



# UTM Exploration in China





# ATM in China





# Characters of ATM

## Commercial Air Transport

- ✓ 8.59 million hours total flight time
- ✓ ATC service is provided: 100-thousand+ activities /day
- ✓ 10.249 million take-off & landing

## General Aviation

- ✓ 0.837 Million Hours Total Flight Time



360 Control Sectors

28 ACCs

40 APPs

200+ TWRs

Over 10 Thousand Air Traffic Controller

**The ATM in China is centered on commercial air transport and giving steadily increasing consideration to GA.**



# UTM v.s. ATM

## Flying Activities

Aircrafts  
Airspace

## Technologies

CNS  
Rules of the Air



## Users

Socialized  
Widespread

## Safety issues

State Security  
Air Safety  
Ground Safety



Currently, the ATM system is not compatible with UAS operation.



# UTMISS

Unmanned Aircraft System Traffic Management  
Information Service System

UTM Exploration in China







# Technical basis of UTM

## Identification

Real-name Registration

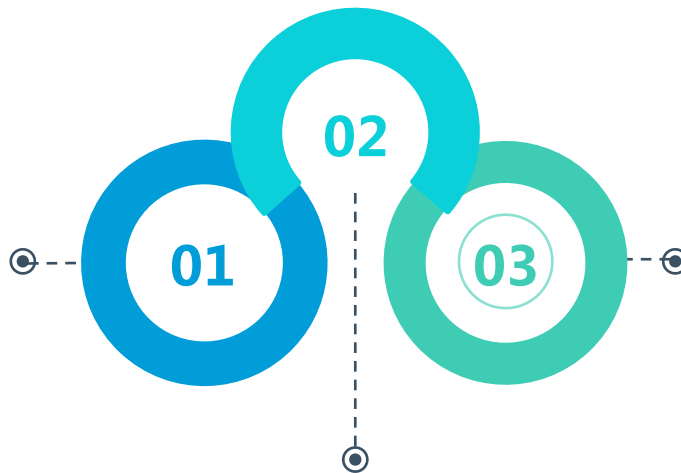
Unique S/N



## Communication and Tracking

Favorable Communication Coverage

Data Transmitted from UAS



## Geo-fencing

Obstacle Limitation  
Surfaces at Airdromes  
Critical Infrastructure

.....





# Structure of UTMISS

## Different Authorities

## Different Users

**UTMISS**

Airspace Management  
Aircraft Operation Monitoring  
Flight Application Management  
Operation Statistics  
Emergency Management  
Operation Notice

Airspace Information Inquiry  
Airspace/Flight Application  
Caution and Warning  
Notice Inquiry

Real-name Registration System

Airworthiness Certification

Operator Management DB

UAS clouds

Personnel Licensing DB

DB Of Other Authorities Related





# Critical Features Of UTMISS

**Comprehensive and Various Resources  
Of Real-Time Flight Data**

**UTMISS**

UAS Flight  
Control System

Cloud of UAS  
Manufacturer

Commercial  
UAS Cloud

Approved Service  
Provider

**Public Service**

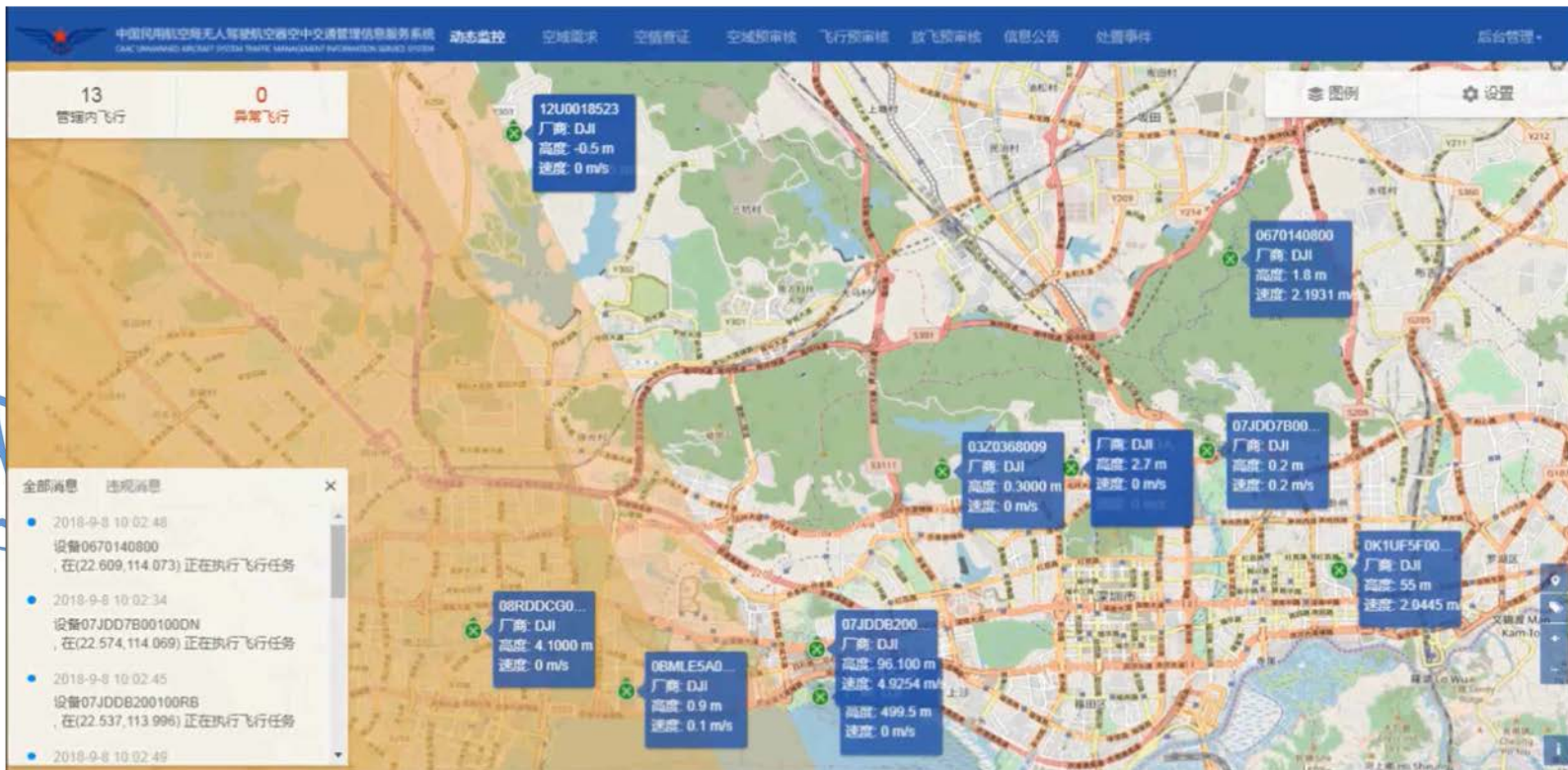
**Privacy Policy**

**Data Security**





# Real-Time Flight Data





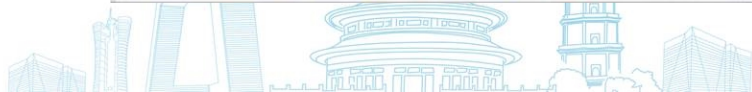
# Flight Records

起飞时间:  -  飞行时长(s):  -

违规情况: 正常

飞行编号	设备类型	起飞地址	起降时间	最高高度	飞行时长	违规	操作
3b4c5ec4-cda7-46c3-b967-8b2296c9e7cb	轻型	福宝西路	2018-09-08 09:00:13 2018-09-08 09:04:19	41.1 <a href="#">[相对]</a>	246	正常	<a href="#">轨迹回放</a>
0FF81B49-EA43-4326-9189-1D6C7D233734	轻型	惠盐南路	2018-09-08 09:04:03 2018-09-08 09:04:20	130.70000000000002 <a href="#">[相对]</a>	16	正常	<a href="#">轨迹回放</a>
D8926658-1955-4DEC-B4E3-6163774DDF83	轻型	惠盐南路	2018-09-08 09:02:50 2018-09-08 09:03:56	68.10000000000001 <a href="#">[相对]</a>	67	正常	<a href="#">轨迹回放</a>
a2fedefc-af45-4c30-9ed3-325edeedbabb	轻型	龙珠四路	2018-09-08 08:55:41 2018-09-08 09:00:37	37.7 <a href="#">[相对]</a>	296	正常	<a href="#">轨迹回放</a>
B2F56C73-84F8-4CEF-A7D0-CA9F7B5D6B47	轻型	伍屋村五巷	2018-09-08 08:58:56 2018-09-08 08:59:21	17.2 <a href="#">[相对]</a>	25	正常	<a href="#">轨迹回放</a>
EA820CF5-2ADD-452A-92C3-A094B7F2A019	轻型	侨香路	2018-09-08 08:34:44 2018-09-08 08:57:29	161.3 <a href="#">[相对]</a>	1365	正常	<a href="#">轨迹回放</a>

CFE



# Critical Features Of UTMISS



**Four-dimensional & Dynamic  
Airspace Management**

**Relatively Fixed Airspace**

**Temporary Airspace**

**Location + Altitude + Validity**

**Pushing airspace  
information**

**Geo-fencing**

**UTMISS**

**UAS Manufacturers /  
Service Providers .....**





# Critical Features Of UTMIS



## Four-dimensional & Dynamic Airspace Management

中国民用航空无人驾驶航空器空中交通管理信息服务系统 动态监控 空域需求 空情查证 空域预审核 飞行预审核 放飞预审核 信息公告 处置事件

CAAC UNMANNED AIRCRAFT SYSTEM TRAFFIC MANAGEMENT INFORMATION SERVICE SYSTEM

编号:

高度:

标记者:

联系方式:

备注:

空域信息

空域名称:

空域类型:

用户申请空域:

请根据需求选择地图上左上角图形按钮进行绘制,或手动输入坐标

数据类型:  圆形  多边形

多边形数据格式[[22.603106,113.908941],[22.6996,114.184896],[22.50002,114.10509]] 多边形数据格式[[22.603106,113.908941],[22.6996,114.184896],[22.50002,114.10509]]

# Critical Features Of UTM/ISS



## Flight Activity Management

State Security

Safety of Civil Aviation

Safety of Airspace

Ground Safety

Comprehensive  
assessment

Risk Management

Simplified  
Examination &  
Approval



# Critical Features Of UTM/ISS



## Effective Management Tools

Temperate Closure of  
Airspace

Special Regulation  
Notices

Track-based Collision  
Risk Prediction

Push Information  
via Various Ways

Deliver Regulating  
Requirements  
Timely



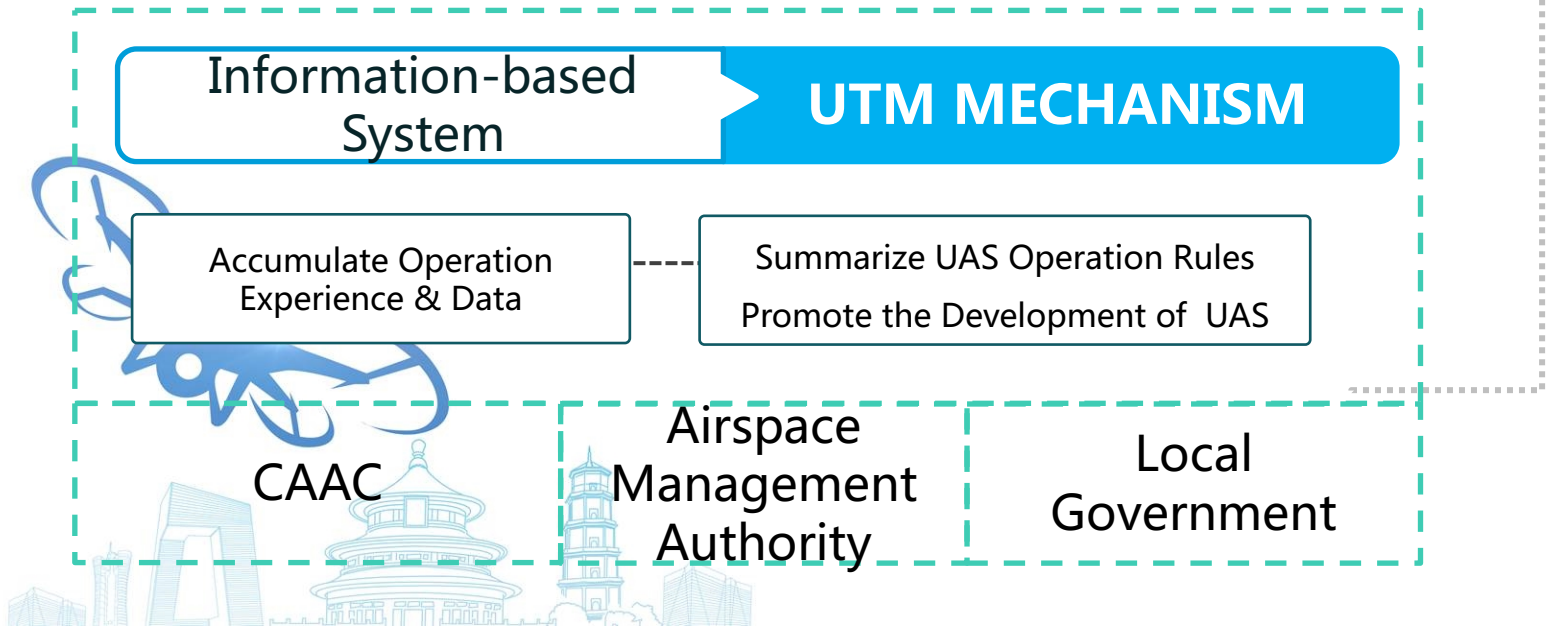




# the UTMISS Experiment

📍 at SHENZHEN

A SAFE 'DRONE ENABLE'





# UTM Vision



# The UAS operation tendency



**Majority:** Consumer,  
Industrial and agricultural  
Operational Flight

**Airspace:** Segregated

**Aircrafts :** light UAS → All Categories

**Altitude :** Low Altitude → Whole Airspace

**Location :** Sparsely Populated Area →  
Populated Area

Rural Area → Urban Area

**Airspace :** Segregation → Accommodation  
→ Integration

Status quo

Future



# Critical Issues during Segregation → Accommodation → Integration



Fly Freely  
Ground Safety

Performance-based Precise Airspace  
Management  
Flight Awareness

Rules Of Operation  
Collision Avoidance

UAS & VFR

UAS & IFR

UAS & UAS in  
Segregated Airspace

Low Altitude

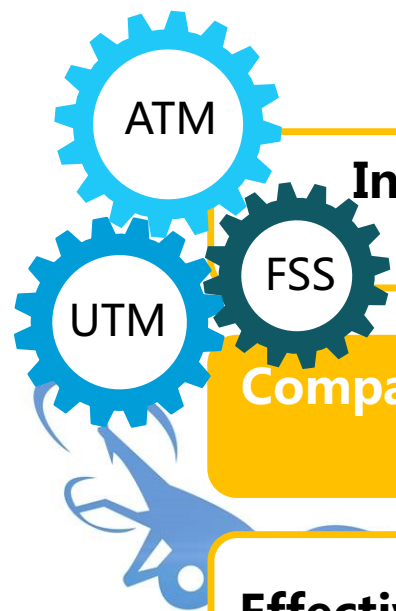
Low & Medium Altitude

Whole Airspace





# Critical Issues



**Interaction Among Multisystem**

**Compatibility of Supporting Systems**

**Effective Management Tools**

**Airspace & Separation Management**

**Risk Assessment & Standard Scenarios**





# UTM TO ATM

– Transitioning from Segregation to Integration

