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

Geo-fencing

Obstacle Limitation Surfaces at Airdromes

Critical Infrastructure

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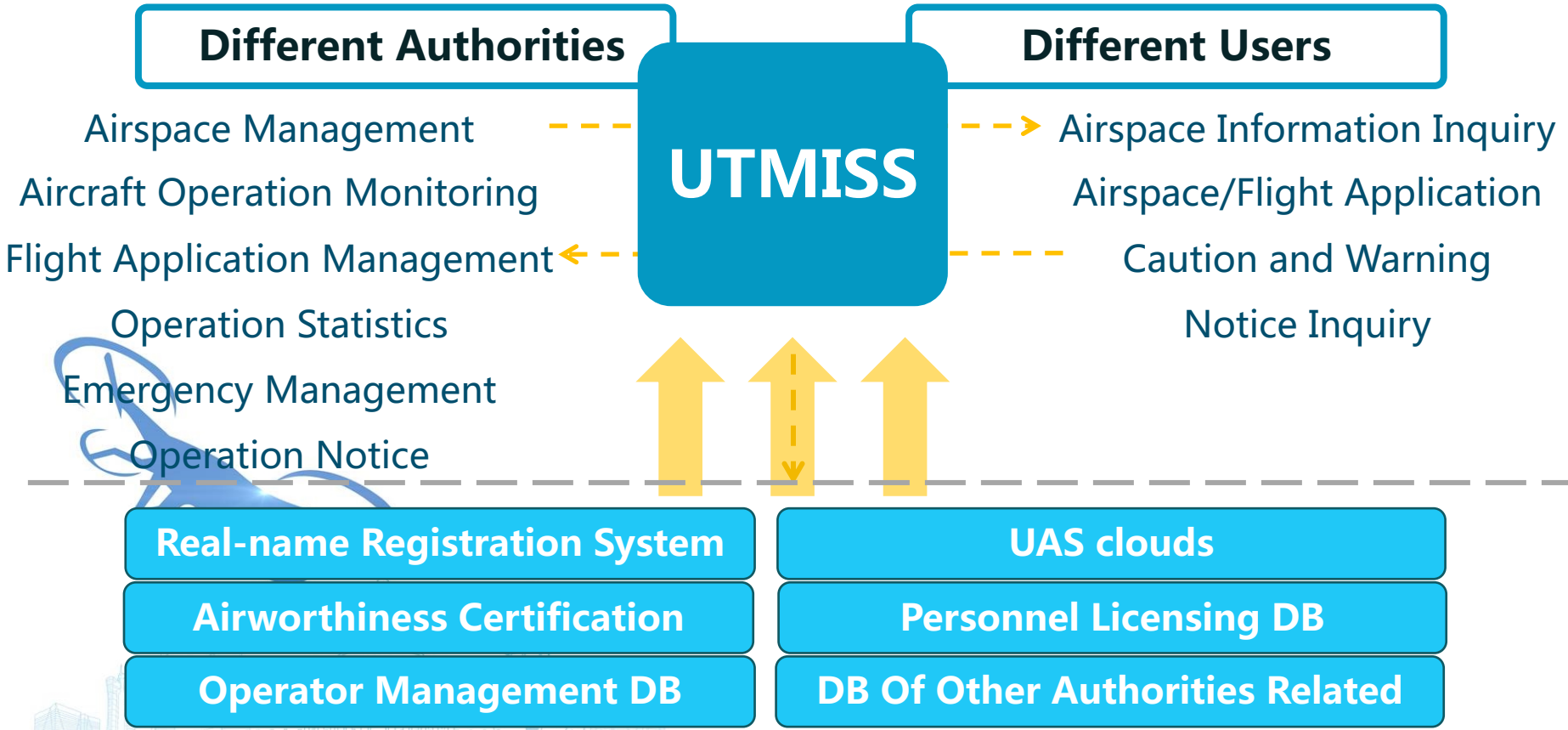
Communication and Tracking

Favorable Communication Coverage

Data Transmitted from UAS

Structure of UTMISS



Critical Features Of UTMISS

Comprehensive and Various Resources Of Real-Time Flight Data

UTMISS

UAS Flight Control System

Commercial UAS Cloud

Cloud of UAS Manufacturer

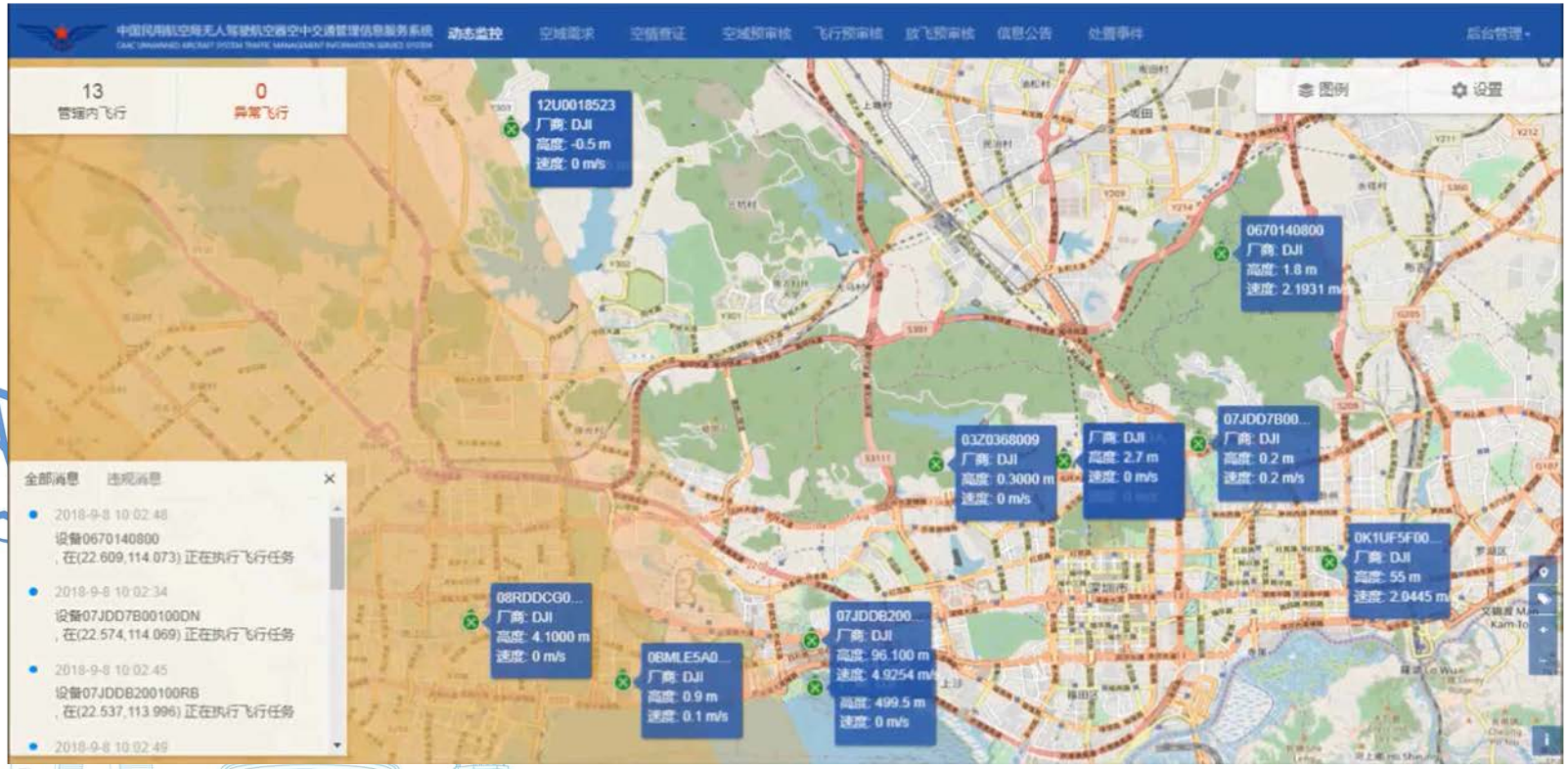
Approved Service Provider

Public Service

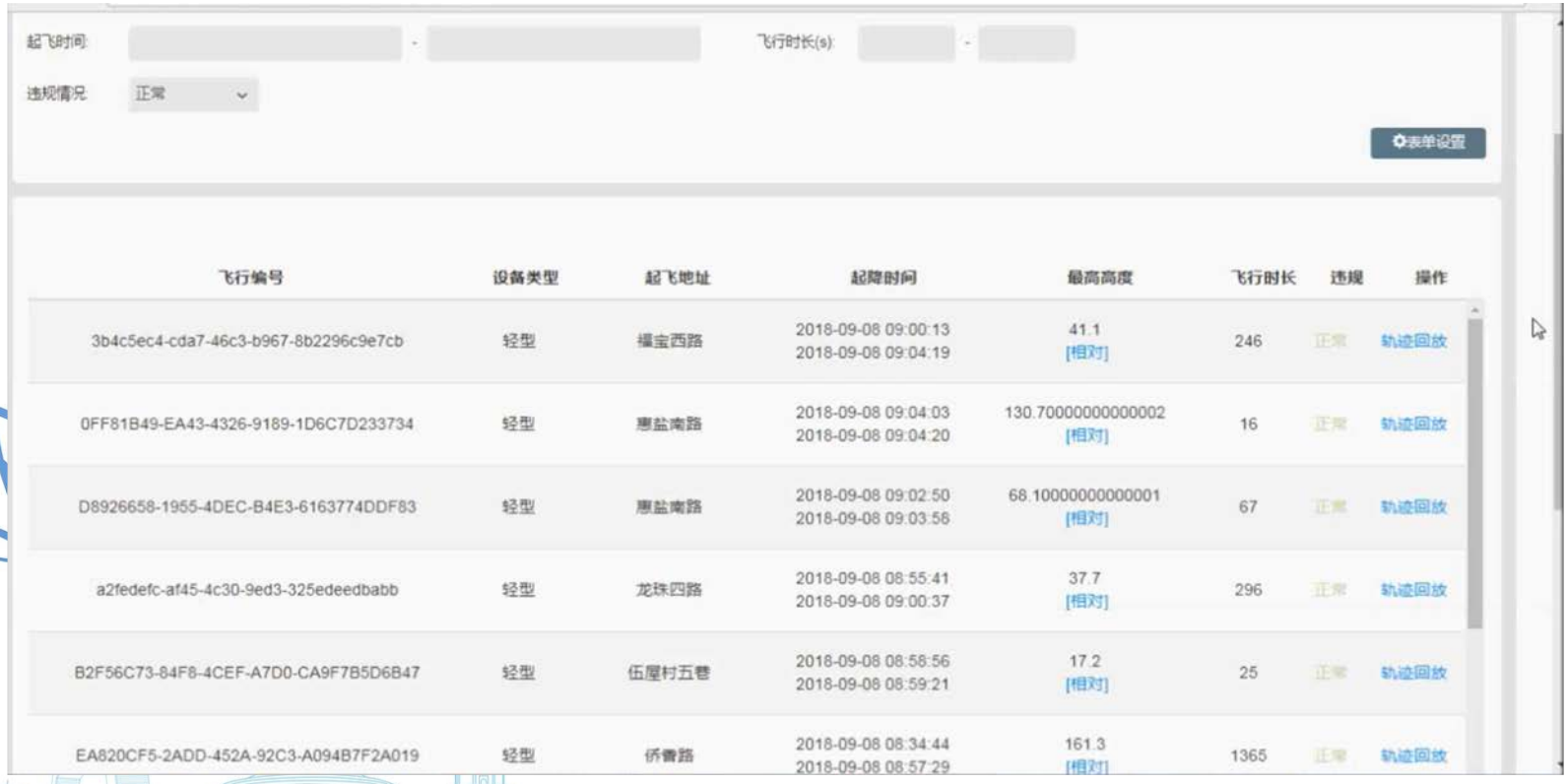
Privacy Policy

Data Security

Real-Time Flight Data



Flight Records



Critical Features Of UTMISS

Four-dimensional & Dynamic Airspace Management

Relatively Fixed Airspace

Temporary Airspace

Location + Altitude + Validity

Pushing airspace information

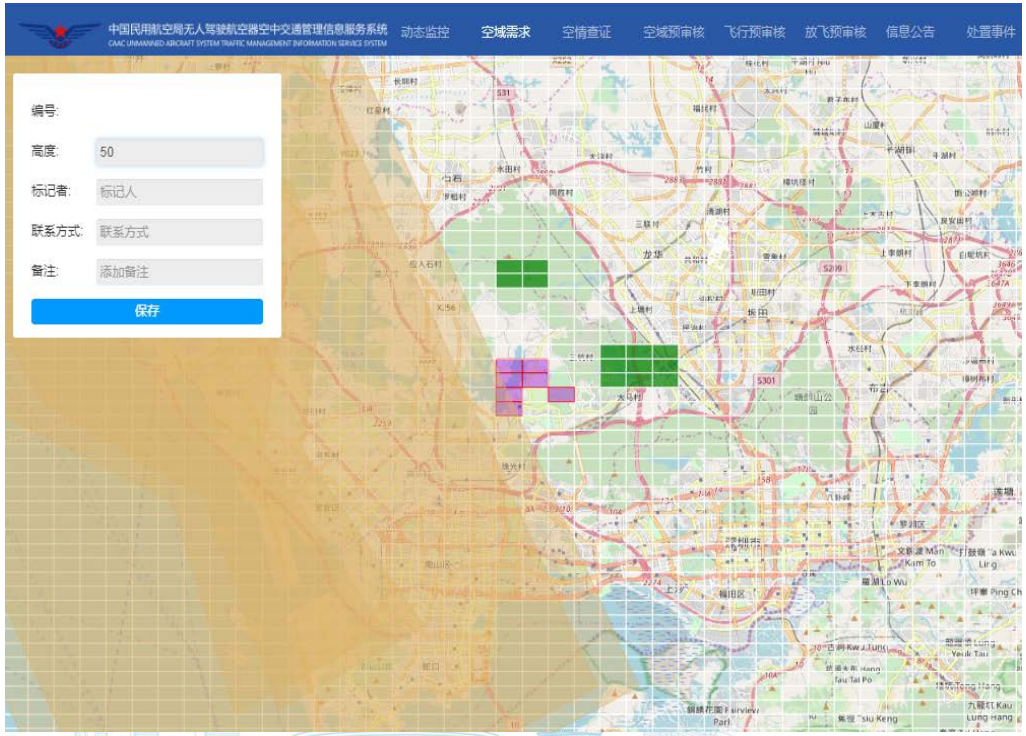
Geo-fencing

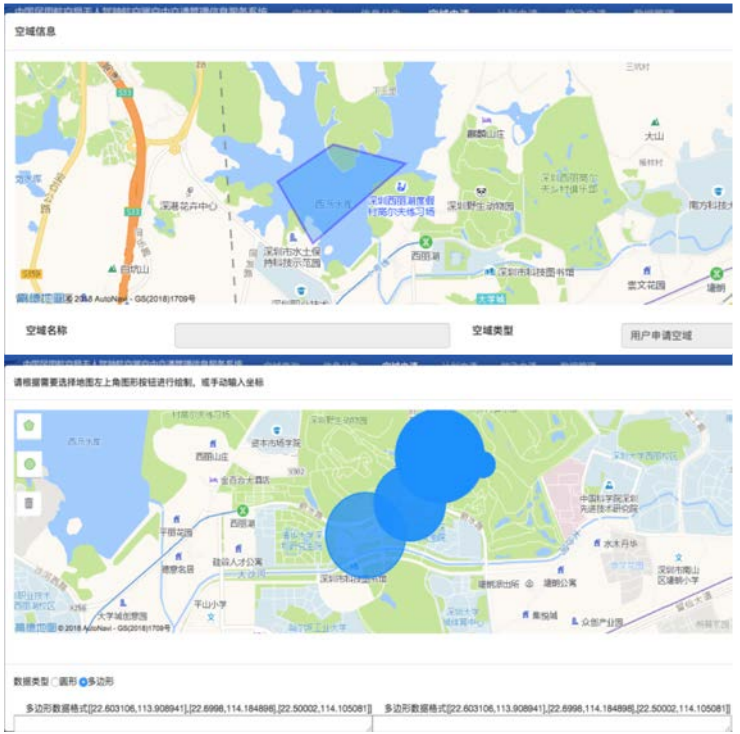
UTMISS

UAS Manufacturers / Service Providers ……

Critical Features Of UTMISS

Four-dimensional & Dynamic Airspace Management





Critical Features Of UTMISS

Flight Activity Management

- State Security
- Safety of Civil Aviation
- Safety of Airspace
- Ground Safety

Comprehensive assessment

- Risk Management
- Simplified Examination & Approval

Critical Features Of UTMISS

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’

Information-based System

UTM MECHANISM

Accumulate Operation Experience & Data

Summarize UAS Operation Rules

Promote the Development of UAS

CAAC

Airspace Management Authority

Local Government

UTM Vision

The UAS operation tendency

Majority: Consumer,
Industrial and agricultural
Operational Flight
Airspace: Segregated

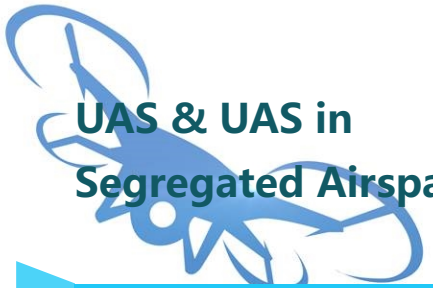
Status quo

Aircrafts : light UAS → All Categories
Altitude : Low Altitude → Whole Airspace
Location : Sparsely Populated Area →
Populated Area
Rural Area → Urban Area
Airspace : Segregation → Accommodation
→ Integration

Future

Critical Issues during Segregation → Accommodation → Integration

Fly Freely Ground Safety	Performance-based Precise Airspace Management Flight Awareness	Rules Of Operation Collision Avoidance



UAS & UAS in Segregated Airspace

Low Altitude

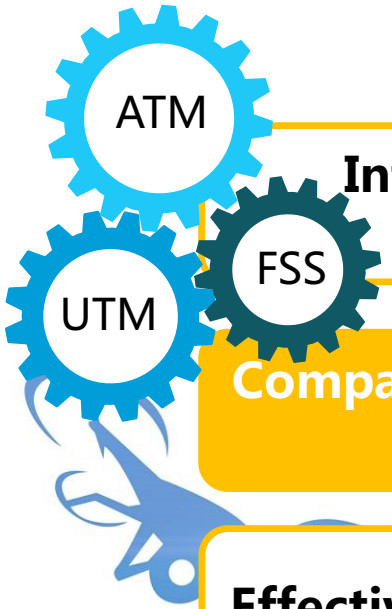
UAS & VFR

Low & Medium Altitude

UAS & IFR

Whole Airspace

Critical Issues



Interaction Among Multisystem

Airspace & Separation Management

Compatibility of Supporting Systems

Risk Assessment & Standard Scenarios

Effective Management Tools

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UTM TO ATM

– Transitioning from Segregation to Integration