

High Starting Point, Wide Coordination and Wide Application

Building an Innovative UAV Regulatory Service System

CASIC

**Industrial Cloud Manufacture (Sichuan)
Innovation Center Ltd.**





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UAV Development and Supervision Status

2

New Technology for UAV Supervision

3

UAV Supervision Service System

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About us





- **China:**
 - "Made in China 2025 ": **Promoting the Industrialization of UAV**
 - The 13th Five-Year "National Strategic Emerging Industries Development Plan": **Pccelerate the Development of Speeding Up the Development of Multi-purpose UAV.**
 - Guidance on Promoting and Regulating the Development of Civil UAV Manufacturing Industry: **Promoting and Regulating the Development of Civil UAV Manufacturing Industry**
- **USA:** "2007-2032 UAV Route Map"
- **EU:** Single European Sky ATM Research (SESAR)
- **Denmark:** National UAV Development Strategy

In recent years, a series of UAV strategy policies and projects have been promulgated at home to promoted the development of UAV, and the UAV industry has shown explosive growth.

According to industry forecasts, China's civil UAV product sales and service market will reach 11.09 billion yuan in 2018, 46.5 billion yuan in 2020, and 75 billion yuan in 2025.



With the explosive growth of the UAV industry, the problem has become increasingly prominent, and the necessity of UAV supervision has become increasingly prominent.

Regulatory policies and regulations



Various countries have issued a series of regulatory policies and regulations on UAV real name registration, flight restrictions, pilot qualification management and so on.

- **CAAC:**
 - Regulations on the Administration of Real-name Registration of Civil Unmanned Aerial Vehicles.
 - Regulations on Driver Management of Civilian UAVs
- **FAA:** Road map of civil UAV system integrated into US national airspace system; Operation and validation of small UAV Systems
- **EASA:** UAV operation regulations framework statement

The effective implementation of UAV regulatory policies and regulations **must be supported by technical supervision.**

There is no uniform logo system, recognition and traceability difficulties.



Identity recognition is difficult

Real time communication is difficult.



Cellular communications networks do not cover that; microwave communications are vulnerable.

Multi department management is difficult to cooperate, and fine scheduling is difficult.



Collaborative scheduling is difficult

Technical difficulties of UAV monitoring

Efficient warning is difficult



At present, early warning technology is lagging behind, lack of data modeling and analysis, and early warning is not timely.



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How do you feel about the performance of 1400 UAVs?

In order to effectively implement policies and regulations, UAV supervision must apply advanced means and construct a unified supervision system.



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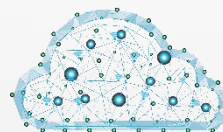
Based on the urgent internal demand of UAV technology supervision, with the help of current advanced technology, such as **IoT, Space-based Internet, Cloud Platform, Big Data and Simulation Modeling technology**, by building a new generation of UAV supervision service system, UAV supervision in the "**identification, real-time communication, coordinated scheduling, efficient**" Problems such as early warning and other aspects, and build a new UAV supervision and service ecosystem.



IoT



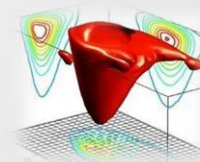
Space-based
Internet



Cloud
Platform



Big Data



Simulation
Modeling



Since 2015, more than 30 UAV "unsupervised fly" incidents have occurred in China. More than 5 drone unsupervised-fly incidents occurred in Chengdu alone, frequently interfering with normal air traffic, bringing huge economic losses and bad public opinion. influences. In order to eliminate the "unsupervised fly" event of the drone from the source, it is necessary to monitor the flight status of the drone and trace the source of the drone. With the help of the industrial Internet and the Internet of Things technology, before the drone is shipped from the factory, it is added to the identification and authentication system to realize the "one machine and one yard" of the drone supervision.

At the same time, in order to stop the illegal flight of the drone in time, it is necessary to establish a national-level UAV safety management and control platform to automatically supervise the unmanned aerial vehicle active identification.

With the Internet of Things, automatic monitoring of drone identification and flight operations safety management and control platforms is carried out. The drone can be traced throughout the cycle to promote the healthy development of the drone market.



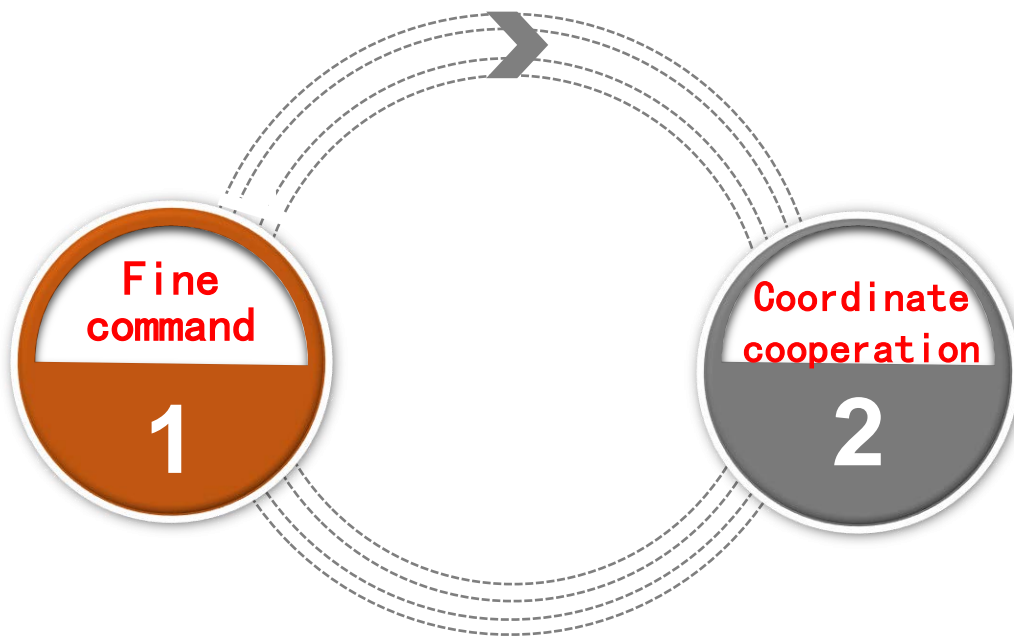
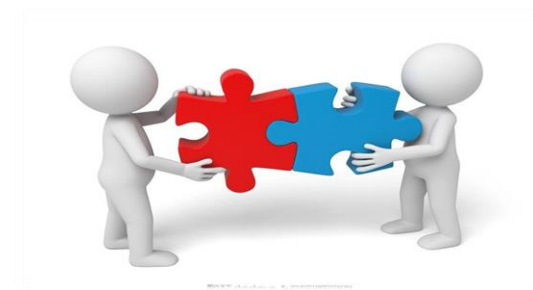
Since 2016, China has launched the “Space-based Internet” access plan, which is to build a global satellite constellation through a small-scale satellite network of a certain scale, and build a world-wide integrated information system to provide users with global coverage and broadband coverage. Internet access, to achieve the intersection of the ground objects without dead ends.

At this stage, in the data transmission, the drone usually uses mobile communication or through microwave to realize information interaction. However, in the transmission of information, **it is prone to communication interruption due to incomplete signal coverage or obstacle blocking, which affects the normal operation of the drone and causes the drone to be lost or dropped.**

With the help of space-based Internet, we can realize unmanned, uninterrupted and low-cost UAV communication, and realize the continuous and real-time monitoring and supervision of drones.



Aiming at the problem of numerous drones and limited platform supervisors, the "Internet +" is used to construct the drone supervision system command and dispatch model to form an optimal supervision task command and dispatch plan, and shorten the drone supervision time to achieve refined management.



Establish an Internet platform supervision method, assign roles to various government regulatory departments, collect complex and scattered information, reduce handover links, and structure the regulatory approval process and coordinate departmental cooperation. And real-time supervision of cooperation tasks will improve government management effectiveness.

Through the "Internet +" model innovation, it helps the cooperation and refinement of the drone supervision department.



Real-time monitoring can not predict the flight trajectory of UAV, and can not eliminate the potential hazards in UAV flight. Based on this problem, the target correlation is judged by calculating the correlation degree of multi-intelligence information according to the position and height of UAV. With the help of multiple intelligence integration, the unsafe factors can be found in time. At the same time, **with the help of "one aircraft, one code", using large flight data**, based on the flight plan load, mission, location and other detailed information on the current flight operation risk assessment, improve the UAV monitoring comprehensiveness. It also provides the UAV value-added services with the help of big data modeling and industry APP.

With the help of big data multi-intelligence fusion and flight risk assessment technology, the potential dangers in the flight of UAVs are pre-judged and timely alarmed, and all aspects of flight operations are fully supervised.



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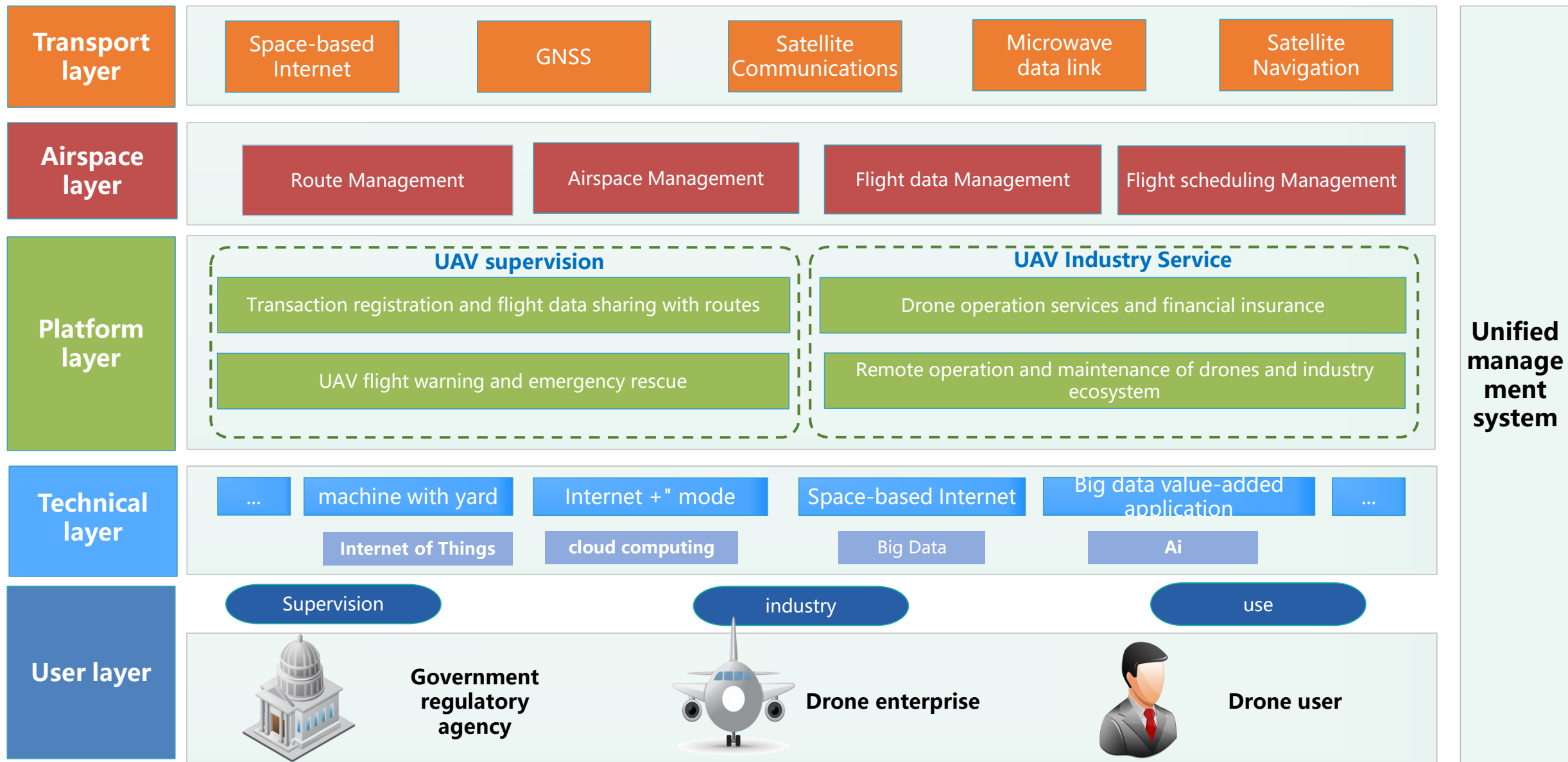
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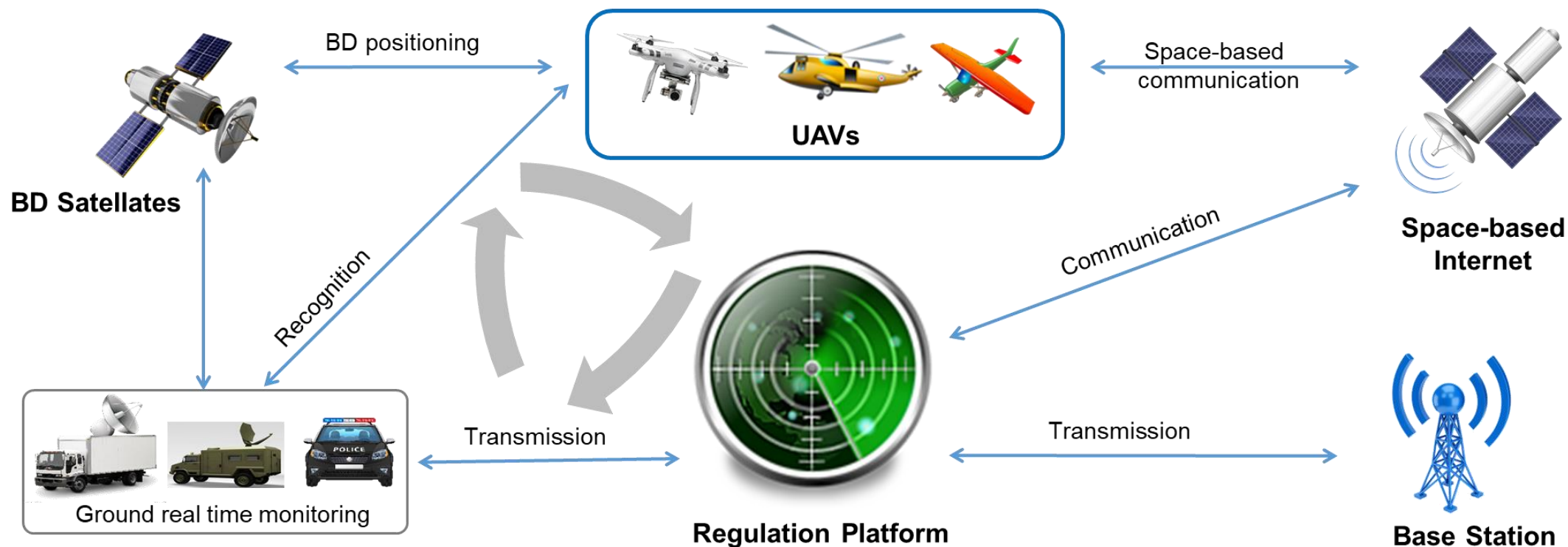
About us



Relying on the technologies of Internet of Things, Space-based Internet, Cloud Platform and Big Data, and supported by the technologies **of IoTs, Space-based Internet, Industrial Internet Platform, Big Data and Simulation Modeling**, a new generation of UAV supervision and service system with "**automatic identification, real-time on-line, sharing cooperation, value-added application**" is constructed. To achieve full-time, full-airspace, high-precision monitoring, and data value-added applications as an extension of the new UAV monitoring, service ecosystem.



UAV Supervision Platform Overall Architecture Diagram



Traffic Guidance



Fire Survey



Law Forensics



Assembly Control



Accident Emergency



Patrol



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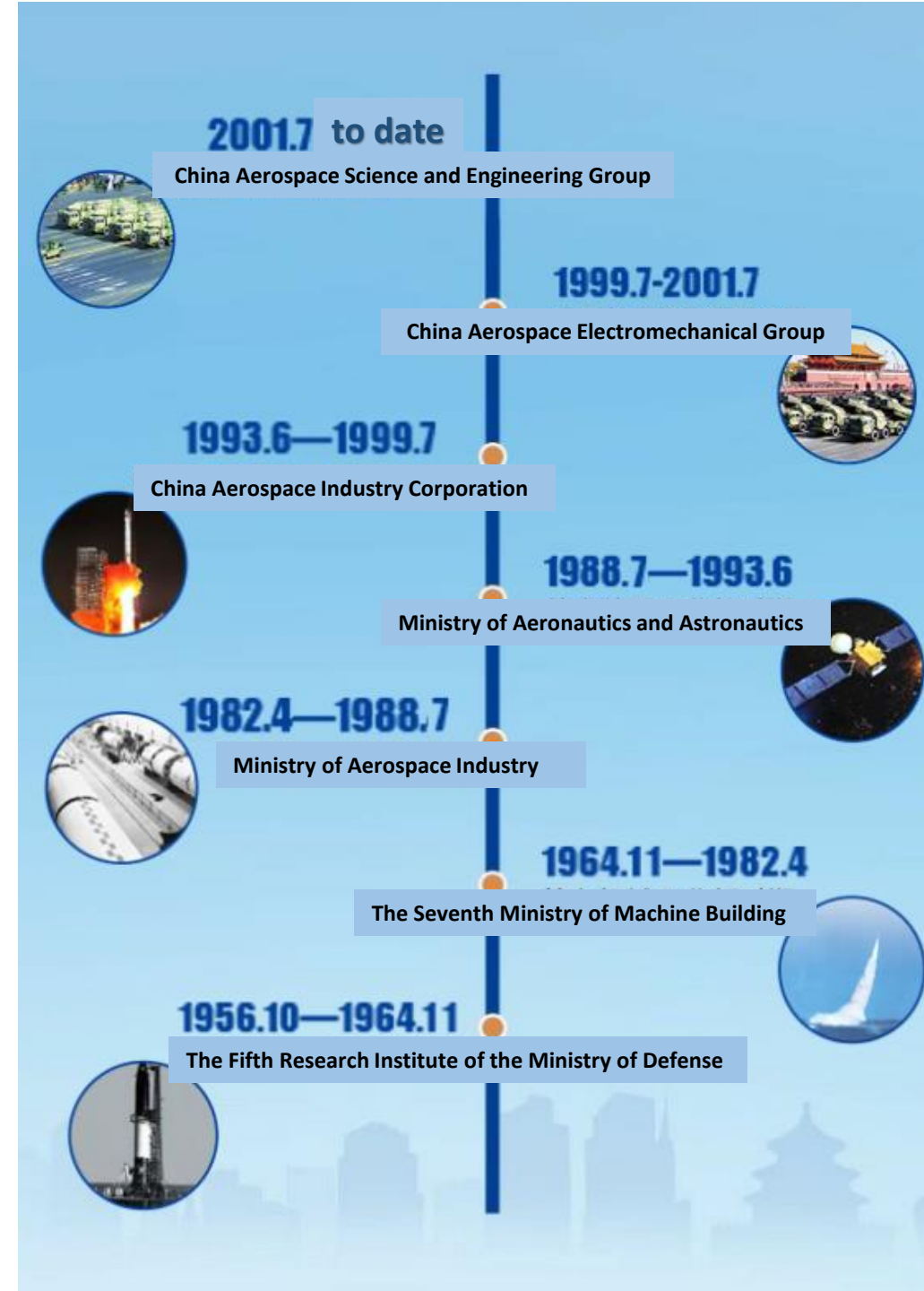


中国航天科工集团

CHINA AEROSPACE SCIENCE & INDUSTRY CORP.

- The state-owned giant high-tech enterprises directly managed by the central government.
- It is composed of **headquarters, 7 research institutes, 1 scientific research and production base and 13 companies/joint-stock enterprises**. It has 138,000 employees and has emerged famous experts such as Qian Xuesen, Song Jian and Huang Weilu.
- Engaged in **aerospace defense, information technology and equipment manufacturing**.

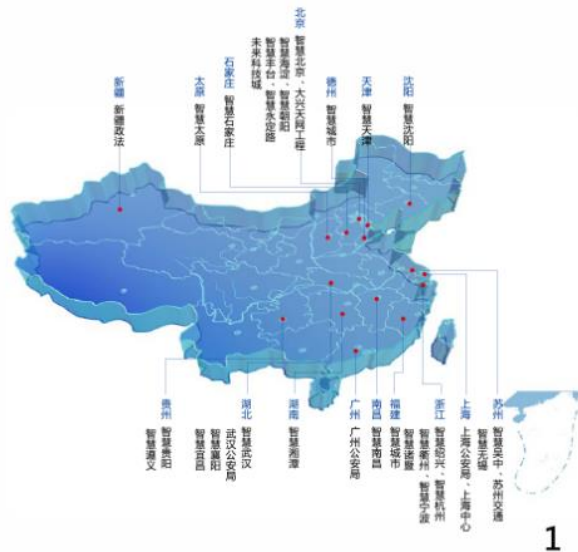
8	3	30	1
两院院士	全国杰出专业技术人才	国家“千人计划”专家	国家“万人计划”专家
49	6	6	149
“国家百千万人才工程”	中国青年科技奖	中华技能大奖	全国技术能手





CASIC Defense

- Air defense missile weapon system
- Airborne missile weapon system
- Solid rocket
- Space technology products and other technologies



1

1. 智慧城市业务分布图

Information Technology

CASIC plays a major role in China's information technology industry.

- Smart industry
- Industry information application
- Satellite application

Equipment Manufacturing

With the core of intelligent manufacturing, CASIC has built a new generation of equipment manufacturing platform, which plays an important role in the equipment manufacturing industry.

- Hi-tech equipment manufacturing
- Energy equipment



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Build space based Internet based on "Five Cloud Project"



Based on "**INDISCS+CMSS**", to build the main platform of the national industrial Internet platform, the **CASICloud**.





Thank You