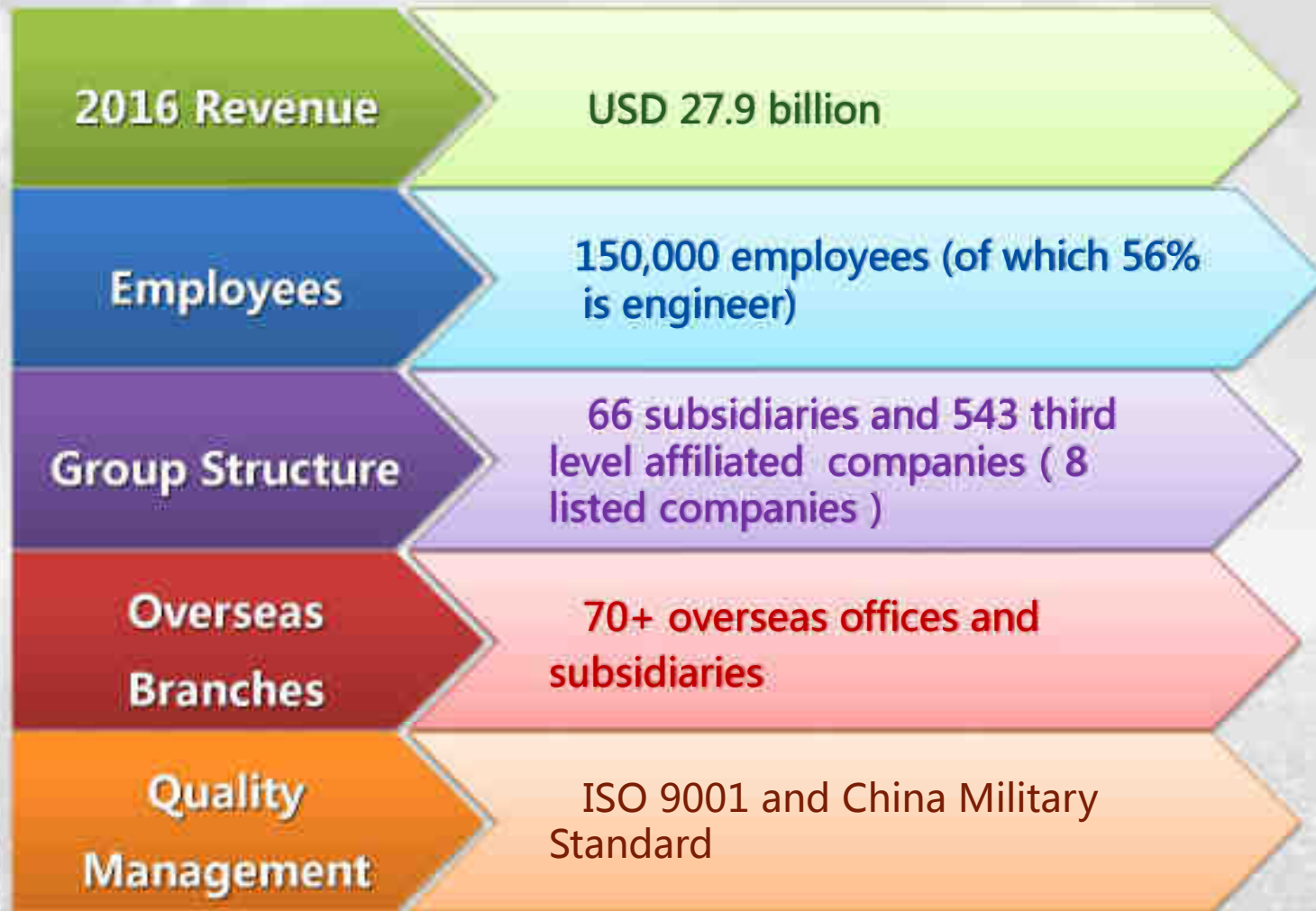




The 54th Research Institute of China Electronic Technology Group Cooperation



- Large-scale state-owned enterprise group
- World top 500
- Under direct administration of SASAC (State-owned Assets Supervision and Administration Commission of the State Council)
- 47 Insitutues



Six Segments of Key Business

SEGMENTS

- C⁴I
- Telecommunications
- Radar
- EW
- Large system equipment

Defense Electronics

- Payload and power system
- Aerospace TT &C and communications
- Aerospace application and space science
- Airborne equipments
- UAV and utility aircraft
- Flight simulation training
- Airspace and air traffic control

Aerospace

- Top-level design and information system solution for public security
- Command and management
- Communications and loading plan
- Monitoring and awareness
- Information security

Security

Energy Electronics

- Photovoltaic
- Energy storage and battery
- Semi-conductor lighting
- Power electronics and smart grid

IT system integration and info service

- Government
- Transportation
- Industries and enterprises
- Financing
- Modern agriculture

Electronics and advanced manufacturing

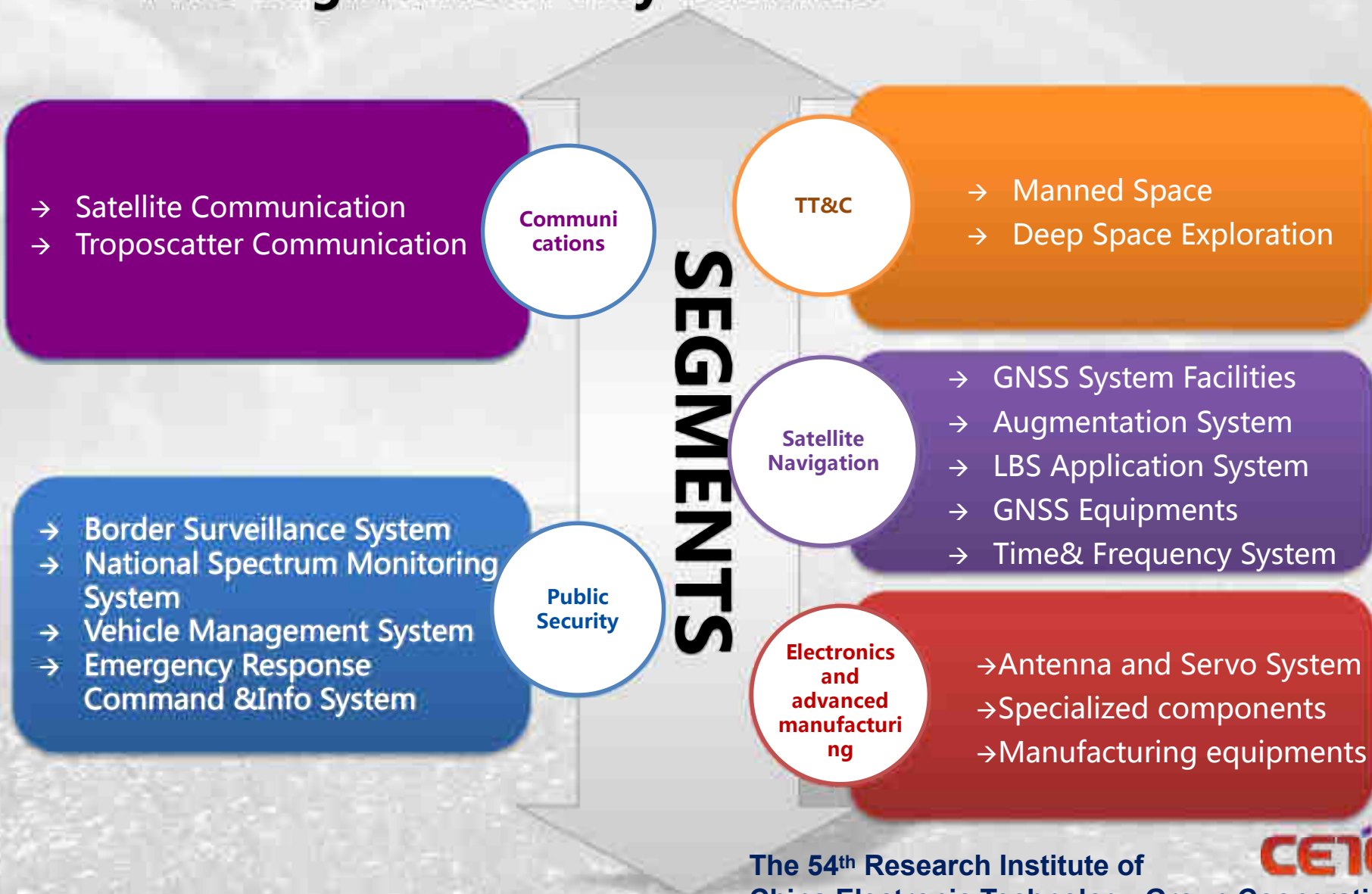
- Basic materials and components
- Specialized components
- Manufacturing equipments



- Leading Electronics SE /SI & Turn key Project Provider
- Founded in 1952, approximately 8,000 employees
- ISO9001 and ISO14001 certification China Military Certification
- One industry park, two test range
- USD 2,300 million revenue in 2016
- Leading in CETC Group



Five Segments of Key Business



Business covered over 40 countries



Communications

- Satellite Communication
- Troposcatter Communication

Fixed/Vehicular/Portable
according to different application



↳ Fixed Satellite Communication

For satellite broadcasting; civil communication; meteorological satellites communication ; satellite TT&C



Specifications:

Operation band	C / Ku / Ka
Antenna aperture	1.2m ~ 13m, optional
PA power	1W ~ 1kW, optional
Data rate	64kbps ~ 8Mbps
Service	Voice, data and image



↳ Vehicular Satellite Station

Maneuverable continuous satellite communication , for
 Coordination of official escorts;
 Emergency system command;
 OTM communication in peace-keeping & anti-terrorism

Specifications

Maximum vehicle speed	100km/h (expressway)
Initial capturing satellite	≤3 minutes
Sheltering recapturing	≤3s
Operation band	Ku
Antenna aperture	0.6m、 0.9m、 1.2m
PA power	4W-100W, optional choice
Data rate	64kbps~2Mbps
Service	Voice, data, and image



↳ Portable Satellite Communication Station

For special areas and situations, eg. disaster relief and emergency communication

Operation band	Ku
Antenna aperture	0.7m, 0.9m,1.2m
Antenna type	Manual or automatic satellite tracking
Modulation type	QPSK
FEC	Convolution encoding, LDPC
Data rate	1 2 8 / 2 5 6 / 3 8 4 / 5 1 2 k / 768/1024/2048kbps
Channel allocation method	PAMA/DAMA
Service interface	Analog video: 1-ch input, 1-ch output Analog voice: FXS 2-ch LAN interface 2-ch
Deployment time	10 minutes / 2 people
Power supply	Battery, mains or AC/DC equipment
Continuous operation time	>60 minutes (storage battery)



↳ Troposcatter Communication

- Long one-hop span
- High communication capacity
- Excellent channel robustness
- Wide application field



↳ Fixed Troposcatter Communication

- Operation frequency: C band
- Transmission capacity: 2,048kbps/8,448kbps/34,368kbps
- Transmission services: voice, data, IP and fax
- Output power: 200W/400W/1000W (SSPA)
- Antenna aperture: 1.8m / 2.4m (typical configuration) / 3.7m / 4.5m
- Communication distance: 200km (8,448 kbps, link availability : more than 99%, power amplifier (SSPA) 400W×2, antenna 2.4 m×2, ocean subtropical climate, $N_s = 350$, smooth sphere)



↳ Vehicular Troposcatter Communication

- Operation frequency: C band
- Transmission capacity:
256kbps/1,024kbps/2,048kbps/8,448kbps/
34,368kbps
- Tx services: voice, data, IP and fax
- Interface types: ITU-T G.703, 802.3
10/100BASE-T
- Output power: 200W/400W/1000W (SSPA)
- Antenna type: Two 2.4-meter grid
parabolic antennas
- Communication distance: 130km
(2,048kbps, link availability: more than
99%, power amplifier
- (SSPA) 400W×2, antenna 2.4 m×2,
temperate continental climate, $N_s = 310$,
smooth sphere)



We provide communication solutions for:

- Venezuela Satellite Teleport
- Communication system for other South America Countries
- Oil Troposcatter Platform in South China
- Troposcatter Communication system for South America Countries
-

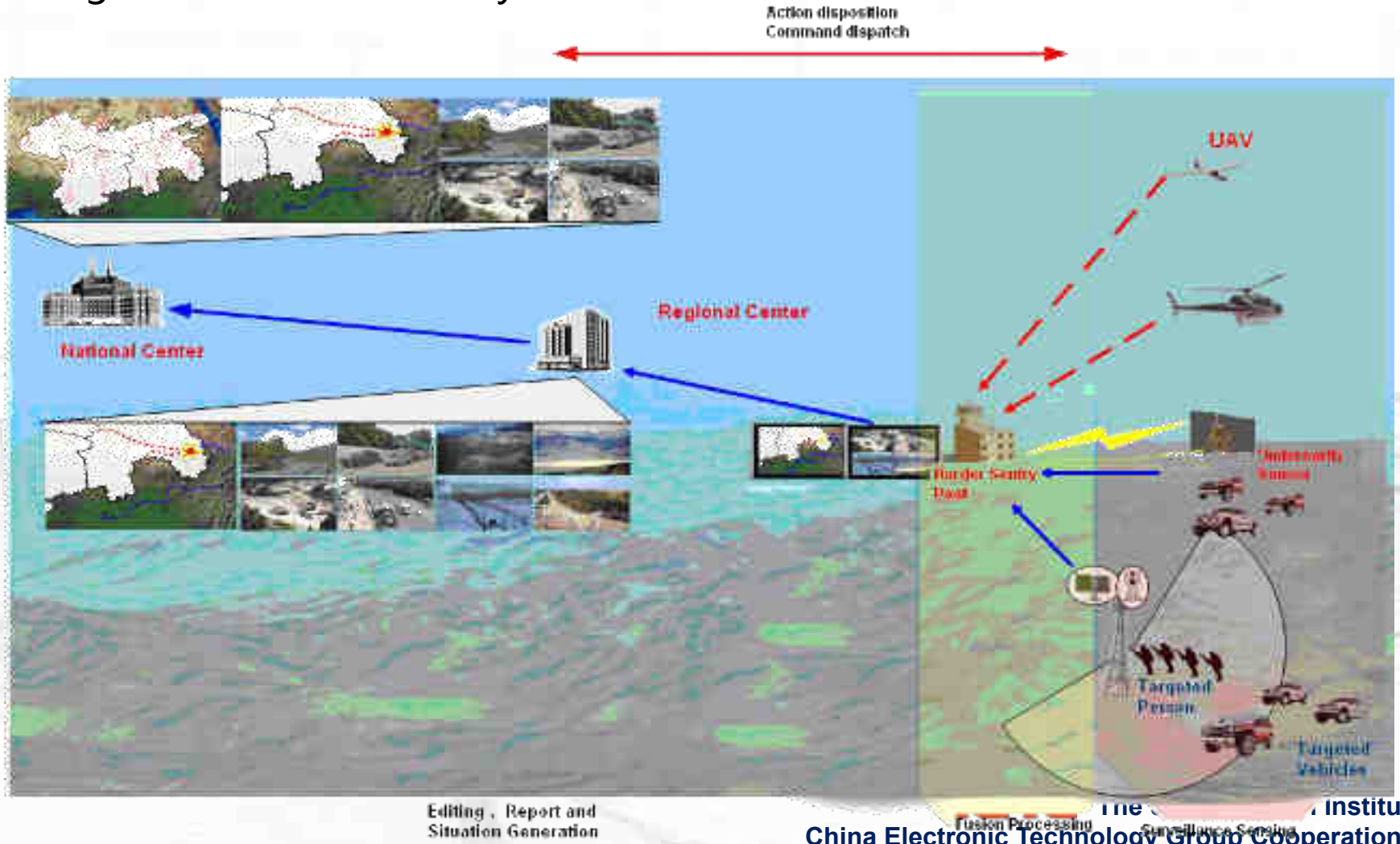
Public Security

- Border Surveillance System
- National Spectrum Monitoring System
- Vehicle Management System
- Emergency Response Command & Info System



↳ Border Surveillance System

For targets surveillance in key place; illegal targets detection, alarming, target tracking and allocation; timely border situation surveillance

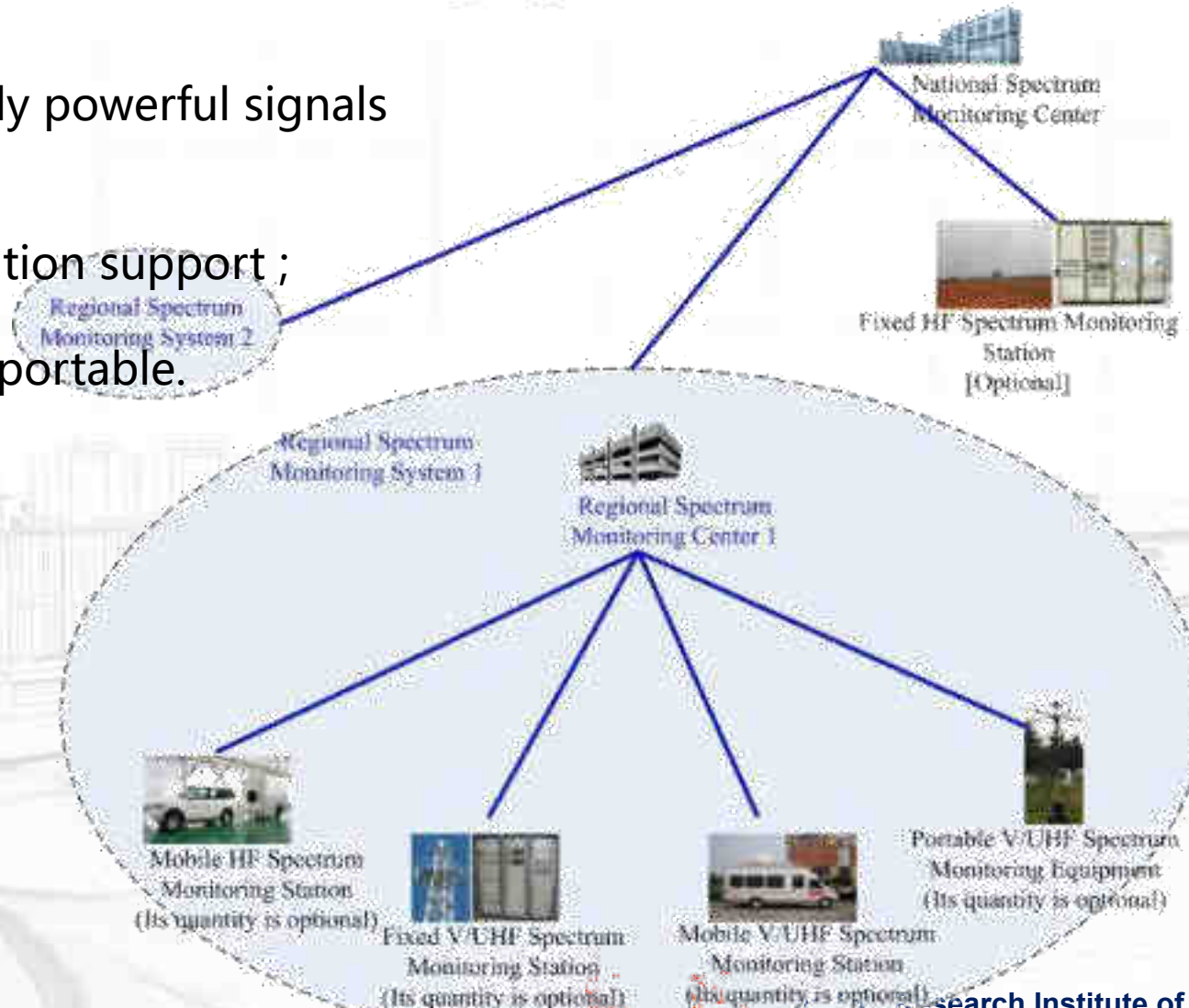


↳ National Spectrum Monitoring System

For illegal signals or overly powerful signals positioning;

Normal radio communication support ;

Types: fixed, mobile, and portable.



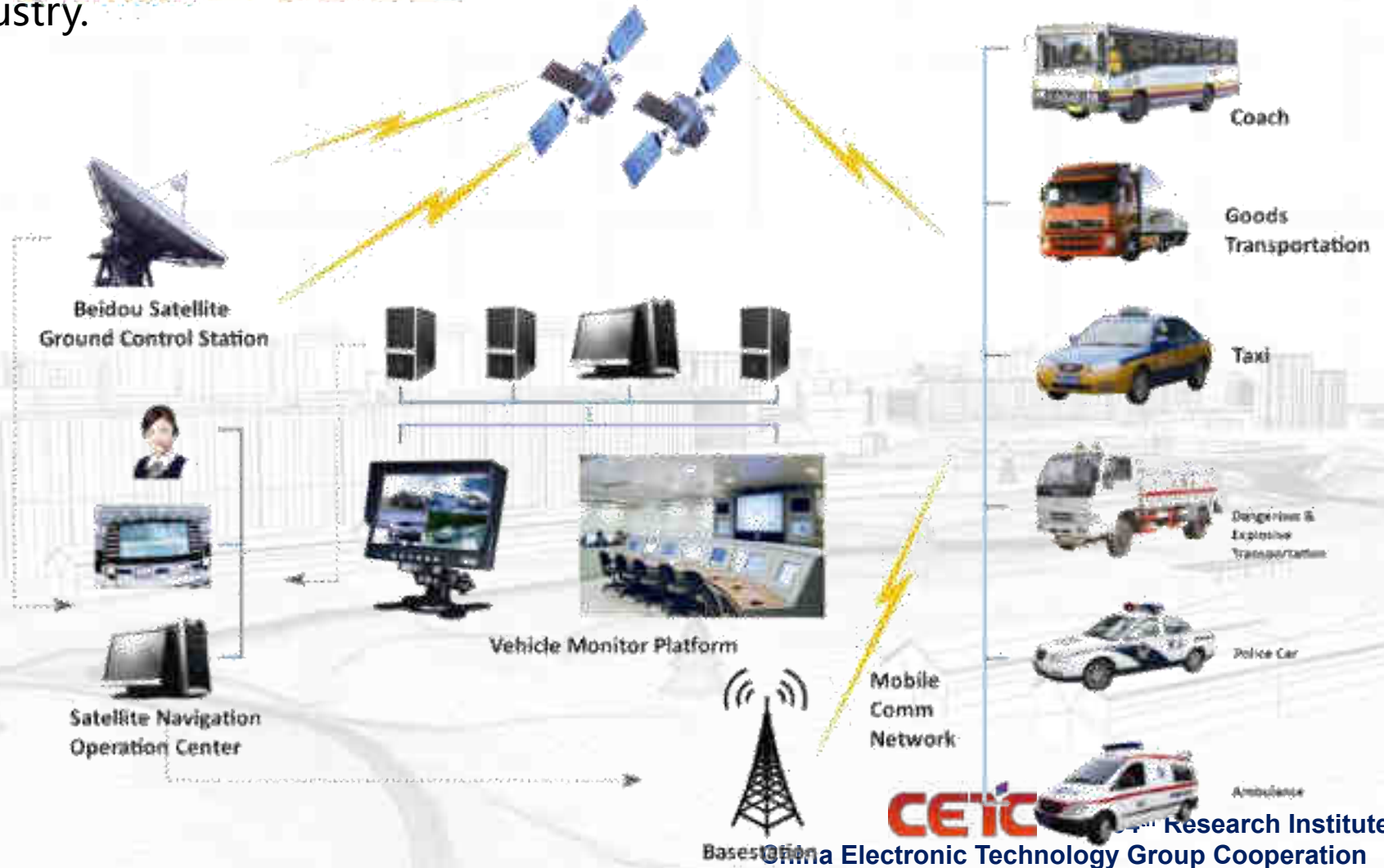
↳ Emergency Response Command & Info System

For governmental organizations, including police, firefighting, and emergency response management departments.



↳ Vehicle Management System

For multiple types of vehicle intelligent position services for government and industry.



We provide security solutions for:

- 2008 Beijing Olympic Games
- 2010 Shanghai Expo
- National Emergency Management Platform
- National border and coastal defense system
- Ecuador's police command system
- Venezuela Prison Security Management
-

Telemetry & Telecontrol

We are important supplier of equipment and system in China' s aerospace industry.

- Manned Space
- Deep Space Exploration



↳ Manned Space

Over 90% of communication & 30% of TT&C equipment had been made by CETC54



↳ Deep Space Exploration

TT&C station for Lunar Exploration, also extend for Mars



S band TT&C System (Santiago)



**50m and 65m Radio Telescope
/Lunar Exploration**



S/X band TT&C System (Sweden)



**35m S/X/Ka
Qeshqer Shehiri**

- › GNSS System Facilities
- › Augmentation System
- › LBS Application System
- › GNSS Equipments
- › Time& Frequency System

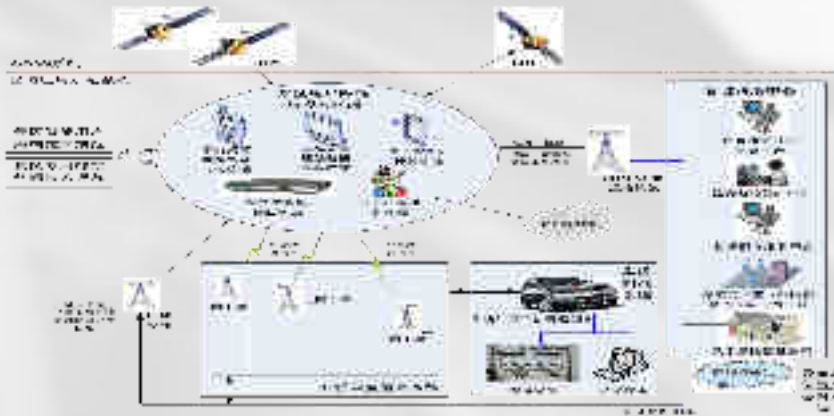
GNSS Ground Station



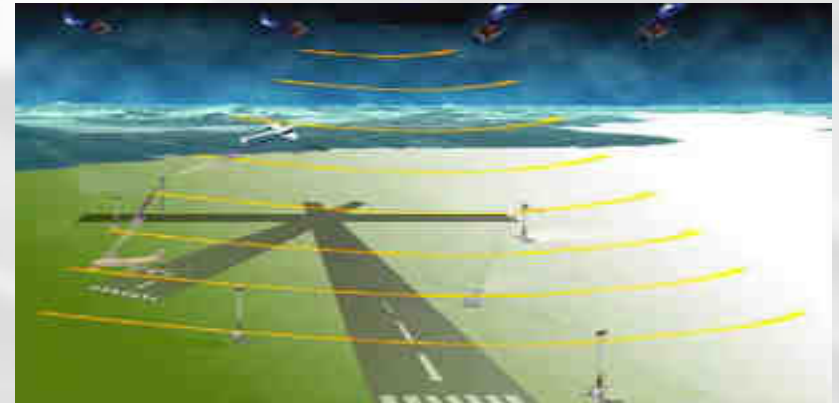
GNSS Outdoor Test Range



LBS Application System: Smart Tourism



Ground-Based Augmentation System





➤ Airborne GNSS Receiver



➤ GNSS/INS Integrated Navigation System



➤ Vehicle GNSS Receiver



➤ GNSS Handset



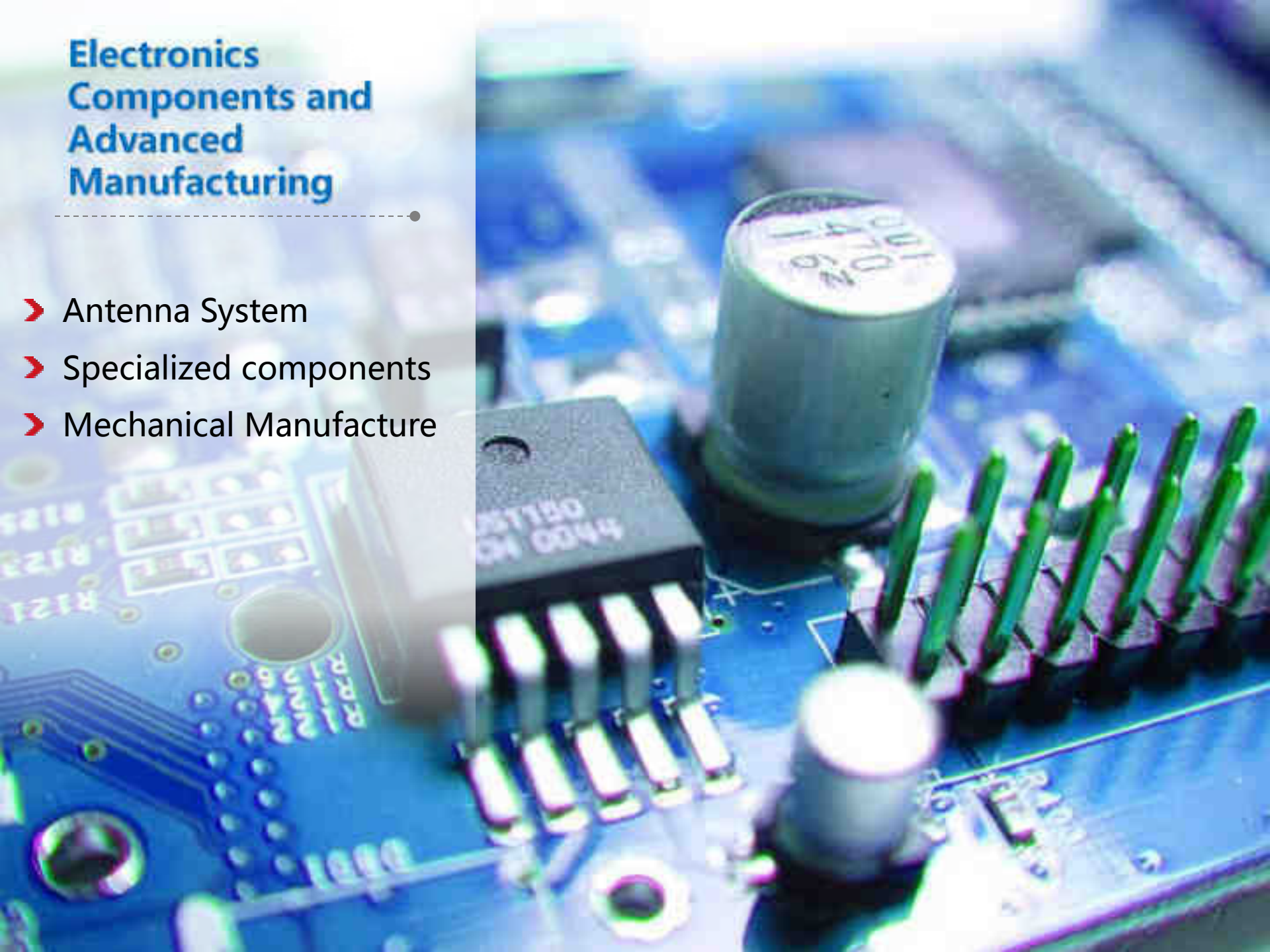
➤ GNSS Monitor Receiver



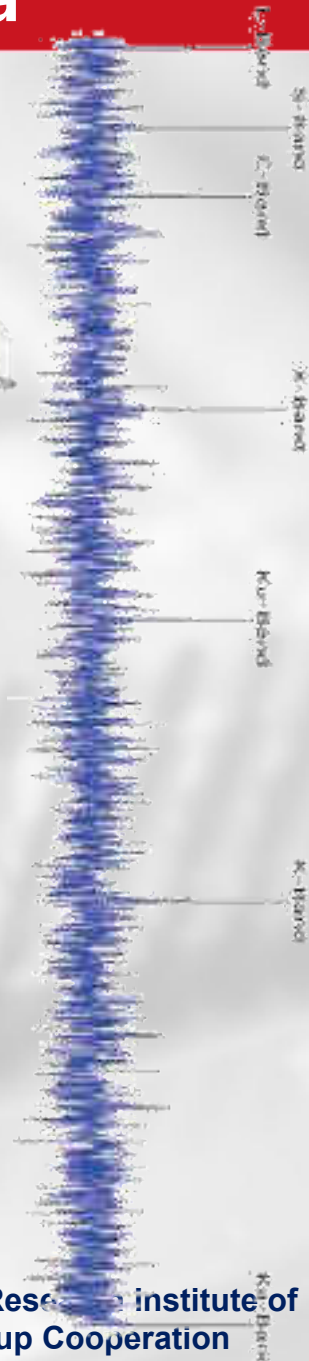
➤ Timing GNSS Receiver

Electronics Components and Advanced Manufacturing

- Antenna System
- Specialized components
- Mechanical Manufacture



↳ Antenna and Servo System





TT&C

**Satellite
Navigation**

**Public
Security**

**Electronics &
advanced
manufacturing**

**Communi
cations**

Thank You!