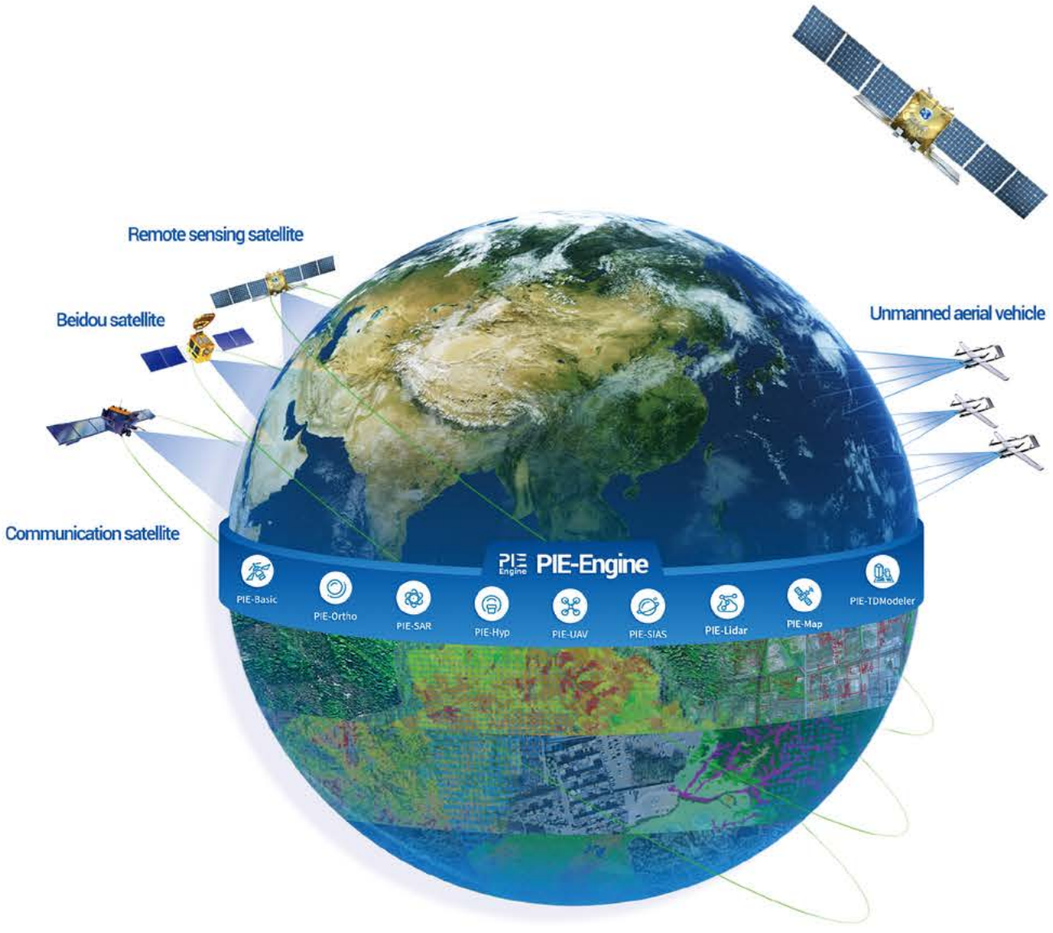
航天宏图信息技术股份有限公司
PIESAT Information Technology Co., Ltd.



2021
PIESAT ANNUAL
ESG REPORT

航天宏图信息技术股份有限公司
PIESAT Information Technology Co., Ltd.

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About this Report

About this Report

This report aims to conduct a frank and honest exchange with various stakeholders on the ESG concept and practical performance of PIESAT Information Technology Co., Ltd., and systematically respond to the expectations and demands of stakeholders.

Time Scope

2021/01/01 to 2021/12/31. To increase report comparability and completeness, some content may go beyond the scope described above.

Release Cycle

This report is an annual report and is published in parallel with the company's annual report. The English version of the 2021 ESG report is disclosed at the same time, and in the event of any ambiguity in the understanding of the English version, please refer to the Chinese version.

Data Description

The sources of data used in this report include internal statistics from the company, public data from government departments and third-party agencies, etc. The financial data for this report is based on RMB as the base currency.

Report Boundaries

The report covers PIESAT Information Technology Co., Ltd. and its major subsidiaries.

Report Appellation

In this report, PIESAT Information Technology Co., Ltd. is referred to as "PIESAT" and " the company".

Report Standards

China National Standard GB/T 36001-2015 "Guidelines for the Preparation of Social Responsibility Reports"

International Standard ISO 26000:2010 "Social Responsibility Guidelines"

United Nations Sustainable Development Goals (SDG 2030)

Global Commission on Sustainability Standards "GRI Sustainability Reporting Standards"

Chinese Academy of Social Sciences "Guidelines for the Preparation of CSR Reports in China (CASS-CSR4.0)"

Shanghai Stock Exchange "Guidelines for the Preparation of Report on the company's social responsibility"

Shanghai Stock Exchange "Guidelines for Environmental Information Disclosure of Listed Companies"

Report Form

An electronic version of this report is available on the website of the Shanghai Stock Exchange (www.sse.com.cn) and Juchao Information Network (www.cninfo.com.cn).

Contents

President's statement

The year 2021 is a milestone of China's 14th Five-Year Plan for economic and social development. It is also a year for PIESAT to build on past achievements and strive for new progress. I would like to, on behalf of the Board of Directors of PIESAT, extend my sincere gratitude to our clients, partners and investors for your close attention, trust, and cooperation!

PIESAT has been taking a core mission to"develop China's own remote sensing image processing software—the Pixel Information Expert (PIE)" since its inception. The past year of 2021 witnessed PIESATs business soaring against the haze of COVID-19 pandemic and the following shrinking market demands. The company's scale rapidly expanded , and the number of its branches surged. The construction of PIESAT constellation was fully kicked off, and its regional operation network was initially formed. The PIE cloud product system continued to enrich, with its registered users exceeding 50,000. The business of survey on natural disaster risks fully bloomed, and the business related to China's 3D real scene construction national project was steadily pushed forward. The interior capacity building was continuously carried out, and the webinar of"Smart Earth Lecture Hall" had been held for more than 100 sessions. The achievements of intellectual property right were fruitful, with 42 new invention patents and 201 new software copyrights registered. The total revenue realized high-speed growth, the private placement of shares was successfully implemented, and the company market value reached 10 billion RMB. A good start achieved in all aspects , especially at the beginning of the"14th Five-Year Plan".

Great achievements belong yesterday and we will continue to forge ahead and make greater progress tomorrow. In 2022, PIESAT will continue to strengthen its research and development capability and informatization service level, improve the data acquisition capacity by earth observation from space and air, and emphatically ensure the completion plan of PIESAT-1 Constellation and its ground system; will build a number of UAV manufacture bases and realized mass production; will consolidate the concept of "One Earth Platform, One Cloud, One Tool Set", and make its typical products not only "usable", but also "easy to use"; will establish regional product line base for market development in lower-tier cities and counties, and promote business of 3D real scene construction, urban lifeline system informatization, natural disaster risks survey, regional development planning, digital village construction, smart meteorology, digital twin of river basins, and so on; will look on the demands in next 5-10 years, explore new industrial application fields such as satellite internet, space economy, and metaverse, and gradually establish the"2035 Laboratory" to carry out researches on cutting-edge technologies including quantum communication, in-orbit computing, brain-like computing, and recyclable space-earth communication.

Looking ahead, all members of PIESAT will continue to adhere to company's core value of "serving clients wholeheartedly, working together ambitiously ", push the company's development towards a higher level, undertake the social responsibilities with actions, and submit a satisfactory feedback to friends who support and concern PIESAT!

PIESAT Information Technology Co., Ltd.

Chairman of the board
April 2022

Company profile

2008
Establish

80+
Branch office

2400+
Personnel

100+
Doctor

700+
Master

70
Patent for invention

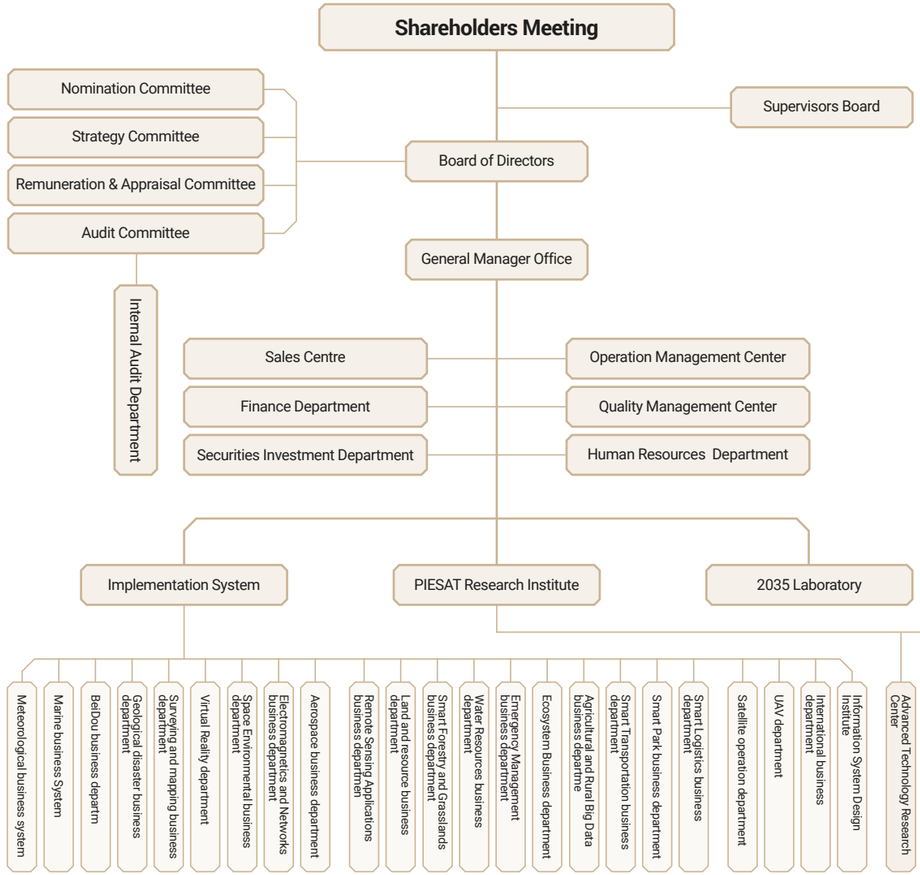
600
Software copyright

PIESAT (stock code: 688066), founded in 2008, is a leading satellite operation and application service provider in China, and one of the first listed enterprises on the Science and Technology Innovation Board. The company has developed PIE— a set of remote sensing data processing softwares with fully independent intellectual property rights, and PIE-Engine—the first remote sensing cloud service platform in China, which realizes the independent development of remote sensing data processing tools . The company is committed to providing overall solutions in space information applications for governments, enterprises, universities and other stakeholders with basic software products, system design and development service, and remote sensing cloud service..

The company has its head office in Beijing, more than 80 local offices across the country, and 4 R & D centers in Xi'an, Chengdu, Wuhan and Nanjing. There are more than 2,300 employees currently with technical personnel accounting for about 80% including 100+ employees with doctor degree, 700+ employees with master degree, nearly 200 talented overseas returnees and industrial experts, some of them are entitled as China's"Hundred Talents",. The company is recognized as "National Key High-Tech Enterprise", owns the qualifications of software product evaluation and software enterprise evaluation, works with CMMI L5, Surveying and Mapping Level-A (including navigational electronic map production), and System Construction and Service Evaluation level-4. The company also owns 70+ invention patents and 600+ software copyrights.

Based on its own software and core technology, the company has independently undertaken or participated in a series of national key projects. PIESAT has served government administrations in fields of natural resource, ecological environment, emergency management, meteorology, marine, water conservancy, and agricultural with systematic consulting and design, and whole-process/full-factor remote sensing information analysis to assist these departements realizing fine management and scientific decision-making; has served enterprises in fields of finance and insurance, precision agriculture, energy and power, and transportation with air-space big data analysis and informatization services; and has served some special customers with automatic target identification, accurate navigation and positioning, environmental information analysis, and other relevant services.

Organization structure



Aiming at the emerging market in 2021, PIESAT took its technology advantages and set up several innovative divisions including the satellite operation department, the UAV department, and the carbon neutrality department, to make contributions to China's new infrastructure plan, commercial aerospace market, digital economy development, and the 3060 Goals"realization.

Satellite Operation department 01

UAV department 02

Carbon neutrality department 03

2035 Laboratory 04

Corporate culture

Mission

Serve the Earth & Space Community

Vision

Multi-dimensionally perceive space and earth
Let the Chinese remote sensing software
“PIE” serve the world

Core value

Serve customers wholeheartedly
Work together ambitiously

Evolution history

2008
Founded in 24th, January
Participated in the Environmental
Disaster Reduction Satellite Project

2009
Independently developed and released the
remote sensing software PIE V1.0
Has now been updated to version 6.3

2010
Participated in the Gaofen Satellite Project

2012
Participated in the Fengyun Satellite Project

2016
Participated in the civil space infrastructure of
"12th Five-Year Plan", the Marine Satellite Project

2017
Participated in Fengyun-4 Satellite Project
Beidou-3 Satellite Project

2018
Participated in the civil space infrastructure
of "13th Five-Year Plan", the Marine Satellite Project

Become one of the first listed enterprises
on the Science and Technology Innovation
Board in 22nd, July

2019
PIE Software reached the international
advanced level

2020
Released China's first remote
sensing cloud service platform PIE-Engine

Participated in national natural disaster
comprehensive risk survey
Participated in the civil space infrastructure
of "14th Five-YearPlan", the top-level
design of Marine Satellite Project

2021

2022
Construct the SAR
Satellite Constellation PIESAT-1

Fine management

Consolidate the enterprise development foundation

- THE COMMUNIST PARTY BUILDING
- COMPLIANCE OPERATION
- RESPONSIBILITY MANAGEMENT
- CORPORATE GOVERNANCE
- IT CONSTRUCTION

The Communist Party building

The year 2021 is the opening year of the 14th Five-Year Plan of China, and also an intersection and conversion year between the "Two Centenary Goals". The company's Communist Party branch followed the leadership of Beijing Municipal Party committee and government, united all Party members in the company to learn and practice the spirits of the 19th National Congress of the CPC and the 5th and 6th plenary sessions of the 19th National Congress of CPC to boost enterprise business through Party building.

Joint Party building activities with the National Astronomical Observatories of China and CETC Network Communication Research Institute

Joint Party building activities with China Agricultural University

Joint Party building activities with the National Astronomical Observatories of China and CETC Network Communication Research Institute

Joint Party building activities with China Agricultural University

01 Strengthen responsibilities and build a high-quality cadre team

- The company Party branch thoroughly studied Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era, and implemented the guiding principles of Chairman Xi's important speeches to enhance "Four Consciousnesses", consolidate "Four Confidence" and conduct "Two Upholds". All Party members realized that the grassroots organizations of the Party are the executors for the implementation of Party's lines, principles, policies, decisions and arrangements, and also the basis for Party's effectiveness.
- The implementation of responsibility system is the key to the Party building work. The company adhered to team construction as the primary task of Party building, and hold Party branch general meetings on time, so as to shape a united atmosphere for the whole team to work into Party building.

02 Deepen joint construction and explore new methods

- To better carry out Party building work, the company's Party branch respectively conducted joint learning and construction activities with the Party branches of other enterprises and public institutions , including the National Astronomical Observatories of China, the CETC Network Communication Research Institute, the Land Surveying and Mapping Department of the Ministry of Natural Resources, and the College of Land Science and Technology of China Agricultural University, to promote mutual learning, enhance communication, broaden thoughts and horizon, constantly explore new methods and new ways, better study Party history, inherit red spirit, and practice the original intention and keep the mission in mind.

- The 3D real scene construction of China is an important measure to implement the strategies of digital China, safe China, and digital economy, a specific deployment for implementing the country's new infrastructure construction, and a fundamental support for ecological civilization construction and economic and social development. The Company and the Land Surveying and Mapping Department of the Ministry of Natural Resources carried out joint Party building activities, to not only study Chairman Xi's thought, and also conduct discussions on the 3D real scene construction business.

Joint Party building with the Land Surveying and Mapping Department of the Ministry of Natural Resources

03 Grasp the ideological work

- The company Party branch adhered to both Party building work and ideological work to achieve mutual integration and promotion. Each party member is required to give full play to their exemplary role, improve their ideological consciousness, and enhance their awareness of serving the people.

Corporate governance

The company constantly improves its corporate governance structure, establishes and perfects its internal control system, standardizes the operation, and effectively protects the legitimate rights and interests of the company and its shareholders. We timely and accurately disclosed information, strove to maintain good relations with investors, and sought legitimate rights and interests for investors. We adhered to standardized internal control, and improved the effectiveness of internal control.

-

The company performed well in governance ecology and market, so it was granted “Golden Bull Awards - Investor Relations Management Award 2020”

-

Its 2020 annual performance presentation was recommended and selected by the members of the Consultation and Securities Supervision Committee, China Association for Public Companies as “The Excellent Practical Case”.

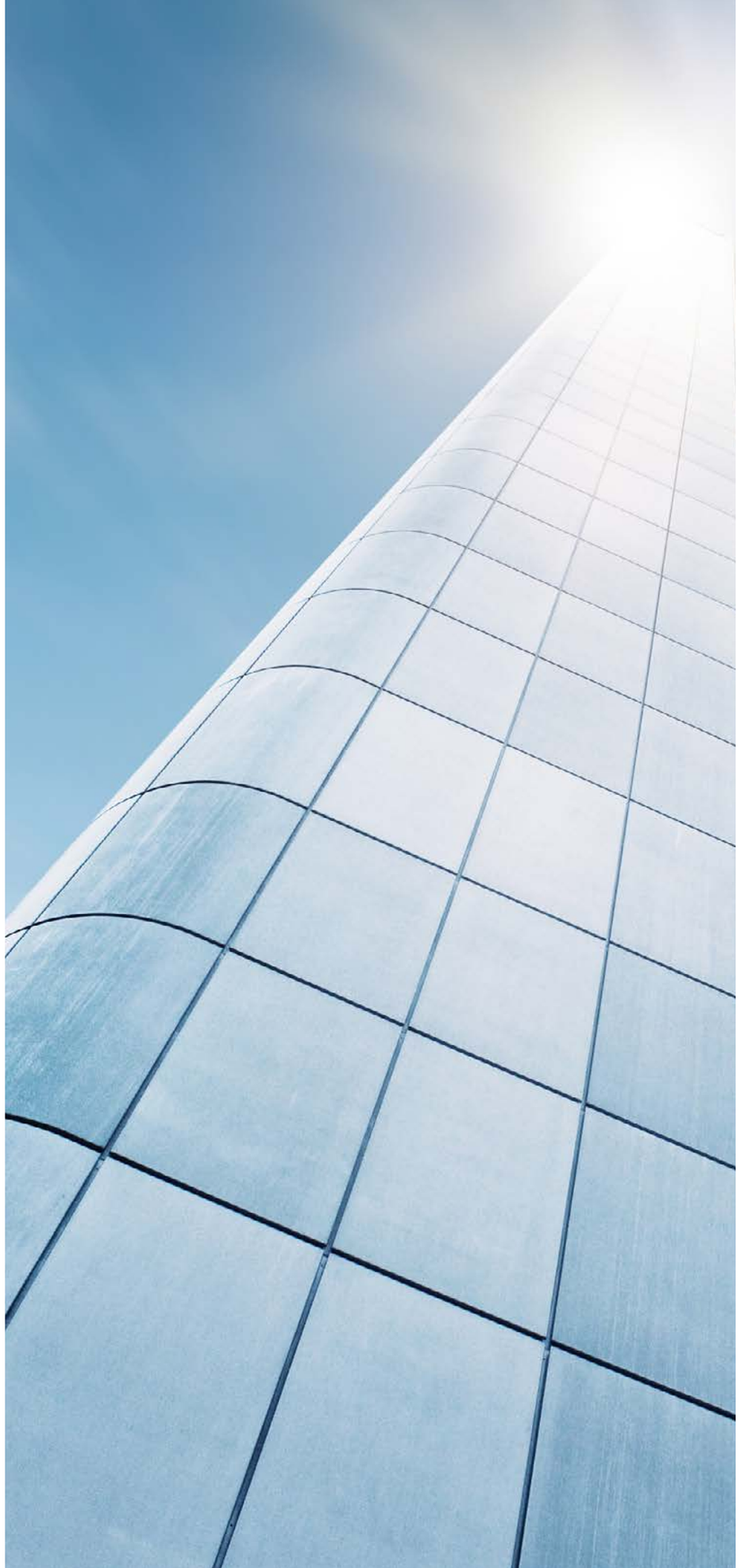
Outstanding cases of 2020 Performance Presentation

2020 Investor Relations Management Award

Compliance operation

The company constantly improved its corporate governance structure in accordance with the relevant requirements of the Company Law of the People's Republic of China, the Securities Law of the People's Republic of China, the Guidelines for Governance of Public Companies, the Listing Rules of Shanghai Stock Exchange, and other laws, regulations and normative documents. We amended the corporate governance system, which is cored by the Articles of Association and supplemented by special governance systems like the rules on discussion among Board of Shareholders, Board of Directors and Board of Supervisors, and continuously and deeply carried out compliance activities, promoting the company’s standardized operation and governance level.

The board of directors is composed of 9 members, i.e. 7 doctors and 2 masters. With their professional background covering economy, accounting, law and technology, they provide effective guarantee for the company's major decisions. The board of supervisors is composed of 3 members, including 1 employee representative. They can effectively supervise the operation decision-making of the company and protect the interests of all shareholders.



FINE MANAGEMENT

In 2021, the company held two general meetings of shareholders, five meetings of directors, seven meetings of supervisors, and nine special meetings of directors. All the meetings were held by legal procedures. In the preparation of the meetings, full and accurate information on the topics was provided for the shareholders and the directors to fully understand the issues reviewed; the rules on the notice period of meetings were strictly followed; the two general meetings of shareholders both adopted on-site voting and online voting combined to effectively protect the legitimate rights and interests of all shareholders.

2021
Year

2
General meetings

7
Meetings of the board of supervisors

9
Board Committee

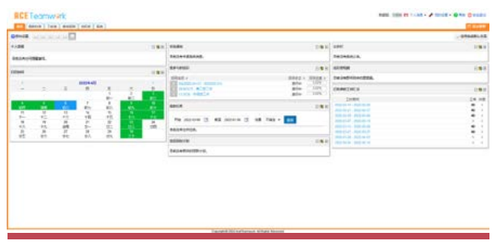
Meetings are held in accordance with legal procedures

IT construction

In order to improve operational efficiency and reduce operational risk and cost, the company actively applied OA system, CRM system, Corporate University and other IT-based operation management means, realizing online collaborative office, project management, customer management, knowledge training and other functions, and replacing artificial and paper files/records with massive data storage to make operation more convenient and efficient.

OA system

CRM system



ACE Project collaboration system

- OA system
- CRM system
- ACE Project collaboration system
- PIESAT Corporate University

PIESAT Corporate University

Responsibility management

The company attaches great importance to the communication with the stakeholders, continuously understands the expectations and appeals of all parties, establishes diversified and effective communication methods, and actively listens to the opinions and suggestions of all parties.

Stakeholders	Issues	Ways of communication
Government and regulatory authorities	• Compliance operation • Tax payment according to law • Response to national policies • Obedience to regulatory requirements	• Observe law and discipline • Cooperate with supervision and inspection • Participate in major meetings and activities • Report work regularly
Shareholders and investors	• Steady development of the enterprise • Stable return on investment • Reasonable operation and information disclosure	• Improve corporate governance • Regular information disclosure and announcement • Investor relations management
Users	• Product function iteration • Service quality improvement • Smooth communication channels	• Constantly improve R&D ability and talent quality • Service evaluation system and customer satisfaction survey • Daily visits and contacts
Suppliers and partners	• Fairness and integrity • Long-term stability	• Optimize and prefect the supplier management system • Fulfill contracts according to law
Staff	• Protection of basic rights and interests • Reasonable compensation and benefits • Training and development • Health and safety	• Staff conferences • Fair and just promotion channels • Improved employee training • Flat and multi-dimensional communication
Communities and the public	• Participation in public welfare undertakings • Promoting the development of the industry	• Take an active part in public welfare activities • Constantly improve our research and development capabilities
Ecological environment	• Energy-saving operation • Environmental protection	• Control carbon emissions • Participate in environmental protection

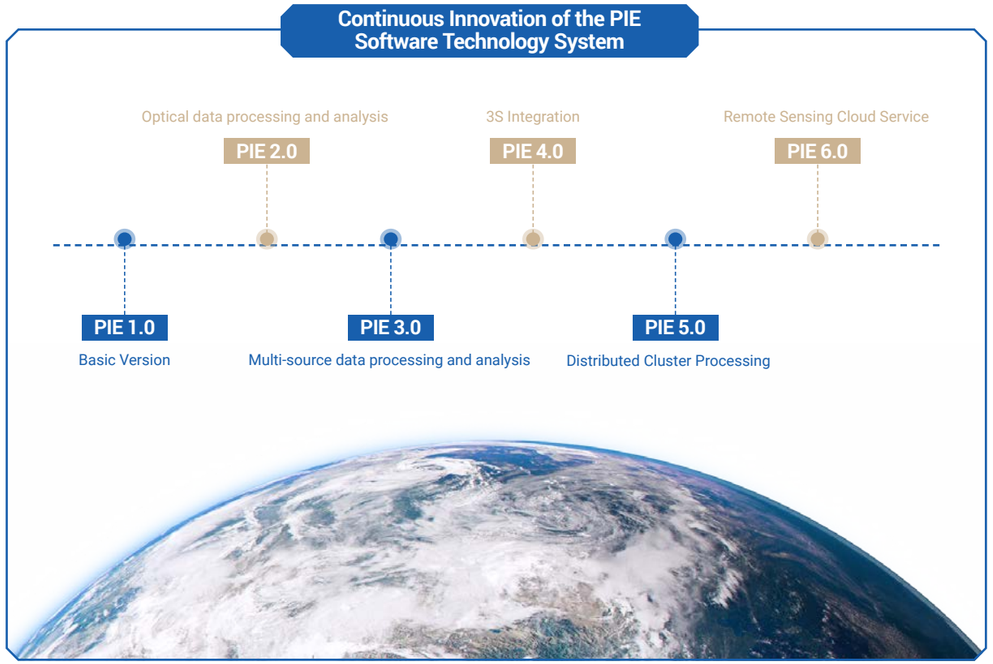
Technological innovation

Create what the country needs

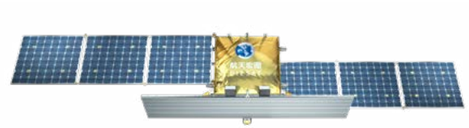
- SOLVE THE REMOTE SENSING SOFTWARE STUCK NECK PROBLEM
- EXPLORE FRONTIER AREAS TO VERIFY EMERGING TECHNOLOGIES
- FIRST ACADEMIC HIGHLAND IN THE FIELD OF EARTH SCIENCES
- FILL THE GAP IN CHINA'S COMMERCIAL SAR CONSTELLATION
- CLOUD SERVICE TRANSFORMATION AND DEVELOPMENT

Solve the remote sensing software stuck neck problem

Remote sensing software is an important tool to process the data acquired by satellites, and a core link to realize the application value of satellites, so it is relevant to a country's science and technology security, industrial security, and national security. The remote sensing software business of Europe and the United States started in the 1970s/1980s, more than 20 years ahead of China. With obvious first-mover advantages, they have achieved monopoly in agriculture, forestry, water conservancy, land, scientific research, education and other industries and fields, and built technical and market barriers. Foreign remote sensing software entered the Chinese market in the 1990s, and now still occupies the Chinese mainstream market and forms an application ecology, An urgent demand raises for a self-controlled remote sensing software.



Based on the needs and prospects of remote sensing applications, PIESAT has been always taking "develop China's own remote sensing software" as its core mission. It has set up the grand vision of "let China's remote sensing software 'PIE' serve the world". Now, the PIE remote sensing image processing software platform independently developed by PIESAT is 12 years old (born in 2008). It has been growing up with a series of key satellite projects implemented in China, such as the "Environmental Disaster Reduction Satellite" project, the"Gaofen" project, the "Fengyun"project, the marine satellite project, the Beidou satellite project, the civil space infrastructure of "12th Five-Year Plan" and "13th Five-Year Plan" , etc. PIE products supported the design and implementation of these major satellite projects all the way, and in turn integated knowledge and experience for its further expansion.



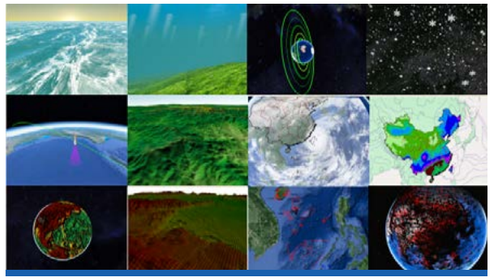
At the 2019 Annual Meeting of Group on Earth Observations (GEO) held in Australia, China National Space Administration (CNSA) announced the launch of the CNSA-GEO platform to share China's GF 16m data with the outside world. For the 800km wide swath data of GF-6 Satellite, CNSA suggested using the Chinese software PIE for data processing. This indicated that PIE was gradually catching up with foreign remote sensing software and going international.

In January 2020, the US government included "software for automated analysis of geospatial images" into its scope of export control, which had a huge impact on the Chinese market. At this time, the core product "PIE" of PIESAT had already stood out and been able to support domestic application demands.

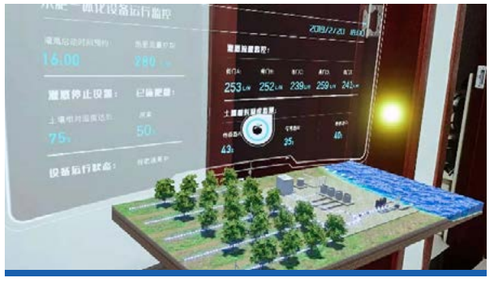
3D City Model in PIE-Smart

The streetscape images superposition in PIE-Viewer

Comprehensive visualization of disaster risk investigation



2D + 3D display in PIE-Map



Smart Citrus Garden shown by AR

China's National Space Administration announced the launch of

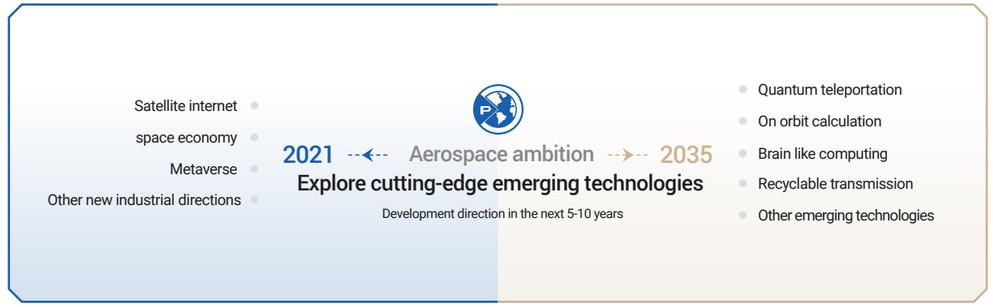
CNSA-GEO Terrace

China's 16M GaoFen data sharing

Geo 2019 GEO meeting

Explore frontier domains and verify emerging technologies

On the top of engaging itself in the field of satellite remote sensing, PIESAT constantly explores and innovates on cutting-edge, emerging technologies. In 2021, the company successively explored new industrial directions of the next 5-10 years such as satellite Internet, space economy and metaverse, gradually established "2035 Laboratory" and carried out researches on emerging technologies like quantum communication, in-orbit computing, brain-like computing and recyclable space-earth transmission.



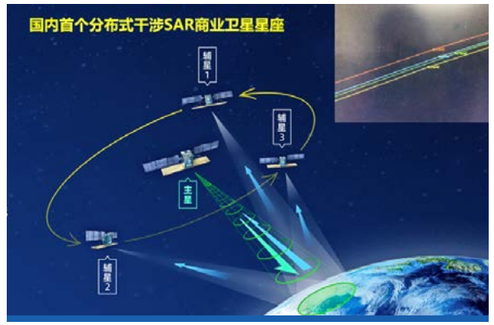
Build the first academic highland in the geoscience field

The webinar of "Smart Earth Lecture Hall" is a featured column based on the PIE-Engine remote sensing cloud service platform independently developed by PIESAT. It's organized by PIESAT, guided by Chinese Society for Geodesy, Photogrammetry and Cartography, Chinese National Committee for Remote Sensing, Nanjing University of Information Science and Technology, and The Surface Subsidence Mechanism and Prevention labortary of Capital Normal University (a key laboratory of the Ministry of Education), and supported by China Association of Remote Sensing Application and China Meteorological Service Association.

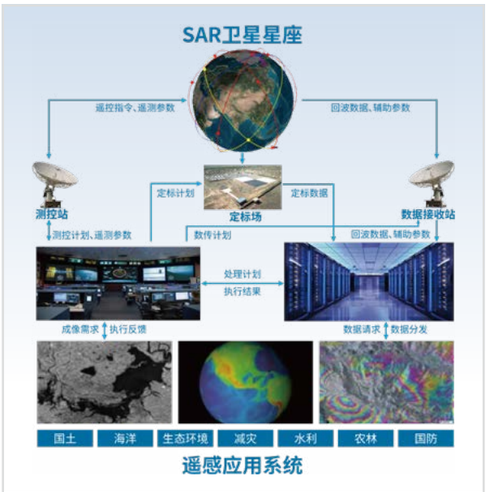
The webinar of "Smart Earth Lecture Hall" regularly invites well-known experts and scholars in the industry to give forward-looking reports, discuss with domestic and overseas insiders and enthusiasts the new theories and new technologies in remote sensing, navigation, meteorology, ocean, water conservancy and other fields of geoscience, and share the new progress and new achievements of geoscience research by means of liveroom, with an aim to forecast the future in a professional and relaxing atmosphere and let remote sensing enter daily life.

Fill the blank of Chinese commercial SAR constellations

For a long time, the number of SAR satellites in China's civil space infrastructure is very limited, and it is difficult to meet the huge market demand at home. As a result, China's SAR data mainly depends on imports, and there is no commercial SAR satellite operating in orbit. Based on this situation, PIESAT is planning a SAR Satellite Constellation named PIESAT-1 (4 satellites in phase I), using the novel distributed technology system of "1 primary + 3 auxiliary". The project can realize the rapid acquisition of high-precision SAR data worldwide. After PIESAT-1 SAR Satellite Constellation is put into use, it will effectively change the status quo of China's SAR satellite data relying on imports.



The first commercial satellite constellation of distributed interferometric SAR in China



Application scenarios of SAR satellites

01

Global topographic mapping

PIESAT-1 can complete global high-precision topographic mapping in 1:50000 scale within one year to get global DEM product. It marks that China's commercial aerospace field will fully and independently realize the collection of global DEM for the first time, which will greatly improve the capability of global surveying and mapping. The products will play a very high application value in many industries and fields.

02

High precision deformation monitoring

PIESAT-1 can conduct interferometric SAR (InSAR) to realize millimeter-level surface deformation measurement, so it can be applied to surface subsidence measurement, slope instability/landslide measurement, regional geological disaster monitoring, cultural relics and historic sites protection and monitoring, bridges/highways/railways/dams and other major infrastructure monitoring and maintenance, thus playing a big role in the field of disaster reduction and emergency response.

03

High-resolution wide swath imaging

For PIESAT-1, the highest spatial resolution is 0.5 m, and the largest swath is 80 km. It is able to conduct high precision imaging for a large area, accurately identify objects as small as cars, propel land resources surveying, geological environment monitoring, crop monitoring and river/lake monitoring, especially playing an important role in cloudy areas (e.g. southwest China).

Lead the transition and development of cloud services

PIESAT is the vanguard of the domestic satellite application industry in China. It has developed China's first universal remote sensing cloud service platform– PIE-Engine in virtue of its listing advantages and years of technology accumulation. The platform was officially released in 2020, ending the long-term absence of alternatives of GEE (Google Earth Engine, the world's first remote sensing cloud service platform developed by Google, which is now been restricted for Chinese users) in China. Through fine operation and maintenance, the platform aims to extend remote sensing application to a wider range, to solve the headaches of grassroots users and propel the government's fine monitoring and digital transition.

PIE remote sensing computing cloud service

PIE-Engine remote sensing cloud service platform

PIE-Engine AI interpretation service platform

PIE-ENGINE

Openness + Co-construction + sharing

Provide one-stop data acquisition, data analysis, products and services

Natural resources | Emergency management | Ecological environment | Meteorolog and Marrine

PIE-Engine is a cross-era product in the Chinese remote sensing industry, with outstanding advantages in intellectual property independency, domestic data adaptation, and other aspects. It establishes an "open + co-built + shared" remote sensing cloud ecology, connects the upstream, the mid-stream and the downstream of satellite application on cloud, and provides one-stop data acquisition, data analysis, and product services. Users can upload their own data and register their own algorithms on the platform, and share results with others, to realize the efficient circulation and utilization of resources, stimulate the vitality of remote sensing application industry, and promote the progress of remote sensing application technology. Today, PIE-Engine has been widely used in natural resources, emergency management, ecological environment protection, meteorology, marine, and other industries/fields.

Empowering environmental protection

Safeguard lucid waters, green mountains, and pure lands

- HELP THE PEAK CARBON, CARBON NEUTRAL GOAL
- CITY ENVIRONMENT REMOTE SENSING CLOUD SERVICE
- ADHERE TO THE GREEN DEVELOPMENT OF ENTERPRISES

Propel the realization of carbon peaking and carbon neutrality goals

In 2020, President Xi Jinpin said at the 75th Session of the UN General Assembly, , "China will increase its autonomous contribution by adopting more powerful policies and measures. We will strive to reach its peak carbon dioxide emissions by 2030, and strive to achieve carbon neutrality by 2060." PIESAT actively responded to this national policy. While adhering to its own green development, it drew on industrial and R&D advantages to provide geographical/administrative regional carbon sequestration capacity evaluation, carbon profit/loss evaluation, clean energy and resources evaluation and other services based on multi-source remote sensing data and products, as well as social and economic data, historical data, and meteorological data, thus propelling the realization of the above-mentioned.

Greenhouse gas emission data reporting platform

At the 2021 China International Fair for Trade in Services (CIFTIS), PIESAT exhibited a number of carbon emission monitoring products alongside a wonderful road show. The staff comprehensively referred to the environmental, energy and economic problems caused by climate change and reviewed the current "carbon emission reduction" policies , relative scheme formulation situations, relative satellite launch plans, and technological breakthroughs at home and abroad, and introduced all kinds of remote sensing and big data related products and services provided by PIESAT on the “double carbon” racing track in the context of the current international environment and background.

A road show of PIESAT on CIFTIS

02> Boost treatment of black and odorous water in cities

PIESAT takes full advantages of satellite remote sensing, UAV remote sensing, ground surveying, and other technical means, established an black and odorous water monitoring and supervision system to assist " general survey + local inspection + ground check", to help regulators at all levels to improve their water quality monitoring and supervision ability.

Black and odorous water “one map” supervision service platform

03> Boost treatment of urban refuse

PIESAT, based on satellite remote sensing images and algorithm models, according to the satellite remote sensing monitoring and analysis results on solid waste, carried out solid waste category identification and area statistics within city scopes, and drew thermal distribution maps of urban solid waste, whose dimensions include solid waste area, the number of solid waste stacks, and area proportion, to provide data support for solid waste monitoring and treatment.

City-level environmental remote sensing cloud services

01> Boost control of urban air pollution

PIESAT, based on satellite remote sensing data, aerial remote sensing data, LIDAR data, ground monitoring data, and data from other sources, carried out monitoring of atmospheric environment related indicators such as PM2.5/PM10, pollution gas, fire point, pollutant traceability, and so on.

Thermal grid distribution map of atmospheric pollution

Adhere to the green development of the enterprise

PIESAT focuses on the remote sensing and satellite application industry, and strictly abides by the Environmental Protection Law of the People's Republic of China, the Environmental Impact Assessment Law of the People's Republic of China, and other relevant laws and regulations. Its daily operation does not involve discharge of traditional industrial waste water, waste gas, refuse and noise. The company regularly conducted staff training on energy-saving office, environmental protection and related issues, always adhered to the concept of green and sustainable development, and implemented garbage classification, energy conservation and carbon emission reduction policies, making great contributions to green development.

Human capital

Adhere to the people-oriented development concept

- PERFECT TALENT TRAINING AND DEVELOPMENT SYSTEM
- ADVANCED AND EFFICIENT EVALUATION AND INCENTIVE SYSTEM
- SUPERIOR EMPLOYEE WELFARE SYSTEM

Perfect talent training and development system

PIESAT attaches great importance to the training and development of talent. We have formed a perfect "induction training - pre-job department business training - monthly expertise training" system, and drew on our Corporate University platform to provide customized training courses and materials suitable for each position. We have formulated the Management Measures of PIESAT Employees' Certificates to encourage employees to receive professional title evaluation and qualification examination in their spare time. This can not only bring them corresponding allowances, but also stimulate their active learning ambition.

Induction training for fresh graduates in 2021

Qualification of corporate vocational skill level recognition

On December 30, 2021, PIESAT was officially awarded the qualification of corporate vocational skill level recognition, which plays a positive role in the training, selection, use, commendation and incentive of talent, and can also open up a broader space for the growth of employees.


北京市职业技能鉴定管理中心文件

关于同意航天宏图信息技术股份有限公司开展职业技能等级认定工作的函

Advanced and efficient evaluation and incentive system

PIESAT adheres to the philosophy of "strivers/contributors-centered". The company set up two promotion channels (professionals and managers); implemented five categories of performance appraisal standards (management posts, sales posts, technical posts, consulting posts, and functional posts) according to the job responsibilities and contents of employees; and formulated the PIESAT Phantom Equity Incentive Plan for Employees to give employees incentives from multiple dimensions. We strive to provide a fair and transparent evaluation and incentive system for employees, so that every employee can find their motive of working hard from objective evaluation results.

In order to optimize the organizational structure and improve personnel efficiency, PIESAT carried out incremental performance management reform based on its IPD management system and realities, providing multi-dimensional incentives for employees with high customer satisfaction, rapid response and high contribution to projects.

Talent development and promotion system

- One-to-one mentorship for new members
- Company culture and team building
- Special training camp for new recruit, elite seminars Lectures by industry experts
- E-learning at the "Corporate University"
- Encouragement to study for an Part-time Doctoral Program, with full tuition fee coverd by Company
- Departmental rotation, competitive recruitment and job selection,promotion chance

Superior employee welfare system

PIESAT strictly abides by the Labor Law of the People's Republic of China to pay basic medical care, pension, unemployment, occupational injury and maternity insurances for every employee to safeguard the vital interests of employees. We actively improve various welfare systems, providing dormitory for eligible employees, and offering paid annual leave, health examination, group building party, lunch and dinner subsidies, holiday gifts, excellent staff travel, and other benefits.

Welfare and bonus system

- Industry-leading salary package
- Year-end bonus linked to performance
- Equity incentive for core staff
- Household registration for outstanding staffResidence sponsorship
- Post-graduate workstation
- Professional and technical title allowance
  Patent and thesis publication incentives
- Birthday and wedding gifts and annual gifts
- Birthday and wedding gifts and annual gifts
- Overseas travel for outstanding staff
- Post-graduate workstation
- A variety of group activities
- Social insurance payment
  Housing Provident Fund
  Paid annual leave

Join hands

Jointly build a satellite industry ecology

- INDUSTRY-SCHOOL INTEGRATION: DEEP COOPERATION WITH UNIVERSITIES
- JOIN THE UPSTREAM: PIESAT-1 CONSTELLATION IS READY TO SERVE
- BOOST THE DOWNSTREAM: UPGRADE PIE SOFTWARE PRODUCTS

Industry-school integration: deep cooperation with universities

Universities are hubs of science and technology intellectual resources and high-end innovation carriers. PIESAT has always attached great importance to the innovative cooperation with universities. We have signed strategic cooperation agreements with Wuhan university, Nanjing University of Information Science and Technology, Ocean University of China, Xidian University and so on to establish industry-university-research integrated training bases, and strengthen cooperation in science and technology research and development, project cooperation, talent training and targeted employment for win-win development.

Wuhan university

Nanjing information engineering university

Ocean University of China

PIESAT

Establish industry-university-research integrated training bases

Technology research and development | Project cooperation | talent cultivation | Accurate employment

Join the upstream: PIESAT-1 Constellation is ready to serve

On July 26, 2021, PIESAT and GalaxySpace, based on its application market accumulation of PIESAT in the satellite remote sensing industry and its technological advantages of GalaxySpace in the development of low-orbit communication and remote sensing satellites, signed a strategic cooperation agreement on the integration of SAR remote sensing constellation and communication constellation system, communication-navigation-remote sensing integrated satellite development, ground satellite tracking telemetry & command, operation & control, and application system construction, marketing and capitalization, to response to the technology trend of communication-navigation-remote sensing integration.

SAR remote sensing constellation system

To meet the market demand for SAR constellations, the two sides will jointly demonstrate an innovative SAR constellation mission. PIESAT will provide application demand; GalaxySpace will provide a constellation construction scheme. Both sides will jointly build a SAR remote sensing constellation system, and promote the development and application of commercial SAR remote sensing constellations.

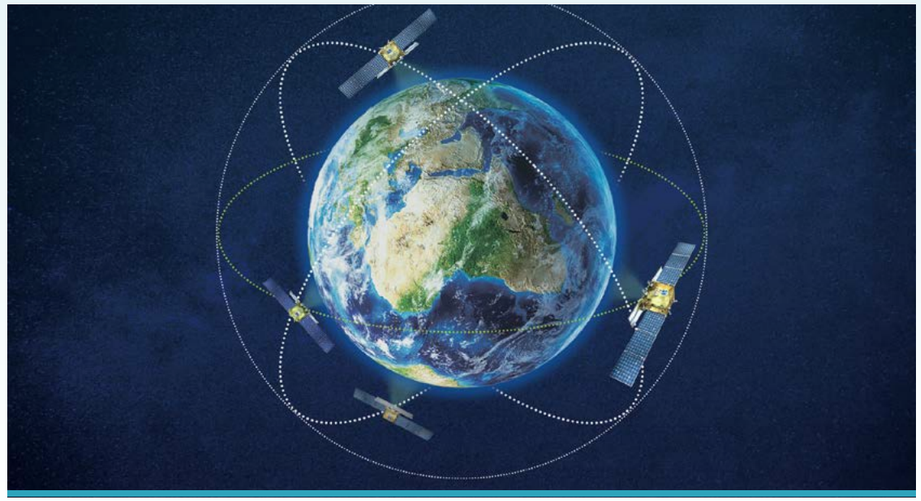
航天宏图 PIESAT | 银河航天 GALAXYSPACE

PIESAT And GalaxySpace
signed a strategic cooperat

Cooperative Construction

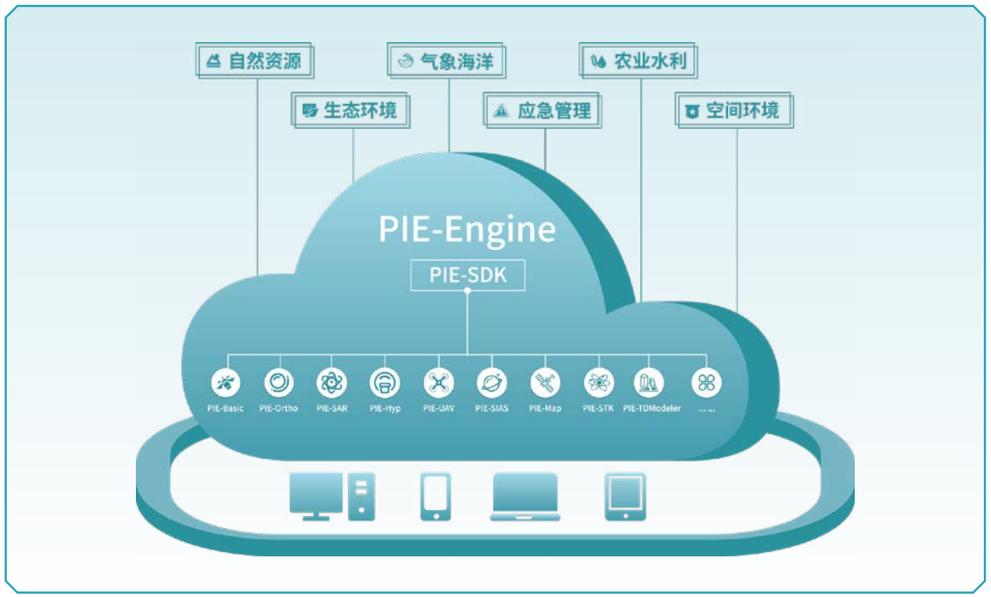
SAR remote sensing constellation system

and promote the development and application of commercial SAR remote sensing constellations.



Boost the downstream: upgrade PIE software products

In 2009, PIESAT released its independently developed remote sensing software PIE1.0. With subsequent continuous improvement and upgrading, the product has been updated to version 6.3. The original PIE remote sensing image processing tools and industrial plug-in platform are combined with cloud computing, artificial intelligence, digital twin and other advanced information technology to set up the system of "One Cloud", "One Earth Platform", and "One Tool Set".



One Cloud

"One Cloud": PIE-Engine, a spatial-temporal remote sensing cloud service platform, integrates “PIE-Engine Server” spatial-temporal data service module, “PIE-Engine Studio” remote sensing API service module, “PIE-Engine AI” intelligent interpretation service module, “PIE-Engine Factory” data batch processing service module, “PIE-Engine UAV” UAV application service module, etc. It can meet the needs of users for geoscience big data analysis and application based on cloud computing, support the demand for business systems development in the industry, and also provide a low-cost education and working platform for Client-end users.

One Earth Platform

"One Earth Platform": PIE-Earth, is a smart Earth platform with simulation and XR as its core. It integrates cross-platform GIS development components in PIE-Map, has the cloud, edge, client hierarchical framework, and can meet the application demands of large-scale simulation, the China’s 3D real scene Construction, and state presentation and command & control in special fields in the context of Internet. PIE-Earth Meta digital twin construction service module can be used to quickly build highly 3D real scene and digital twin city scenes in different scales.

One Tool Set

"One Tool Set": The PIE fundemental software tool set can provide the analysis and processing of multi-source geospatial-temporal data, and has realized all-type, all-sensor and whole-process data services.

PIE has excellent ability in the data processing and application of Chinese satellites. It has realized integrated application of remote sensing information and industry information–providing whole-process, whole-factor remote sensing information analysis and processing for the ministries as well as provincial and municipal government administrations in fields of natural resources, ecological environment, emergency management, meteorology, marine, water conservancy, agriculture, forestry, and so on, to support these government departments to implement fine supervision and scientific decision-making; providing air-space big data analysis and information services to enterprises in fields offinance & insurance, precision agriculture, energy and electricity, and transportation, to improve decision-making and operation efficiency.

Public service

Firmly fulfill social responsibilities

- FREE SKILL TRAINING FOR STUDENTS
- INDUSTRY-EDUCATION INTEGRATION PROJECTS
- SOCIAL ASSISTANCE
- METEOROLOGICAL SUPPORT FOR THE 100TH FOUNDING ANNIVERSARY CEREMONY OF THE COMMUNIST PARTY OF CHINA (CPC)
- SUPPORT FOR JIANGXI “RED CULTURAL TOURISM + BEIDOU DEMONSTRATION” PROJECT
- SUPPORT WINTER OLYMPICS

Free skill training for students

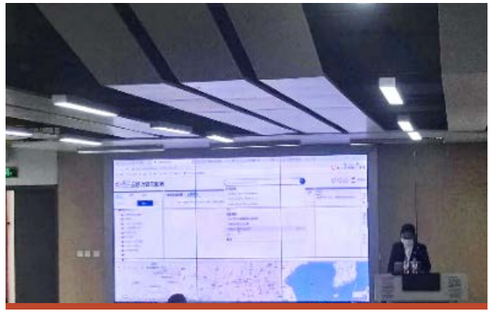
Talent is an indispensable resource for a country. China's remote sensing and satellite application industry started late, so it is important to discover and cultivate talent. In 2021, PIESAT visited universities across the country to organize free skill trainings for students on remote sensing application technologies. A total of 228 training sessions on PIE remote sensing software were completed, involving 137 universities/institutions and more than 11,000 trainees.

PIESAT For college students
Free skills training

PIE training 228 times

Involving 137 universities/units

More than 11,000 people participated



In December 2021

PIESAT joined hands with Asia-Pacific Space Cooperation Organization and other related units to hold the "PIE Remote Sensing and Geographic Information Integration Software" training and "The Competition of Using Remote Sensing Technology to Discover Natural and Cultural Heritage". PIESAT deeply contributed to the competition as the exclusive sponsor, providing all participants with free trial licenses to PIE software series, and more than 24 hours of online professional training and technical guidance on remote sensing image processing.

Industry-education integration projects

In order to better serve national key strategies, promote the construction of a high-quality higher education system, and train short-supplied talent in surveying, mapping and remote sensing fields, PIESAT continuously deepens industry-education integration, industry-school cooperation, and collaborative training, and assist the reform of talent training in universities with the latest needs of industrial and technological development. In 2021, we had 36 projects selected as the industry-school cooperative and collaborative education projects of the Ministry of Education. The projects contained 30 projects for teaching content and curriculum system reform, and 6 projects for practice conditions and practice base construction.

2021 year
PIESAT successfully selected by Ministry of Education

36
industry-school cooperation and collaborative training

30
projects for teaching content and curriculum system reform

6
projects for practice conditions and practice base construction.

The list of collaborative education projects declared by PIESAT in 2021

Number	Project name	University	Project type
1	The teaching practice platform on marine remote sensing image application based on PIE platform under the background of science-education-industry integration	Qilu University of Technology	Practice conditions and practice base construction
2	Innovative Joint Laboratory for Sustainable Development of Coastal Zones	China University of Petroleum (East China)	
3	Mining Remote Sensing Practice Base Supported by Massive Satellite Data and PIE	China University of Mining and Technology	
4	Comprehensive Laboratory for Multi-Source Remote Sensing Data Processing Co-built by PIESAT and NJUPT	Nanjing University of Posts and Telecommunications	
5	Marine Remote Sensing Data Intelligent Processing Practice Base	Shanghai Ocean University	
6	Satellite-borne SAR Marine Remote Sensing Comprehensive Laboratory	Xiamen University	
7	PIE-based “Remote Sensing Hydrology” Hybrid Teaching Reform and Practice	University Of Ji'nan	Teaching content and curriculum system reform
8	C# Program Design Curriculum Reform Based on the Secondary Development and Application of PIE Platform	Shandong Jianzhu University	
9	Research on the Construction and Application of "Introduction to Remote Sensing" Course Supported by PIE	Nantong University	
10	"Data Mining and Analysis" Demonstration Curriculum Construction and Teaching Reform	Shandong Agricultural University	
11	Education Reform Exploration on the Application of New Remote Sensing Technology in the Urban and Rural Planning	Shanghai University	
12	Teaching Reform and Practice on Remote Sensing Cloud Computing	Capital Normal University	
13	Construction of Geoscience Remote Sensing Curriculum System Based on PIE Software	China University of Geosciences (Beijing)	
14	PIE Software Series Enable the Teaching Content Reform of "Engineering Surveying" Course	Taiyuan University of Technology	
15	Application of PIE in Hydrology and Water Conservancy Computational Practice Teaching and Graduation Projects about Flood Loss Management	North China Electric Power University	

An annual declaration of collaborative education projects

An annual evaluation of collaborative education projects

16	Teaching Reform and Practice of Remote Sensing Courses in Local Agricultural Colleges Based on PIE Software	Shanxi Agricultural University	Teaching content and curriculum system reform
17	Research on Teaching Method Reform of Remote Sensing of Land Resources Based on PIE Platform	China Agricultural University	
18	Construction of Remote Sensing Information Intelligent Extraction Curriculum Group Based on PIE	Henan Polytechnic University	
19	Research on the Applied Teaching Reform of Remote Sensing Courses Such As Remote Sensing Geoscience Analysis Supported by PIE	Xingtai College	
20	“PIE-Engine Remote Sensing Big Data Cloud Computing Practice” Course Construction and Practice	North China University of Science and Technology	
21	Online and Offline Hybrid Teaching Reform and Practice of Remote Sensing Advanced Professional Courses Based on PIE	China University of Mining and Technology (Beijing)	Teaching content and curriculum system reform
22	Exploration on Natural Resource Management Curriculum Construction and Teaching Reform Supported by Geospatial Information	China Agricultural University	Teaching content and curriculum system reform
23	The Reform of Remote Sensing Intelligent Curriculum System under the Enterprise Demand-Oriented Training Mechanism of "Curriculum-Creation-Practice-Graduation Project"	Central South University	
24	Curriculum Reform and Practice of Remote Sensing Digital Image Processing Based on PIE	Luoyang Normal University	
25	Online and Offline Hybrid Course Construction of “Remote Sensing Image Processing Expertise and Practice”	Jiangxi University of Science and Technology	Teaching content and curriculum system reform
26	Research on Improving Students' Innovation Ability Based on PIE Software	He'nan University of Technology	Teaching content and curriculum system reform
27	Curriculum Reform Exploration and Practice of “Principles and Application of Remote Sensing” Based on School-Enterprise Linkage	Chengdu University of Information Technology	
28	Construction and Practice of Virtual Simulation and Experiment Teaching Resources of Remote Sensing Course Based on PIE	Yunnan Normal University	
29	Case Construction and Practice on Remote Sensing Courses for Space Information and Digital Technology Majors Based on PIE Software	University of Electronic Science and Technology of China	
30	Teaching Reform of Remote Sensing Courses Based on the Application of Chinese Remote Sensing Data in Geological Disaster Prevention and Mitigation	Southwest Petroleum University	
31	Industry-University-Research Curriculum Reform Demonstration on Urban Geographic Information Courses	Yunnan University	
32	Experimental Comparison and Development Practice of PIE and ENVI in “Remote Sensing Digital Image Processing”	Guangzhou University	
33	Internationalized Course Construction of "Introduction to Remote Sensing" Based on PIE	Fujian Normal University	
34	Reform and Construction of Remote Sensing Geo Application Curriculum Group Under the Deep Integration of Industry and Education	Chang'an University	
35	Reform of Remote Sensing Professional Development Courses Based on PIE-SDK	Xi'an University of Science and Technology	
36	Demonstration Course Construction and Teaching Reform of “Principles and Application of Remote Sensing” Based on PIE Software	Shenyang Jianzhu University	Teaching content and curriculum system reform

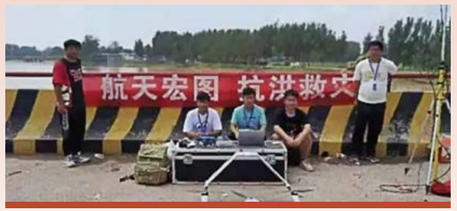
Social assistance

From July 17 to 22, 2021, central and northern Henan Province suffered continuous rainstorms, with local precipitation approaching 1,000 mm, breaking the historical land record in China. This "once-in-a-thousand-year" natural disaster worried the Chinese society.

Witnessing great love in time of disaster

On July 24, 2021, PIESAT donated disaster relief materials worth 1 million RMB to Hebi City, Henan Province, to support the flood relief work in Henan Province. Our UAV team also went to Xinzhen Town, Junxian County, Hebi City on July 22. They used the company's independently developedUAVs to continuously collect disaster data and provide relevant technical support to local government for the emergency relief decision-making.

PIESAT donates disaster relief materials worth 1 million RMB



The PIESAT UAV team provides technical support

Meteorological support for the 100th founding anniversary ceremony of the Communist Party of China (CPC)

On the morning of July 1, 2021, a grand ceremony for celebrating the 100th founding anniversary of CPCwas held. The demand for suitable weather of multiple venues, multiple sessions and multiple elements made meteorological support an important component to ensure the smooth holding of the celebration. The Winter Olympics service guarantee & business support system undertaken by PIESAT, as one of the key projects promoted by Beijing Meteorological Service during the "13th Five-Year Plan" period, was assigned to provide real time and forecast data services for the Tian'anmen District Management Committee during the sessions of major activities to celebrate the 100th founding anniversary of CPC. It managed to provide timely, accurate and stable data, offering an important reference for the decision-making of support work.

The PIESAT team provides technical support at the National Satellite Meteorological Center

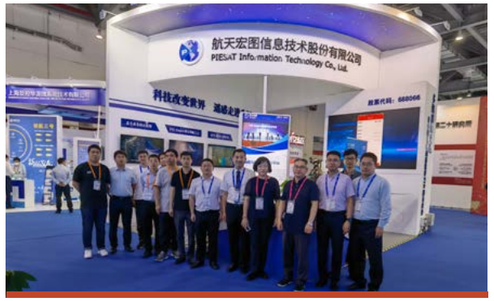
The PIESAT project team insisted on 24-hour inspection and reporting during the service period, providing strong technical support for the meteorological support work of the grand event.

Support for Jiangxi "red cultural tourism + Beidou demonstration" project

In order to accelerate the application of Beidou positioning and navigation system in the red cultural tourism industry, and use Beidou technology to promote the development of red cultural tourism, in January 2020, the first Beidou-3 regional application demonstration project (the Comprehensive Application Demonstration Project of Beidou Satellite Navigation system) was launched in Jiangxi Province. In the project, "Red Tourism Demonstration Application Platform" was developed by PIESAT. Through the construction of the project, PIESAT built a "Jiangxi model" of Beidou satellite navigation comprehensive application demonstration, accumulated rich experience in the construction of "provincial/municipal Beidou system + service centers", and summed up a PIESAT proposal of "1+N" mode for building provincial/municipal Beidou system + service centers , to help the development of red tourism.

Commissioning of the red cultural tourism demonstration

The demonstration, training and commissioning of the red cultural tourism demonstration & application platform are held in "Gan Zuchang Cadre College", Pingxiang, Jiangxi

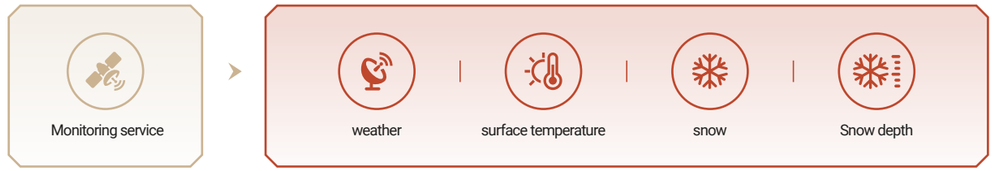


Exhibition on the 12th China Satellite Navigation Conference

Support Winter Olympics

During the Winter Olympics, PIESAT worked together with Beijing Meteorological Information Center and other companies to develop a Winter Olympics service guarantee & business support system as the primary reception system of meteorological data from the indoor and outdoor venues of the Winter Olympics. The system bore the responsibility of providing timely, stable and efficient data transmission services for all downstream systems. It managed to provide important references for the decision-making of TV commentators, large screens at competition sites, media, main control center, media and rebroadcasting agencies from all over the world, and offer strong support for realizing Beijing-Tianjin-Hebei meteorological service and integrated meteorological business during the Winter Olympics.

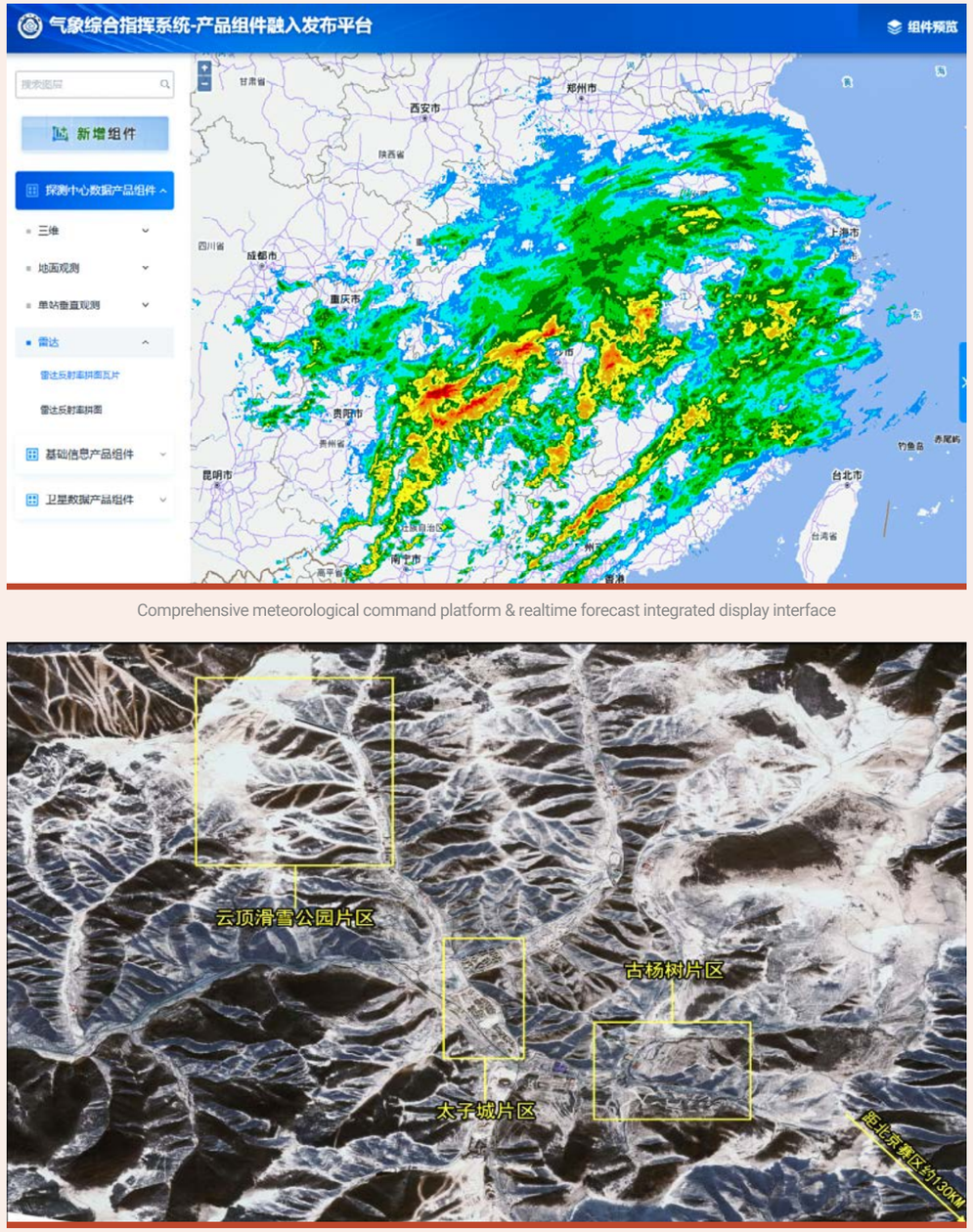
Besides, another team from PIESAT served on the spot at the National Satellite Meteorological Center (NSMC), relying on the satellite weather application platform jointly built with NSMC to provide special monitoring services for the Winter Olympics, and providing technical support for the personnel on duty to carry out meteorological support work. They drew on "Fengyun" satellite series to carry out monitoring on weather, surface temperature, snow cover, snow depth and other factors.



The disaster was relentless, but people were loving

In terms of emergency security, PIESAT participated in the national key R&D plan "Construction and Demonstration of Air-Space-Earth Collaborative Remote Sensing Monitoring Accurate Emergency Service System". The project built a meteorological emergency service platform for the outdoor venues of the Beijing Winter Olympics to meet the meteorological emergency service needs of the Winter Olympics.

Meteorological Emergency Service Platform for the Outdoor Venues of the Beijing Winter Olympics



Comprehensive meteorological command platform & realtime forecast integrated display interface

A remote sensing image of venue distribution in Zhangjiakou zone
(The image is provided by China Centre for Resources Satellite Data and Application)

Honors of 2021

In 2021, PIESAT actively participated in the technological innovation and industry discussion activities organized by relevant national industry regulators and associations, was granted 10+ company-level awards, and received 300+ commendation letters from government sectors at all levels and partners with professional ability and quality service.

Awarding time	Award name	Awarded by
2021	The 23rd Listed Company Golden Bull Award	China Securities Journal
2021	The Unmanned Systems Industry Golden Wing Award 2021	
2021	Investor Relations Management Award 2020	
2021	MVX Gold Award	SHENZHEN USER EXPERIENCE INTERFACE DESIGN INDUSTRY ASSOCIATION (SUXA)
January, 2021	Member Unit of China Association for Geographic Information System	China Association for Geographic Information System
April, 2021	Technical Cooperator of Electric Power Technology Collaboration (EPTC)	Electric Power Technology Collaboration
April, 2021	Member Unit of Technology Transformation and Industrial Development Committee, China Association for the Promotion of International Agricultural Cooperation	Technology Transformation and Industrial Development Committee, China Association for the Promotion of International Agricultural Cooperation
June, 2021	Member Unit of the 10th Council of Beijing Software and Information Service Industry Association	Beijing Software and Information Service Industry Association
October, 2021	First Prize of National Surveying and Mapping Science and Technology Awards	Chinese Society for Geodesy, Photogrammetry and Cartography
October, 2021	Member Unit of China Association for Geographic Information System	China Association for Geographic Information System
October, 2021	Excellent Exhibitor of ARMS11 Technological Innovation Industrial Exhibition	Chinese Society for Rock Mechanics & Engineering
November, 2021	General Organizational Member of The Society for Ecological Rehabilitation of Beijing	The Society for Ecological Rehabilitation of Beijing

Search index

Reader feedback

Dear reader:

Thank you very much for taking time out of your busy schedule to read the ESG Report of PIESAT 2021. In order to provide more valuable information for you and other stakeholders, and effectively promote the company to improve its ability and level of fulfilling social responsibilities and optimize the quality of ESG reports, we are sincerely looking forward to your opinions and suggestions.

Multiple-choice (please tick your choice)
Your overall assessment of this report:
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
How does this report perform in response and disclosure to the concerns of stakeholders?
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
How does PIESAT perform in fulfilling its social responsibility?
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
How does PIESAT perform in energy conservation and environment protection?
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
How does PIESAT perform in business management?
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
Are the information, indicators and data disclosed in the report clear, accurate and complete?
☐ very good ☐ good ☐ general ☐ bad ☐ very bad
Do you think the content arrangement and format design of this report make it easy to read?
☐ is ☐ no

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What do you say on PIESAT and the content of this report?

Your contact information:

Name _____ Tel _____ Employer _____ Position _____

E-mail _____ Postal address _____