

ALLEN IN SPACE

World Leader in Engineering & IT Services



ALLEN

ALTEN IN SPACE

We are home to those committed to having a positive impact.

750 engineers

10+ operating in 10+ countries worldwide

Our main clients

AIRBUS DS

ARIANEGROUP

BLUE ORIGIN

THALES

CNES

ULA

EUTELSAT

RTX

ROCKET LAB

RUAG

LEONARDO SPA

ALTEN'S ADDED-VALUE



Global partner



Multi-specialists in mechanics, embedded system (electronics and software), integration and IT ground segment



Digital in IT skills & Networks (Agile, Big Data, AI, Cloud, Cybersecurity, UX/UI design ...) and Ground segment



Expertise in AIT (Assembly, Integration & Test) & FAL Design, Electrical and avionics architecture design, Simulation and validation of optical instruments and certification compliant with ECSS and GSWS standards



We are the ones who are building the world of tomorrow today.

As a world leader in Engineering & IT Services, ALTEN supports the growth strategy of its clients in innovation, R&D & IT systems.

€ 4,07 billion in revenue in 2023

57,000 employees

6,500+ clients worldwide

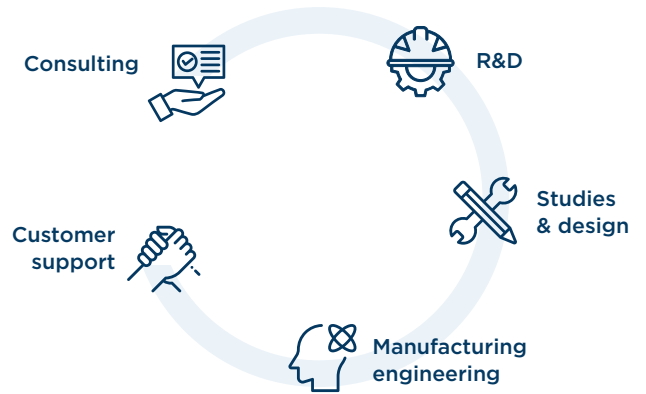
30+ countries

Our business sectors



A KEY PARTNER

ALTEN is involved in all phases and areas of the product life cycle:



SERVICE OFFERING

Five levels of commitment to meet clients' needs:

Fixed-price project	Fixed-price project with a commitment to results	Commitment to results: Control, quality, time, delay, fixed price
Work units service contract	Service contract with a commitment to results and performance	Commitment to results: Deliverables industrialization & productivity gains
Service contract	Service contract with a commitment of providing resources and to achieve performance goals	Service level agreement: Service level commitment & delegation of project management
Globalization	Gathering on a single contract covering several consulting projects	Commitment of providing resources: Teams of consultants delivering a wide range of expertises, thanks to a unique contract
Consulting	Commitment of providing resources	Commitment of providing resources: Delivery of specific & flexible expertise

Thanks to its technical expertise, ALTEN is involved throughout the satellite and launcher life cycle, with a historical presence of more than 25 years in key environments such as Space Electronics, Mechanics and AIT.

ALTEN'S EXPERTISE

— ALTEN is involved in the complete value chain of the space sector. We support our customers throughout studies, development, manufacturing and operations as one of the top suppliers.

Structures

Propulsion

On-board avionics & platforms

Control, operating or launch centers

Spacecraft architecture

Payloads & instruments

Flight physics & trajectography

Assembly, integration & tests (AIT)

Data processing services

ALTEN'S FUNCTIONAL SECTORS

Launchers

— Reducing launch costs is a major driver for competitiveness in the space industry. With its technical expertise (structure, propulsion, flight mechanics, etc.), ALTEN is taking part in various development projects to meet the challenges of more flexible and competitive launchers.

Satellites

— ALTEN has over 25 years of expertise in the field of spatial electronics, mechanics and systems engineering, from designing the embedded electronics to software development and final satellite integration. ALTEN is also acting in the satellites market transformation by supporting the new players on constellations and small-sats.

Ground operations

— ALTEN is involved in the ground segment architecture and in the deployment of tools to optimise its clients' operations of the various installations for communication with satellites. To complete the scope of space system life cycle, ALTEN also supports its clients in data processing. ALTEN has proven experience in network design, automation and SDN architecture related to ground communication devices.

ALTEN'S MAIN PROJECTS

Electric / Electronics

— ALTEN offers **end-to-end** support on electrical & electronics activities. Our **strong experience** in the space sector, close to its main actors, allows us to manage the **whole development cycle of space products and satellites**:

- Feasibility **studies**, Systems specifications & cascading requirements, Analyses/simulations & Justifications
- Electrical System **design**: Batteries, Solar Panels, Power management systems, avionics, microchip-based boards and atomic clock
- **Test bench** design and development for avionic and electronic ground support equipments (EGSE)
- **FPGA** design, development and validation of the space systems according to ECSS & DO254

Embedded software

— ALTEN has a wide experience in software design, real-time validation and critical software, especially on **On-Board SW development** with implication on **18 satellites programs** and more than **20 components developed** (Platform, SCAO & payload). ALTEN is mainly recognized for its expertise in:

- **OBSW components**: Requirement Based Engineering, design, code & validation
- **Software Product Assurance** based on ECSS & DO178

Mechanical

— ALTEN manages **Mechanical Design & Analysis** activities with the strategy to cover the **full scope of products** (Satellite, Launchers, Instruments, Means) with strong Service Centers able to **innovate** and to achieve **costs savings**:

- **Launch Vehicles Components and Ground Support Equipment**
- **Satellites & Launchers** Mechanical Service Centers
- Product Architectures
- **Design & accommodation:** Instruments, Antennas, Structures, Satcom
- **MGSE/OGSE** development
- Mechanical & Thermal **Analysis**
- Vibrations & **Environments tests**
- **Tools** development, **3DX support**
- **AIT** Satcom and optical instrument

IT / Software / Data processing

— ALTEN innovates in **digital transformation of Ground Segment** to extract **greater value fom spatial data**.

ALTEN supports its customers in delivering satellite services based on:

- **Analysis of environmental data**
- **Observation of oceans and continental waters**
- **Monitoring of land and maritime activities**
- **Satellite control center software integration**

— ALTEN is responsible for the **optimal operability** of platforms, supporting the integration tests, corrections and maintenance.

AIT

— Thanks to **25+ years of experience** in Space AIT programs and its **CoC of 150+ AIT FTE**, ALTEN supports the satellites manufacturer with a **multi-skill approach**:

- **Mechanics: Assembly, Vibration tests**
- **Electronics: Integration, Signals controls**
- **Optics: Instruments alignments & performances**
- **Telecom: RF transmission (uplink/downlink)**
- **Quality: Methods & Process, controls**
- **Management: AIT planification & coordination**
- **Manufacturing Engineering: FAL Design and Smart Factory 4.0**

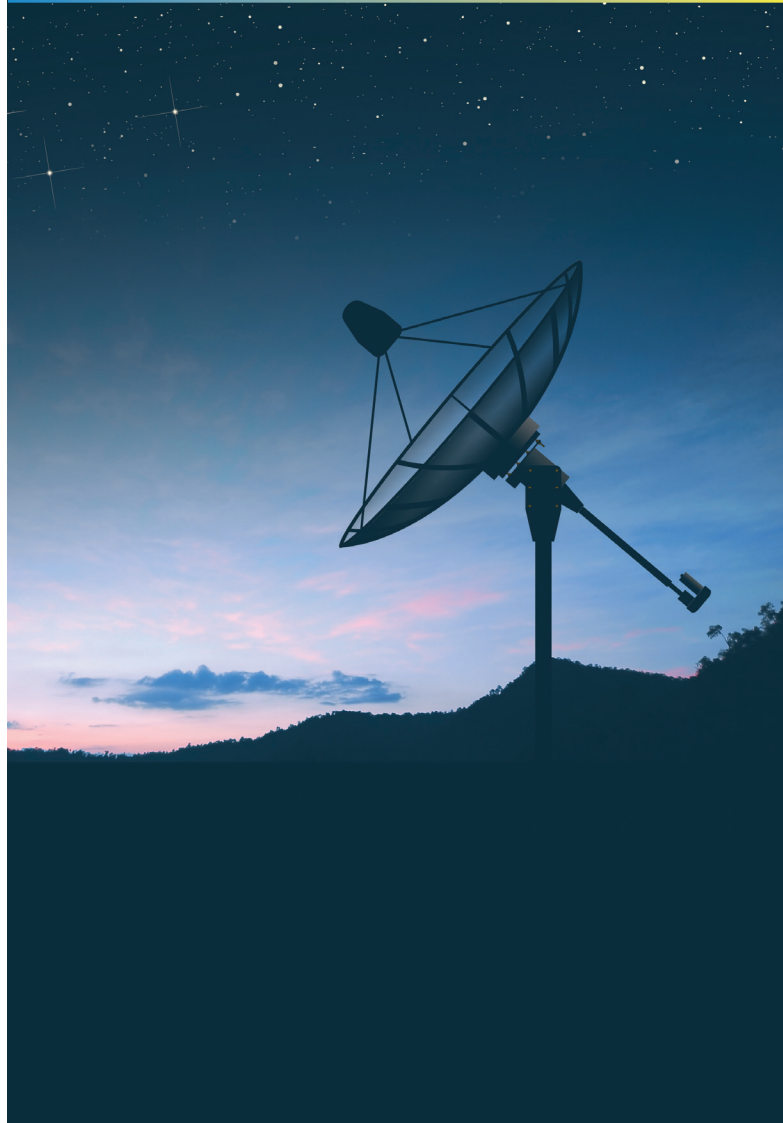
This core-business activity is delivered for **Observation, Telecom, Scientific Satellites and SmallSats**.

Cybersecurity

— Involved in cybersecurity projects around the world supporting ALTEN's clients mainly in:

- **Integration:** system administration, integration of Cisco IDS (intrusion detection system), transverse integration between IDS & malware analyser
- **Deployment:** system installation & deployment of its components, system support & maintenance
- **System validation and integration:** redaction of functional test plans, workload tests, integration follow up, tests campaigns, installation, redaction of user or administration documentation

ALTEN has also developed and applied Training & Certification programs with its partners.



Pioneering the future of space

With close relationships with key players in the industry, ALTEN leads collaborative R&D projects through its Innovation Department. Its dedicated Space Innovation Lab enables the realization of POCs in artificial intelligence for industrial applications (embedded systems and test benches). These efforts not only enhance the added value for ALTEN and its partners but also improve the company's attractiveness and the recruitment of talents specialized in the space domain.

ALTEN'S SPACE INNOVATION PROGRAMS

Reactive Space Systems

- This program aims to optimize end-to-end space missions:
- Design-to-Cost & Design-to-Manufacturing
- Orthography Simulation
- MBSE Modeling
- AIT & Factory 4.0, Supply Chain Optimization
- Data Processing

Satellites Above Your Head

- Existing capabilities comparator:
- Orbital Trajectory Propagation & Predictions
- Maneuver Predictions with Artificial Intelligence
- Cartography of Constellations, Spacecraft, Actors... Performances (Database)
- Meteorological Comprehension and Pairing with Space Issues & Meteorological API
- AI & Data (Front & Back End in Python)

Cost-Engineering

- Definition of new methodologies to explore space mission designs:
- Finding Low-Cost Mission Architectures by Design
- Space Exploration Using Pattern Languages and Houbolt Questions

In Orbit AIT & MRO

- Ideation program to define new ways of integration & maintenance/repair operations in orbit:
- New Designs: Modularity, Additive Manufacturing
- AIT with Robotics & Industry 4.0
- Refueling and/or Deorbiting
- Repairing, Module Replacement
- Artificial Intelligence

TO LEARN MORE ABOUT OUR
VISION, COMMITMENT, OPPORTUNITIES,
VISIT OUR WEBSITE

alten.com



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