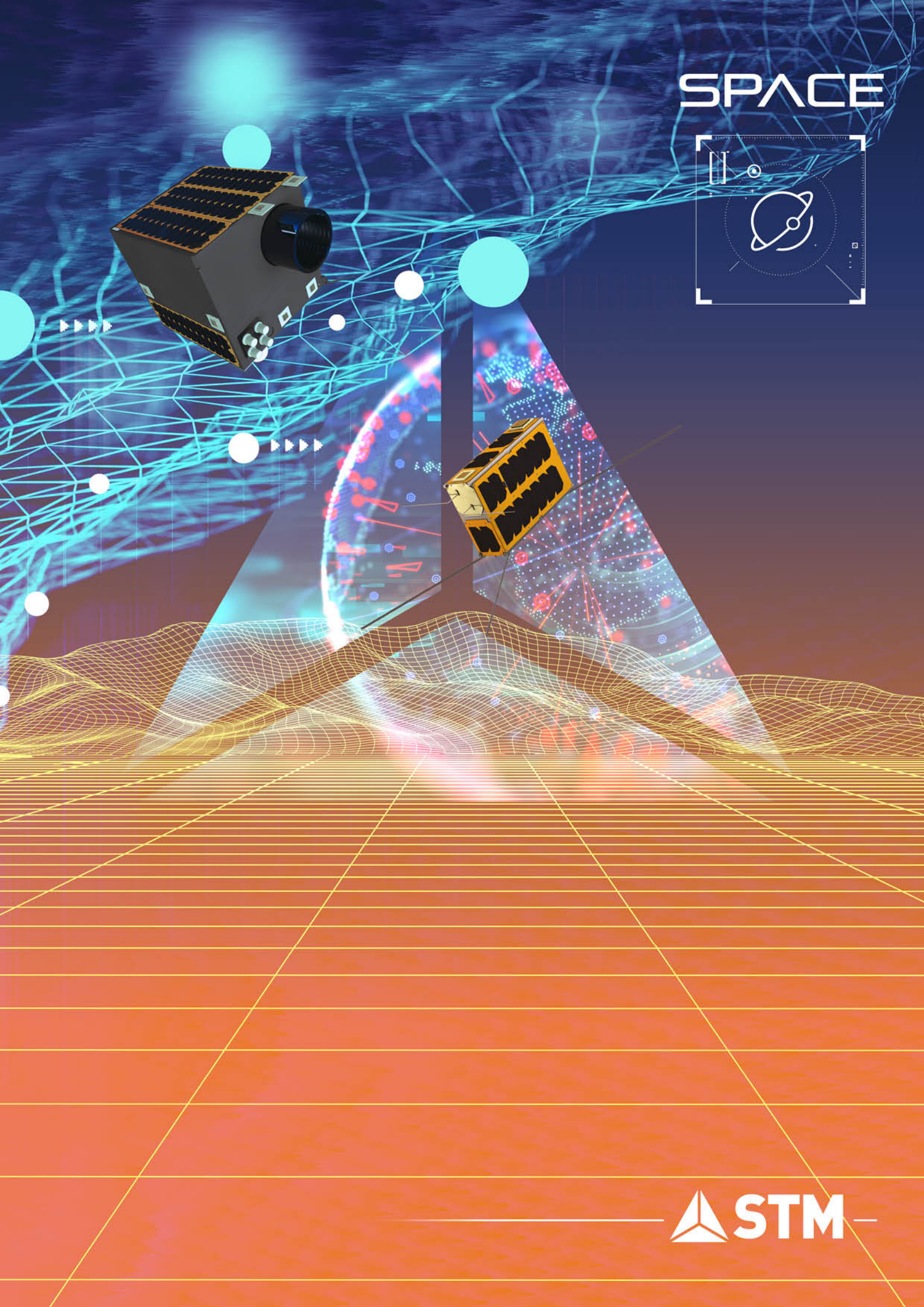
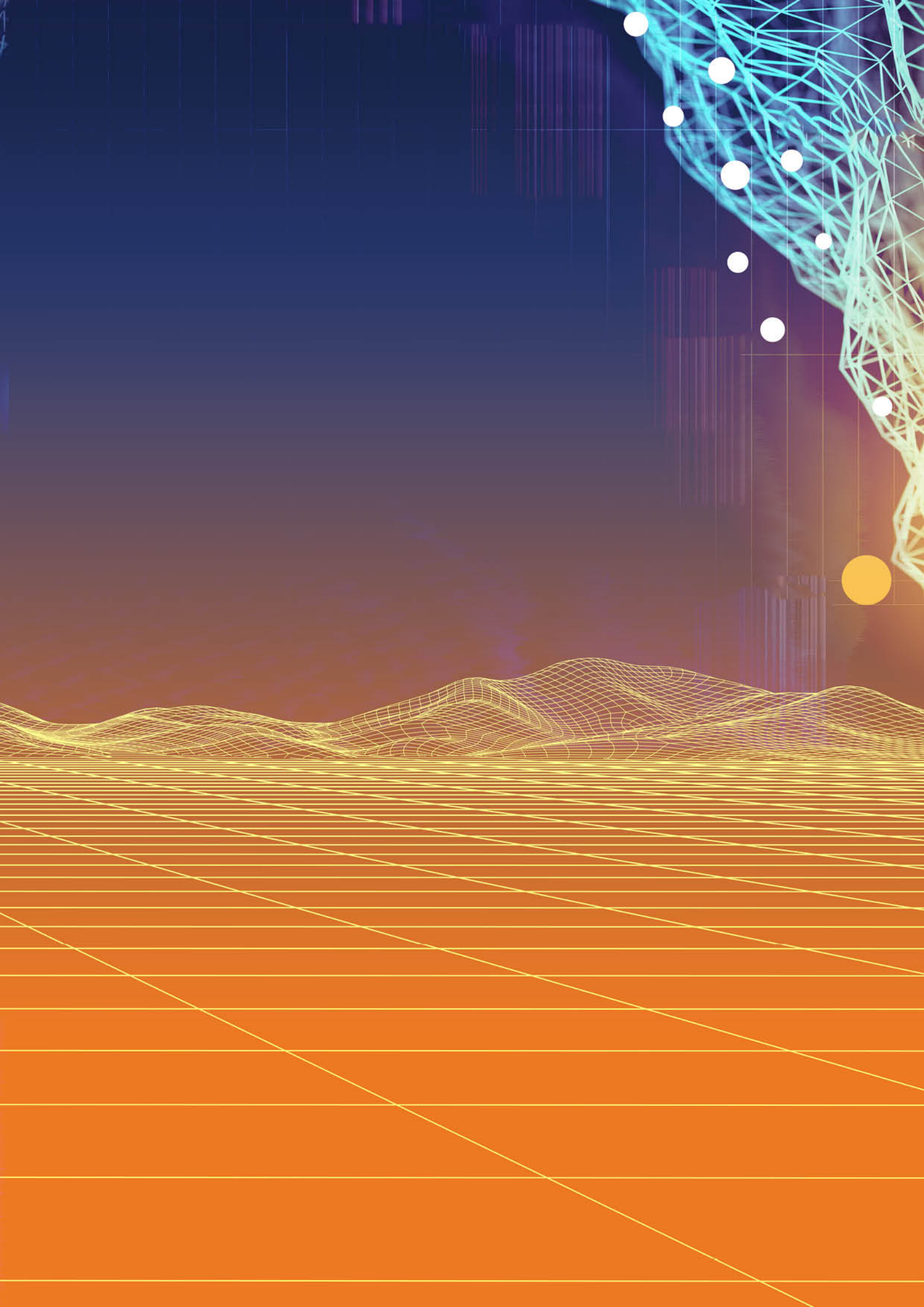

SPACE
STM



STM Savunma Teknolojileri, Mühendislik ve Ticaret A.Ş.

STM was established in 1991 for the provision of project management, system engineering and consultancy services to the Defense Industry Agency (SSB) and the Turkish Armed Forces (TAF).

The SSB continues to be the majority shareholder in the company, which has a workforce of 850 people, 63 percent of whom are engineers.

STM is among the leading companies operating in the defense sector, and is engaged in projects, particularly in the fields of naval platforms, tactical mini UAV systems, cybersecurity and IT services, command and control projects, satellite technologies, military aviation, radar and electronic warfare, and procurement and consultancy services.

Aside from its involvement in many national projects being conducted by the Turkish defence sector, STM is also engaged in export and business development activities for NATO with operations in more than 30 countries.

In addition to acting as the main subcontractor in the MiLGEM Project for the development of Türkiye's first national corvette, STM is also carrying out the detailed design as the main contractor in the project for the construction of TCG İSTANBUL (F-515), Türkiye's first national frigate.

STM has undertaken important tasks in submarine modernization and construction projects for the Turkish Navy, and is also responsible for Türkiye's first submarine modernization export, taking the lead role in the Pakistan AGOSTA 90B project.

STM developed KARGU, Türkiye's first indigenous attack UAV System, and launched Türkiye's first Cyber Fusion Center in 2016.

Through the INTEL-FS2 Project, STM ensures the flow of intelligence between all NATO headquarters around the world, and is successfully engaged in one of Türkiye's largest software exports to the Organization.

STM diversifies its technology-based activities to meet the needs of the public and private sectors – in particular those related to the Turkish defense sector.

STM is headquartered in Ankara, the capital of Türkiye, and continues its operations out of nine facilities, located in İstanbul, Gölcük and Ankara, as well as Pakistan.

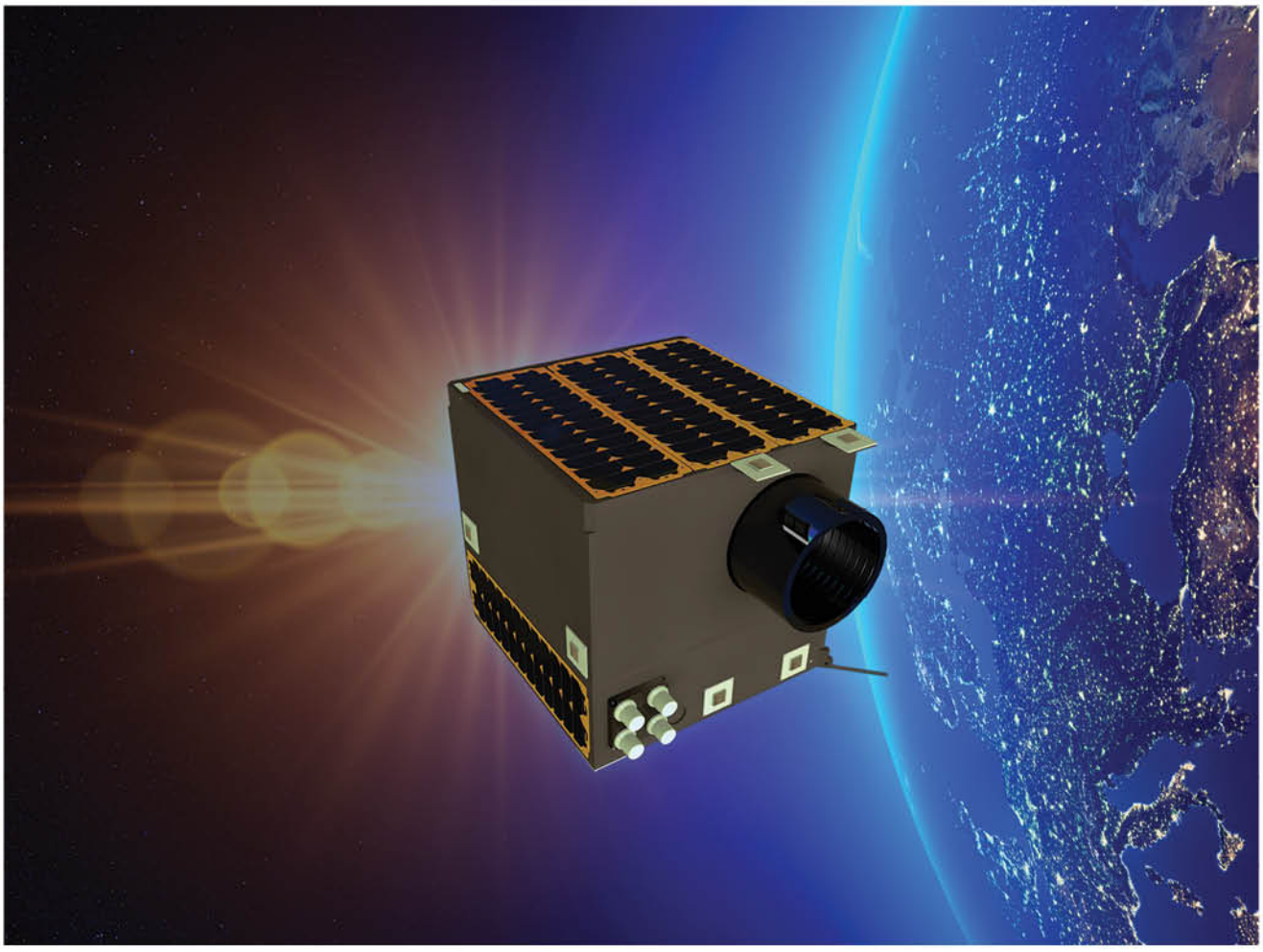
STM was for three consecutive years listed on the Defense News Top 100 list of the world's top 100 defense companies.

LAGARİ®

High Resolution Earth Observation Microsatellite

LAGARİ is a micro class, high resolution Earth observation satellite to provide imagery for remote sensing applications such as security, disaster management, agriculture, forestry, urban planning.

The spectral bands covered by LAGARİ from Low Earth Orbit are PAN, RGB and NIR. In addition, images in the Red Edge band will be experimental products.

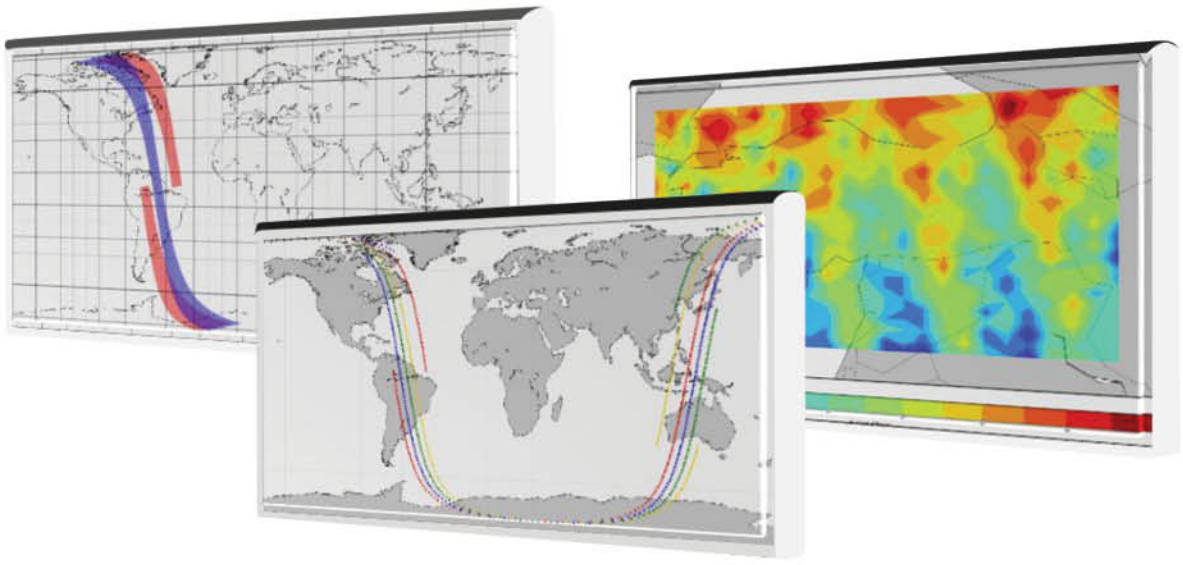


MAIN FEATURES

- High resolution imaging
- Lightweight and compact satellite structure
- High accuracy attitude determination and positioning
- 3-axis attitude control
- Body-mounted high efficient solar panels
- Lithium-Iron (Li-Fe) battery technology
- S-Band and X-Band links for communication with the ground

TECHNICAL FEATURES

Coverage	Global coverage between 80°N - 80°S latitude
Access Time	Daily access for Turkey region
Lifetime	At least 2 years
Orbit	Sun synchronous orbit



PİRİSAT

Automatic Identification System Application on Nano Satellite

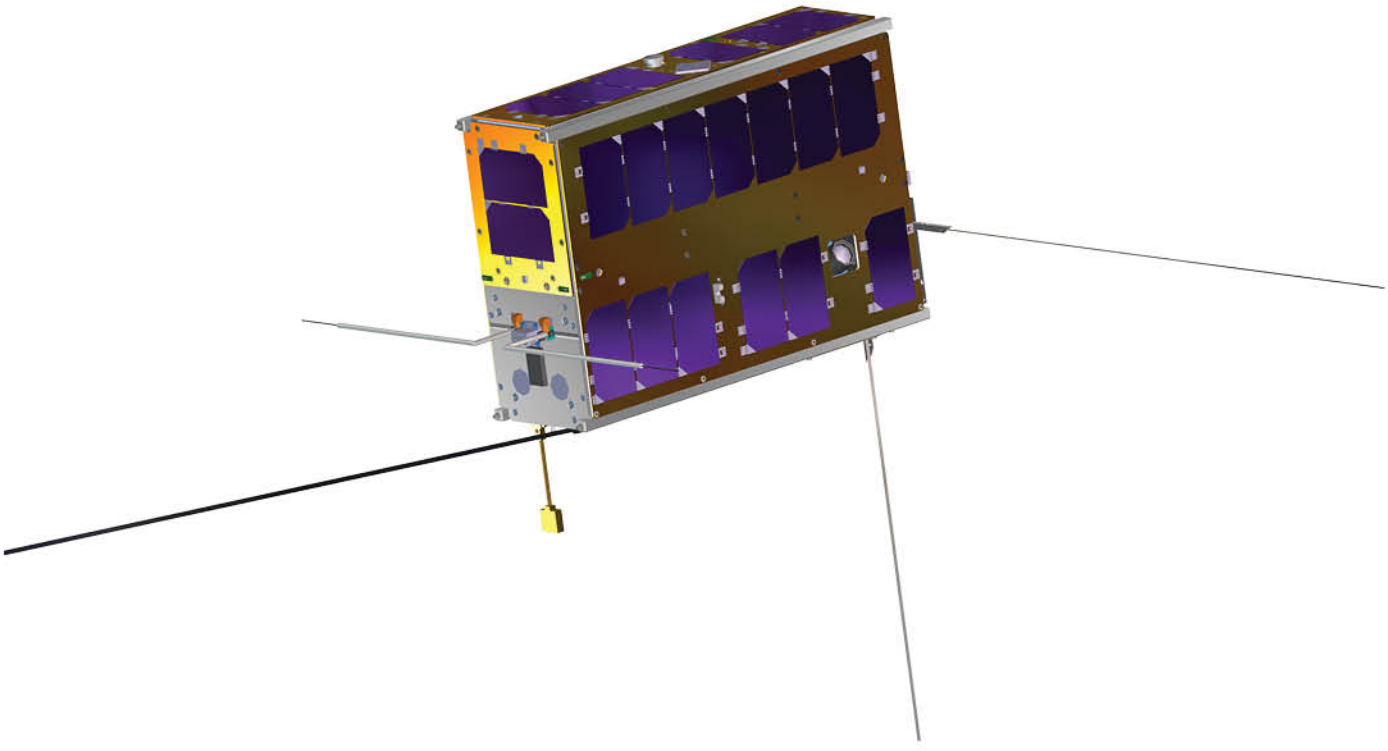
PİRİSAT; is a 6U cubesat developed to demonstrate that multiple tasks can be performed with a nano-satellite platform. The main mission of PİRİSAT is an Automatic Identification System (AIS) application and it will also be a heritage acquisition model for the cubesat constellation projects.

CAPABILITIES | COMPETENCIES

- Mission Design and Analysis
- Satellite Design and Analysis
- System Integration and Testing
- Software Development
- Hardware Development
- Satellite Communication

TECHNICAL FEATURES

Main Mission	Space-Based Automatic Identification System Data Detection
Lifetime	At least 1 year (without propulsion system)
Satellite Mass	Up to 10 kg
Payload Volume Capacity	2U



MICROSATPRO

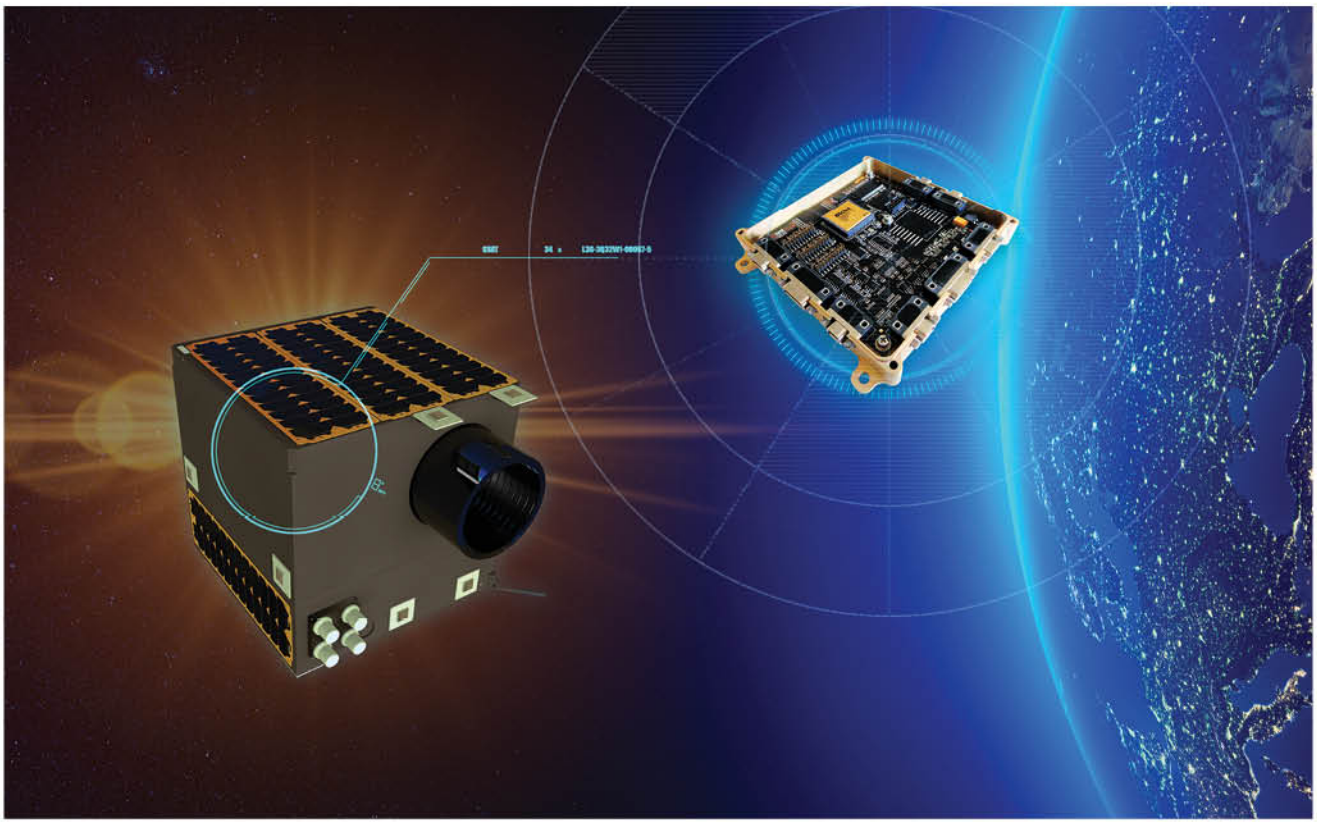
Space Qualified Processor Unit

Space Qualified Processor Unit (MICROSATPRO) is a high performance on-board computer (OBC) compatible with micro satellite platforms for advanced space missions.

MICROSATPRO is a control unit that is resistant to harsh space conditions, has a high fault tolerance, reliable and high processor power. LEO is targeted as the operational orbit and it is designed to stay in this orbit for at least five years.

MICROSATPRO has an operating system running on FPGA (soft processor based). It is supported by interfaces frequently used in micro satellite platforms (RS485, RS422, CAN, Spacewire, SPI, I2C, etc.). Thanks to its modular design, integration into the target platform can be provided.

Single Event Effects (SEE) protection is provided through the use of a Fault Tolerant (FT-LEON3) processor core, Triple Modular Redundancy (TMR) in FPGA, Error Detection and Correction (EDAC) in memory units, Watchdog on software and Latch-up Current Limiter (LCL) in power units.



GENERAL FEATURES

Lifetime	5 years in LEO
Processor	32-bit Leon 3 Fault-Tolerant Processor
Processor Clock	48 MHz SDRAM 32 MB (EDAC on Memory)
SRAM	8 MB (EDAC)
Instruction Cache	8 kB
Data Cache	4 kB
Real Time Clock (RTC)	Available
Watchdog	Available
ROM (SPI)	128 MB (Post-EDAC)
ROM (Parallel)	8 GB (EDAC)
Operating Temperature Range	-40°C to +85°C
Power Supply Input	4.5 V to 5.5 V
Radiation (TiD)	30 kRAD (Si)

INTERFACES

SpaceWire	10 Mb/sn	2
SPI	10 Mbps	1
I2C	400Kbps	1
CAN	1 Mbps	2
Serial Ports	RS422 Input/Output	4/4
Serial Ports	RS422 / RS48 5 UART	6
PPS Interface	RS485 PPS Input/Output	1/1
GPIO	3.3 V/ 5 V	8/8
Debugging	JTAG Port for CPU (Real Time Debug Interface)	1

SIZE, MASS AND POWER CONSUMPTION

Nominal Power Consumption	3.0 W
Mass	280 g
Length	130 mm
Width	126 mm
Height	18 mm

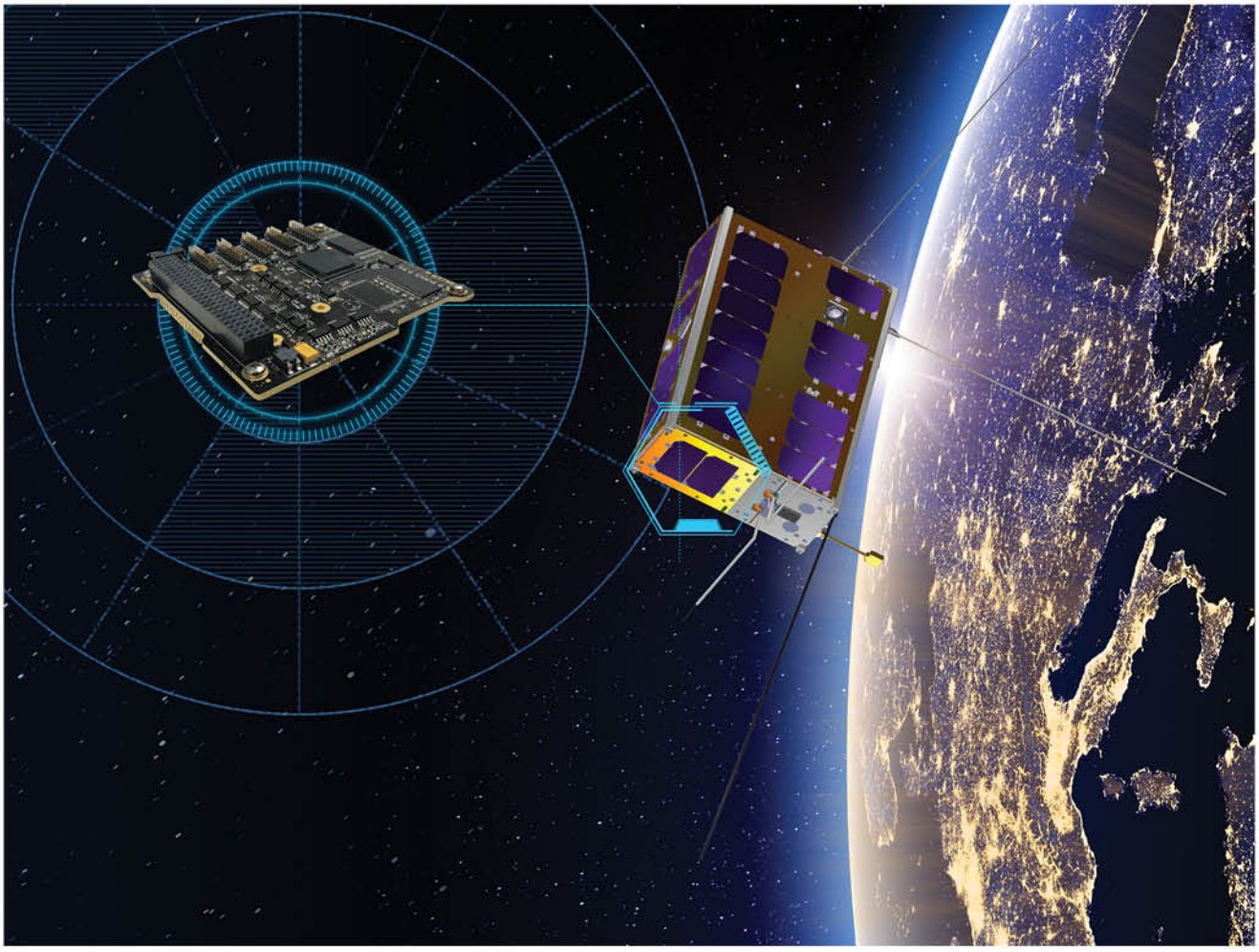
NANOSATPRO

Space Qualified Processor Unit

The Nano Satellite Processor Unit (NANOSATPRO) is a high-performance on-board computer compatible with nano satellite platforms for advanced space missions.

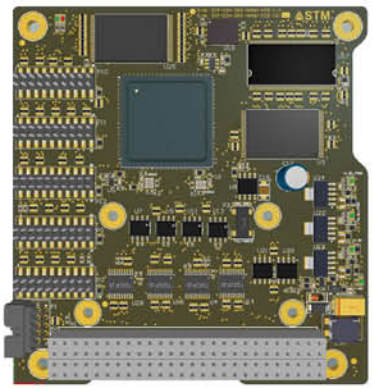
NANOSATPRO offers a solution that is resistant to harsh space conditions, has high fault tolerance, reliable and high processor power. Low Earth Orbit (LEO) is targeted as the operational orbit and it is designed to stay in this orbit for at least two years.

NANOSATPRO has a real time operating system running on FPGA (soft processor based). It is supported by the most frequently used interfaces (UART, RS485, CAN, SPI, I2C) in nano satellite platforms. With its modular design, it easily adapts to the connection constraints of the target platform. Single Event Effects (SEE) protection is provided through the use of a Fault Tolerant (FT-LEON3) processor core, Triple Modular Redundancy (TMR) in FPGA, Error Detection and Correction (EDAC) in memory units, Watchdog on software, Latch-up Current Limiter (LCL) in power units.



MAIN FEATURES

Lifetime	2 years in LEO
Processor	8051 Softcore / Leon 3 FT (Error Tolerant) Softcore
Processor Clock	48 MHz
SDRAM/SRAM	32 MB (EDAC on Memory) / 8 MB (EDAC)
Instruction Cache	8 kB
Data Cache	4 kB
SPI Flash	128 MB (EDAC on Memory)
MikroSD Card Support	Available
Real Time Clock (RTC)	Available
Watchdog	Available
Operating Temperature Range	-40°C to +85°C
Power Supply Input	4.5 V to 5,5 V
Radiation (TiD)	30 kRAD (Si)

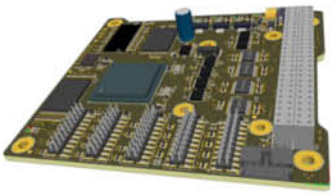


INTERFACES

SPI	10 Mbps	2
I2C	400 Kbps	2
CAN	1 Mbps	1
Serial Connection Inputs	RS48 5 UAART	3
GPIO	3.3 V	8
Debugging	JTAG Port for CPU (Real Time Debug Interface)	1

SIZE, MASS AND POWER CONSUMPTION

Nominal Power Consumption	1.5 W
Mass	100 g
Length	95.90 mm
Width	90.18 mm
Height	18.21 mm

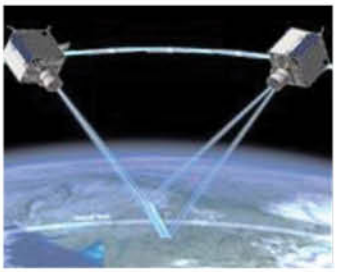


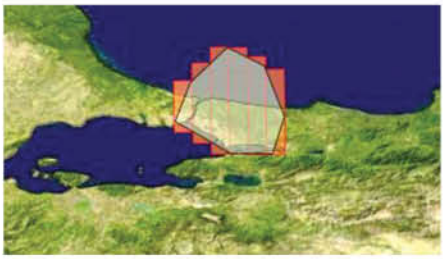
STM MISSION PLANNING SOFTWARE

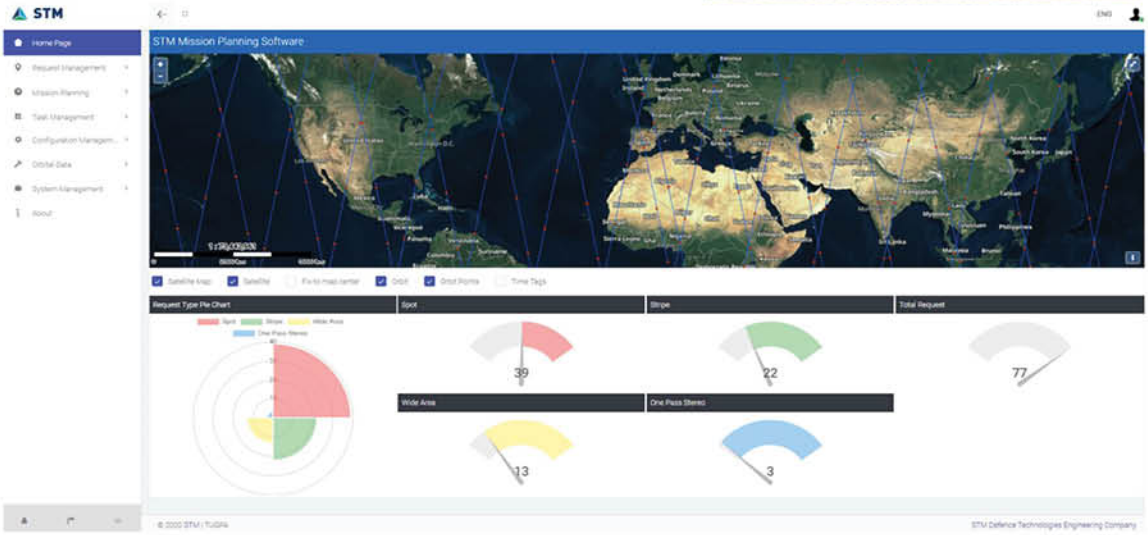
STM Mission Planning Software is a Web-Based mission planning software that plans the mission of a satellite system having one or more satellites according to the constraints and resources, calculates the parameters required for the mission with high accuracy and to get the maximum benefit from the satellite system.

- Automatic planning without user intervention.
- Ability to create image requests through the map application.
  - o Utilities such as distance measurement on the map
- Feasibility analysis at the entry of an image request using satellite dynamics and image geometry.
- Satellite power and memory management.
- Support for different imaging request types:
  - o Spot
  - o Strip (both parallel to orbit and inclined)
  - o Periodic image acquisition
  - o Single Pass Stereo
  - o Wide Area Slicing
  - o Border Line Slicing

  More than 10 different image / target guidance methods, which differs in steering modes including special imaging techniques such as constant GSD.







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