GS GROUP

THE SMART FUTURE
FOR A SAFER, MORE INTELLIGENT AND
BETTER PROTECTED WORLD

KEY FIGURES IN SPACE

480
ENGINEERS AND EXPERTS

- › On-Board Software
- › Ground Control (MCS/FDS/MPS)
- › Ground Mission (SIM/PROG)
- › Ground Processing & DownStream

40 **Years**
Experience in Space

- › Earth Observation
- › Telecom
- › Science
- › Navigation
- › Launchers
- › Space Surveillance

49 M€
REVENUES

- › France
- › Germany
- › Netherlands
- › Romania
- › Canada

cnes — CENTRE NATIONAL D'ÉTUDES SPATIALES · esa · EUMETSAT · AIRBUS DEFENCE & SPACE · ThalesAlenia Space · hemeria · LEONARDO · OneWeb Satellites · SAFRAN · Astroscale · DLR · European Commission · OHB · MINISTÈRE DES ARMÉES — Liberté Égalité Fraternité · arianeGROUP · rosa · CSA ASC Canada · CDE COMMANDEMENT DE L'ESPACE

WIDE RANGE OF SPACE MISSION

ARIANE, SOYOUZ, VEGA
ATV, In-Orbit Services
Space Surveillance
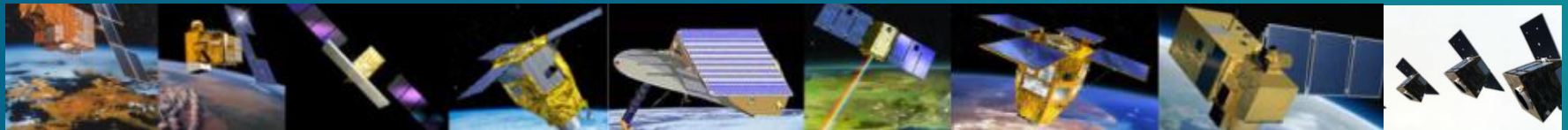**Debris Removal**

Access to space
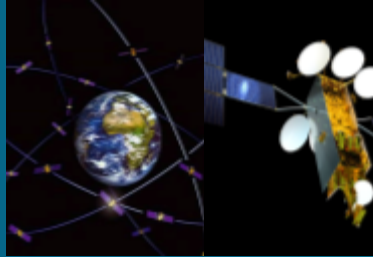
GALILEO - EGNOS
COSPAS-SARSAT/MEOSAR
NEOSAT – ANGELS –
ONEWEB

Navigation & Telecom
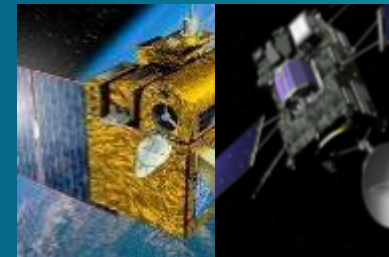
MYRIADE (Demeter, Parasol, Essaim, Picard, Elisa, Taranis, Microscope, …) ROSETTA, GAIA, MMX, MASCOT, SWOT

Science & Planetary

SPOT   HELIOS   CSM   PLEIADES   SAR LUPE   VENµS   CSO   COPERNICUS   CO3D

Earth Observation

END-TO-END GROUND SEGMENT PRODUCT LINE

SPACE SURVEILLANCE PLATFORM

SMIS

MISSIONS & SATELLITES COMMAND & CONTROL SYSTEM

CS NANO

OREKIT FLIGHT DYNAMICS SYSTEM

OreFLIDS

GOSMIC
BY CS GROUP

MISSION & PROGRAMMING SOFTWARE

MAPS

MULTICLOUD MANAGEMENT PLATFORM

SAFESCALE

PLATFORM AS A SERVICE FOR DATA PROCESSING & ANALYSIS

METIS

GOSMIC

END TO END GROUND SEGMENT PRODUCT LINE

GOSMIC
BY CS GROUP

> Micro-Services based solution
> On premise, in the cloud, hybrid by design
> Secured by design
> Designed for maintenance and evolutions
> Homogeneous MMI: TOPAZ
> Design for low hardware coupling
> Integrated high availability automatic operations

-> Decreasing cost for operations

MISSIONS AND SATELLITES COMMAND & CONTROL SYSTEM

for any types of satellites and constellations

- Main services for command & control operations

- New way to manage any TM/TC description

- Optimized for multi-satellites missions

- Already operational (sInce ANGELS, 2019)

- Multi-missions Operating Center in CS Group Toulouse

Micro Service

CS NANO

OREKIT FLIGHT DYNAMICS SYSTEM
for any types of satellites, missions and constellations

- Modeling and managing orbital position and movement of satellites using OREKIT open-source FD library

- Set of generic flight dynamic algorithms configurable for any missions

- Infrastructure to support any FD algorithms

- Interfacing with any kind of visualization tools

- Already operational on several missions

- Specific algorithms for Electrical propulsion maneuvering

MISSION AND PLANIFICATION SOFTWARE

- Dedicated to Earth Observation satellites constellations

- Designed to be reused for any kind of EO missions thanks to a pre-defined data model

- Definition of the zone to capture

- Generation of acquisition plans

- Dashboard (users' requests, acquisition plan follow-up, satellites information, etc.)

SMIS – SPACE SURVEILLANCE PLATFORM

- Provides a synthetic and complete visualization of the space situation in Real Time

- Gathers all information allowing a strategic vision of the spatial situation from any type of sensors (RF, optical, radar,...)

- Architecture able to process all types of data and formats

- Construction of a complete national catalog covering LEO, MEO, GEO orbits

- Allows interoperability with other systems

- Ability to focus on one or several specific satellites

- Currently operated within the French Space Command – CdE

- Also used for simulation and training purposes (defense training, AsterX 2021 and 2022 SSA international military exercises)

METIS – PLATFORM AS A SERVICE (PAAS) - DATA PROCESSING AND ANALYSIS SOLUTION

- Advanced software components::

  - Data access management (ingestion and virtualization).

  - Data governance (classification, alignment, disambiguation, cleaning)

  - Data visualization (dynamic charts, complex real-time dashboards).

  - Data analysis (feature engineering, statistical and exploratory analysis, classification, regression, forecasting, distributed processing, workflow, sandboxing)

  - Collaborative work (chat rooms, video conferencing, forums).

  - Uses the SafescaleTM solution developed by CS GROUP to deploy the platform with its complete software environment..

- Agnostic and secure with respect to cloud providers (user federation, identity and access management, encryption, ACL, intrusion detection)

- High interoperability.
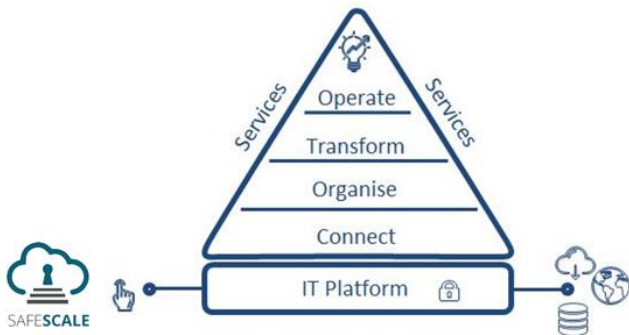
SATELLITE IMAGE & DATA PROCESSING TOOLS & SERVICES
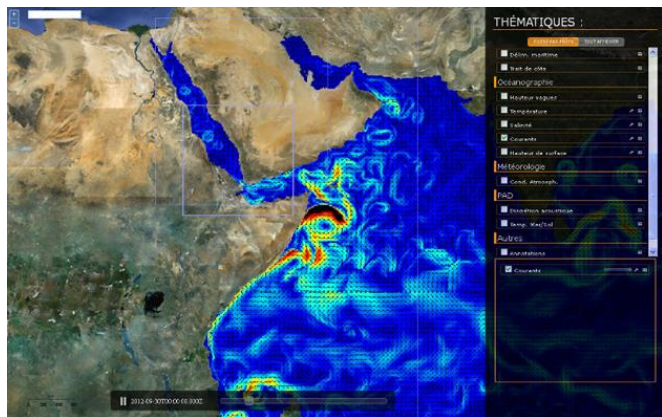
- Long term experience in Earth Observation SPOT, VGT, POLDER-PARASOL, FORMOSAT, PLEIADES, VENUS, CFOSAT, SENTINEL S2,…

- Services related to Satellite Image & Data Processing :

- Design and development of L2 and L3 processing chains

- Systematic production and reprocessing on-demand

- Archiving, Cataloguing and Supervision

- Calibration methods development

- Use of Geostorm, a Geospatial platform

- IA & Deep Learning