

- Orbital systems
- Space planes
- Satellites
- Ground segments
- Transversal competencies



AGENIUM Space offers expertise in the fields of Earth Observation and Deep Learning in two areas: space missions and multisource downstream services (satellite data, UAV, IoT...). In space missions, its skills cover as much on-board processing as image ground segments and spaceflight dynamics. AGENIUM Space develops innovative solutions for deep learning on the edge and particularly on-board satellites. AGENIUM Space team has a large experience in projects for the key accounts of the European spatial sector: CNES, ESA, EC, EUM, Airbus, Thales, ...

## COMPETENCIES & CAPABILITIES

### DEEP LEARNING:

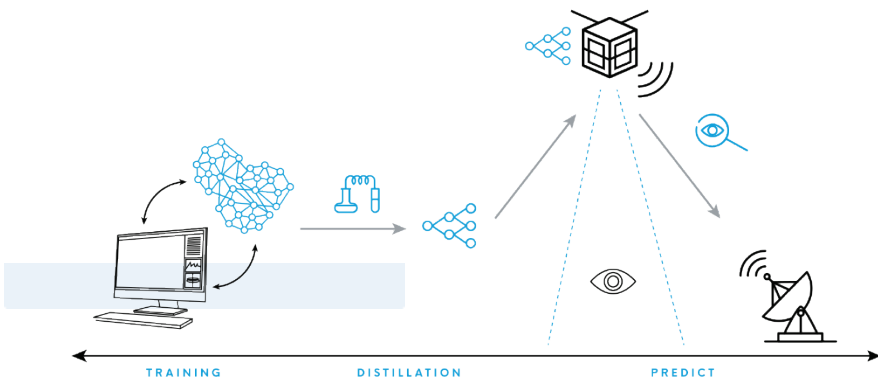
On board processing, Object detection and identification (airplanes, ships, buildings, clouds...), Land cover/land use, change and anomalies detection, Future ground segments (resampling, radiometric and geometric corrections...), Emulation and models' inversion (atmosphere, biophysical parameters, waveforms...), 3D reconstruction, Predictive maintenance, Analytics, Decision optimization

### SATELLITE IMAGES PROCESSING AND ANALYSIS

Radiometric corrections, Calibration, Geometrical corrections, Image Quality, Straylight detection and correction, Definition of optical and infrared missions, Image simulation, In-flight commissioning, Information extraction, Classification, Segmentation, Multi-temporal and multisource series analysis

ON GROUND

ON BOARD



# AGENIUM SPACE

## PRODUCTS & SERVICES

AGENIUM Space team masters all phases of space projects and the preparation of operational services:

### Space projects:

- Feasibility and design studies, contribution to the definition of space missions
- Image chains prototyping
- Development of scientific ground segments
- Support to Operations: satellite in-flight commissioning, Image Quality studies, geometry and radiometry expertise

### Multisource services based on Deep Learning (DL):

- R&T and feasibility studies
- Solutions prototyping,
- Validation and upscaling
- Execution on specific HW (e.g. SoC-FPGA)

### AGENIUM Space expertise relies on a proven know-how in:

- project management
- ICTs for deployment and execution in cloud platforms (devOps).

## MAJOR SPACE PROJECTS & REFERENCES

CNES: SI/2A department:

R&T study regarding algorithm part of "Smart Payload". We are currently working on Deep Learning Neural Networks (DNN) simplification using pruning, quantization and distillation methods. R&T study regarding detection and classification of building damages with deep learning.

ESA: ESRIN (PhiLab)

Study (<https://esacortexproject.agenium-space.com/>) to define a workflow to ease the integration and reduction of complex DNN models on Soc-FPGA platforms.

ESA: ESTEC

Study on using DNNs for cloud classification, testing it on a large number of satellite optical images available on Google Earth Engine Database.

AGENIUM Space has submitted to ESA, in the frame of GSTP Make program, a proposal for the development of DNN simplification tools and ad-hoc simplified networks for on-board information extraction and data analysis. The proposal sponsored by the French Delegation as national priority is under evaluation by ESA.

**ADDRESS** 1 avenue de l'Europe 31400 Toulouse – France

**WEBSITE** <https://agenium.com/fr/filiale/agenium-space>

**PHONE** +33 (0)5 61 41 46 40

**POINT-OF-CONTACT** : FERNANDEZ-MARTIN Christine, COO,  
[christine.fernandez-martin@agenium.com](mailto:christine.fernandez-martin@agenium.com),  
+33 (0)6 22 59 55 43

**TURNOVER** 0.7 M€

**WORK FORCE** 8

**SPACE TURNOVER** 0.7 M€

**SPACE WORK FORCE** 8