



CLUE

**ENHANCED
CONSTELLATIONS
MONITORING AND
PERFORMANCE**

Increasing safety,
reliability, and autonomy
of space systems.



CLUE SAAS FOR ENHANCED OPERATIONS

Modular and customised software solution with possibility of on-board or ground deployment.
CLUE makes selected use of AI with general and reusable approach, rapid configuration and validation for single satellites as well as constellations.

CORE FUNCTIONALITIES

- Predictive health assessment [Monitoring]
- Root cause identification [Monitoring]
- Remaining useful life prediction [Monitoring]
- Slew duration prediction [Monitoring]

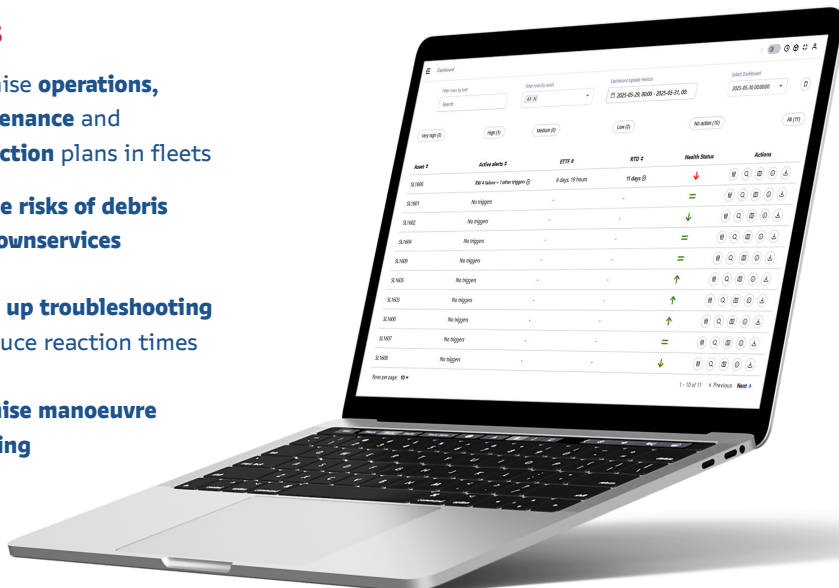
BENEFITS

Optimise **operations**, **maintenance** and **interaction** plans in fleets

Reduce risks of debris and **downservices**

Speed up troubleshooting to reduce reaction times

Optimise manoeuvre planning



SUCCESS STORIES

Predictive diagnostics & prognostics

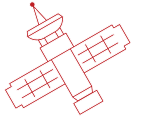
Space project specific achievements

Results obtained from CLUE customisation for AOCS related failures, now being extended to power, payload, propulsion systems.

2 WEEKS TO
2 MONTHS

Early detection

Time interval between an alert by the CLUE system and a real component failure (excluding crash breaking events) or standard FDIR alert.



98.5%

Correct CLUE alerts rate (precision)

Among all CLUE alerts, how many are correct

98.2%

Anomalies detection rate (recall)

Among all real anomalies, how many are identified by CLUE

99.6%

Fault Isolation accuracy

Among all CLUE alerts, how many give the correct root cause

77%

RUL estimate accuracy

Accuracy of CLUE Estimated Time To Failure



Automotive OEM specific achievements

CLUE runs for automotive applications in operations since 2022, on more than 100.000 vehicles. Feedback and economic benefits from customers

30%

KPI-1

Reduction of wrong component substitutions

40%

KPI-2

Reduction in the number of times a vehicle returns to the workshop due to previous ineffective intervention

15%

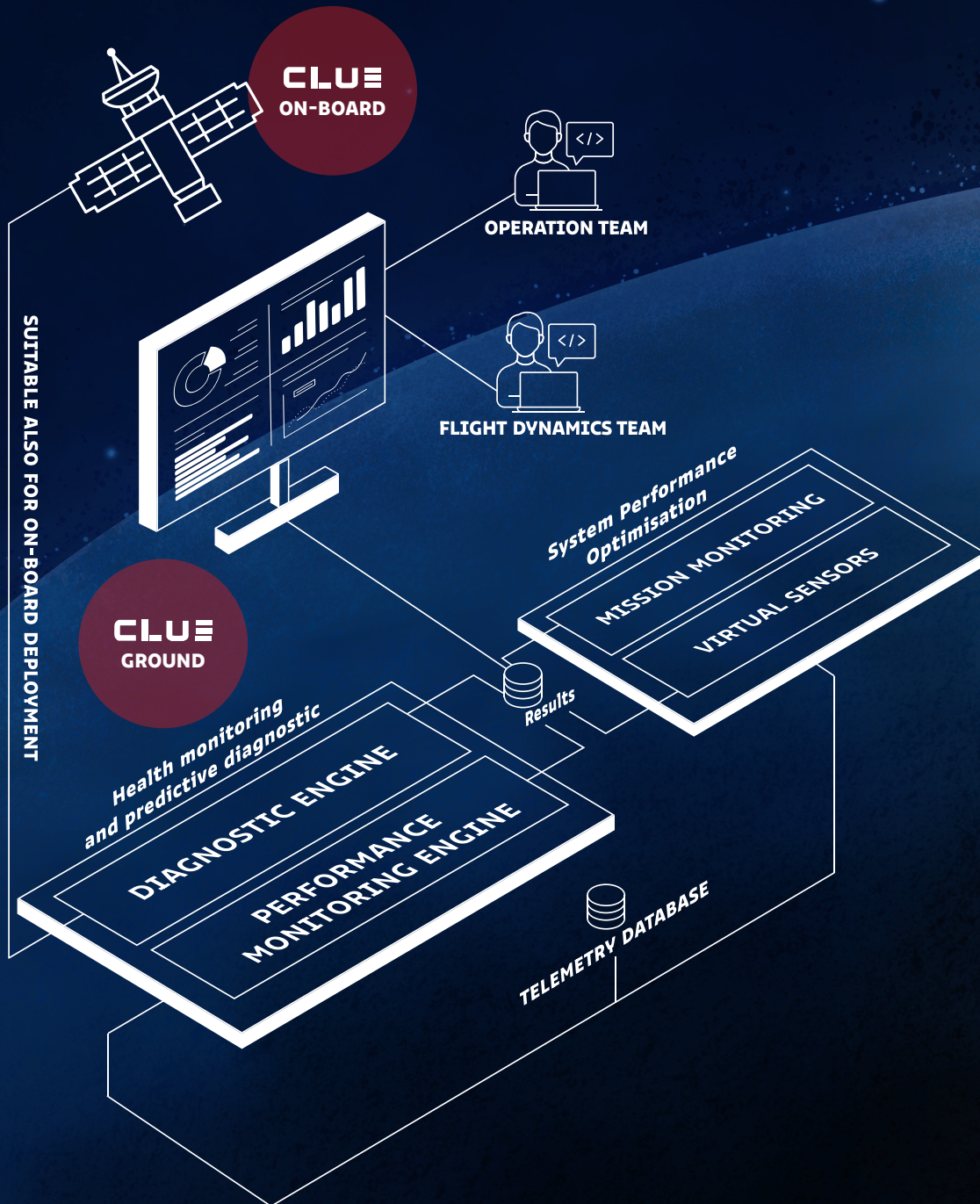
KPI-3

Reduction of the time spent at workshop for troubleshooting operations

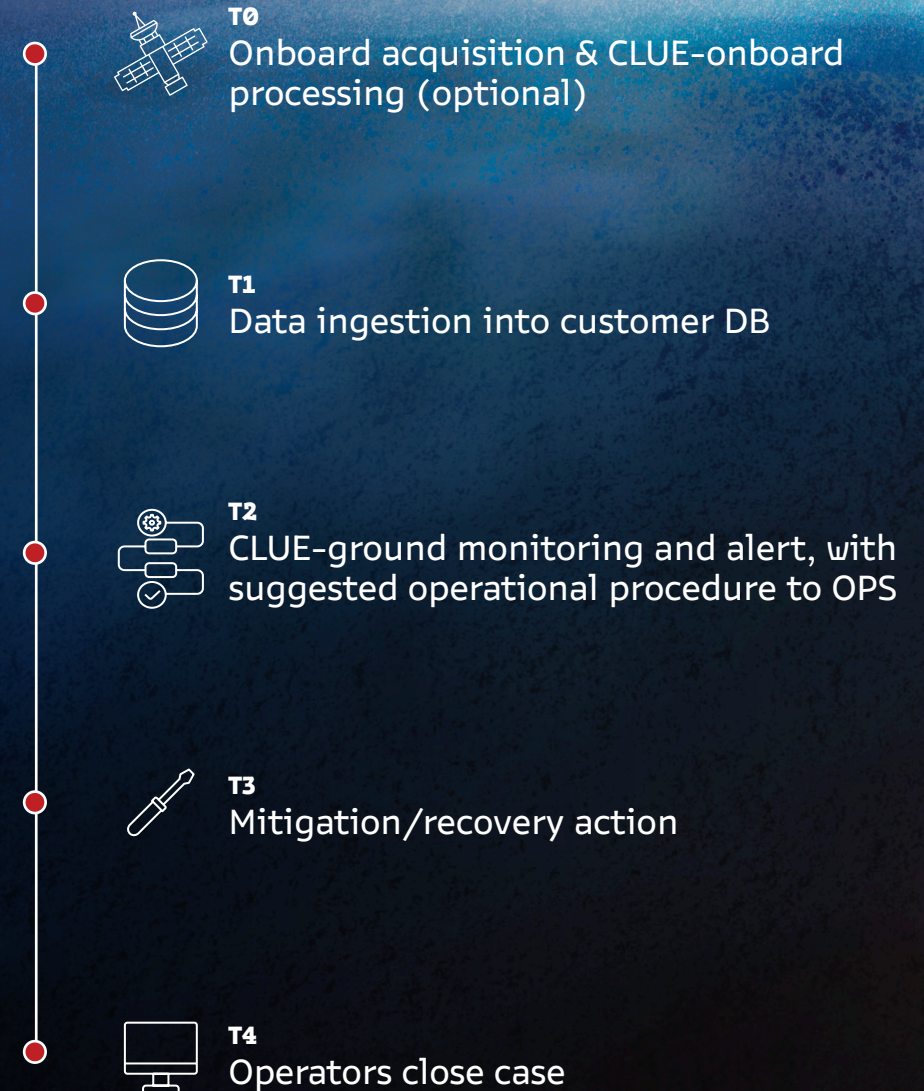
40%

KPI-4

Reduction of the number of unplanned vehicle stop on road



OPERATIONAL WORKFLOW



FLIGHT-GROUND INTEGRATED SYSTEM

To support and enhance ground operations and classical onboard FDIR

Hybrid deployment options, system reconfigurability, evolving role of the **human in the loop** are key to manage different scenarios and mission requirements and **build trust** in the solutions.

KEY FEATURE

CLUE

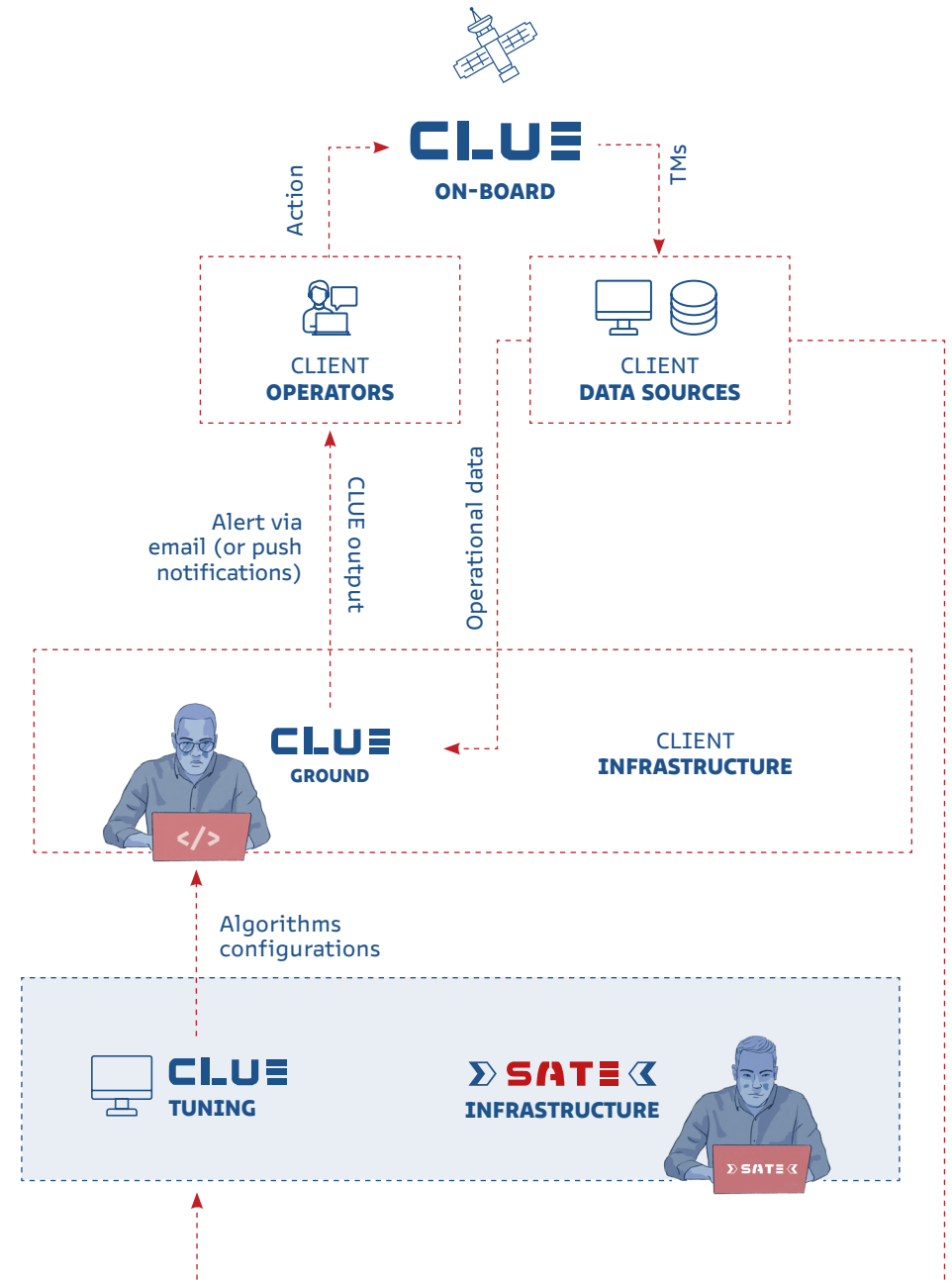
GROUND

- Web-based UI accessible via browser
- Deployment based on Docker containers
- Full scalability to evolving constellation size
- License and maintenance service based model, with on-premise deployment options

CLUE

ON-BOARD

- Light-weight software
- No AI acceleration need
- No dependency on third party libraries
- Fully interpretable approach
- Smooth integration with external modules



WHY CLUE

Highly mature technology resulting from more than 20 years activity in predictive diagnostics.

LOOKING TO THE FUTURE...

SATE continues to evolve CLUE to meet the challenges of autonomous constellations and next-generation satellites.

Partner with us to shape the future of intelligent space systems.



For more information