



Security from Space to Earth

Cyber Resilience for Critical Infrastructures

RHEA System S.p.A.

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RHEA Group in Europa e Canada

Italia

Frascati
Fucino

Spain

Madrid

UK

Harwell
Welwyn

France

Paris
Toulouse

Luxembourg

Luxembourg City

Canada

Montreal
Gatineau

Belgium

Wavre
Diegem
Redu

Czech Republic

Prague

Germany

Darmstadt
Garching
Oberpfaffenhofen
Bremen

Netherlands

Leiden
Noordwijk

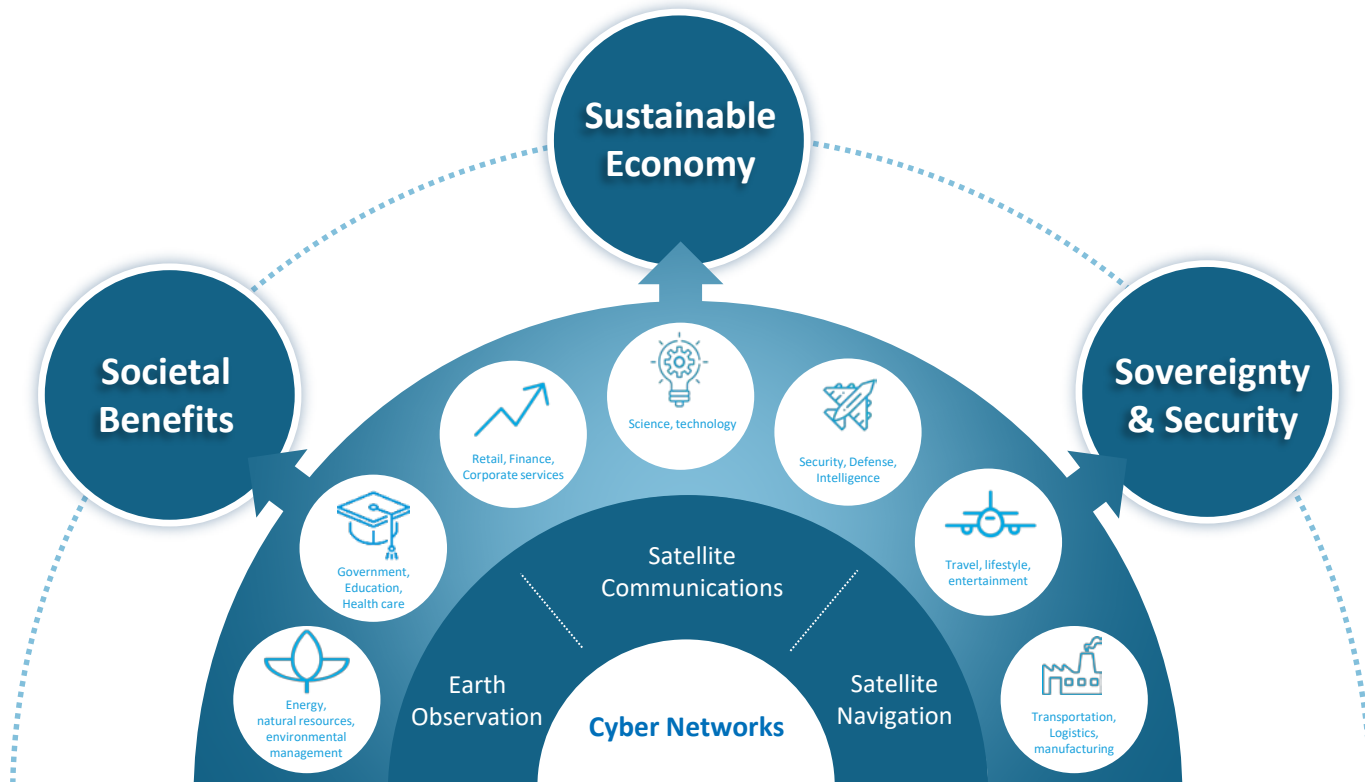
Switzerland

Zurich

600+
employees

11
countries

RHEA Mission: a Space and Cyber enabled Society



RHEA's Service Offering

EO & Data Analytics

- Long Term Data Preservation and Exploitation
- Downstream EO Services
- Big EO data management platform

System & Digital Engineering

- Concurrent Design
- Model Based Systems Engineering

Security Services

- Risk Assessment
- Security-by-Design and Development
- Cyber Range
- Monitoring, Detection, and Response

Ground Systems Engineering

- Ground segment systems
- Space segment systems
- Mission Planning and Automation

Standards & Regulatory Frameworks

- Standards compliance (ISO, OGC, ECSS, etc)

Professional Engineering Services & System Engineering and Security Solutions

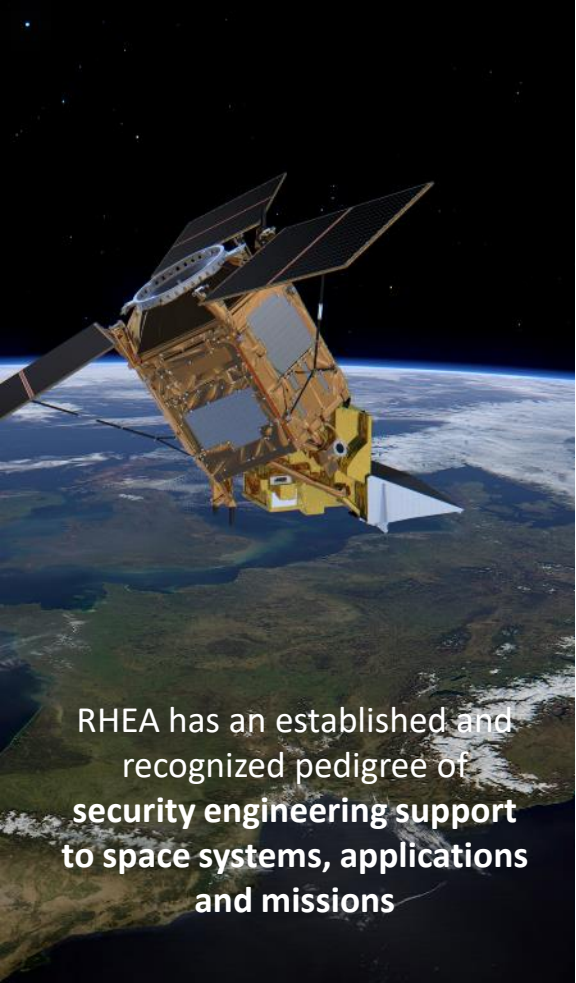
Security Engineering Support to Space Missions

Contributing security expertise supporting diverse space missions and organizations

✓ GSA, ESA, Inmarsat, Eutelsat, GomSpace, etc.

Security risks assessment, requirements analysis, design support

- ✓ Inmarsat Communications Evolution - Messaging
- ✓ Euclid – part of SEST validation (ESOC)
- ✓ secure Multi-mission Ground Station (ESEC)
- ✓ Cyber defense for space - Phase 1 (ESA/EDA)
- ✓ CSOC Preparatory Study (ESEC)
- ✓ EM-SAT (Creaction consortium)
- ✓ GovSat Pooling and Sharing System (ESTEC)
- ✓ SECOPS Phase 1 (Eutelsat Quantum)
- ✓ Cyber Test and Evaluation Facility (ESA/RMA Consortium)
- ✓ TRALEO (GomSpace)
- ✓ ESA Risk Management Framework (ESA/ESO)
- ✓ ESA FLEX
- ✓ BESecured Pooling & Sharing Hub



RHEA has an established and recognized pedigree of **security engineering support to space systems, applications and missions**



EU Projects

RHEA is heavily involved in all aspects of cyber security for critical infrastructures in Italy:

ECHO - European Network of Cyber Security Centers. RHEA technical manager (with ACEA, FINCANTIERI, CIRM, etc.)

CYBERWISER - a European platform for professional training on cyber security (with Ferrovie dello Stato, etc.)

PANACEA - toolkit to assess and reduce IT risks in hospitals and care centers. Coordinates the Agostino Gemelli University Hospital Foundation.

PANOPTESec - prototype of a cyber defense support system for ACEA ROMA

Security Services

RHEA Security Services & Solutions

SERVICES

1. Security Consulting Services
2. Threat Risk Assessment Services
3. Security By Design Services
4. Cyber Range Technology Services
5. Cyber Security Training Services
6. Managed SOC Services/MDR
7. Early Warning System Services



SOLUTIONS

1. DRMP – Dynamic Risk Management Platform
2. SACDP – Security Aware Concurrent Design Platform
3. CITEF – Cyber-Sec Integration, Test & Evaluation Framework
4. RapidPHIRE/MDR – Network Traffic Analysis Solution
5. CIRP – Collaborative Coordination of Incident Response Platform

Understand Risks

Security by Design

Security Operations

ASSESS RISK

DRMP

SACDP

DESIGN & DEVELOP

SACDP

SIMULATE & TEST

CITEF

SACDP

MONITOR DETECTION RESPONSE

RapidPhire/MDR

DRMP

CIRP

EDUCATION & TRAINING

CITEF

SECURITY CONSULTING & SUPPORT



ESA Operators

trained in areas of security awareness, security risk management, incident management and forensics.

"The ESA Cyber Range will be used to equip spacecraft operators and other technical staff to recognize and respond to cyber security incidents."

*Douglas Weimer,
RHEA's Chief Technology Officer – Cyber*

First European cybersecurity range for space systems and operations (ESA since 2016)

Leading the first cybersecurity-range project for space systems and operations at the European Space Security and Education Centre (ESEC) in Redu, Belgium.

- ✓ Delivering a specialized space-assets cyber-emulation environment
- ✓ Actively training experts in the field of cybersecurity
- ✓ Securing space assets research, development, and testing
- ✓ Developing secure software engineering practices for ESA.

RHEA Cybersecurity training Center



**Remote via Internet
and secure VPN**




On-Premise
(Redu – Belgium)



SOC Facilities

Gatineau 

SOC Facilities for international Managed SOC services

Redu 

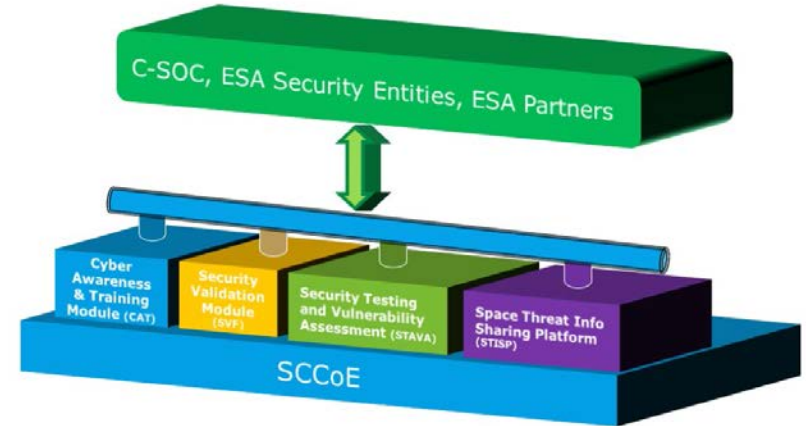


ESA - Security Cyber Centre of Excellence



SCCOE aims to provide a unique capability Europe in the frame of Space Cyber Security, terms of:

- Training,
- Test and validation services, and
- Centralization of forensic services/expertise.



Digital Twin

Definition:

A virtual representation that serves as the real-time digital counterpart of a physical object, system or process.

Impact:

Digital twins are expected to impact every industry by enabling real-time comprehensive oversight over physical objects, products, systems and processes, be those satellites and constellations, vehicles, manufacturing processes and supply chains, built infrastructure or entire cities. This enabling drastic advances in efficiency, predictive, design and simulation capabilities.



Figure 2: Opportunities for ESA Member States around Theme 2: Digital Twins

THANK YOU

A satellite with two large solar panel arrays and a parabolic dish antenna is shown in orbit above the Earth's horizon. The background is a deep blue space with the curvature of the Earth visible at the bottom.

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