

The background features a bright sun in the upper left, the curved horizon of the Earth in the upper right, and the cratered surface of the Moon in the lower right. A faint grid of dashed lines is overlaid on the left side of the image.

**RI.
SE**

SPACE@RISE

Space activities at RISE

Sweden's research institute

- We help businesses and the public sector develop products, processes and entire operations for a sustainable future.
- With applied research, test and demo facilities, and interdisciplinary expertise, we provide support and knowledge throughout the entire journey – from idea to innovation and into the market.
- As a neutral platform, we can bring together different stakeholders, thereby contributing to faster transformation and increased competitiveness for businesses, society and Sweden.

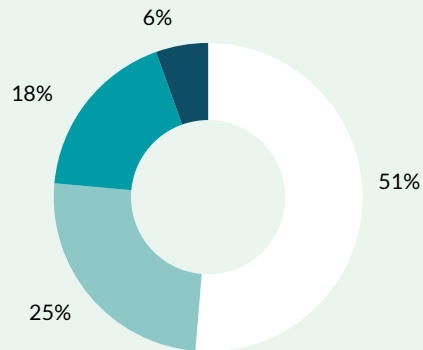


4,329

SEK million, net sales

Adjusted operating profit: 145 SEK million

Adjusted operating margin: 3,3 %



Revenue distribution

Business sector	2,222 MSEK
Public funds	1,087 MSEK
State funds	783 MSEK
EU funds	237 MSEK

All figures refer to 2024.

Approximately

3,300

employees

4th

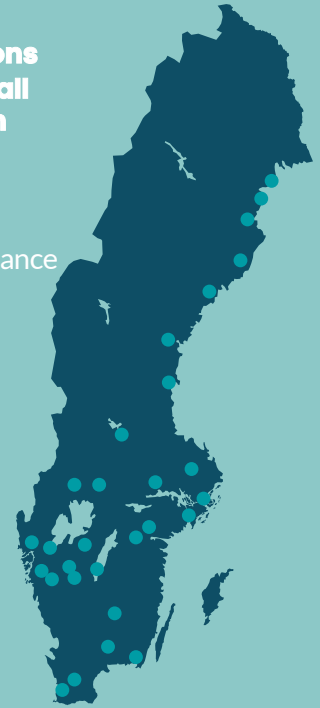
Largest institute in Europe after Fraunhofer, CEA, and TNO

130+

Test and demonstration facilities

Our operations are located all over Sweden

We also have operations in Norway and France



77 (2024)

Customer Satisfaction Index



We contribute to the transformation of critical sectors of society

- Energy supply and electrification
- Health and life science
- Industrial transition
- Urban transition
- Transformation through digitalisation and AI
- Total defence

Different ways to collaborate with RISE



Contract research

Our contract research provides you with the right expertise at the right stage and you have control over both lead times and results.



Participation in research projects

Gain new knowledge together with us and other partners. Projects are fully or partly funded by research funders.



Packaged services

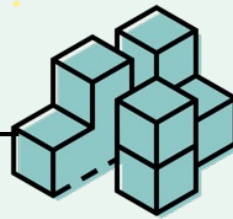
Take advantage of our wide range of pre-packaged services, including testing, certification, calibration and training.

From idea to innovation and all the way to the market



Explore and analyse

- Future analysis
- Research and specialisation
- Strategic roadmaps
- Policy development
- Education and training



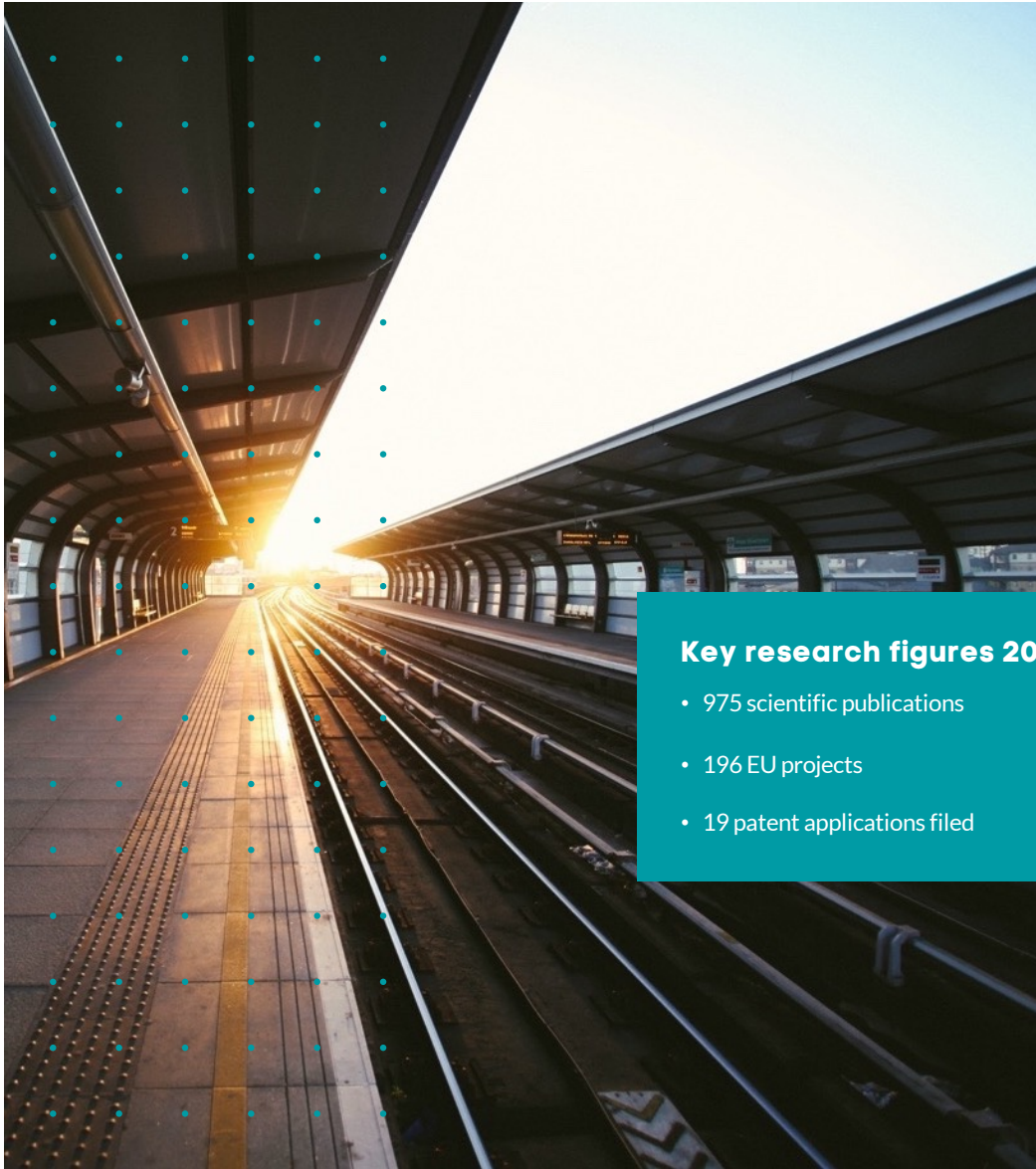
Develop and scale

- Research and development
- Problem-solving and expert support
- Test and demo
- Innovation management
- Education and training



Evaluate and verify

- Testing
- Certification
- Test and demo
- Calibration
- Education and training



Key research figures 2024

- 975 scientific publications
- 196 EU projects
- 19 patent applications filed

International competitiveness and relevance

According to its ownership directive, RISE must be internationally competitive to remain relevant for Swedish industry. We interpret this on several levels:

- Quality of our research (e.g., citation index)
- EU-funded research projects
- Direct assignments with international clients

RISE creates value for the space sector

RISE conducts research in a wide range of areas relevant to space activities and has 27 test and demonstration facilities that correspond to the testing needs of the space sector.

RISE Fiberlab - R&D and pilot production of specialty optical fiber	Testbed UAV Västervik - Drone Center Sweden	Model manufacturing	Cyber Range - test bed for cybersecurity	Sustainable composites - from idea to product	Climate simulation - product tests in extreme climate	Molecular analysis of materials and surfaces with imaging mass spectrometry	Surface Analysis and Surface Design	Infrastructure and Cloud datacenter test Environment (ICE)
Environmental testing of packaging and products	Printed electronics and hybrid electronics – Printed Electronics Arena	ProNano - Scale up your innovation with nano and GaN materials	Testbed: Materials testing in hydrogen environment	Additive manufacturing in various materials	New material compositions for extrusion	Stamping and forming center Olofström	Barrier materials - analysis, optimization, and development of barriers	Testbed for magnetic analysis, magnetic characterization and modelling
Hybrid joining testbed	Sustainable Composite Hydrogen Storage Tanks	Transparent materials	Paint center - surface treatment and painting in pilot and full scale	Research, development, and production of semiconductor components	Test & demo for sensors and sensor systems	Testbed for components and large structures	Testbed for Solar Energy Solutions	Testbed for volume and flow technology



Space projects at RISE

Swedish National Space Agency (Rymdstyrelsen)

- Digital Earth Sweden
- National Space Data Lab (in collaboration with Vinnova)
- BIOSPACE – Grassland Management for Biodiversity
- Precision in Grasslands and Pastures
- Organic Molecules on Mars

European Union Satellite Centre (SatCen) and the European Defence Agency (EDA)

- Feasibility study for an AI framework for image intelligence

European Space Agency (ESA)

- Cybersecurity and Space Segment
- RISE is directly contracted by ESA to coordinate and establish an ESA phi-lab focusing on AI and edge learning

Swedish Foundation for Strategic Research (SSF)

- SMART 6GSAT

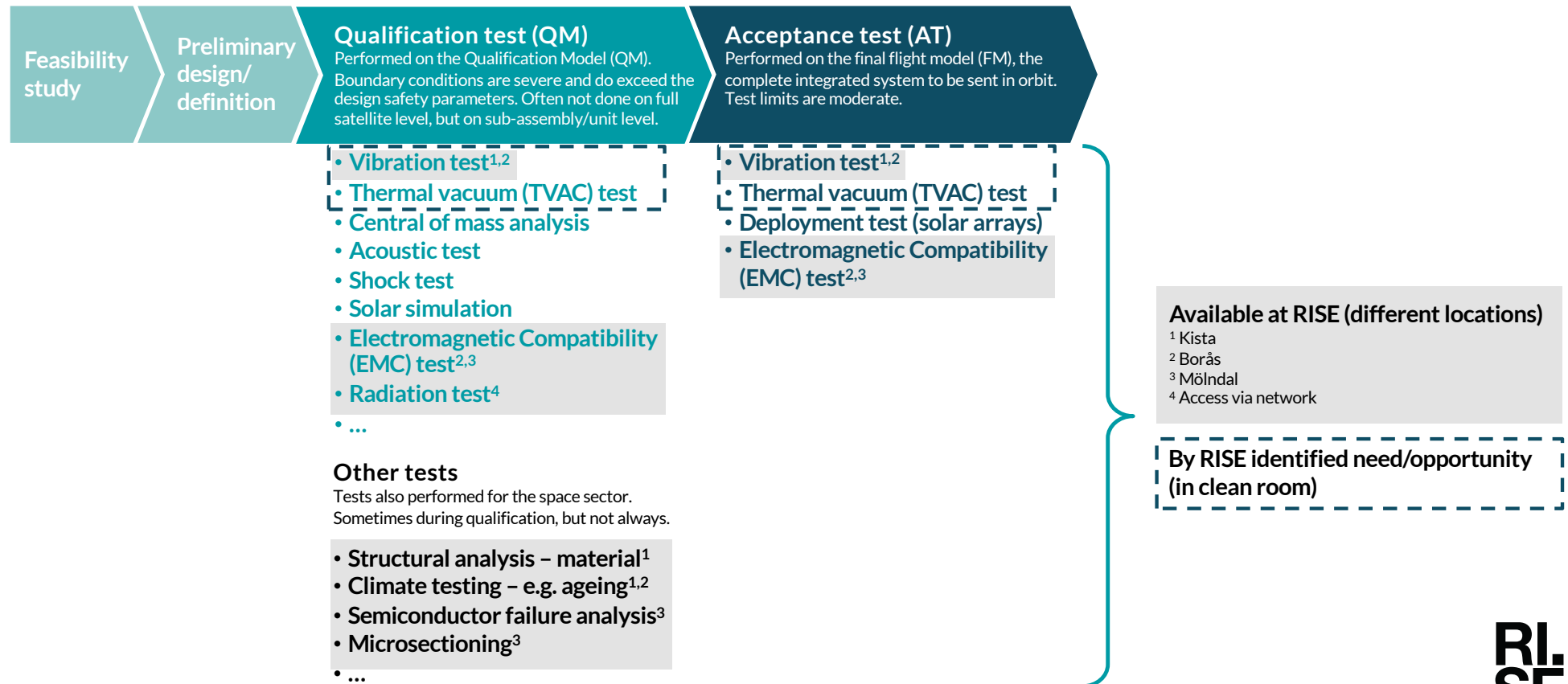
Eurostat (Statistical Office of the European Union)

- Urban green areas and crop residues

And direct assignments in materials development and hardware testing.



Test phases in satellite manufacturing and RISE testing facilities



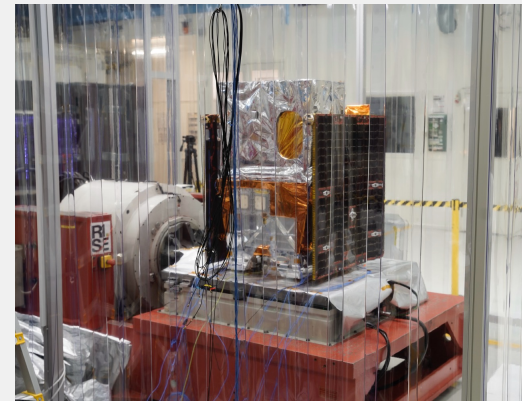
Vibration testing for the space sector

Examples from RISE Kista (Torshamnsgatan)

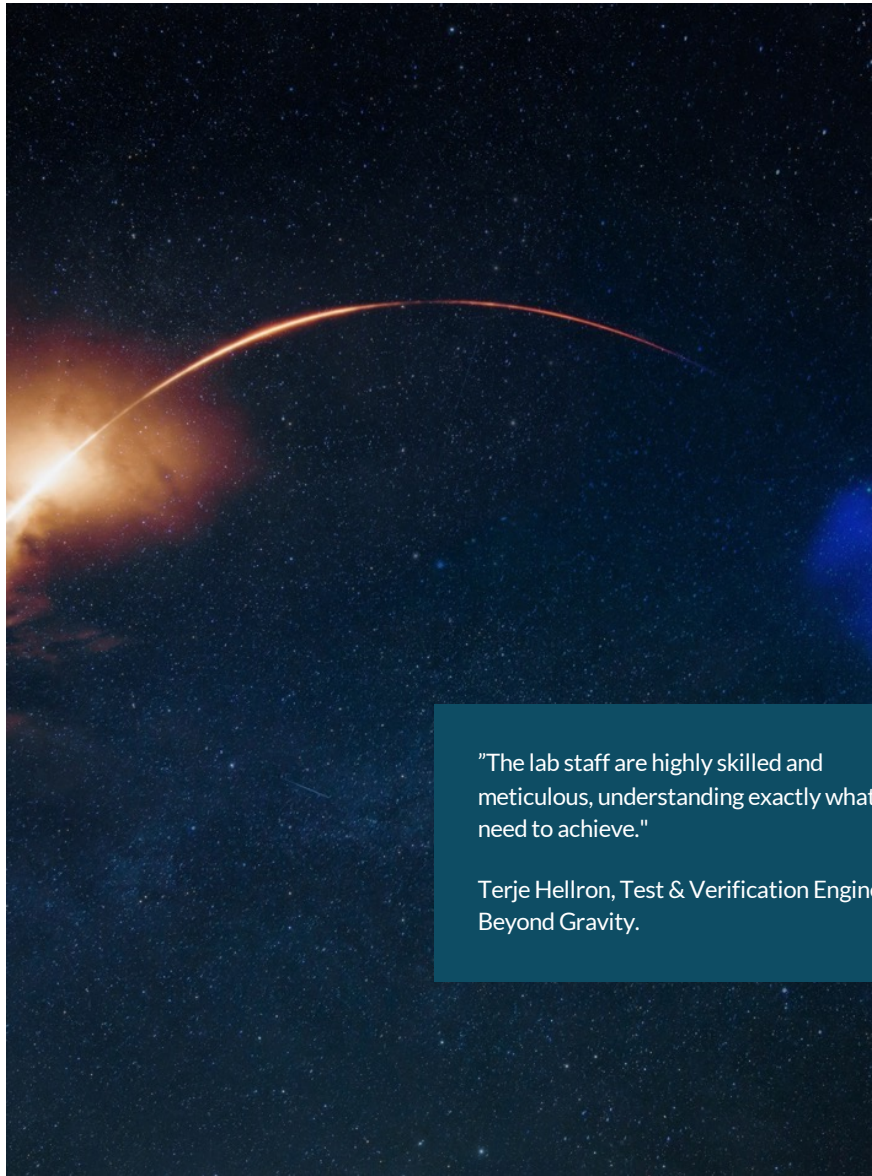
- Three electrodynamic shakers with slip plates
- Access to clean room tent (ISO 8)



Testing of a sounding rocket
(SSC Space)



Testing of a satellite (OHB)



"The lab staff are highly skilled and meticulous, understanding exactly what we need to achieve."

Terje Hellron, Test & Verification Engineer,
Beyond Gravity.

Customer case: Beyond Gravity

Tests on Earth for success in space

- Beyond Gravity ensures precise satellite positioning in orbit.
- RISE has conducted several years of testing to ensure that materials perform as expected in space, where extreme conditions such as cold, heat and vibrations prevail.
- With its various test chambers, RISE has supported Beyond Gravity with material testing – from small components to entire systems measuring 2-3 metres in diameter.

Phi-Lab Sweden

AI and Edge Learning for Space

ESA COMMERCIALISATION GATEWAY

SPACE FOR BUSINESS
BUSINESS FOR SPACE

Chiara Ceccobello
Project manager

April 28, 2025 - Gothenburg

ESA UNCLASSIFIED – For ESA Official Use Only



ESA phi-lab Sweden is antional collaboration project

- Joint calls with:

VINNOVA

- Collaboration on test infrastructure with:



Swedish Space
Corporation



INSTITUTET FÖR RYMFYSIK
Swedish Institute of Space Physics



- Initiated by:



Rymdstyrelsen
Swedish National Space Agency



RI.
SE

Empowering Space
by enabling disruptive
AI and Edge Learning
solutions

• **esa**

Phi-Lab
NET

Sweden

THEMATIC AREAS

1 CALL / YEAR

If all the budget is granted

AI

ACCELERATING AI FOR SPACE APPLICATIONS

EDGE LEARNING

INNOVATIVE CROSS-SECTOR EDGE LEARNING SOLUTIONS APPLIED TO THE SPACE DOMAIN

HARDWARE

OPTIMIZED HARDWARE FOR AI IN SPACE TECHNOLOGY

CLIMATE AND SUSTAINABILITY

STRIVE FOR SUSTAINABLE SPACE MARKET DEVELOPMENT

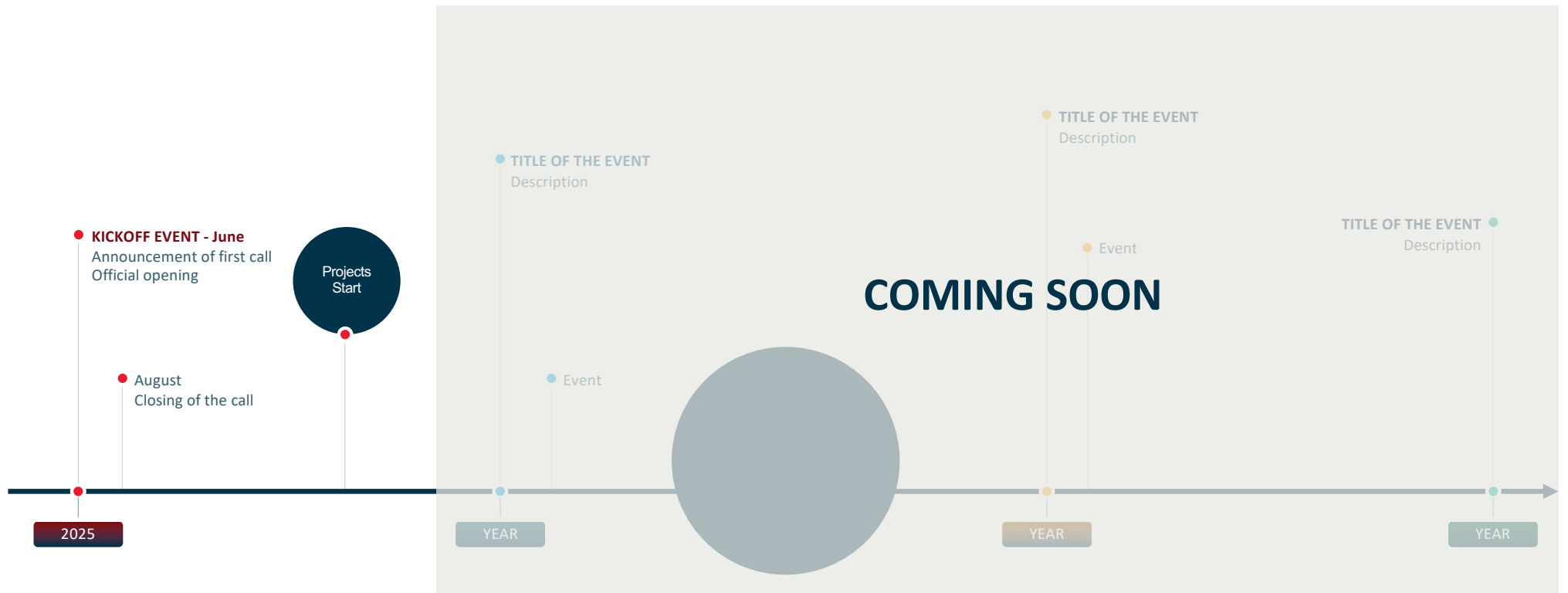
FIRST CALL

BUDGET

900.000 Euro

Up to 3 projects funded

Timeline



ESA UNCLASSIFIED – For ESA Official Use Only

16



→ THE EUROPEAN SPACE AGENCY

LeoDOS

A Distributed Operating System **for the Space Era**

Pioneering on-board satellite processing to revolutionize space-based computing. Moving computation to the edge of space.



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Digital Earth Sweden

In collaboration with



Rymdstyrelsen
Swedish National Space Agency



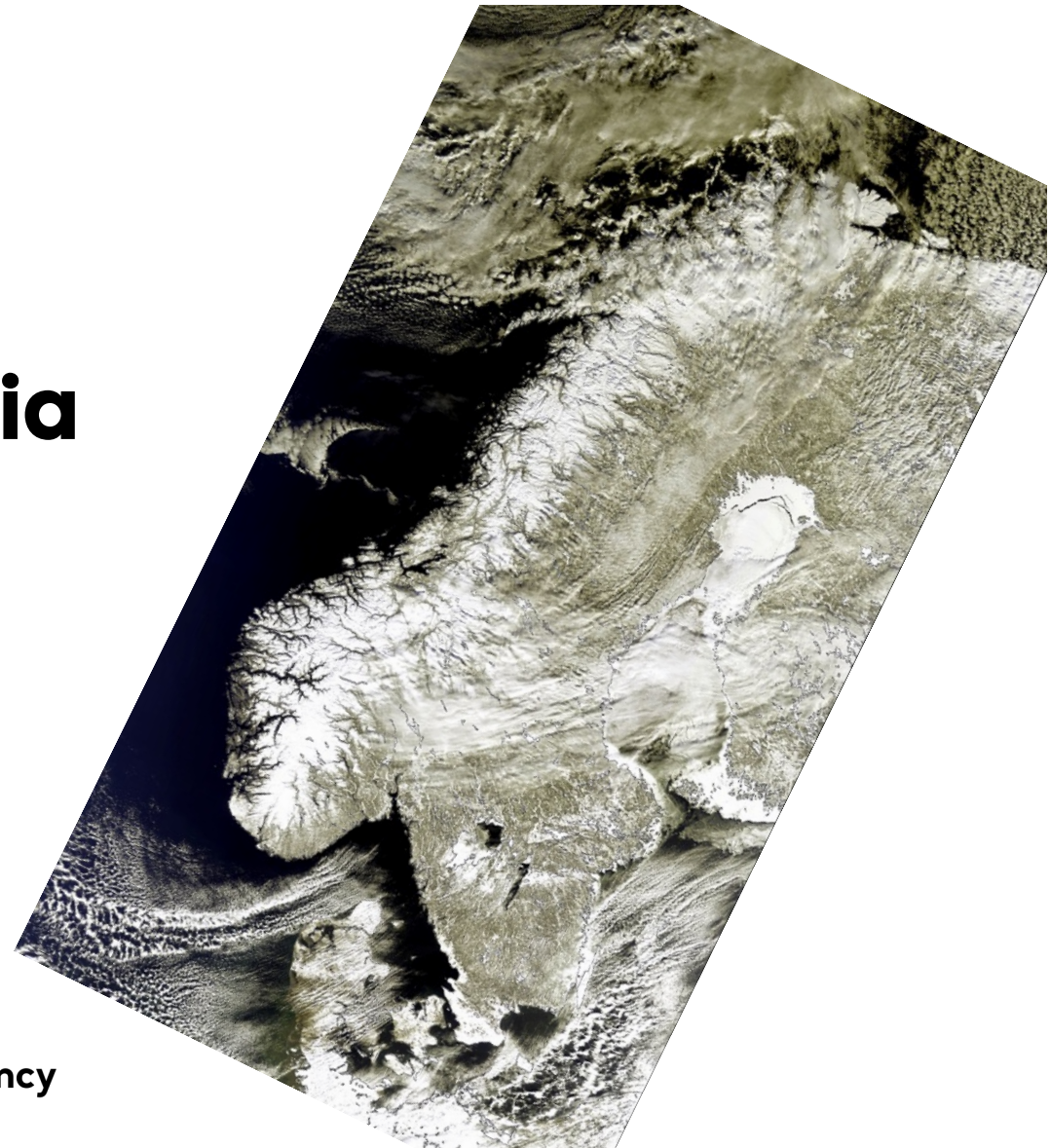
Focus on Scandinavia

- Storage ~500 terabyte of data
- Tools för analysis, processing and storage.
- Publicly accessible

A collaboration between



Rymdstyrelsen
Swedish National Space Agency



**Storage and processing
AI ready in
datcenter with
Nvidia H100 GPU:s
Tools for analysis
<https://github.com/DigitalEarthSweden/digital-earth-sweden-community>**

**Distribution
OGC-services,
openEO API**



```
In [5]: res=conn.load_collection(s2.s2_msi_l2a,
                             spatial_extent=s2.bbox.karlstad_mini_land,
                             temporal_extent=s2.timespans.one_image)
res=res.ndvi(nir="b08",red="b04").download(format="gtiff")
```

```
In [6]: show_result(res,is_ndvi=True)
```



Metadata (eo3)

Common fields

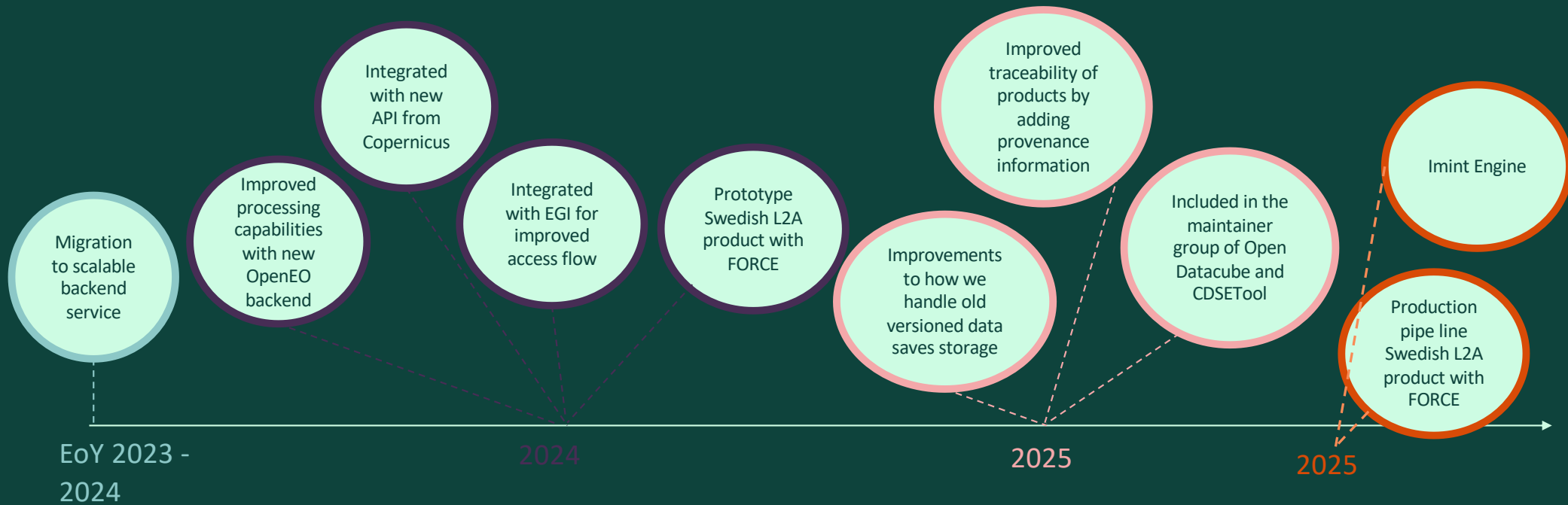
- creation_time :
- dataset_maturity :
- format geotiff
- instrument MSI
- product_family level2

JSON / GeoJSON

- Regions
- Footprint
- Timeline

**RL
SE**

Recent Developments



Together with:

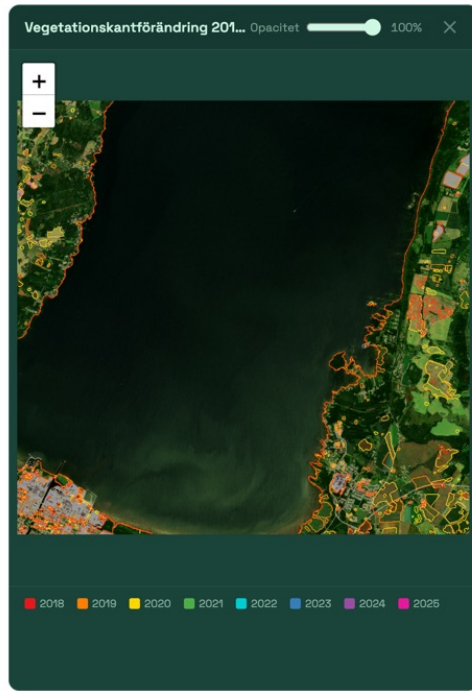
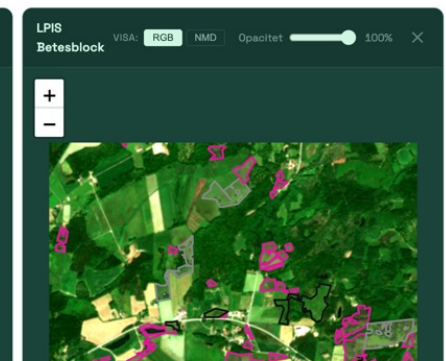
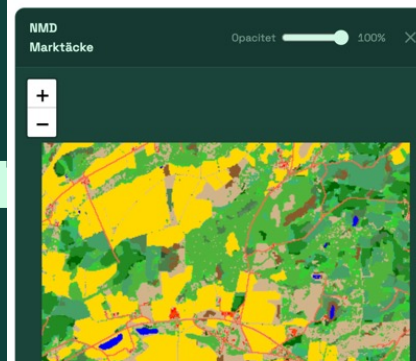
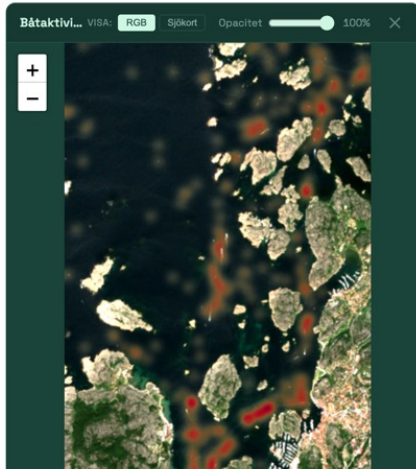
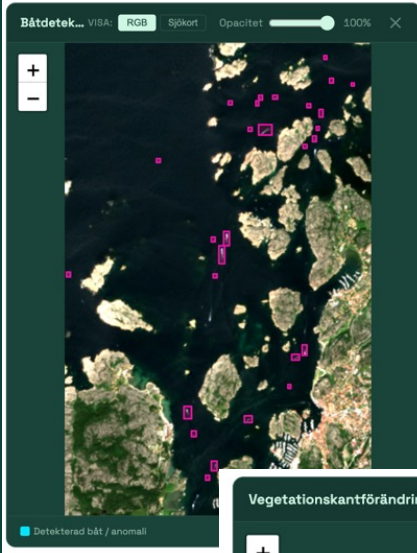
Myndighetssamverkan Copernicus:



Financed by:



int Engine



Inconsistent pixel values in sentinel data

*Sentinel-2 MSI L2A product from
Copernicus Data Space Ecosystem*



Visible
difference when
comparing
overlapping
pixel values
between granules

*Sentinel-2 MSI L2A product
produced with FORCE-E0*



Hard to spot
difference when
comparing pixel
values between
granules



Digital Earth
Sweden

Open-source contributions

- Part of maintainer group
 - Open Datacube
 - CDSETool
- Regular contributions to
 - GDAL
 - TerriaJS
- Sporadic contributions
 - protomaps-leaflet (Visualisation support)
 - Ruff (Coding support)
 - hierarchical-namespaces (Infrastructure support)
- And additional contributions to 30+ open-source packages



Links

Homepage: <https://digitalearth.se/>

View the images we download on a map: <https://maps.digitalearth.se/>

Code examples with OpenEO:

<https://github.com/DigitalEarthSweden/digital-earth-sweden-community/tree/main/tutorials>

Connect to our WMS: <https://ows.digitalearth.se/wms?>

Explore the archive: <https://explorer.digitalearth.se/products>

Summary

- We provide a reliable platform for earth observation workflows built on open-source software
- Domestic archive of analysis ready earth observation data
- A custom Sentinel-2 MSI L2A product for Swedish conditions
- Showcased how to use platform through demo and use-cases



Tack!