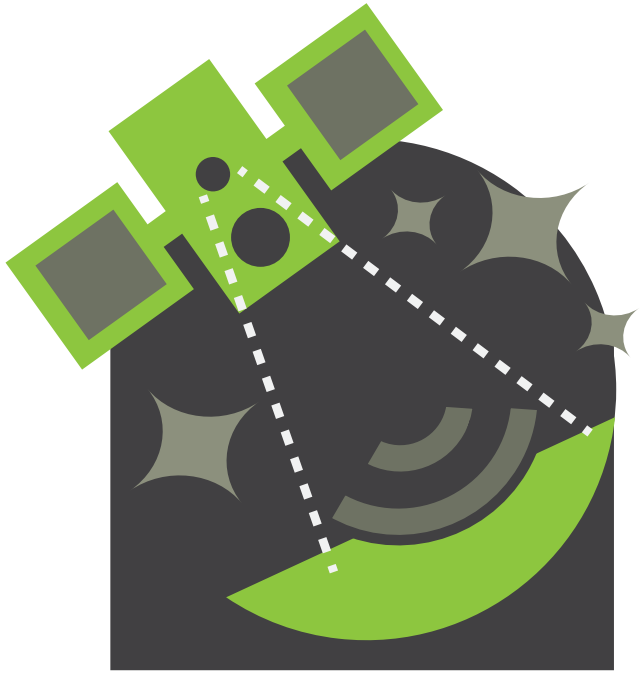
FarEarth for SmallSats

Short guide



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Overview

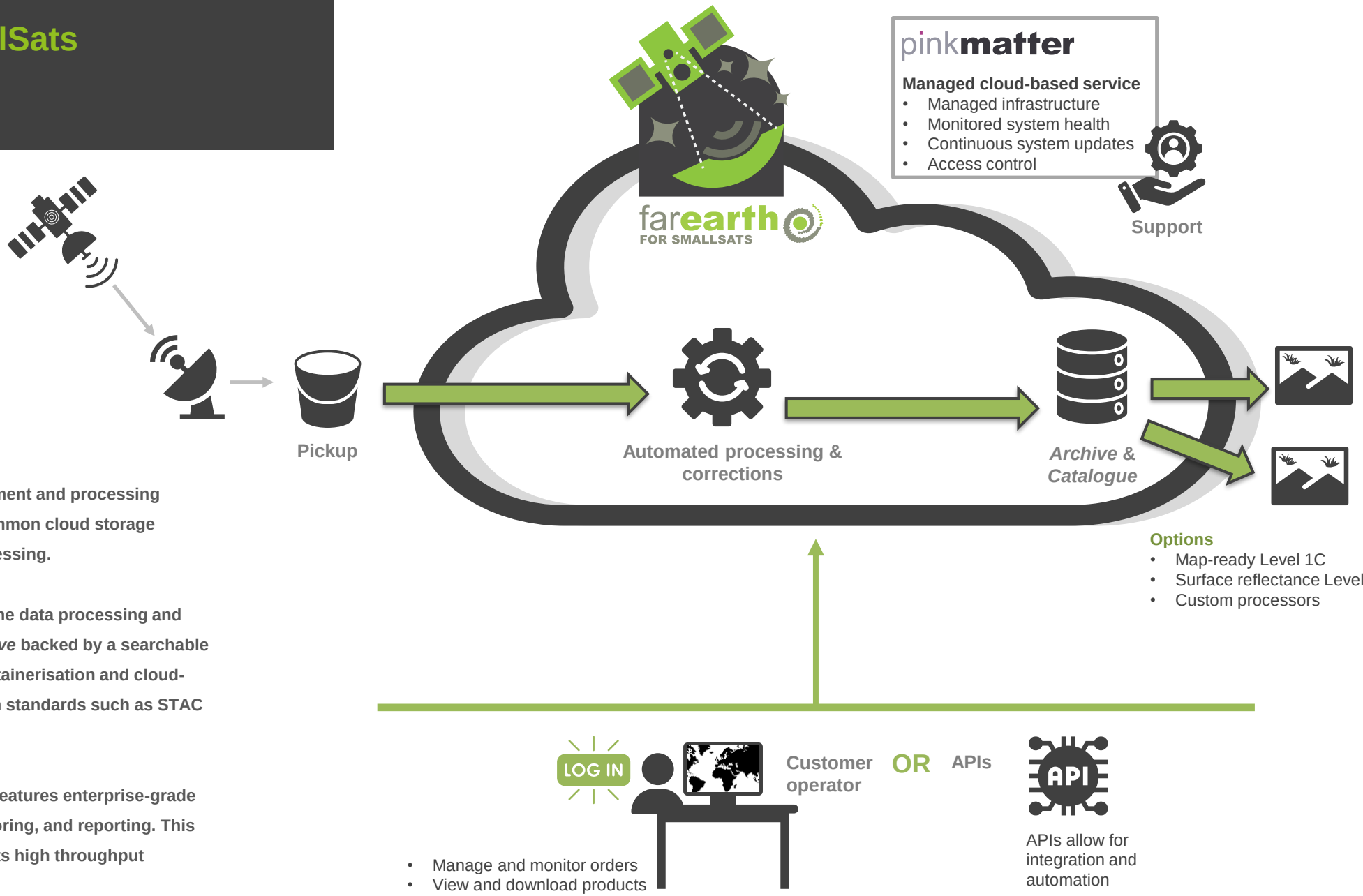
FarEarth for SmallSats is our image processing and data management software for NewSpace.

Our cloud-based system is the easiest way to calibrate new optical sensors and rapidly roll out processing for your constellation.

FarEarth creates high-quality image products that are accurate over time and across your satellites. Raw and processed products are securely stored in a searchable *Archive*. All at scale!

Concerned about…?

System



FarEarth **is a flexible data management and processing system. It consumes data from common cloud storage providers for automated bulk processing.**

Customisable workflows manage the data processing and outputs products to a robust *Archive* backed by a searchable *Catalogue*. It uses Kubernetes containerisation and cloud-based storage while targeting open standards such as STAC and OpenAPI.

Our fully managed cloud platform features enterprise-grade user management, security, monitoring, and reporting. This massively scalable system supports high throughput distributed processing.

Advantages

***FarEarth* is a managed cloud-based service, removing the need for your own hardware. In addition to image processing, *FarEarth* provides you with:**

- **Continuous sensor calibration**
- **Satellite performance monitoring**
- **Raw and processed data archiving**
- **Order progress tracking**

Quality & accuracy

- Continuous calibration
- Sub-pixel geolocation
- Traceability
- Quality report per product

Infrastructure

- Managed service
- Automated scaling
- We take care of the infrastructure

Security

- Access control
- Data silos
- Trusted cloud platform
- Industry-standard security

Compatibility

- Industry-standard packaging and tiling
- COG format
- STAC-compliant

Timeline

- Quickly onboard new and existing satellites
- Start using FarEarth anytime during your mission
- Process historical data
- Talk to us; the sooner, the better

Options

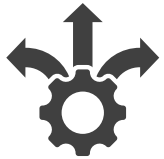
***FarEarth* supports multiple missions, various processors, and multiple sensors. The system is flexible and easily integrates into your acquisition and distribution systems.**

Any sensor

- Frame camera
- Push broom camera
- Multispectral payload
- Hyperspectral payload
- Thermal & sounder co-registration
- Many more…

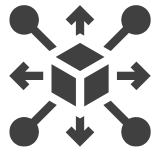
Any processor

- Includes standard pre-processors
- Pluggable custom processors
- Developing your own sensor? *FarEarth* can manage your data and scaling



Flexibility

- APIs
- Processing pipelines
- Configurable data management
- Connects to external STAC-Catalogs
- Connects to buckets, acquisition systems, ground segment as a service



Deployment options

- Managed cloud-based service, log in and get started
- Private cloud
- Self-hosted

Cost

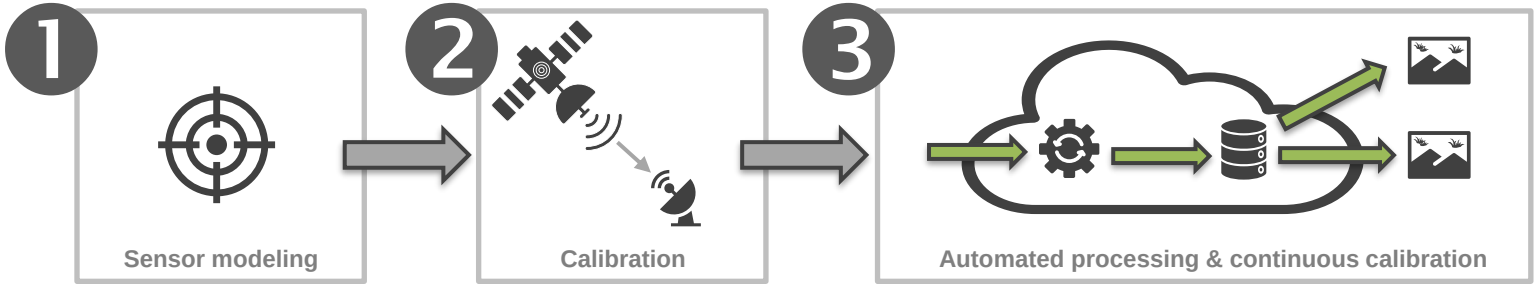
- Annual subscription
- Pathfinder option
- Enterprise option
- Ask about constellation options

What to expect

Already in orbit? Don't worry, you can still use *FarEarth*

Before you even launch your satellite, we will set you up for a successful mission.

We will work with your team to define the recommended configuration to match your requirements. Once you place your order, your *FarEarth for SmallSats* project starts.



Pre-launch

- ❑ We use your lab data to calculate the initial calibration parameters for your sensor

In-orbit commissioning

- ❑ Lift-off!
- ❑ We will validate your downlinked data
- ❑ Visualise NavAtt and ephemeris
- ❑ Your first calibration campaign!

Operational

- ❑ Your *FarEarth* system is now fully operational and ready to automatically process data at scale

1 What to expect
Pre-launch

Don’t have lab test data? Don’t worry, talk to us!

Before you launch, we use your lab data to calculate the initial calibration parameters for your sensor.

Note: If you miss this phase, no worries!

What we need from you

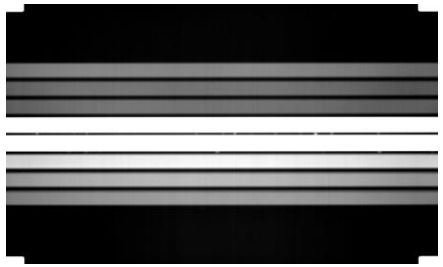
- ❑ Your sensor and data format specifications
- ❑ Lab test data

What we do

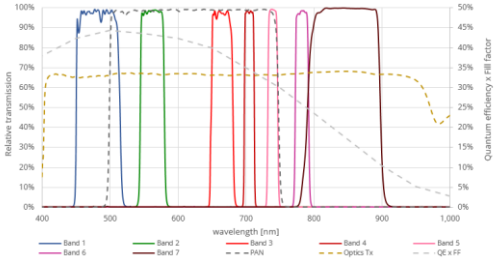
- ❑ Develop a raw data decoder and sensor model for your unique satellite

What you get

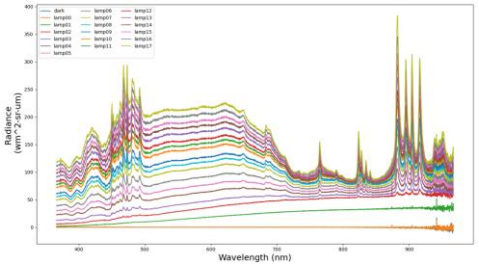
- ❑ Subscription login
- ❑ API documentation
- ❑ A pre-launch validation report



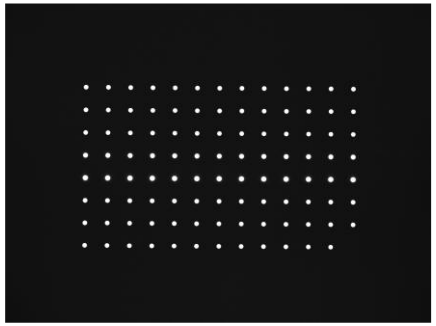
Flat-field correction



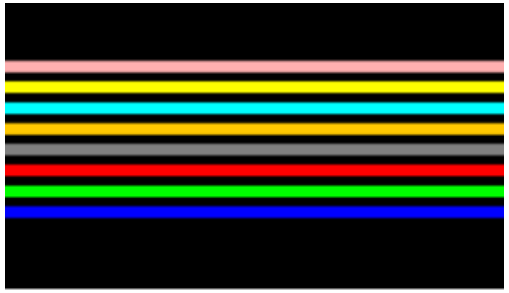
Spectral response functions



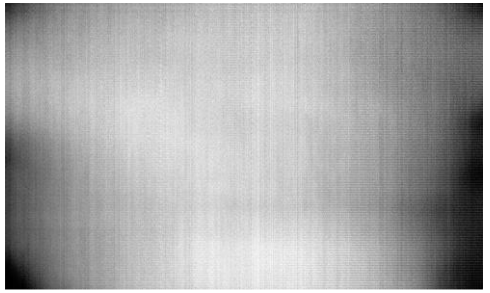
Integration sphere data



Lens distortion grids



Sensor layout



Dark view

2 What to expect
Commissioning

Acquire images

You will receive your 1st PR image

Lift-off!

Your initial images will be used to validate downlinked data. You are now ready to task images for your first calibration campaign.

What we need from you

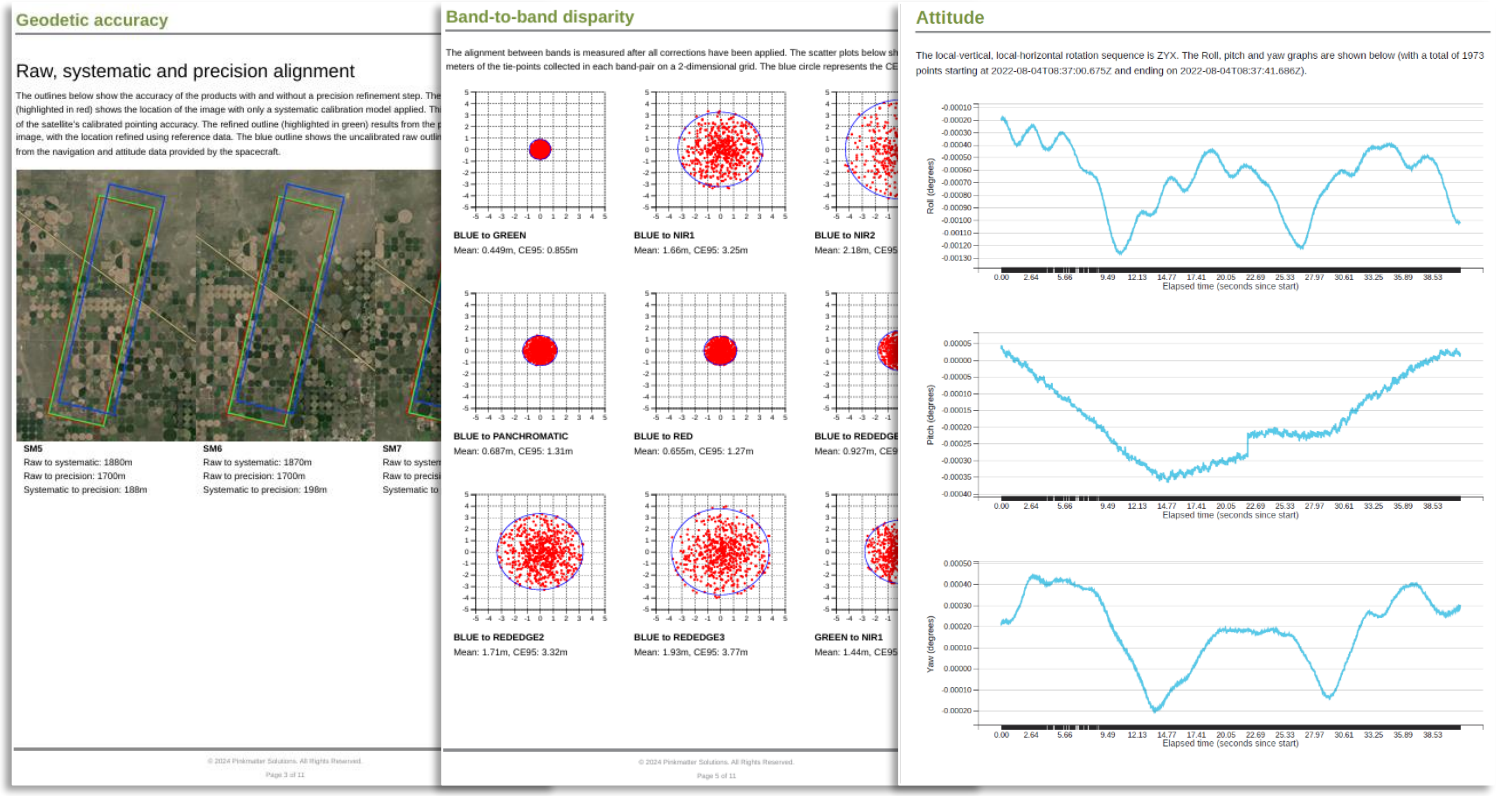
- ❑ Acquired images over calibration sites

What we do

- ❑ Verify your data formats
- ❑ Visualise ephemeris, navigation and attitude anomalies

What you get

- ❑ Your first PR image
- ❑ Access to satellite metric tracking information
- ❑ An in-orbit calibration report



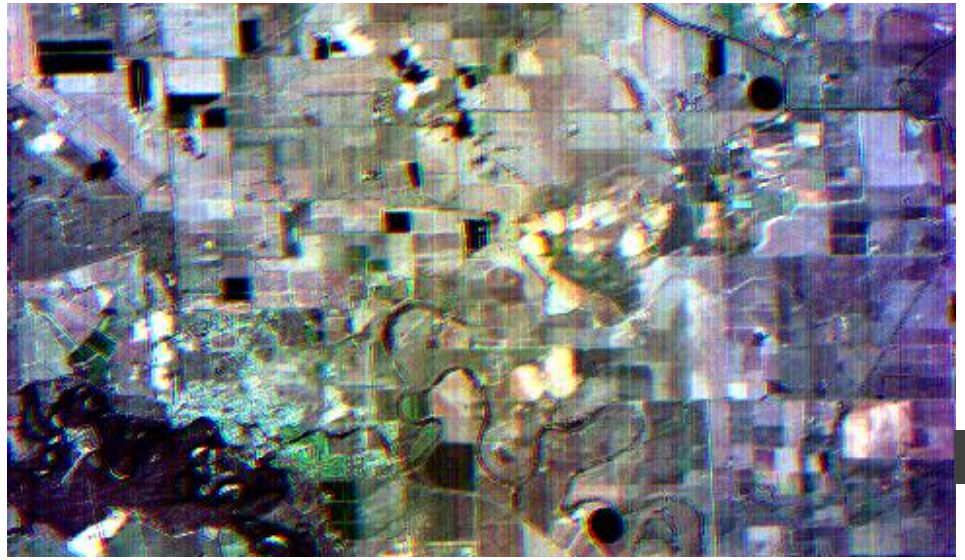
3 What to expect
Operational

Managed subscription Service.
All at scale!

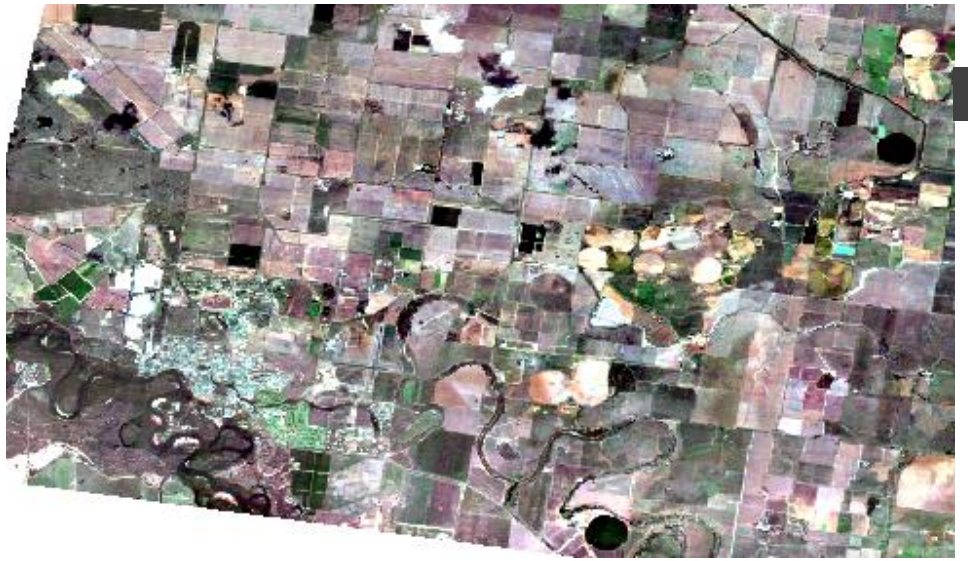
All systems go!

You are now fully NewSpace compliant!

Your *FarEarth* system is now fully operational and ready to automatically process your data at scale.



BEFORE



AFTER

Supplied information

- ❑ System administrator guide
- ❑ Operator training guides
- ❑ Support guide

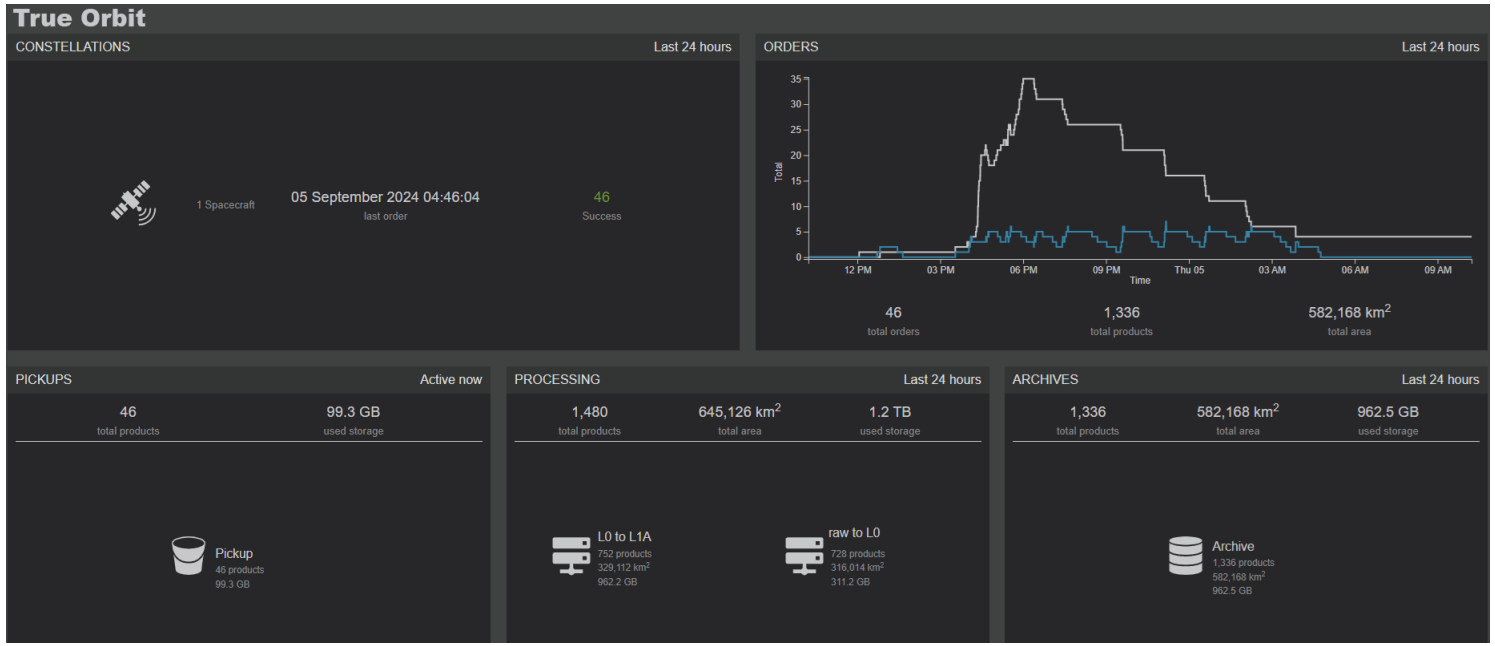
What we do

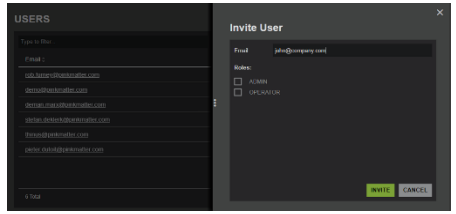
- ❑ Continuous re-calibration
- ❑ We take care of the infrastructure and system

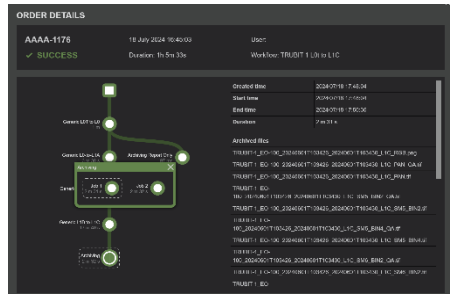
What you get

- ❑ Easy-to-use interface
- ❑ High-quality image products
- ❑ Standard metadata and quality metrics with each image product
- ❑ Raw and processed products that are securely stored in a searchable *Archive*
- ❑ Support via a ticketing system

What you get







Operational system

- ☑ Managed cloud service
- ☑ Automated volume processing
- ☑ Searchable *Catalogue*
- ☑ Configurable data management
- ☑ APIs to integrate with other systems
- ☑ Scalable for constellations
- ☑ Annual subscription

Industry standard products

- ☑ Product level of your choice
- ☑ Analysis-ready data
- ☑ Quality report per product
- ☑ Traceability
- ☑ STAC-compliant metadata
- ☑ COG format

Quality images

- ☑ Consistent high-quality scientific products comparable over time and across satellites
- ☑ Continuous sensor calibration

Typical geometric results

- ☑ Band-to-band alignment: sub-pixel
- ☑ Geodetic accuracy relative to Sentinel reference: sub-pixel

Typical radiometric results

- ☑ Absolute certainty relative to calibration sites: <5%
- ☑ Inter-band relative uncertainty: <5%
- ☑ Multitemporal relative uncertainty: <2%

Demo

TL;DR

If you feel this document was too long to read….
Contact us for a demo!
hello@pinkmatter.com