



**Temperature data
from space
for food security on
Earth.**



Boundary **conditions** for food security

90% increase
in prices for
basic crops
expected by
2030

30% decline in
agriculture
land between
1975 and 2050

10-20% yield
loss estimated
because of
regulations

2.5x crop area
for corn, rice,
wheat, and soy
required by
2050

Up to 46%
yield loss in
key 3 crops (at
2°C scenario)

85% of crops
consumed by
humans face
production
decline

An aerial photograph of a river valley. A large river flows through the center, surrounded by a city and agricultural fields. The landscape is a mix of green fields and brownish urban areas. The sky is a deep blue.

The two largest challenges of our time: water and carbon



Water, energy, and carbon cycles



Where?

How fast?

Biomass

The problem: Plant stress detection

Healthy

Stressed

Damaged

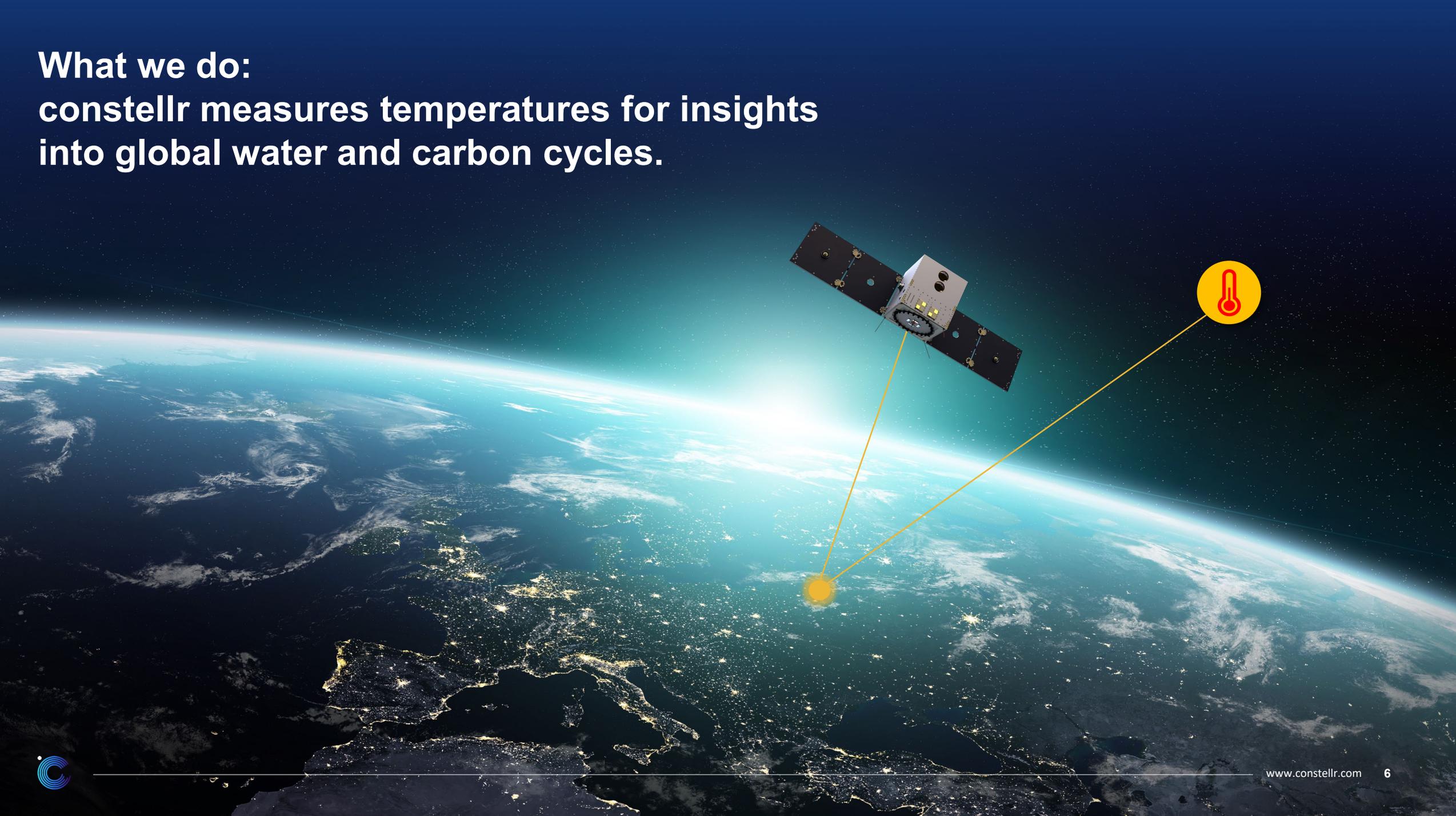
Dead



INFRARED



**What we do:
constellr measures temperatures for insights
into global water and carbon cycles.**



Our progress: from idea to space

Our Mission

Through temperature measurements, we support efficient water and carbon stewardship to improve food security.



business incubation centre



2024+

- Launch of new HiVE satellite constellation
- Commencement of full commercial service based on proprietary data

Scale commercial operations and constellation

today

- First satellite via ESA InCubed program
- Product MVP
- Copernicus Contributing Mission “emerging player”
- 80 employees, intl. expansion
- Backed by a prominent investor base across domains

Preparing for commercialization

2016-2022

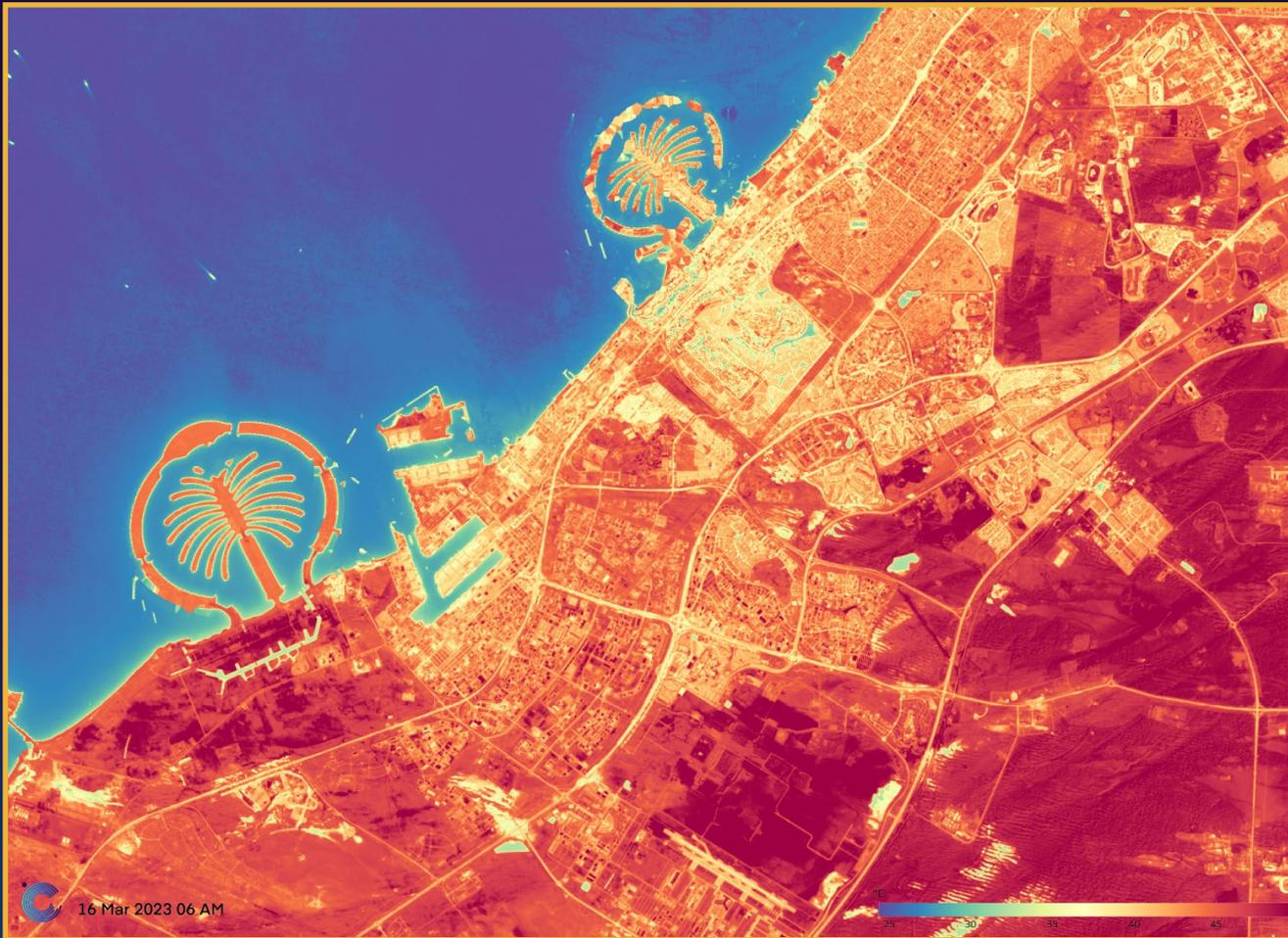
- Idea presented at Copernicus Masters
- R&D at Fraunhofer
- Incubated at ESA BIC
- Launch of LisR instrument to ISS

Proving the technology



constellr offers land surface temperature at unprecedented quality

constellr LST



- ✓ 30 m native resolution in thermal infrared
- ✓ 5 m native resolution in visual and near infrared
- ✓ Daily revisit time (4 sats)
- ✓ Global coverage (tasking)
- ✓ Target of 1.5 K absolute radiometric uncertainty
- ✓ Available from H2 2024

The benefits of the constellr solution

Scalability



Global coverage

Global agriculture (4.5 bn ha) requires global coverage.



Affordable pricing

Just a few € per hectare and year to enable benefits where most needed.

Actionability



Field-level

Requires resolution of at least 30 m for accurate intervention at field-level.



Timeliness

Same-day interventions to act before damage occurs.



High accuracy

No proxies but direct measurement for reliable crop & soil health assessment



Reliability

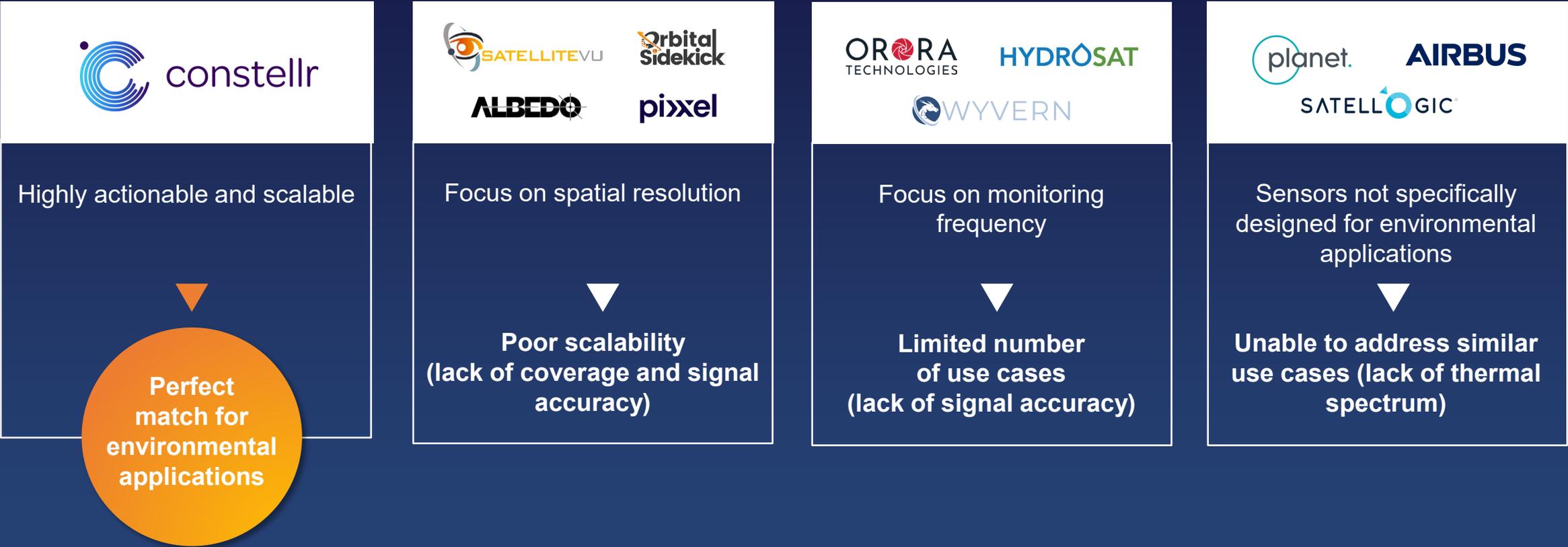
Datasets relevant for agriculture (i.e., thermal and hyperspectral data)

Optimized information for agriculture



The benefits of the constellr solution

A comparative market overview



Commercial momentum

Gaining ground in agriculture and government

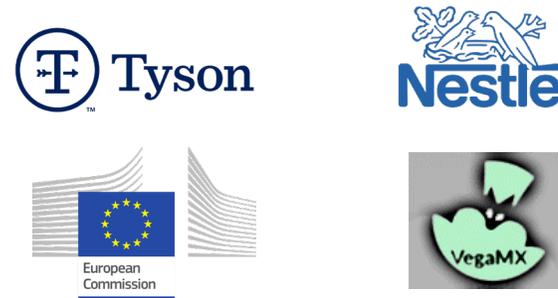
Legally binding purchase options

€ 45m



Contractually binding bookings

€ 8m



ARR signed in 12 months after launch

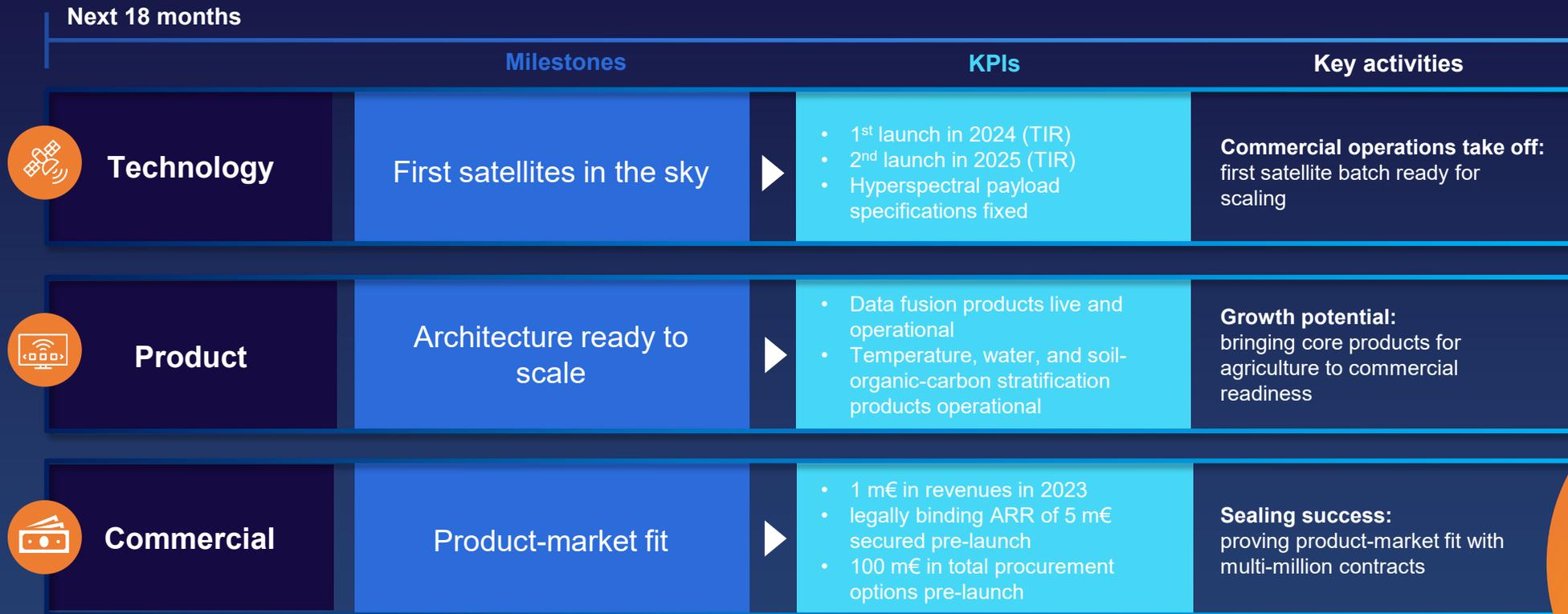
€ 3m



From farms to finance: easy scaling, expanding into ESG and insurance



The road ahead: 18-month plan for milestones & performance metrics



+ €6m
non-dilutive funding
to be closed by end of
2023

Strong network: support from Europe's influential stakeholders



The result



Water savings

60.1 bn t

Potential: 337 bn t



CO_{2eq} savings

14.4 Mt

Potential: 81 Mt



End-user benefit

€ 7.43 bn

Potential: € 42 bn

The facts

Problem

Food security is water security

Climate change is water change

Agriculture is early victim ... and solution

Solution

Thermal monitoring from space

First cameras to be installed in 2024 supported by InCubed

2023

2024

2025

2026

2027

2028

2029

2030



Take-home messages

**In three years from now,
water will be a bigger issue
than carbon is today.**

**Space technology will be key
to tackle this challenge.**

