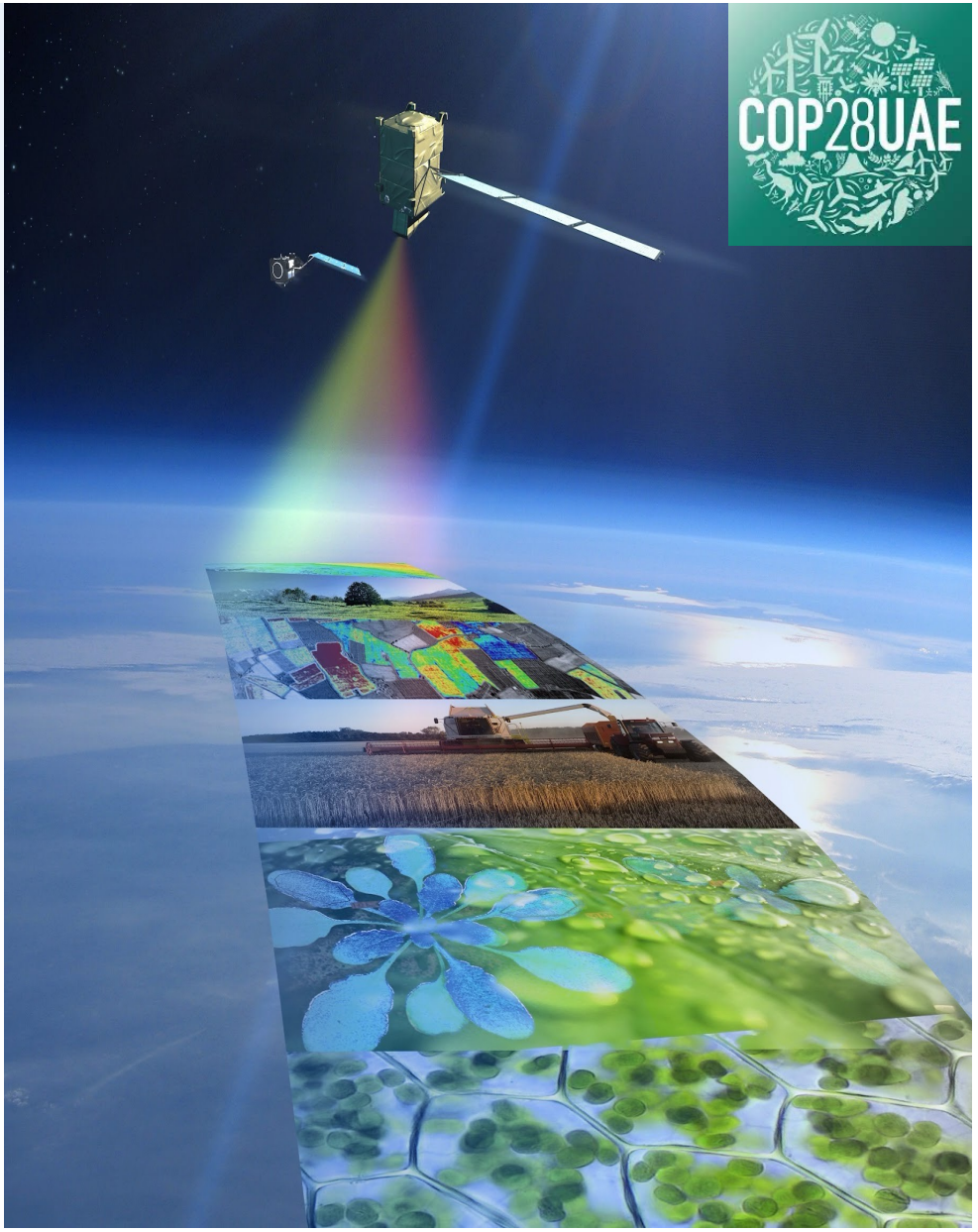
NEXTAV
Next Artificial View

Tunisian talents united



Continuous Oil and Gas facilities Monitoring with AI Super-Resolved Open Satellite Imagery for Cost-Effective Leak Detection

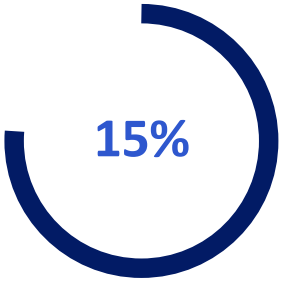
Empowering Global Change with Innovative Technology

Hichem Mokni, CEO NextAV
Dubai, December 3rd 2023

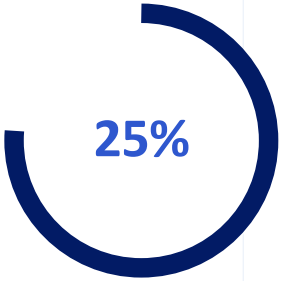
Problem

Understanding Methane Emissions

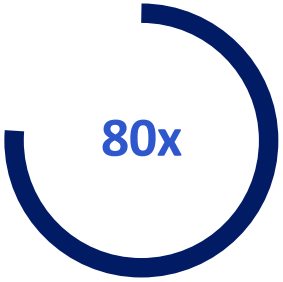
- Methane emissions from oil and gas operations in 2019: **82 million metric tons**.
- Nearly equal distribution between oil and gas sectors.
- Sources include production, processing, transmission, and distribution to end-use consumers.
- **Accidental leaks** (faulty seals, leaking valves…) and **Deliberate releases** (for safety reasons or due to design).



contribution to total energy sector GHG emissions



contribution to global warming since the Industrial Revolution



more heating impact than CO2 in the short term

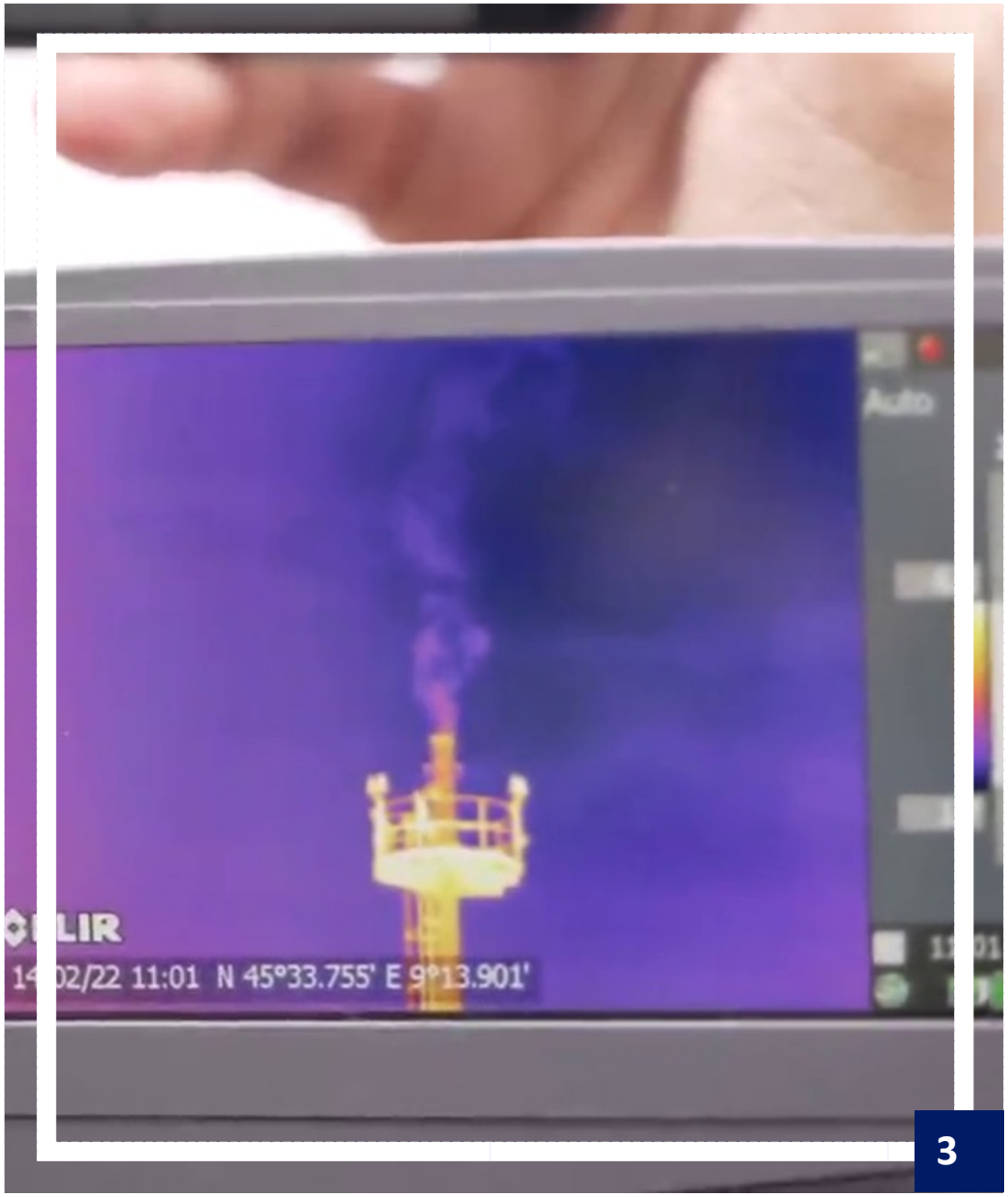
annual losses due to fugitive methane in USA

Problem

Invisible Enemy

Challenges in Detecting Methane Leaks

- **Invisible and odourless**
  making leaks difficult to detect using human senses.
- **Typical sensing camera may cost $100k**
  detection technologies are expensive and limited in their coverage, especially in large or remote areas.
- **70% uncertainty about emission reports**
  The lack of a comprehensive detection system means many leaks go unnoticed until they cause environmental damage.

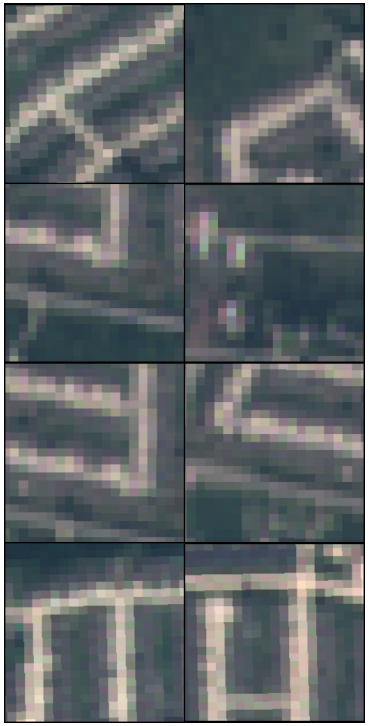


From space

Challenges with Satellite imagery

Open Satellite imagery

- Relatively low resolution
- GSD from 10m up to 100m
- 5 days revisit time



Commercial satellite imagery

- High Resolution
- GSD up to 15 cm
- Up to 6 revisit acquisitions per day

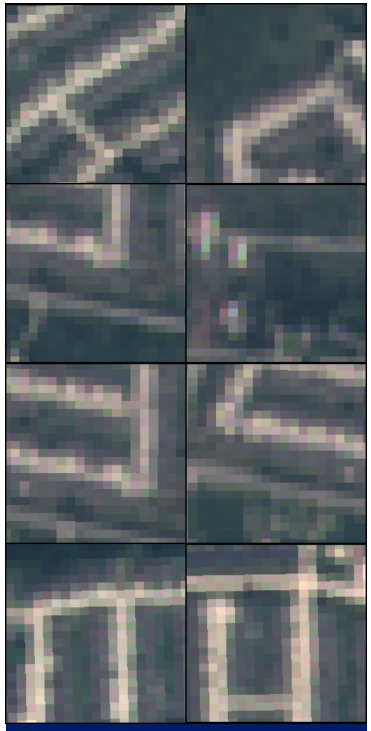
SkySat commercial satellite imagery:

- minimum tasking order: $15,000
- minimum archive order: $5,000
- Minimum size :25 sq km

SOLUTION

Super-resolved Satellite Imagery

Based on open available imagery



10 m GSD open Data

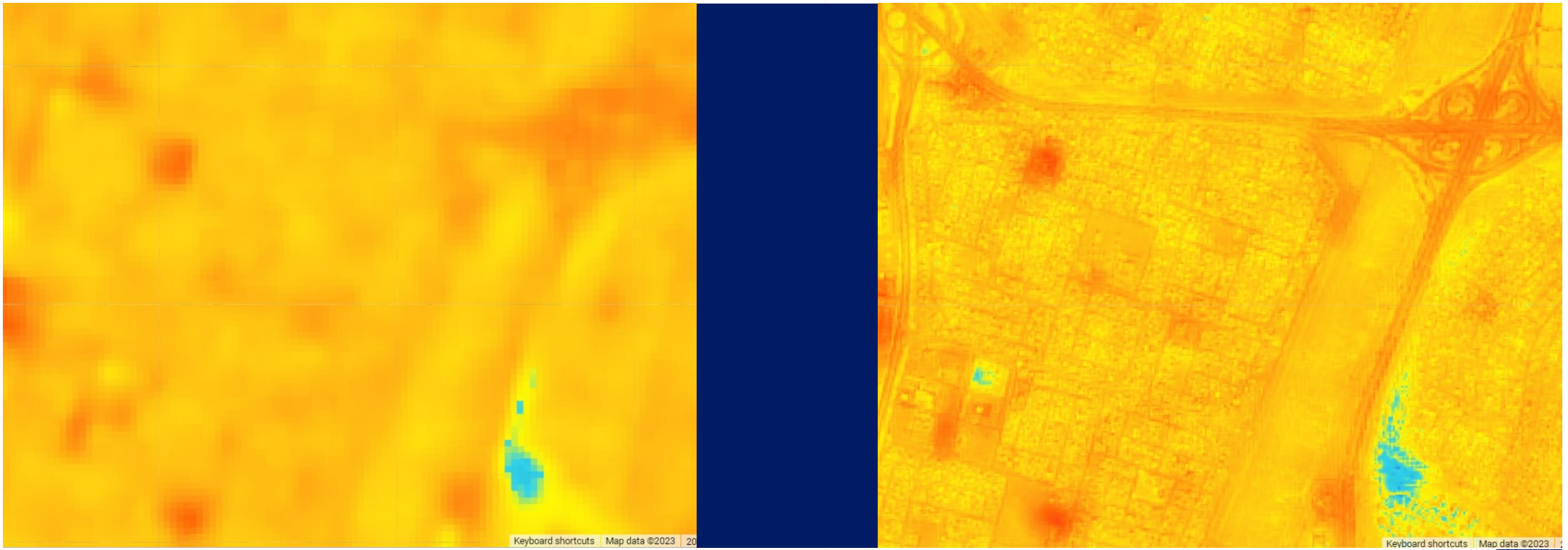
1 m GSD Commercial Data

Super-resolved open Data

Multispectral Satellite Imaging

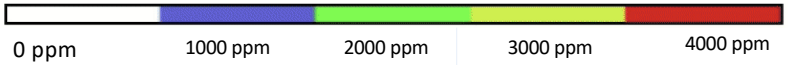
Super-resolved Thermal Imaging

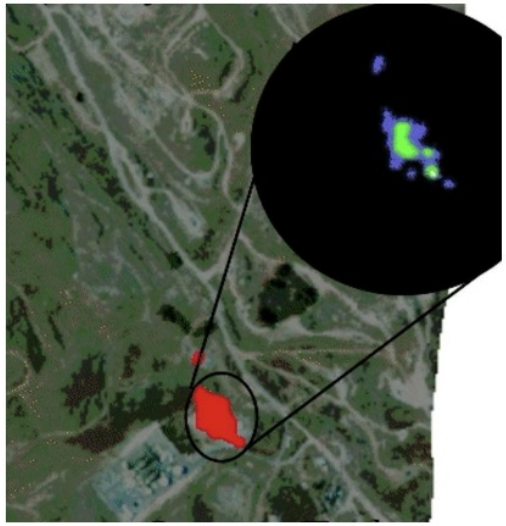
An example of super-resolution technique applied on Landsat 8/9 band 4/8



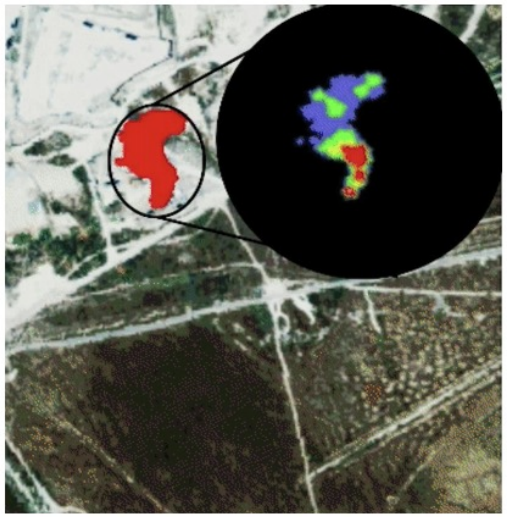
From Super-resolved Satellite Imaging

Methane leak detection



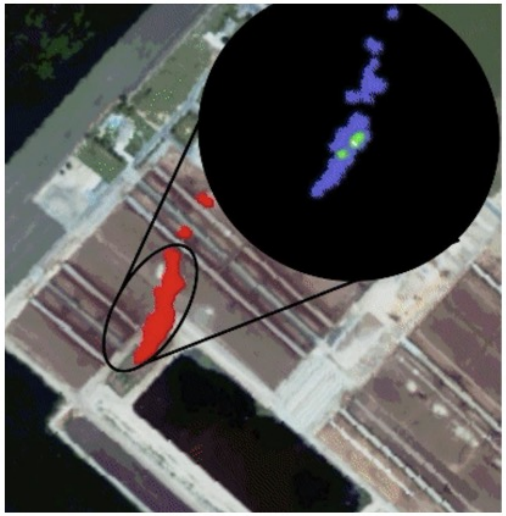


vegetation environment



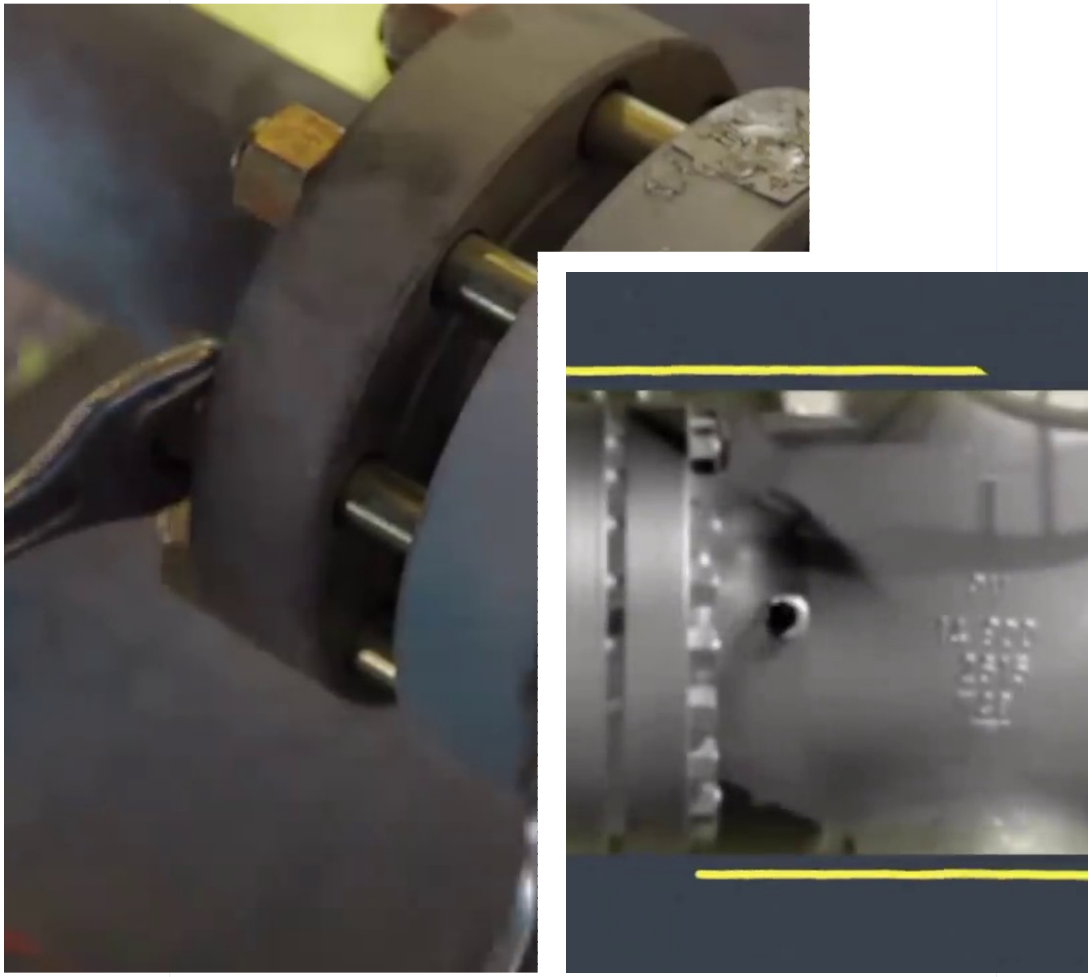
vegetation environment

concrete environment



High vegetation environment

Subscription Model : Bi-Weekly Satellite Scan Detecting Leaks, Geo Hazards, and Third-Party Interference



Big Impact

Some of the sources can be fixed easily

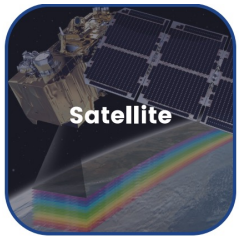
45% reduction in methane emissions within a decade can prevent a potential 0.3 degrees Celsius increase in global warming

Building on the momentum from COP26, countries are implementing new policies and initiatives to reduce methane emissions across various sectors.

Vision

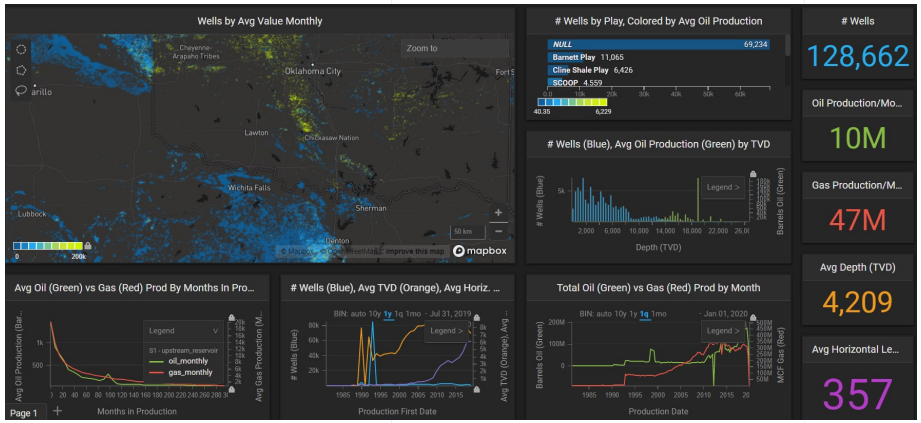
Multiple Data Sources

GPU accelerated Data Processing for real time Insights



Digital Twin

AI processing

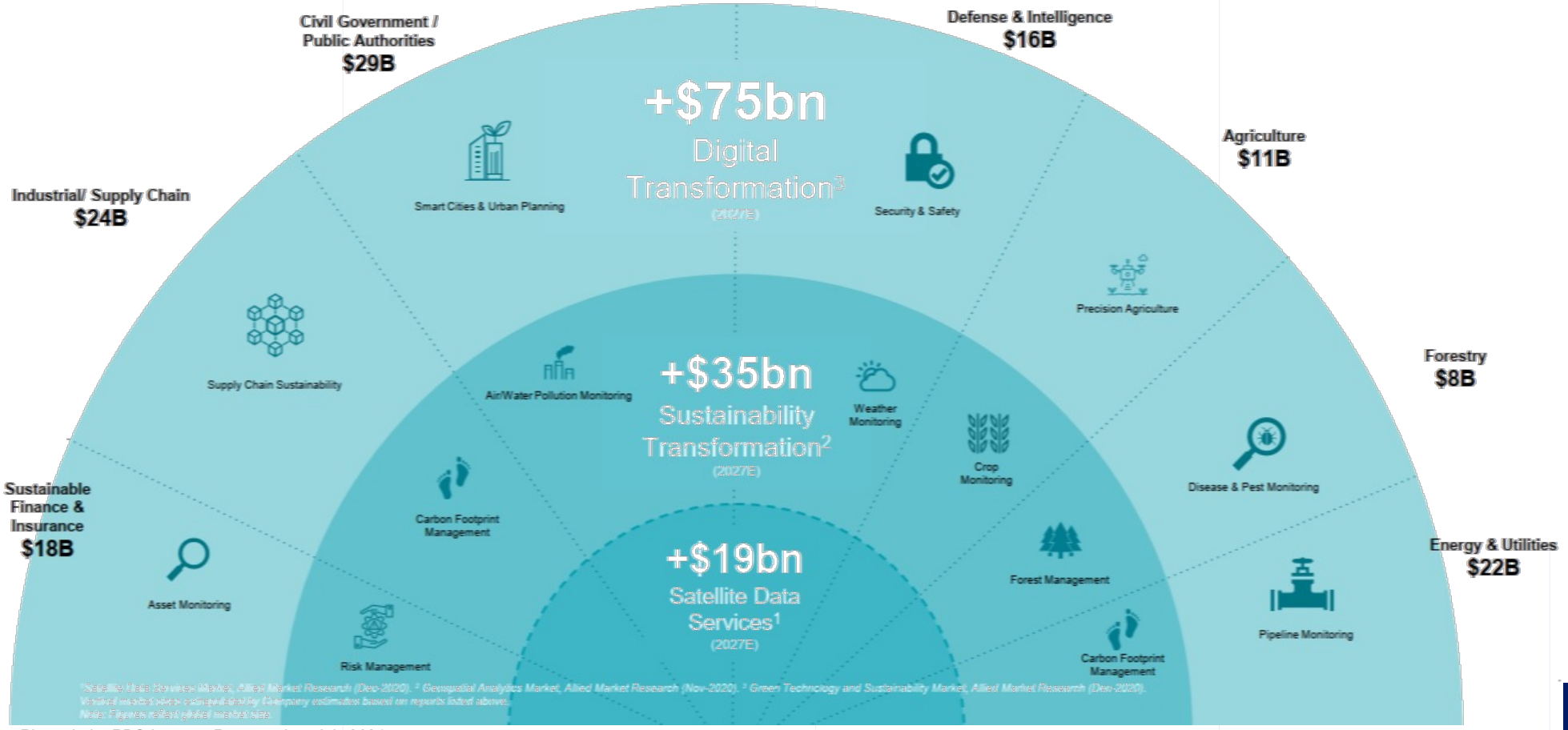


Interactive Dashboard

Up to millions of data samples per second

Forecast for 2027

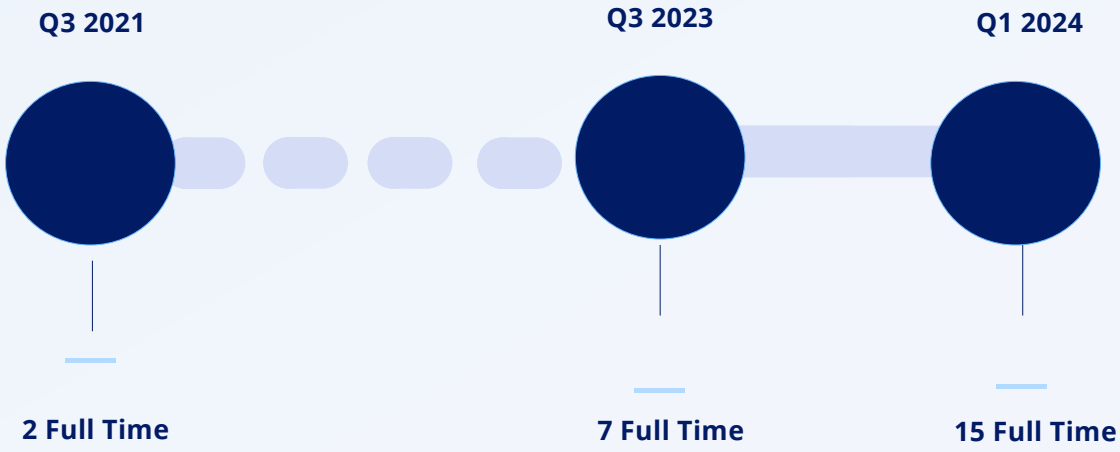
Market within a Global Economic Shift

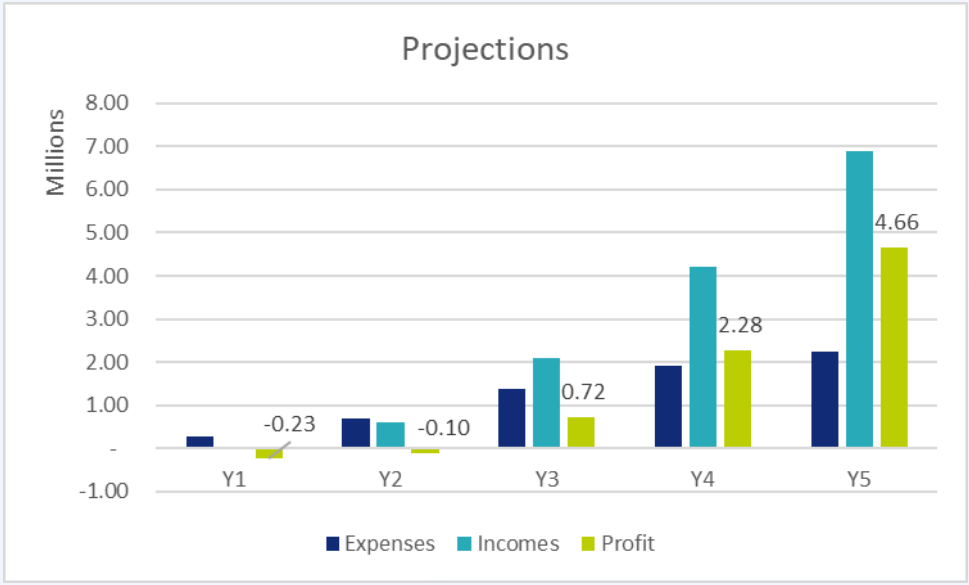


Planet Labs PBC Investor Presentation, July 2021

Market penetration

Roadmap





1 Customer
$5K MRR

3 Customers
$15K MRR

TEAM

People Behind

Hichem Mokni, CEO

8 years experience at Fraunhofer FKIE Germany, Aerial Vision Team

3 years R&D director at AVIONAV

Bilel Khlaifia, CTO

Data Science and AI instructor

GitHub Campus Advisor

Official Nvidia Jetson Mentor

Amine Hakouna, Senior Cloud Architect

Cloud architecture Expert

References:

La Poste, Saint-Gobain, GRT Gas

,

Technical Sales

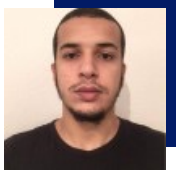
Sondes Bousnina

Machine Learning Engineers Team

Rym Oualha

Souha Mourou

Aymen Mootamri



Nour Soltani

Partnership and corporations

Microsoft for Startups

NVIDIA INCEPTION PROGRAM

aws partner network

Réseau Entreprendre TUNISIE

tact Tunisian Association for Communication & Technology

AI FACTORY

Changing the Way, We make Decisions

NEXTAV

Next Artificial View

Email Address
contact@nextav.ai

Phone Number
+ (216) 27 792 406

Address
PERSAVIA, Novation City
Technopole 4023 Sousse, Tunisia