



Satellite Applications

# Earth Observation & AI at Satellite Applications Catapult



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We work with  
**Innovate UK**

**CATAPULT**



# **Our Mission**

**// To innovate for a better world, empowered by satellites.**

## SATELLITE APPLICATIONS CATAPULT

# Who are **we**



We are a not-for-profit innovation and technology company transforming the way the world uses satellite technology and data.



### WE ARE INDEPENDENT.

We bring together industry, researchers, end-users and government to explore and develop new ideas.



### WE ARE GOVERNMENT BACKED.

We are partly-funded by the Government and work closely with Innovate UK, UK Space Agency, UK Science & Innovation Network, and other public bodies.



### WE HELP ORGANISATIONS GROW THEIR BUSINESS.

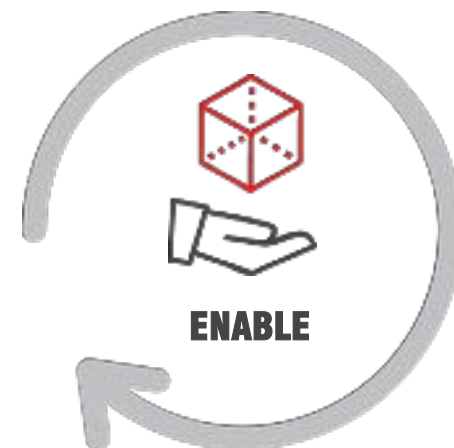
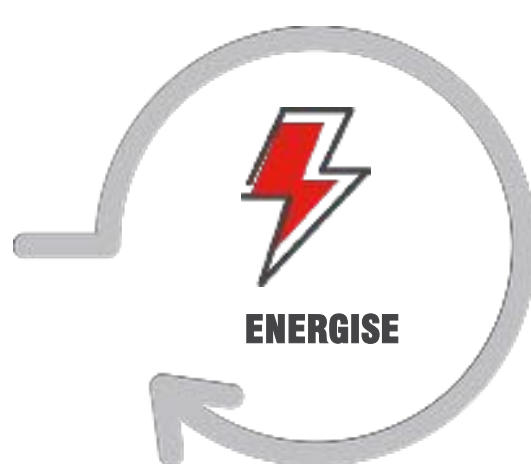
We help organisations to use satellite applications to grow their business in the UK and internationally.

## OUR APPROACH

# We do 3 things

## Across Global Markets

## Across key Technologies



**INTELLIGENT  
TRANSPORT**



**BLUE  
ECONOMY**



**SUSTAINABLE  
LIVING**



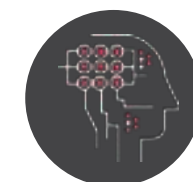
**GOVERNMENT  
SERVICES**



**SMALLSAT  
CONSTELLATIONS**



**MOBILE  
COMMUNICATIONS**



**AUTONOMOUS  
SYSTEMS**

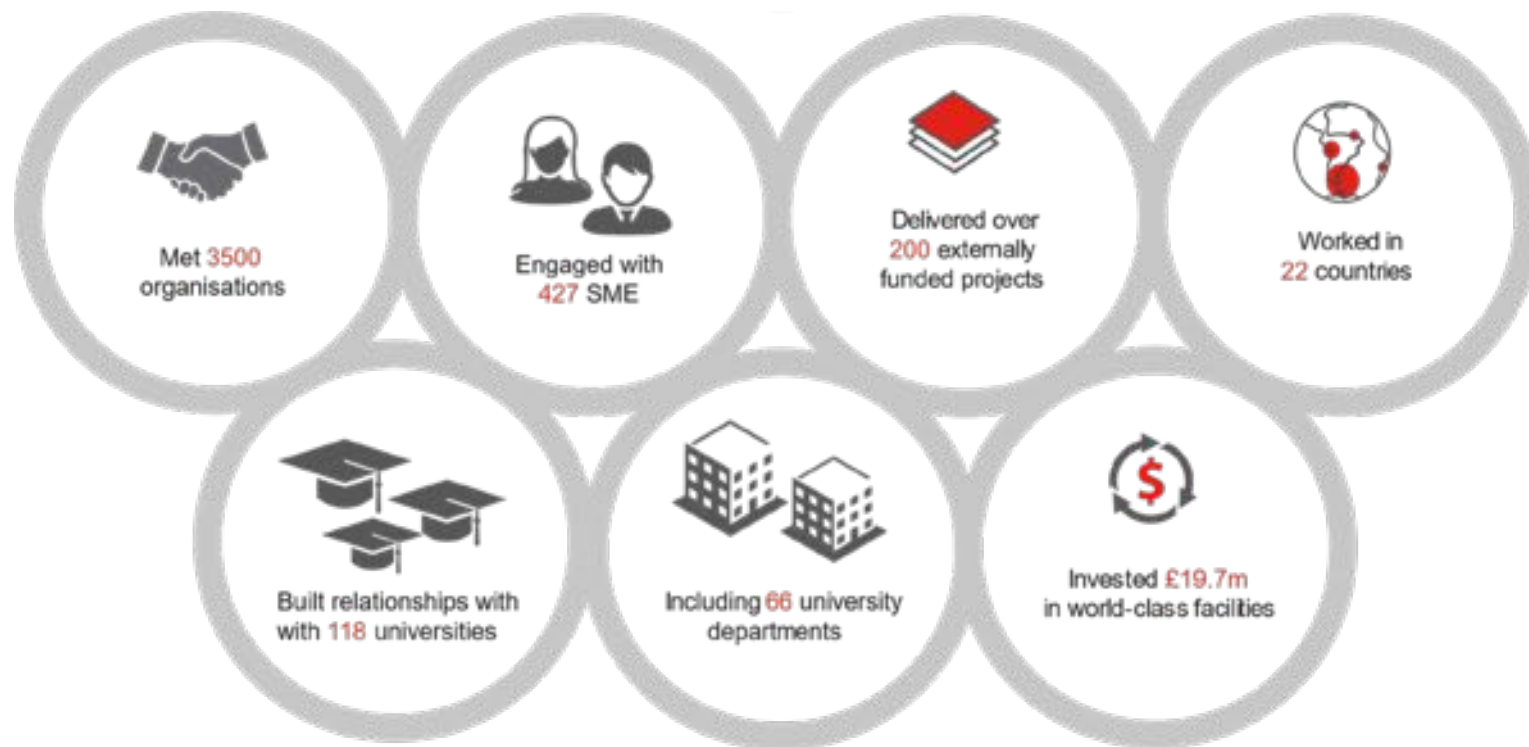


**GEOSPATIAL  
SYSTEMS**

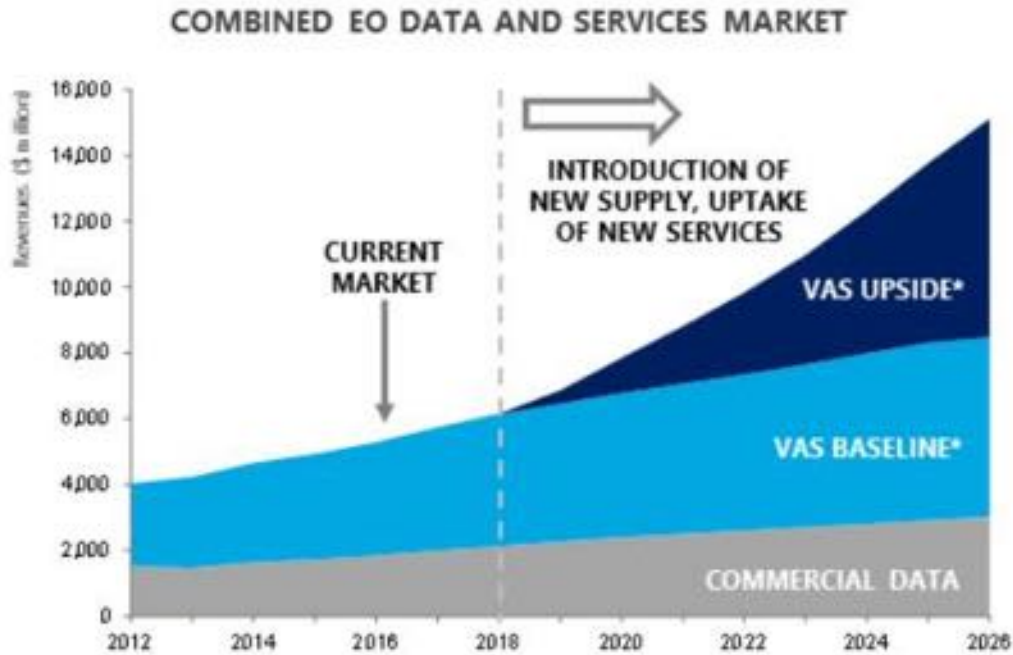
WE WERE SET-UP

**5** YEARS AGO

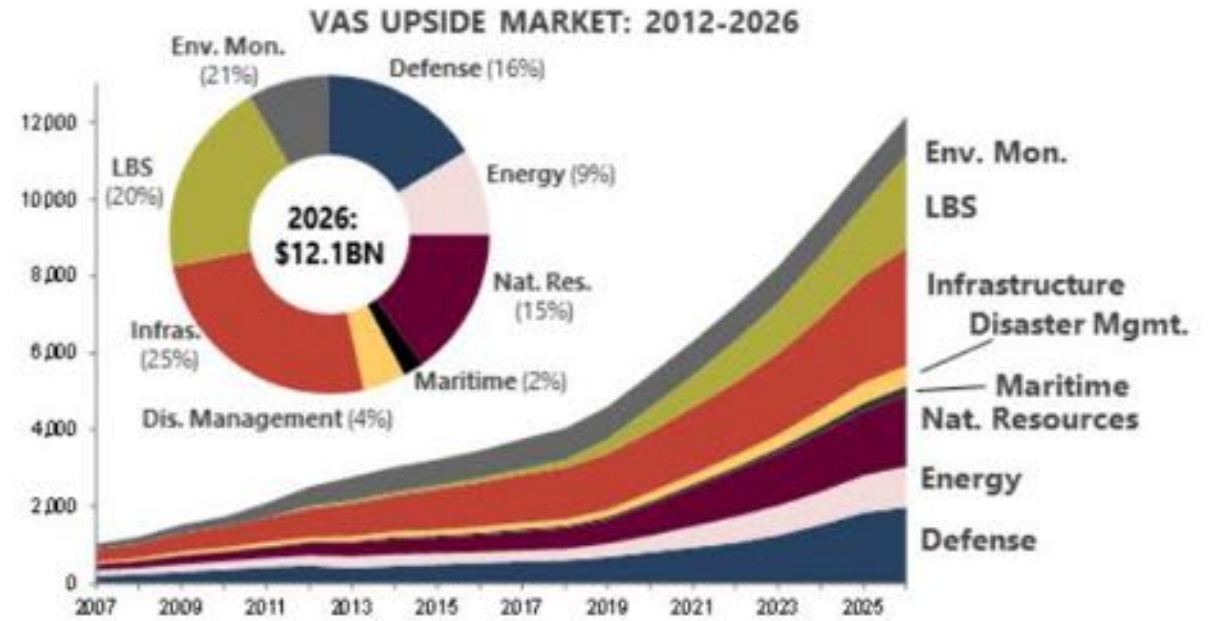
# Our impact



# WHAT SIZE IS THE MARKET?



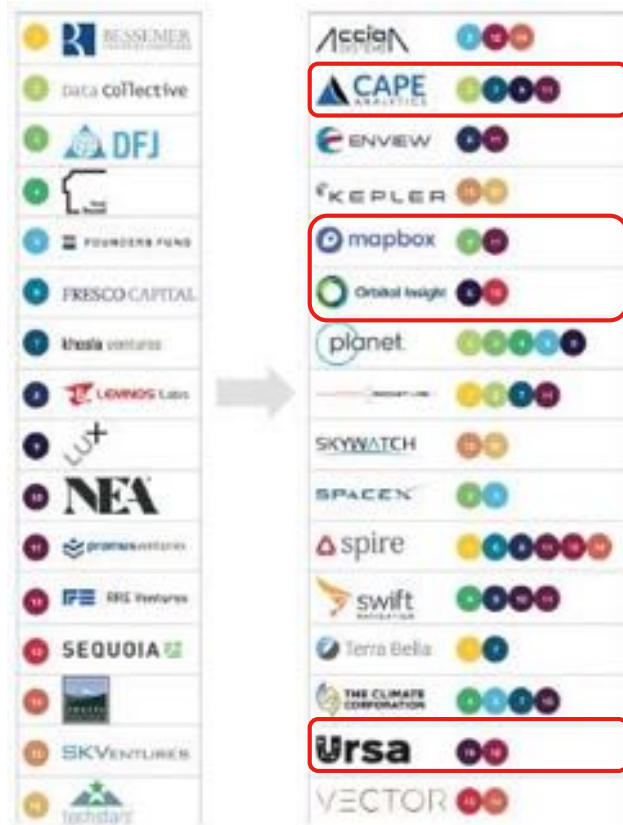
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**15 \$Bn** p.a. market by 2025

## WHO IS PLACING BETS? HOW MUCH?

### Major VC Investments in Space (since 2000)



**18 \$Bn** Total financing

**6.5\$Bn** Venture Capital

**60%** last 3 years

# Industry Challenges



Flood of **Data**



**Labour** intensive  
Processes

Opportunity: “To **accelerate** the **transformation** of the Earth Observation industry through the **adoption** of **Artificial Intelligence** technologies.”



## CATAPULT'S PROGRAMME OF WORK – AI FOR EO

# 4 Key Activities



### RAISE AWARENESS

Conferences  
Competitions  
Case-studies

### BUILD ECOSYSTEM

User challenges  
AI capabilities  
EO capabilities

### SHARE TOOLSET

Platforms  
Open-source  
Data sources

### TRIGGER FUNDING

Commercial R&D  
Public grants  
Start-ups funding

Key blocker  
**Training Data**

# MARKET-LED USE-CASES

## Challenges relevant to AI



**AgriTech**

Growth Disease, Logistics, Intelligence/ Compliance

**BlueEconomy**

Coastal Monitoring, Smart Ports, Maritime Domains.

**Extractive Ind.**

Tailing Dams, Environmental impact, Illegal mining

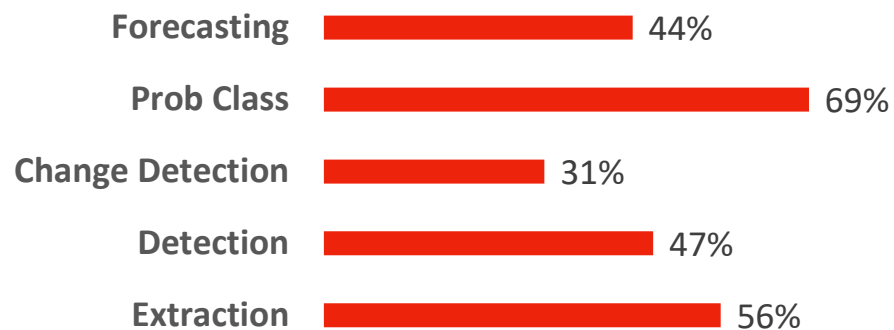
**Intel. Transp.**

Autonomous vehicles, Traffic management

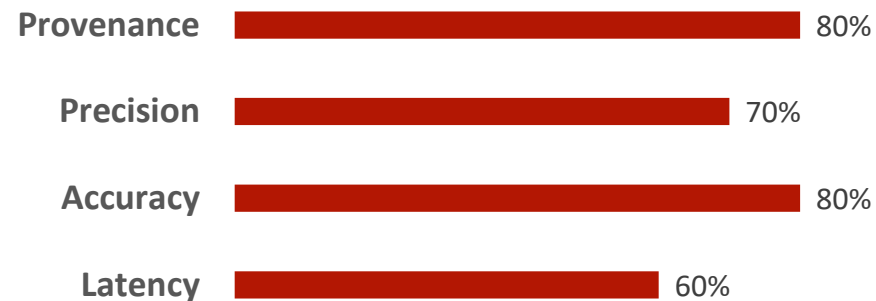
**Governments**

Urban development, Disaster management

## Nature of technical challenges – % relevant



## Business improvement opportunity – % relevant



## LABELLING TOOL PROJECT: USER-CASES

ATKINS



Classification of building types for land-use planning in developing countries.

Kenya

citi



Global monitoring of PV farms deployments to model commodities demand.

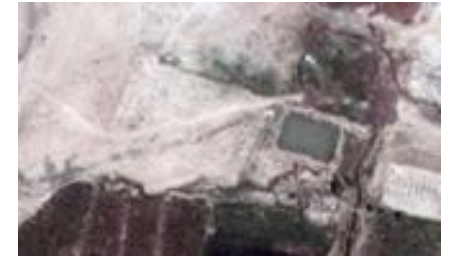
USA



Damage assessment of infrastructures to steer relieve effort post-disaster.

Dominica

Alcis™



Detection of household reservoirs as indicators of narcotics production sites.

South Afghanistan



Assessment of infrastructures damages to steer relief effort post-disaster.



## TRAINING DATASET – 150,000 LABELS – 8,000 MULTI-ANNOTATORS



 BUILDINGS



 ROADS

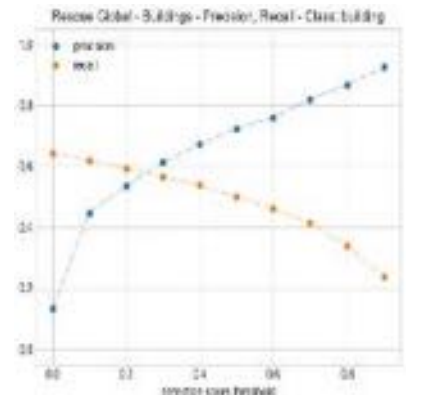
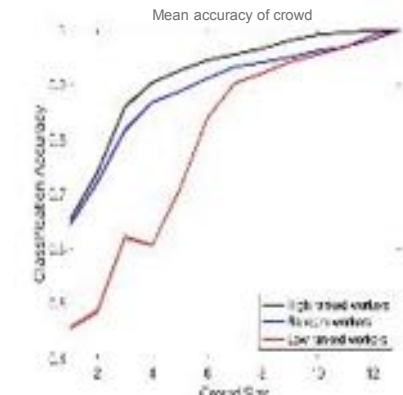


 BUILDING DAMAGE



 ROAD DAMAGE

## COMPUTER VISION INFERENCE - LABELLERS RELIABILITY RANKING



## DELIVERING AN EXPLOITATION STRATEGY

Other legacy  
activities



RAISE  
AWARENESS

BUILD  
ECOSYSTEM

SHARE  
TOOLSET

TRIGGER  
FUNDING

**ENGAGE'18**  
conference

**FDL'18**  
AI accelerator

**Oxford AIMS**  
Doctoral Training

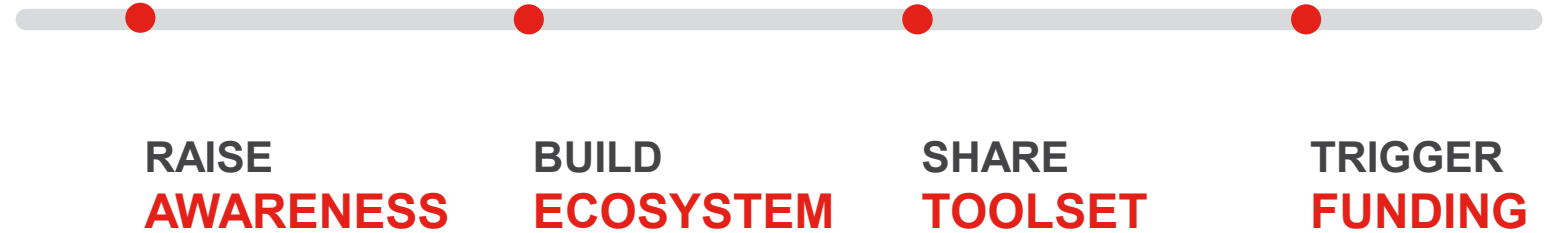
**RiRs**  
Researchers in Residence

**Cooperations**  
international scene

**Intuitive Data Access**  
Data Discovery Portal

## WHAT'S NEXT?

# AI4Space activities



## SatCom

Spectrum management

## FDL'19

AI competition

## AI4EO Library

Signposting & Tools

## Constellation

Predictive maintenance &  
capacity management

## Oxford AIMS

Doctoral Training

## Cooperations

international scene

## FLF

AI Fellowship

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