

UVSAT

A small satellite with solar panels, positioned between the letters 'V' and 'S' in the 'UVSAT' logo.

A LOW-COST UV-VIS CUBESAT FOR AIR QUALITY ASSESSMENTS

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AIR POLLUTION AFFECTS **92% OF PEOPLE** GLOBALLY, CAUSES **THREE MILLION** PREMATURE **DEATHS** AND COSTS **\$3-5 TRILLION** PER YEAR*

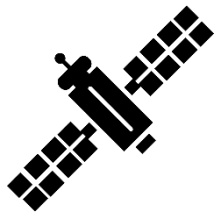
*WHO figures (2006)

Image source: the World Health Organization

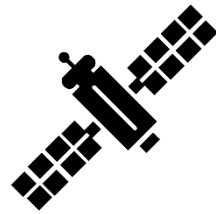
- Deliver quality **tropospheric O₃ and NO₂ data** to terrestrial operational air quality modelling services
- Deliver additional information on mid-morning air quality, a **gap between S5 and GOME2**;
- Demonstrate use of **auxiliary information** from the sentinel missions (albedo maps, atmospheric profiles), enabling smaller, simpler spectroscopy payloads to deliver key datasets.



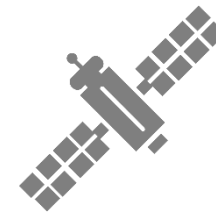
FILLING THE INFORMATION GAPS



Sentinel 5 – global but only once a day, same time



Sentinel 4 geostationary, non-global coverage 24/7



UVSAT – second dataset at a different time
at a reduced cost

Unique UVSAT Aspects:

- Spectral Calibration System
- Improved diurnal coverage of key air quality parameters
- Novel instrument specification
- On-board filtering
- Radiometric calibration for albedo and aerosol retrieval
- Ground Segment

INFORMATION GAPS



4 geostationary,
global coverage 24/7



UVSAT – second dataset
at a different time
at a reduced cost

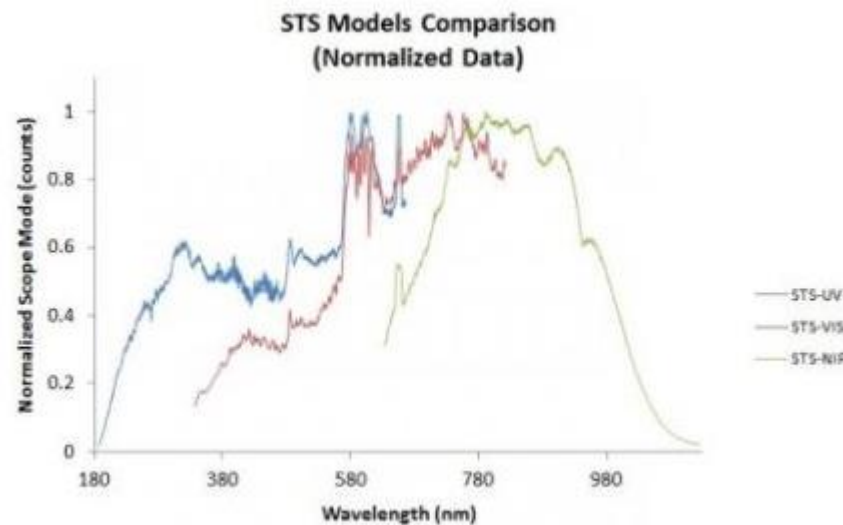
Imaging System:

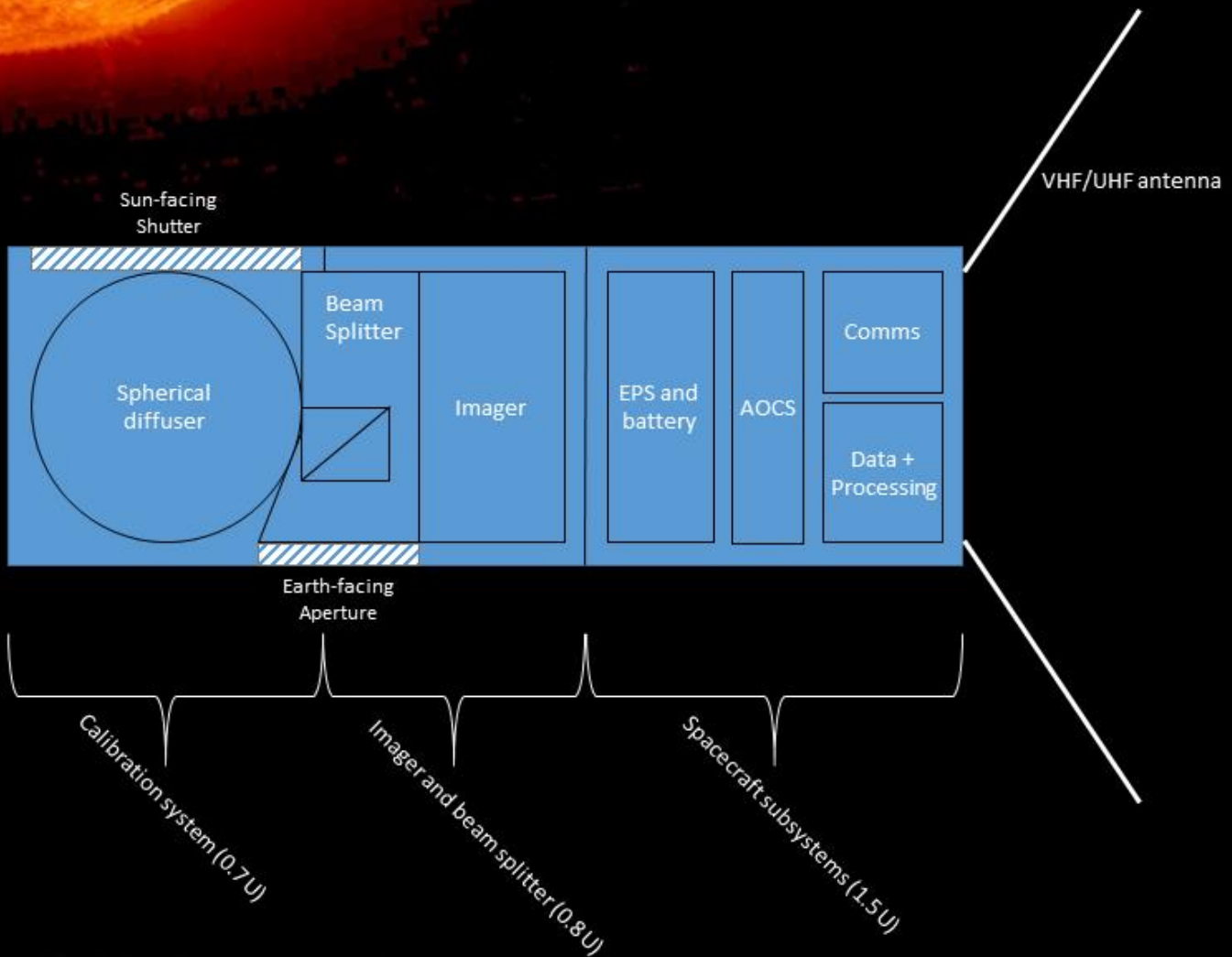
- Ocean Optics spectrometers:
 - 2x STS-UV (10 μm and 50 μm slit size)
 - 1x STS-VIS (10 μm slit size)
- Data taken across full VIS and majority UV spectrum at best grating efficiency for the whole range



Calibration System:

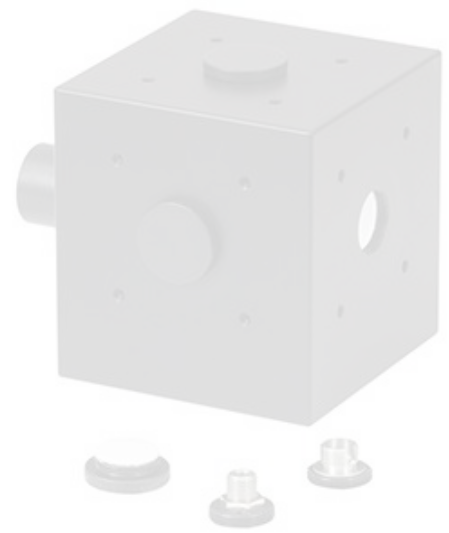
- COTS Integrating sphere + ancillaries: Spectral & radiometric calibration



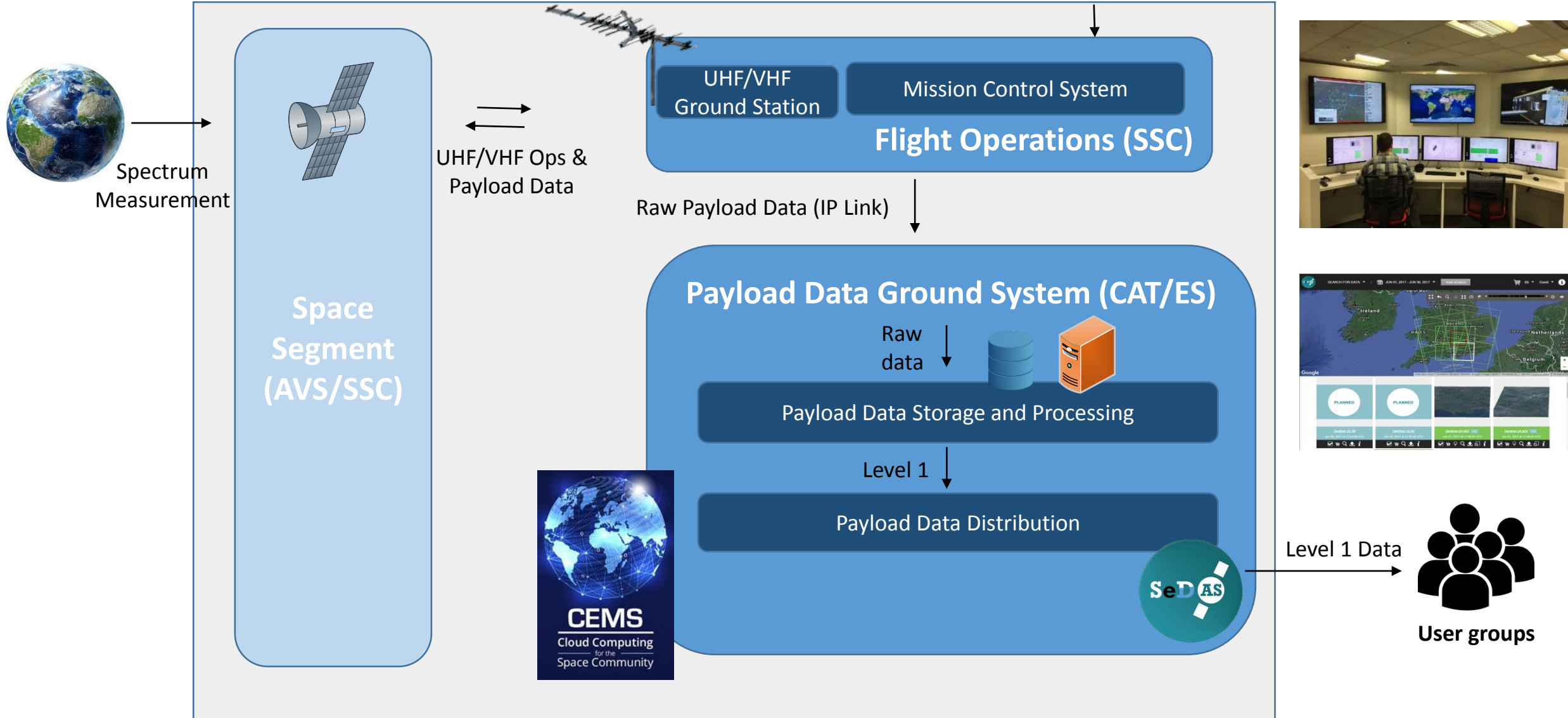


System:

Integrating sphere + ancillaries:
radiometric calibration



UVS AT GROUND SEGMENT & DATA FLOW





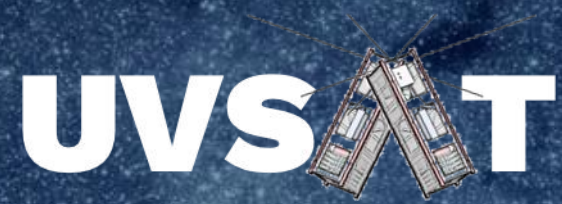
SCALABLE – A FUTURE OF 10-
100 UVSATS **FILLING GAPS** IN
AIR QUALITY DATA



AGILE – POSSIBLE BESPOKE
SOLUTIONS TO TARGET
PARTICULAR NEEDS



HOURLY TRULY GLOBAL
DATASETS OF AIR QUALITY TO
PROVIDE EXPERTS WITH
ACTIONABLE INSIGHTS



Thanks!

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