



Changing the economics of space

Instrumentation and Data Handling for Low-Cost EO

Project summary

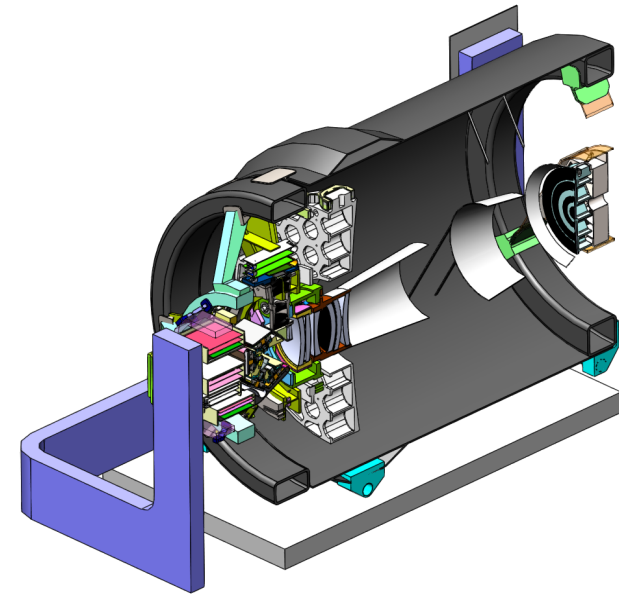
- SSTL has a strategic relationship with an overseas partner to develop:
 - Highly innovative Earth Observation sensors aboard a future constellation of EO satellites
 - The associated payload data chain to support them
 - Novel technology to enable real time responses to the data being processed from the sensors
- Targeting a step change in low cost precision imagers and their supporting payload chain

Commercial aims

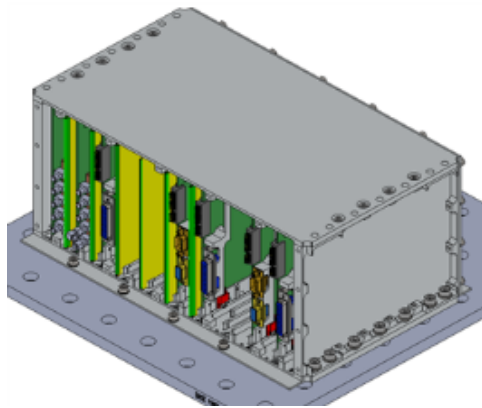
- £3m UK investment producing a competitive advantage in securing a significant return on investment for UK industry
- Disruptive UK technology on the front page
- This project not only enables “made in the UK” but “owned in the UK” for the IP generated
 - A head start for UK industry in an increasingly competitive global market
- Anticipated preferential access to the downstream data from the sensors
 - Data could be used by Researchers, Academia, SME’s, and applications developers alike across the UK

Low cost precision imagery

- Provides 0.5m High resolution PAN Optical still imagery and ultra HD video
- The Optical Tube Assembly, or telescope, includes a large primary mirror whose design and mounting technology represents a departure from previous SSTL design.
- The Pushbroom Focal Plane Assembly (FPA) channels light from the telescope to various panchromatic and multi-spectral CCD and CMOS detectors
- *Breadboard primary mirror nearing completion*



Handling the Data



- The Payload Data Handling Unit (PDHU) is the upgraded version of SSTLs heritage data recorder solution
 - The heritage solution utilised a High Speed Data Recorder (HSDR-16GB) with a non-volatile Flash Mass Memory Unit (FMMU-256GB)
 - High resolution and duty cycle imaging payloads require higher data rates (>10 Gbit/s) as well as significantly larger data storage
 - The card based system can be configured to support different payload configurations and storage requirements.
 - Will support up to 30Gbps with a total of 3 Tbytes memory on board
- *The backplane schematic and mechanical design are now complete*

Real time use of Data

- Increased demand for real time processing on board satellites
- Inter Satellite Link (ISL) enables a trailing satellite to receive data from a leading satellite so it can be rapidly re-tasked
- ISL design is baselined around SSTL's TTC card due for first flight Q1 2017
- Antenna development will also be required
- *ISL schematic changes to TTC card currently in progress*

