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TAKING THE PULSE
OF OUR PLANET FROM SPACE



The TRUTHS Ground Segment

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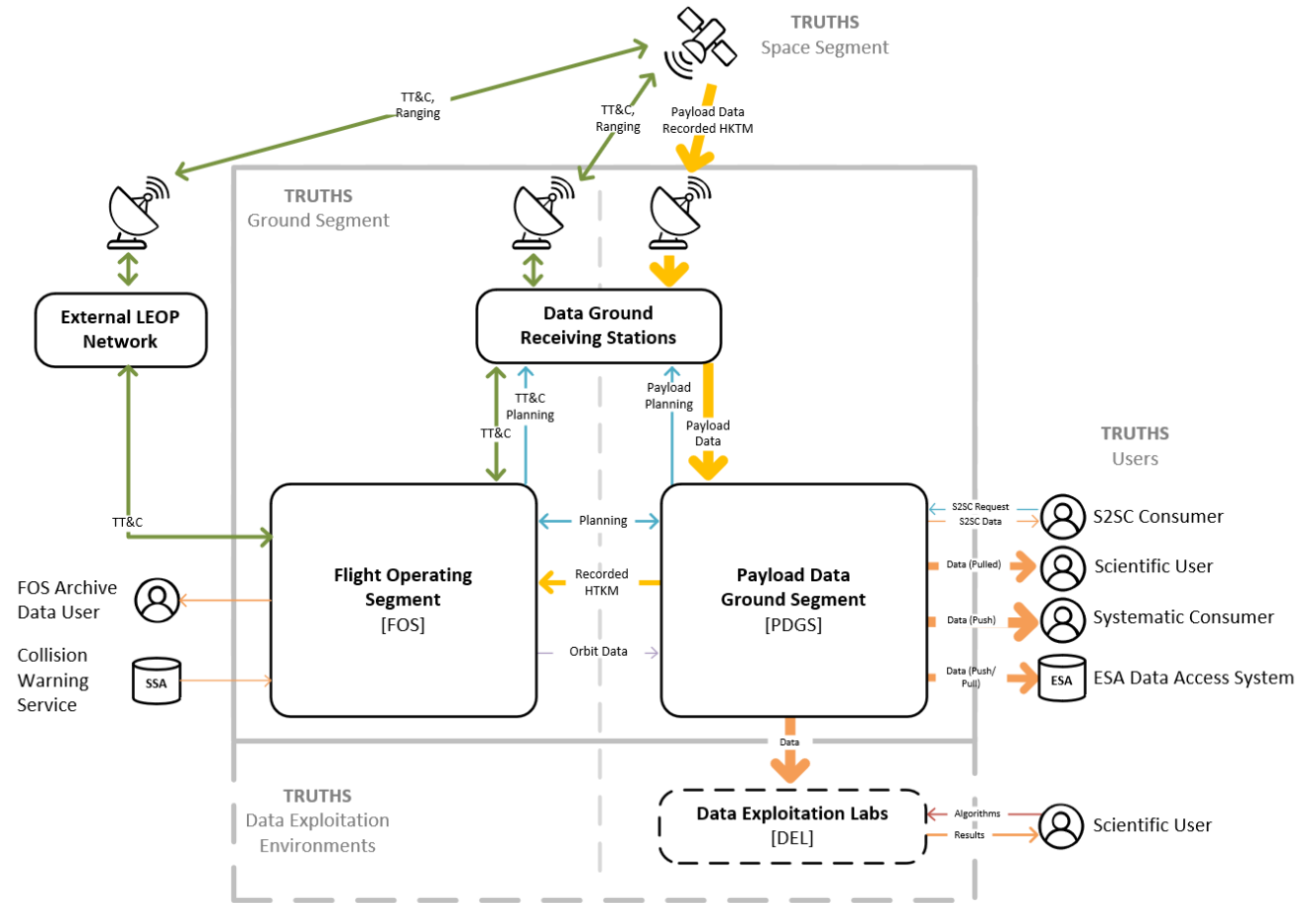
TRUTHS Ground Segment Context

Recalling:

- LEOP/Early Commissioning @ ESOC
- Routine FOS in UK
- 1 polar station baselined for data transfer (e.g Svalbard), second (e.g. Inuvik) for robustness
- PDGS in UK + data access at ESRIN with ESA Open Data Access Policy

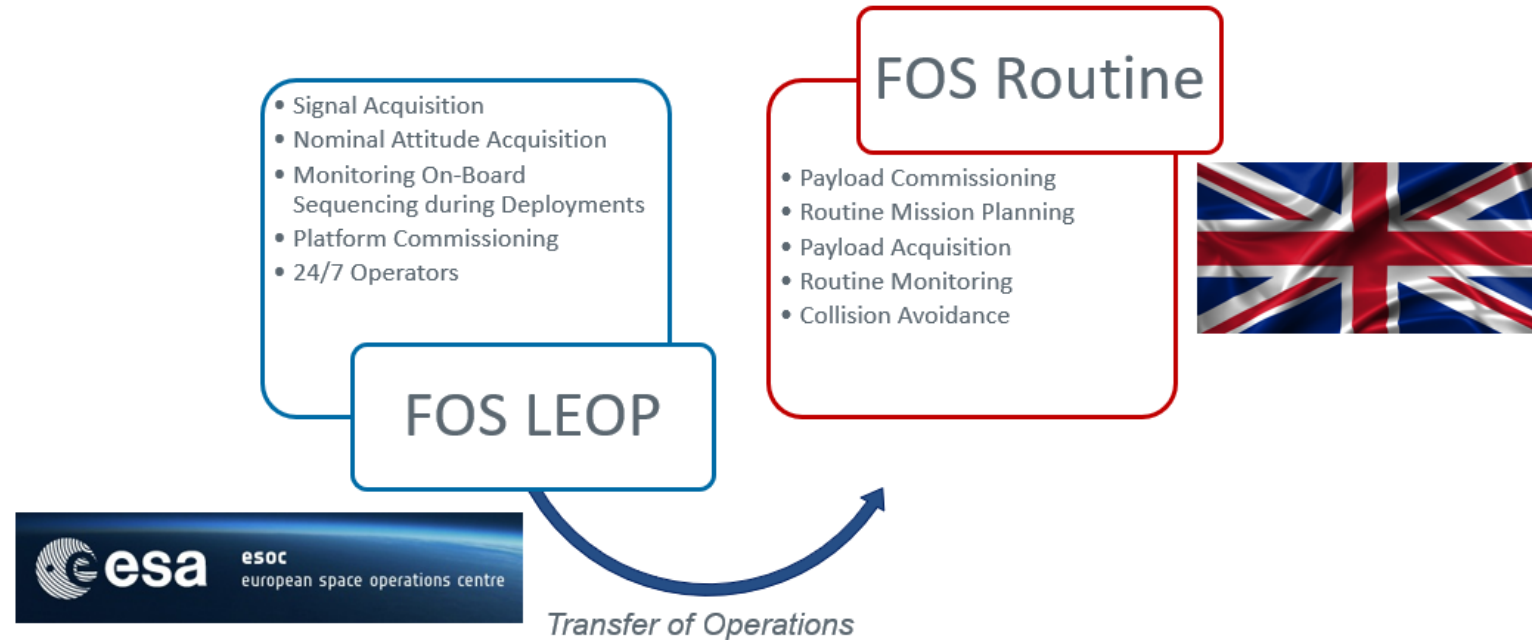
Main interesting TRUTHS specific interactions:

- Mission Planning
- LEOP
- Processing, Data Dissemination and Exploitation
- Data Provenance

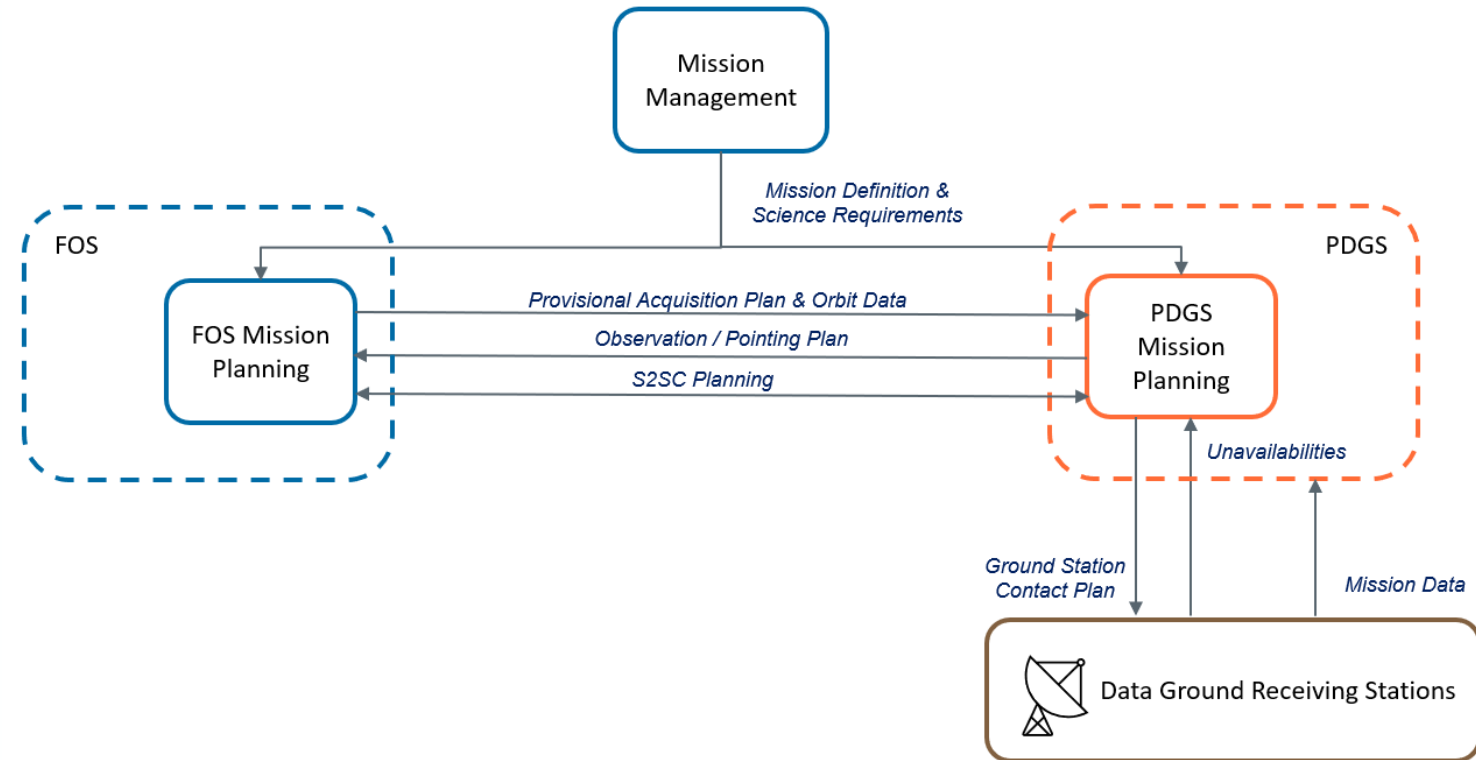


Note 1. Only major data flows are shown (e.g. user support, authentication omitted).
 Note 2. The DGRS have a FOS aspect (TT&C) and Payload Data aspect (X-Band Acquisition).
 These functions do not need to be co-located with each other, or with the FOS or PDGS.

- FOS LEOP will be in **ESOC**
 - LEOP and Platform Commissioning
- FOS Routine will be in **UK**
 - Payload Commissioning and Routine Operations
- Operations Handover:
 - Procedures / Training / Tools
- Active Manoeuvring needed to fulfil Observation Requirements
- Stringent Requirements on Observation timing and pointing



- Mission-Planning iterated between FOS & PDGS
- FOS will dictate the cadence of that planning process
- Key Processes Automated
- FOS will monitor plan execution and report to PDGS



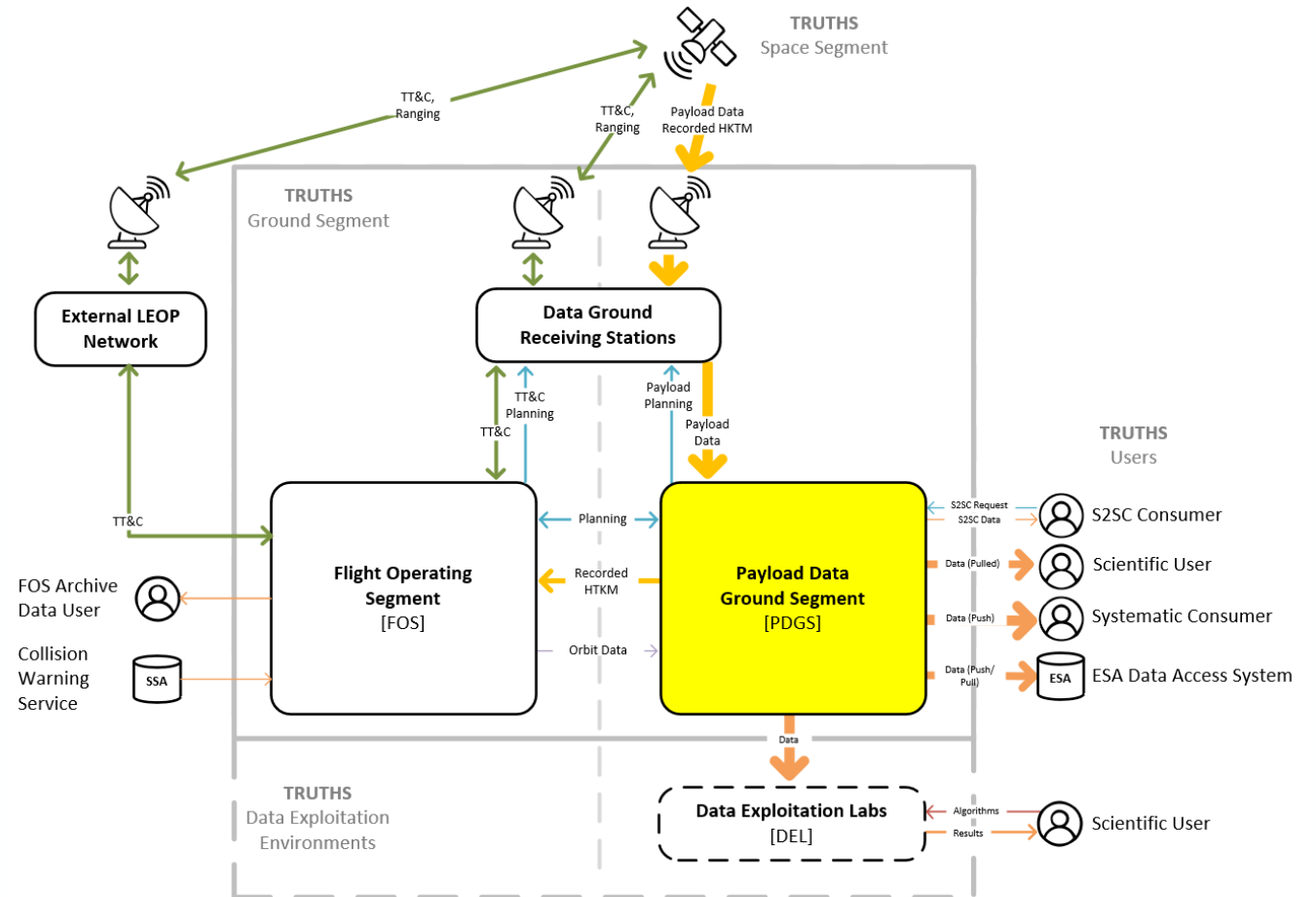
Payload Data Ground Segment: Functions

PDGS Functions:

- Data Reception
- Data Processing
- Data Archiving
- Data Access & On Demand Processing

- Calibration
- Instrument Monitoring and Product Quality Control
- Performance Monitoring
- Payload Mission Planning

- User Support



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As a source of Truth, provenance is an essential requirement.

- **Traceability**

What was used to create a given product?



Typically, metadata.

This is a standard requirement for EO missions.

- **Integrity**

Has this data been corrupted?



Typically, checksums.

This is a standard requirement for EO missions.

- **Authenticity**

Is this what was originally generated?

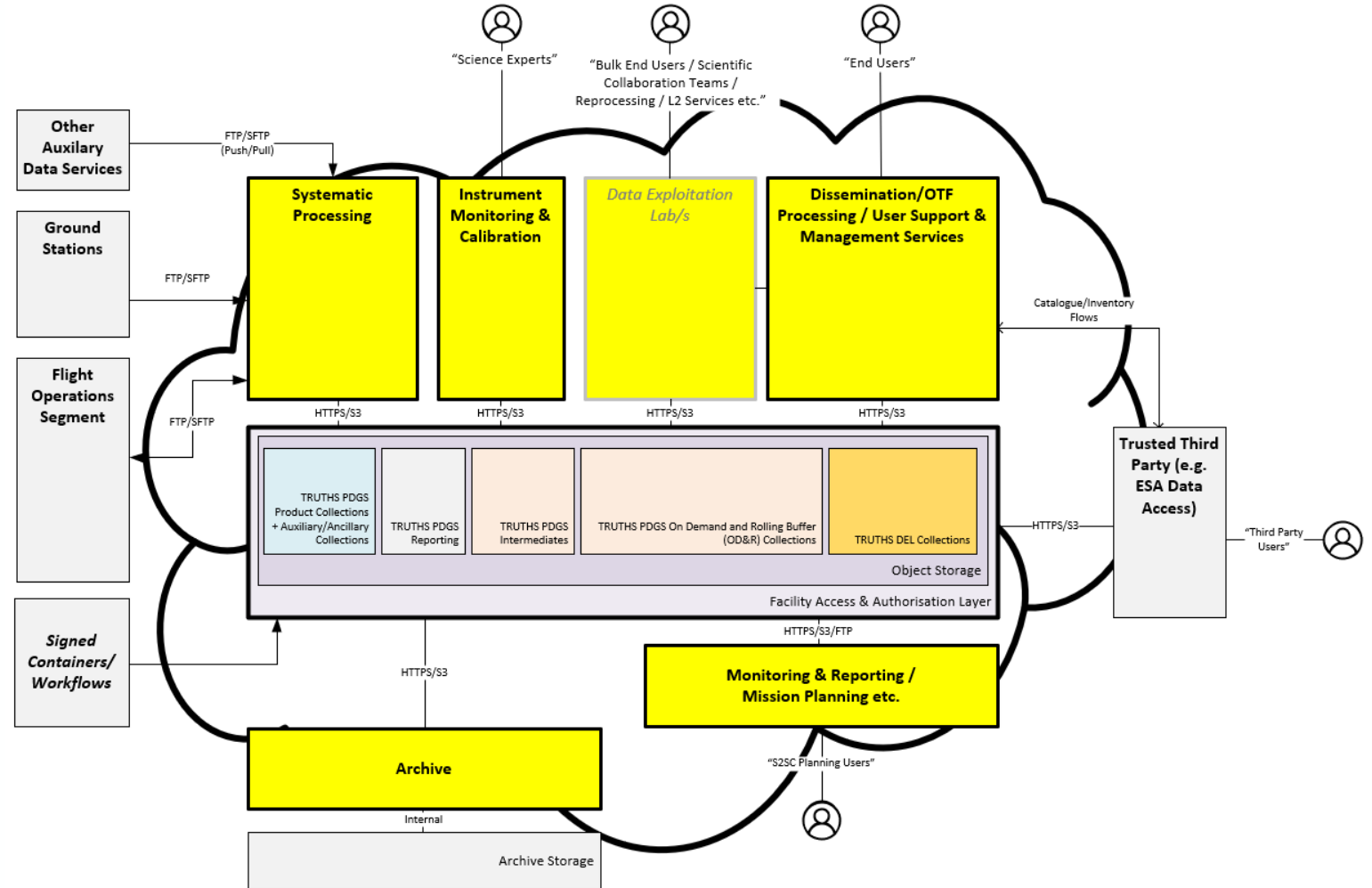


Typically, “trust in the source”

But now we usually retrieve data from secondary locations – DIAS, AWS, GEE etc. Consider digital signature?

Payload Data Ground Segment: Provisional Design

- Co-locate as much as possible.
- Avoid unnecessary data transfers – transfer metadata.
- Share processing resources, in a controlled way.
- Generate old and reprocessed L1B/L1C and tailored products – then sign for authenticity– on demand.
- Data Exploitation as first class citizen of PDGS.



Thank you for listening



We're happy to take questions at the end of the session or afterwards!

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