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# Implementing the New CCSDS Housekeeping Data Compression Standard 124.0-B-1 (based on POCKET+) on OPS-SAT-1

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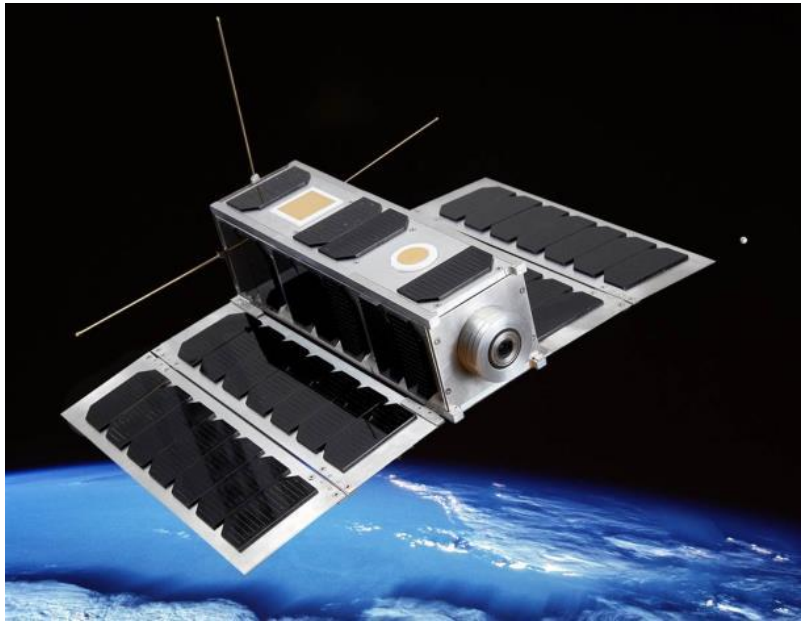
# Background – OPS-SAT

- 3U CubeSat launched by the European Space Agency (ESA).
- Conceived to break the “has not flown, will not fly” cycle.
- Full set of sensors and actuators including a camera, GPS, star tracker, and reaction wheels.
- High speed X-band and S-band communication.
- Laser receiver.
- Software defined radio receiver.
- Dual-core 800 MHz CPU clock & 1 GB DDR3 RAM.
- FPGA.

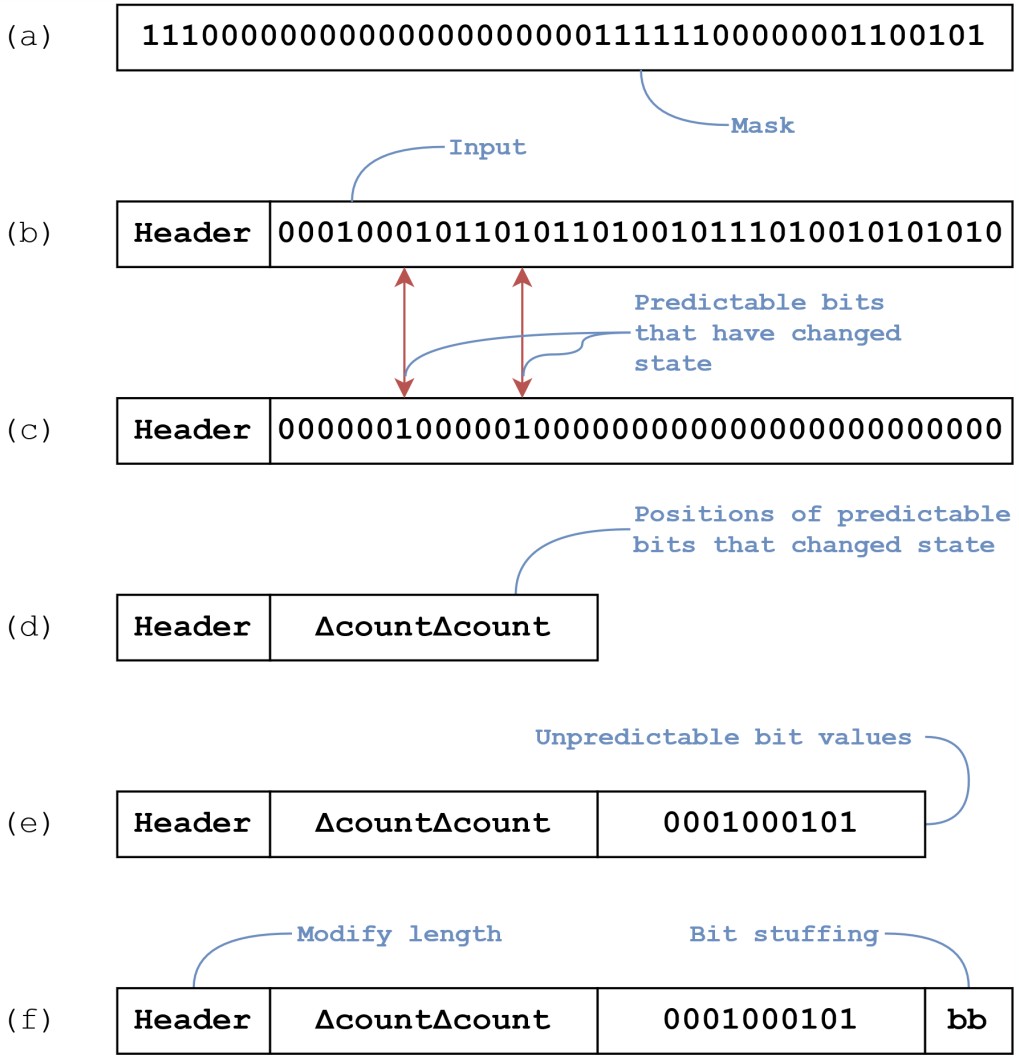


# Background – OPS-SAT – Apps

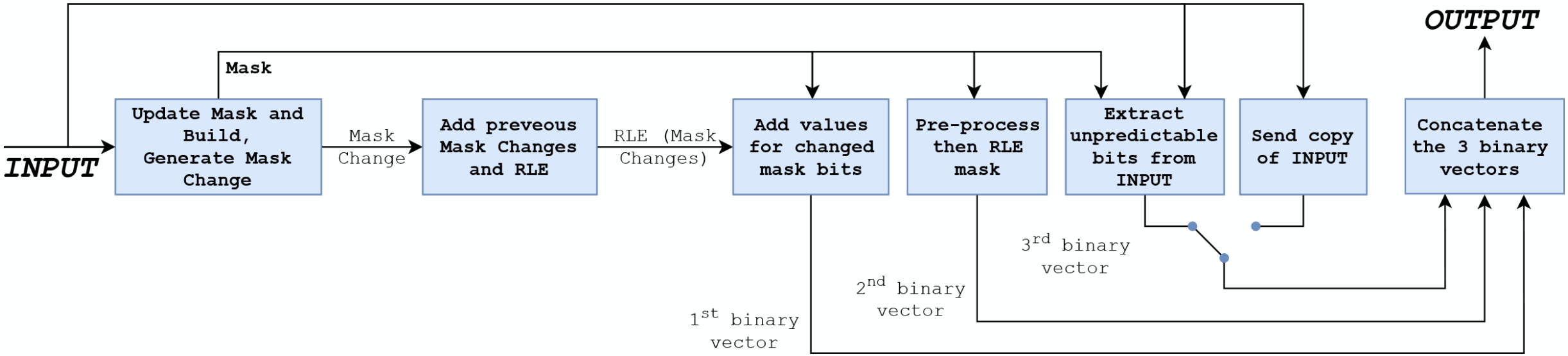
- A new paradigm to on-board software by introducing “**apps**” in space.
- Apps run on an Ångström distribution of Linux on top of the **Satellite Experimental Processing Platform (SEPP).**
- An app can be easily developed, debugged, tested, deployed, and updated at any time without causing any major problem to the spacecraft.

- Apply to fly your experiment: https://opssat1.esoc.esa.int/

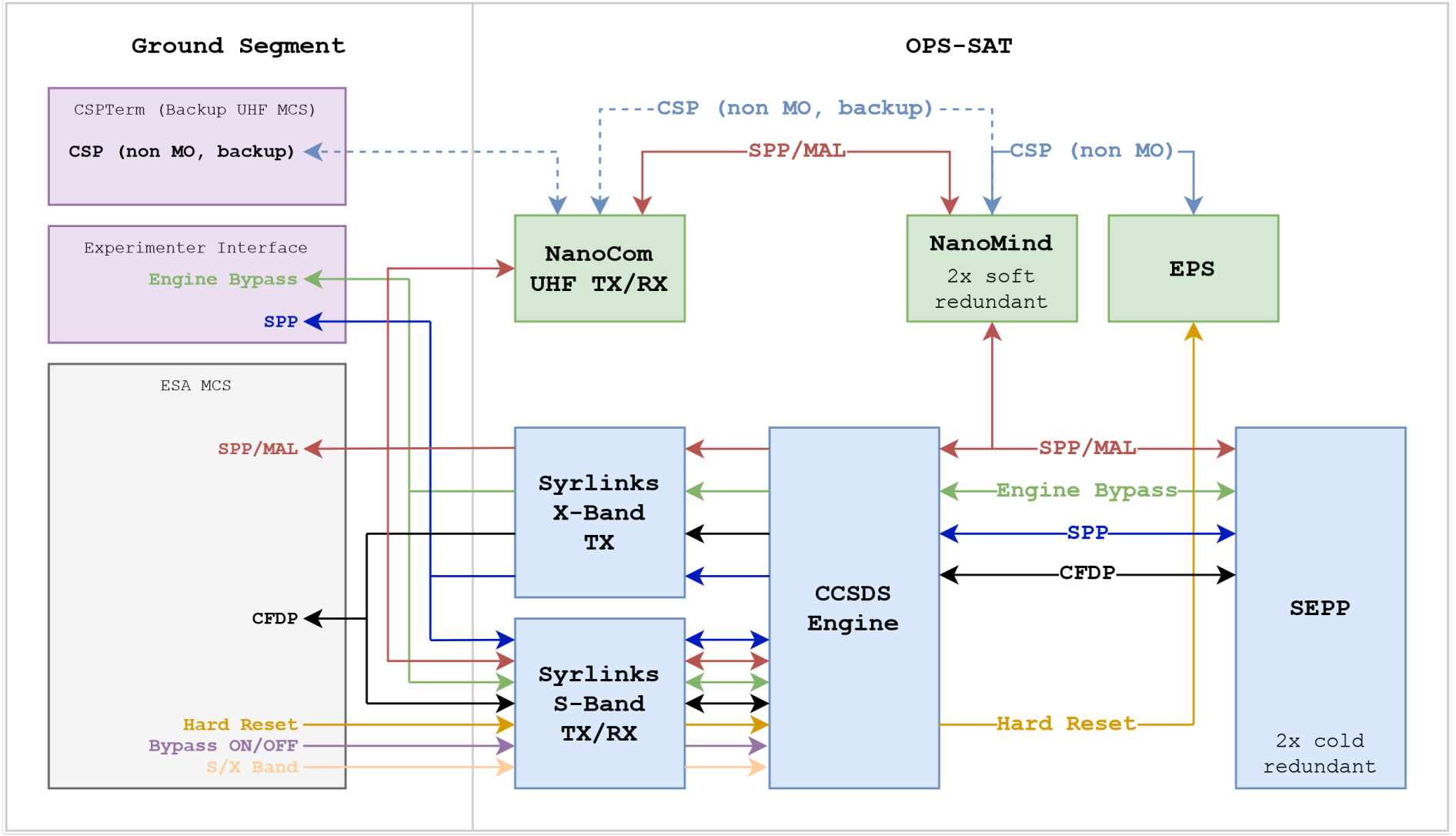
# POCKET+ Basic Principle



# Compression Mechanism



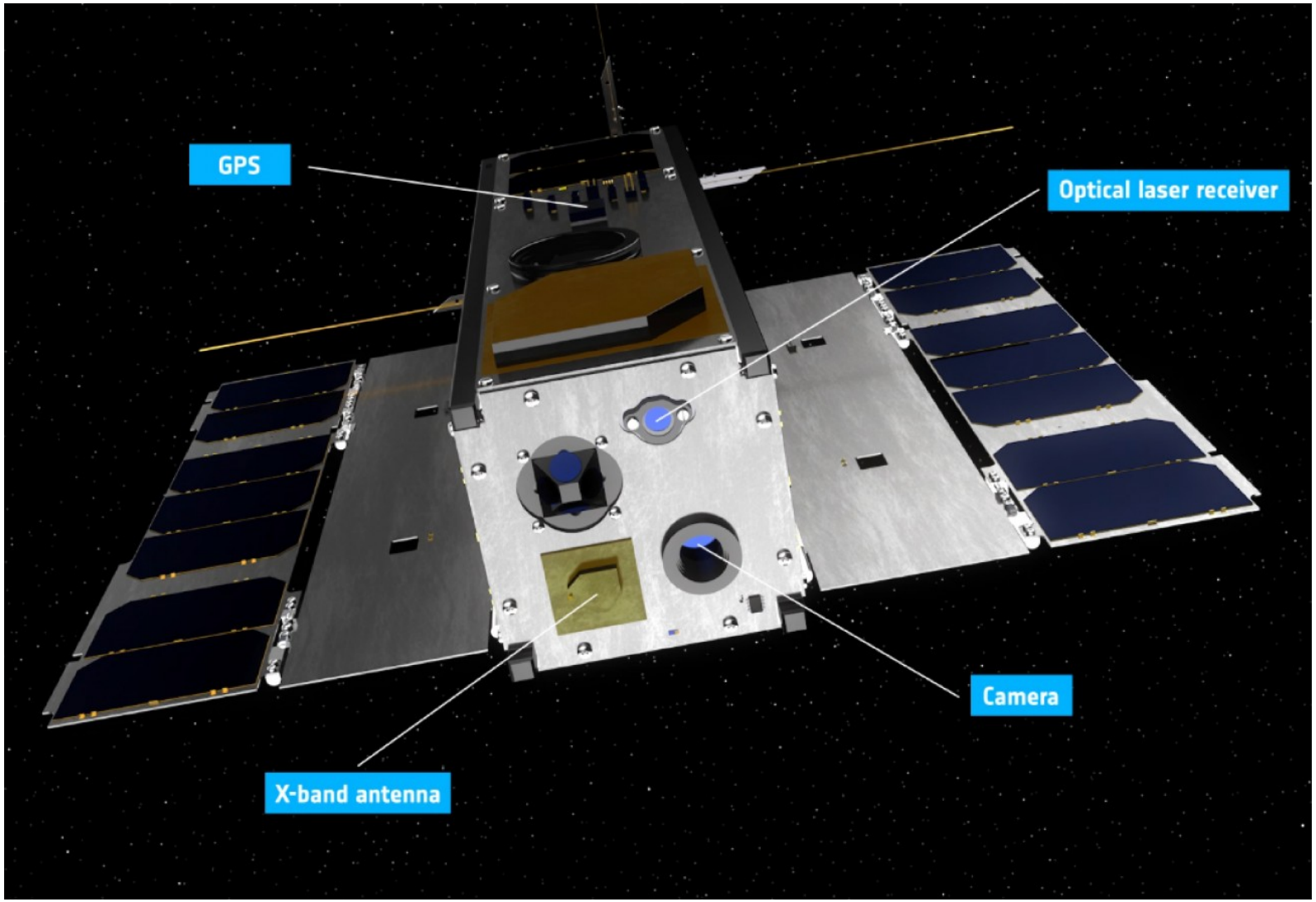
# OPS-SAT Implements CCSDS 124.0-B-1



# OPS-SAT Implements CCSDS 124.0-B-1

1. Classic packet stream-based implementation of CCSDS 124.0-B-1 in OBSW
2. File based implementation of CCSDS 124.0-B-1 in combination with CFDP transport
3. File based implementation of CCSDS 124.0-B-1 in combination with UDP transport

# Future Work & Conclusion



# Have an idea for experiment to run on OPS-SAT?

**Great!**

**Apply to fly:**

https://opssat1.esoc.esa.int/

# Thank you and check out the research papers for more!

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