

ARC TRAINING CENTRE FOR CUBESATS, UAVs,
AND THEIR APPLICATIONS



a partnership between



CUAVA-1

The Centre's First Satellite

Xueliang Bai

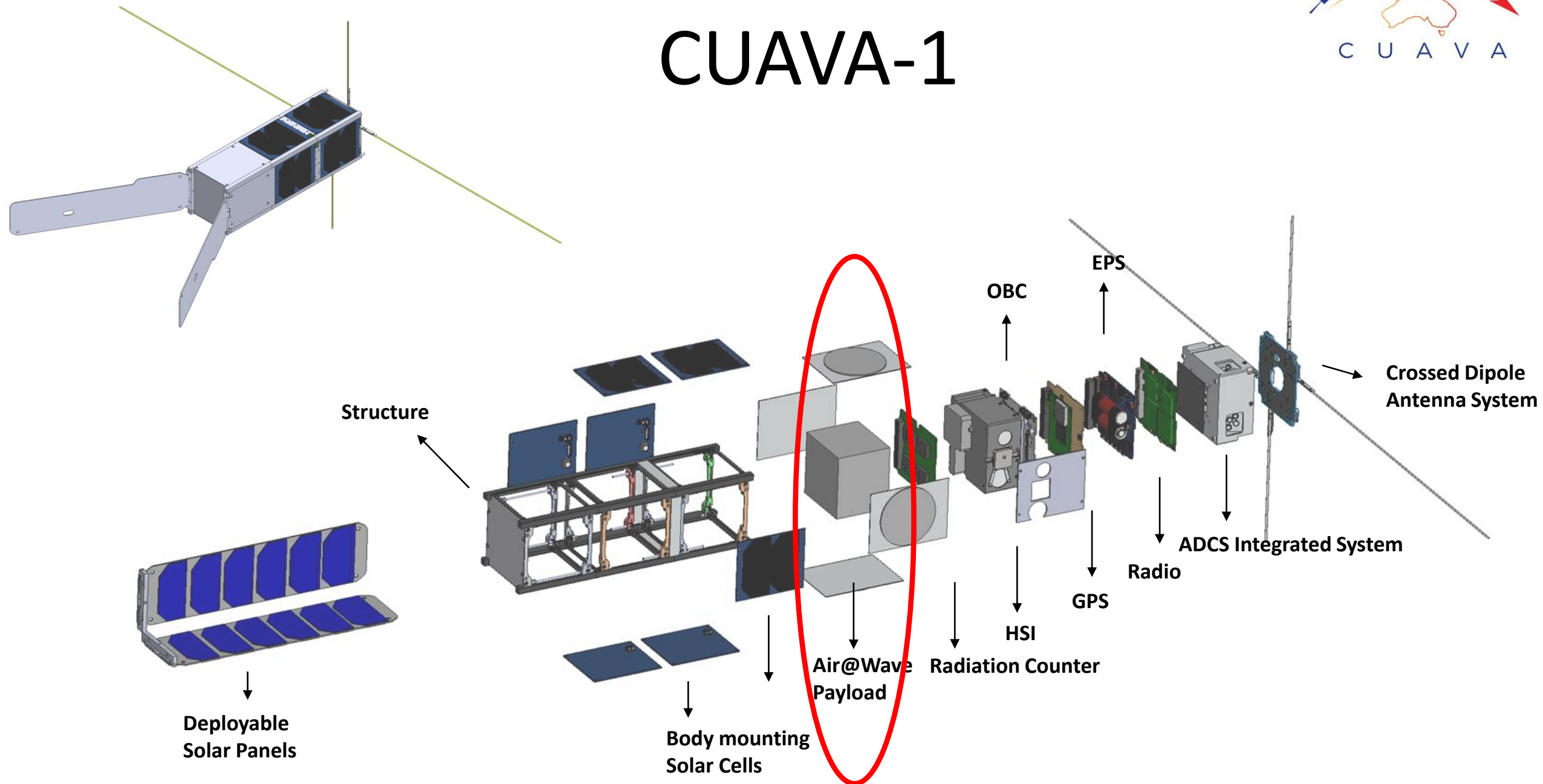
Training Centre Engineer

ARC Training Centre for CubeSats, UAVs & Their Applications

The University of Sydney

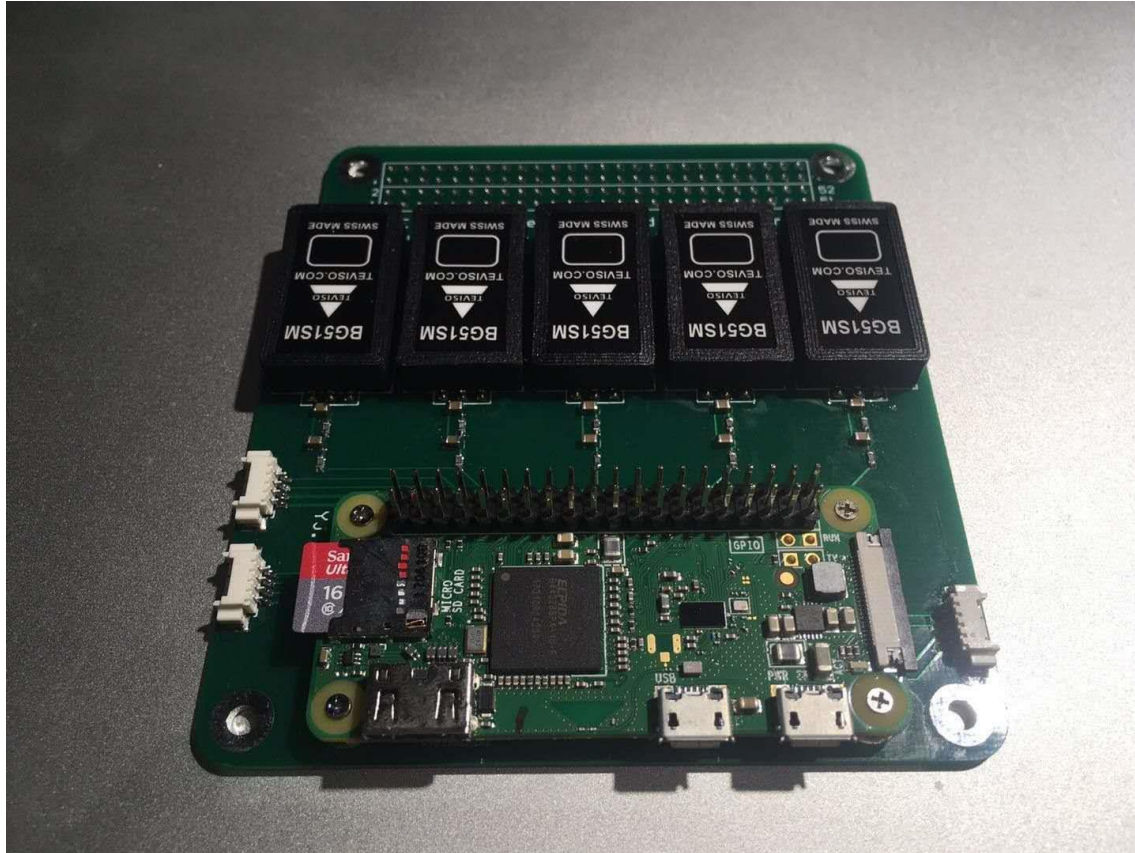
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CUAVA-1



Fly Heritage Payloads

Radiation Counter (RC) Board



GPS Module



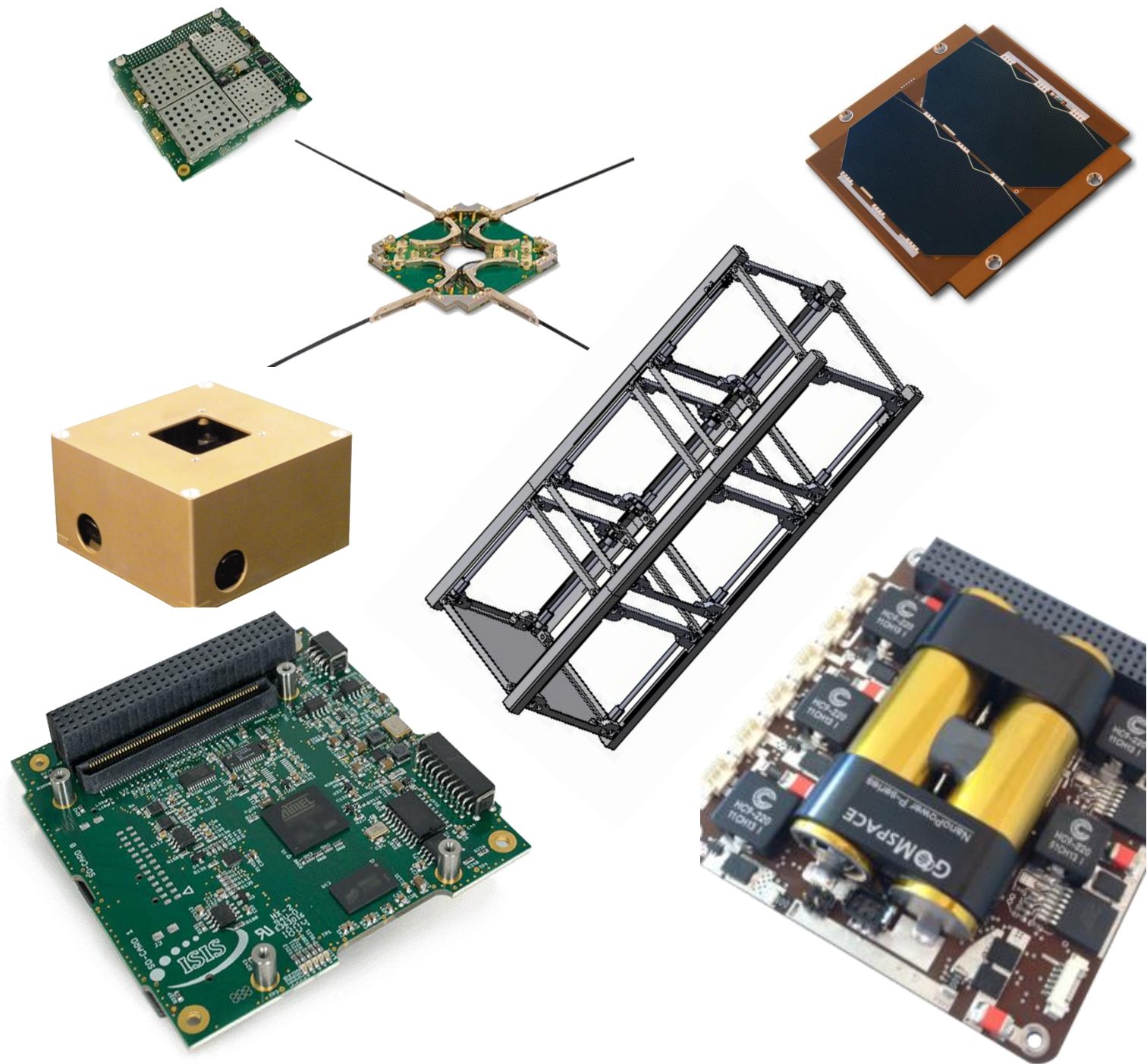
Hyper-Spectral Instrument

- First step to a full CubeSat ready hyper-spectral instrument
- 20mm input aperture
- 2W@5V in nominal operation and 3.5W max.
- Overall dimension: 96.9 x 96.9 x 67.2 mm
- Overall mass: ~600g
- Enabling increased light collection ability for a given size and spectral resolution than previously possible
- A TinyTol telescope as secondary payload



Satellite Bus

- Flight heritage for all subsystems
- 3U satellite Structure from Innovative Solution In Space (ISIS)
- A 19 Whr (2 pack lithium ion 18650 cell) battery with intelligent electrical power system (EPS) and solar panels from Gomspace Nanopower
- Attitude Determination and control system (ADCS) with single reaction wheel and 3-axis magnetorquer from AdCole Maryland.
- Communications subsystem (COMM) and antenna subsystem with UHF downlink and VHF uplink from ISIS

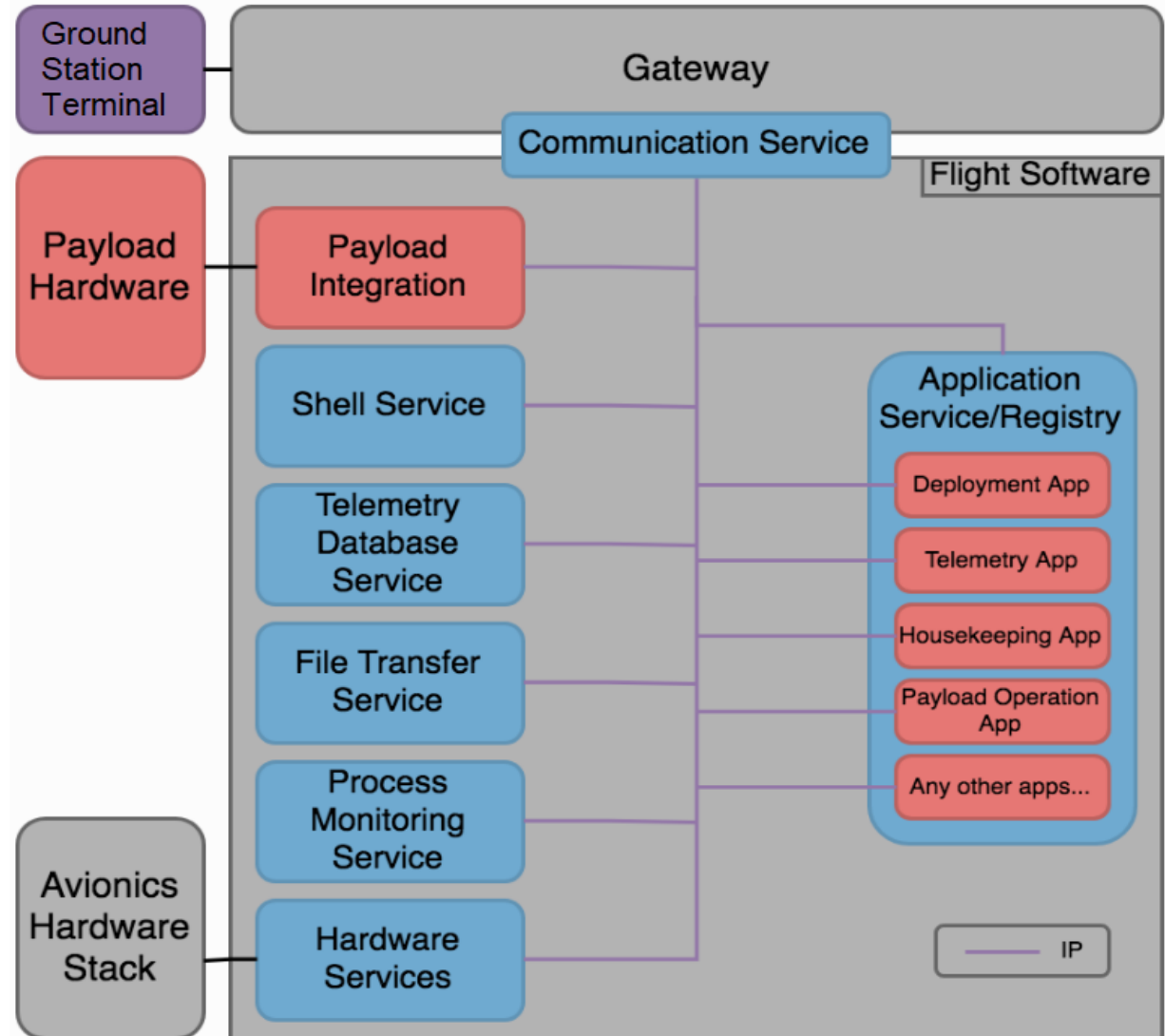


Flight software



KubOS platform provides satellite developers the tools and libraries necessary to quickly bring up space-ready software. It is an open-source, integrated platform designed to increase development speed, lower risk, and allow teams to focus on the payloads

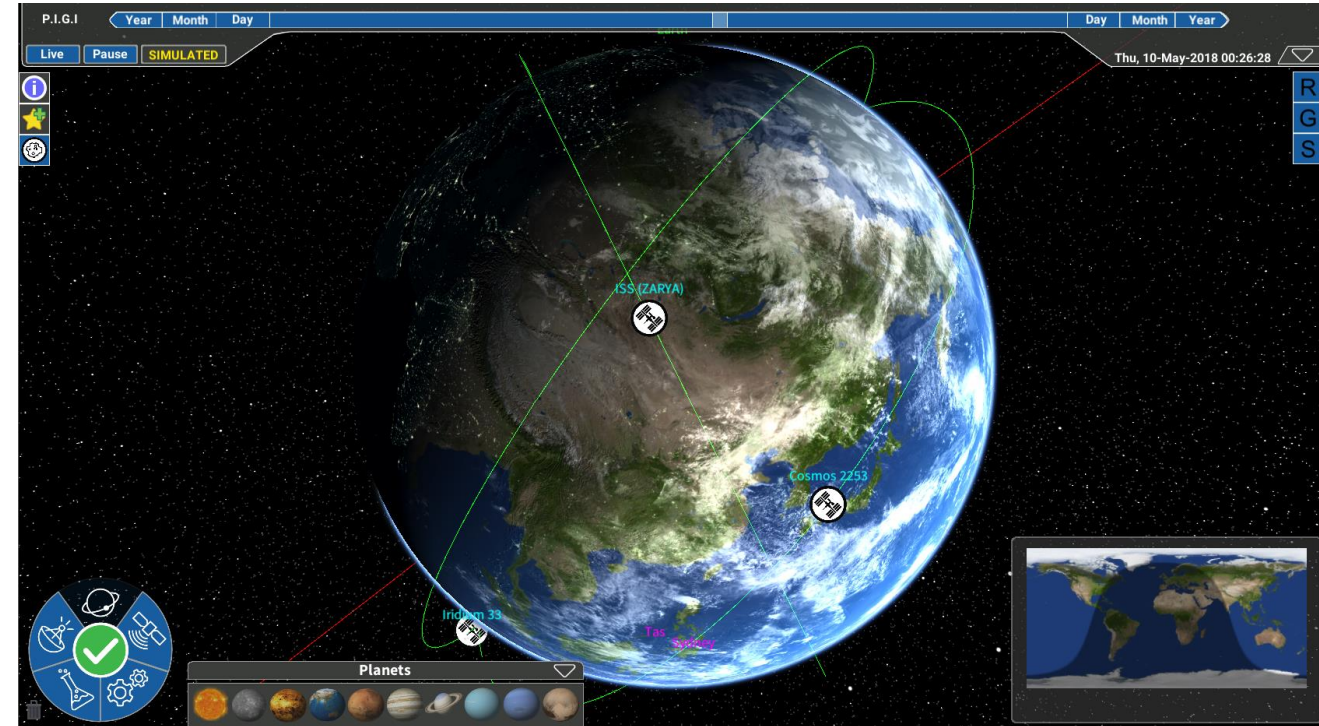
- Linux based OS environment
- Packages communications protocols
- HTTP + GraphQL communication scheme
- Provide build-in service for our ADCS, OBC, Radio and UHF/VHF Antenna
- Intuitive Software Development Kit (SDK)
- Fully documented, and (optional) Service Level Agreement Support



Ref: <https://docs.kubos.com/1.15.0/architecture-overview.html>

Ground Station

- A joint effort of the CUAVA satellite team at the University of Sydney and Saber Astronautics (Saber)
- A crossed Yagi antenna set contains both 2 m and 70 cm bands for uplink and downlink respectively controlled by a set of rotors.
- IC-7100 radio together with an in-house designed Terminal Node Controller TNC as the transceiver configuration
- Terminal software will be developed by our industrial partner Saber Astronautics
- Data analysis and graphic interface: Predictive Interactive Ground Station Interface (P.I.G.I.) by Saber Astronautics



P.I.G.I. - The Predictive Interactive GroundStation Interface

Ref: <https://saberastro.com/pigi>

Thank You!!

Partners in the Training Centre

