



6U to 27U SILSAT OMSR Bus

Engineered for Space

Intelli-Avionics® - VBITS (GPS Tracking, AFTS and SBR)

Li-Ion Polymer Intelli-Pack® Batteries



SIL Aerospace Small Business

- SIL is located in Santa Maria, CA 15 miles from Vandenberg AFB and 1 mile from Santa Maria Airport (SMX)
- Primary business is Aerospace Products and R&D for Aerospace Industry and Federal Agencies including MDA, AFSPC, SMC, NASA, AFRL, etc.
- Aerospace Industry subcontractor
- AS9100C Quality Management System 20 January 2015 to 19 January 2018
- Products include Intelli-Avionics[®], VBITS GPS Tracking, AFTS and SBR units, Li-Ion Polymer Intelli-Pack[®] batteries, and 6U to 27U SILSAT OMSR Bus





MMIII VBITS GPS Tracking and SBR Unit with internal LiPo 6.6Ah Battery

Range Safety Space Qualified and Flown
2004 - 2005



MDA Target Missile VBITS GPS Tracking Unit

Range Safety Space Qualified and Flying
2006 - Current



ULA Atlas/Delta Rockets VBITS GPS Tracking Unit

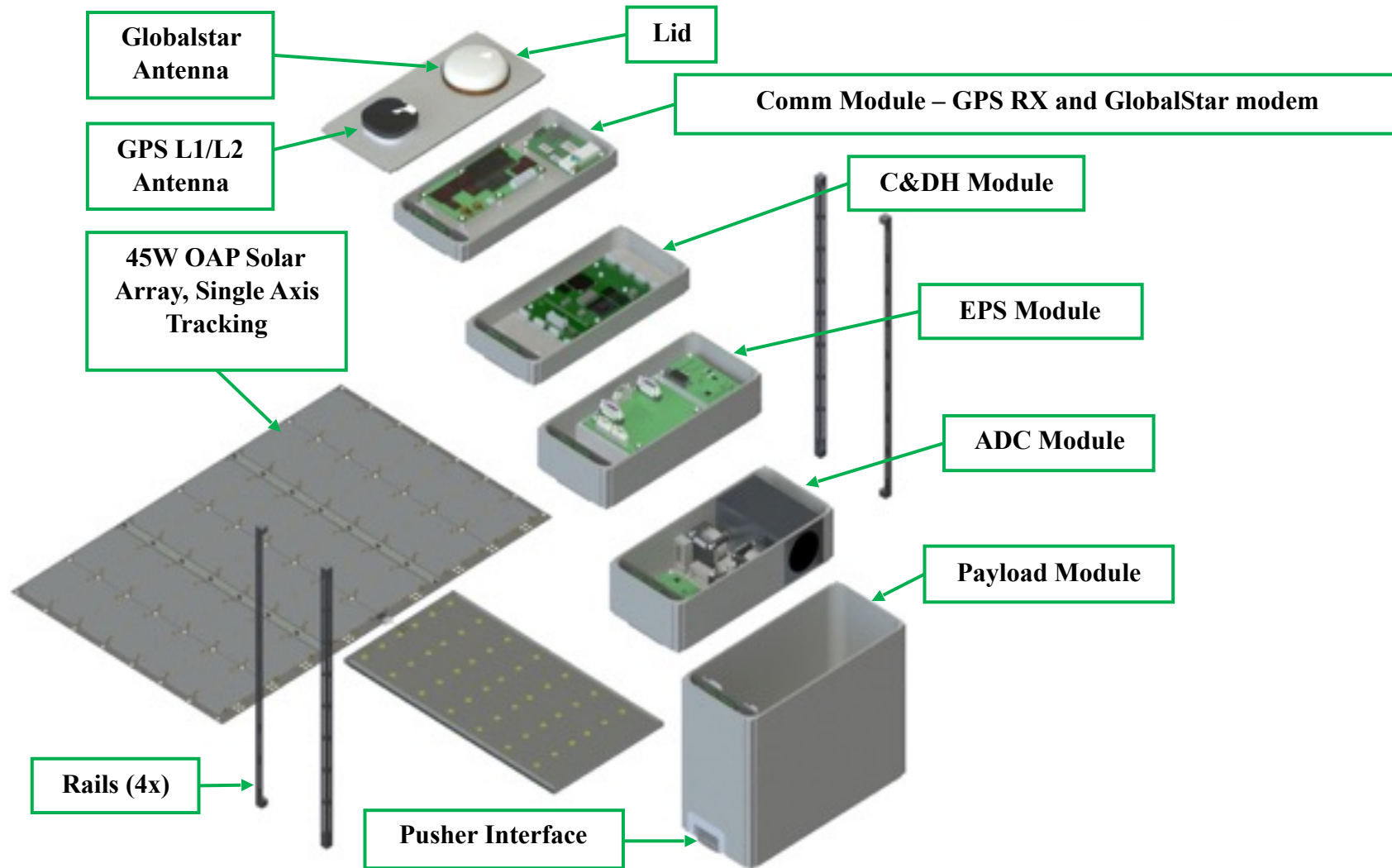
Range Safety Space Qualified and Flying
2008 - Current



VBITS AFTS DARPA ALASA and MDA target missiles

2012-Current

6U SILSAT OMSR Bus



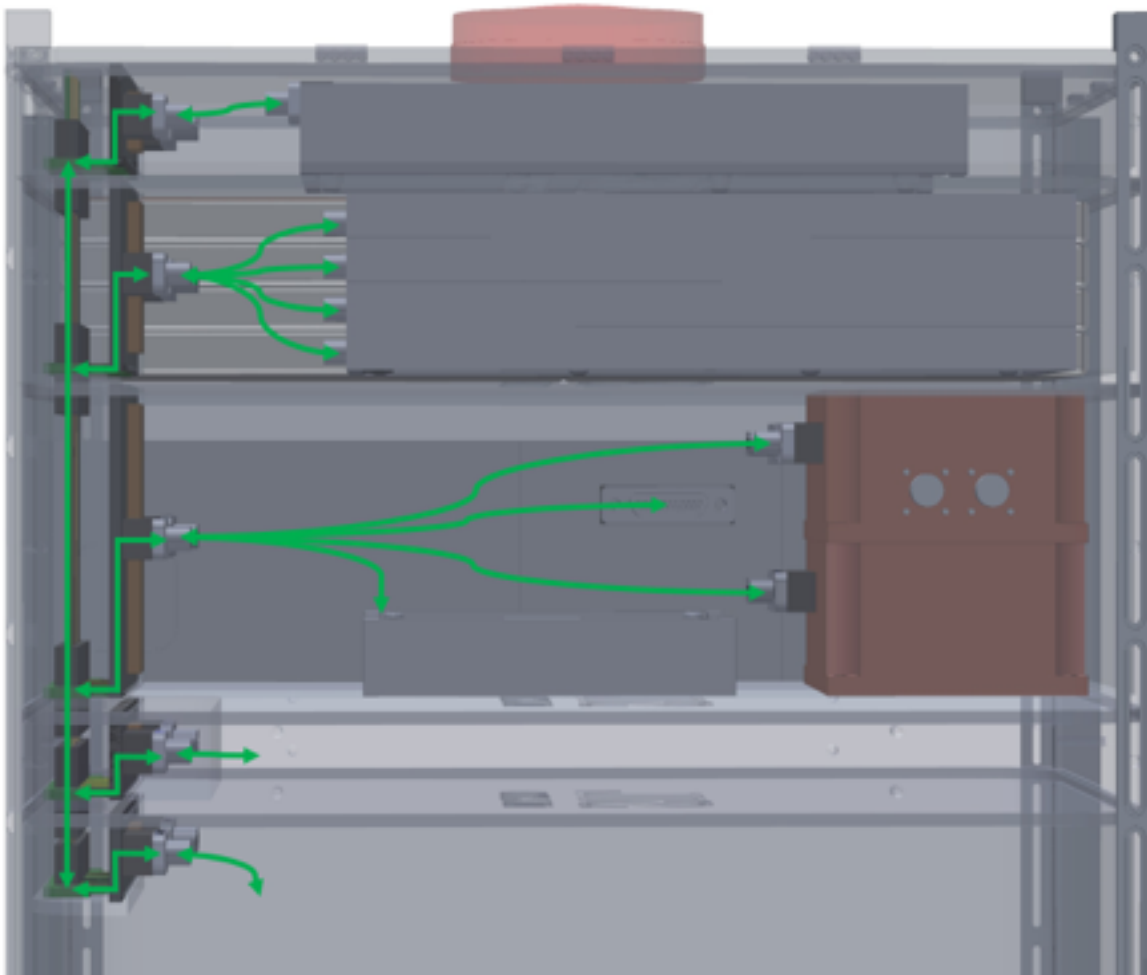
**C&DH
Module**

**Power
Module**

**COMM
Module**

**Prop
Module**

**Payload
Module**



- 3D Power and Data Interconnect Backplane System
- Standardized Interfaces between all Bus modules and Payload
- Designed for Manufacture and Test (DFMT)



6U to 27U SILSAT OMSR Bus Features

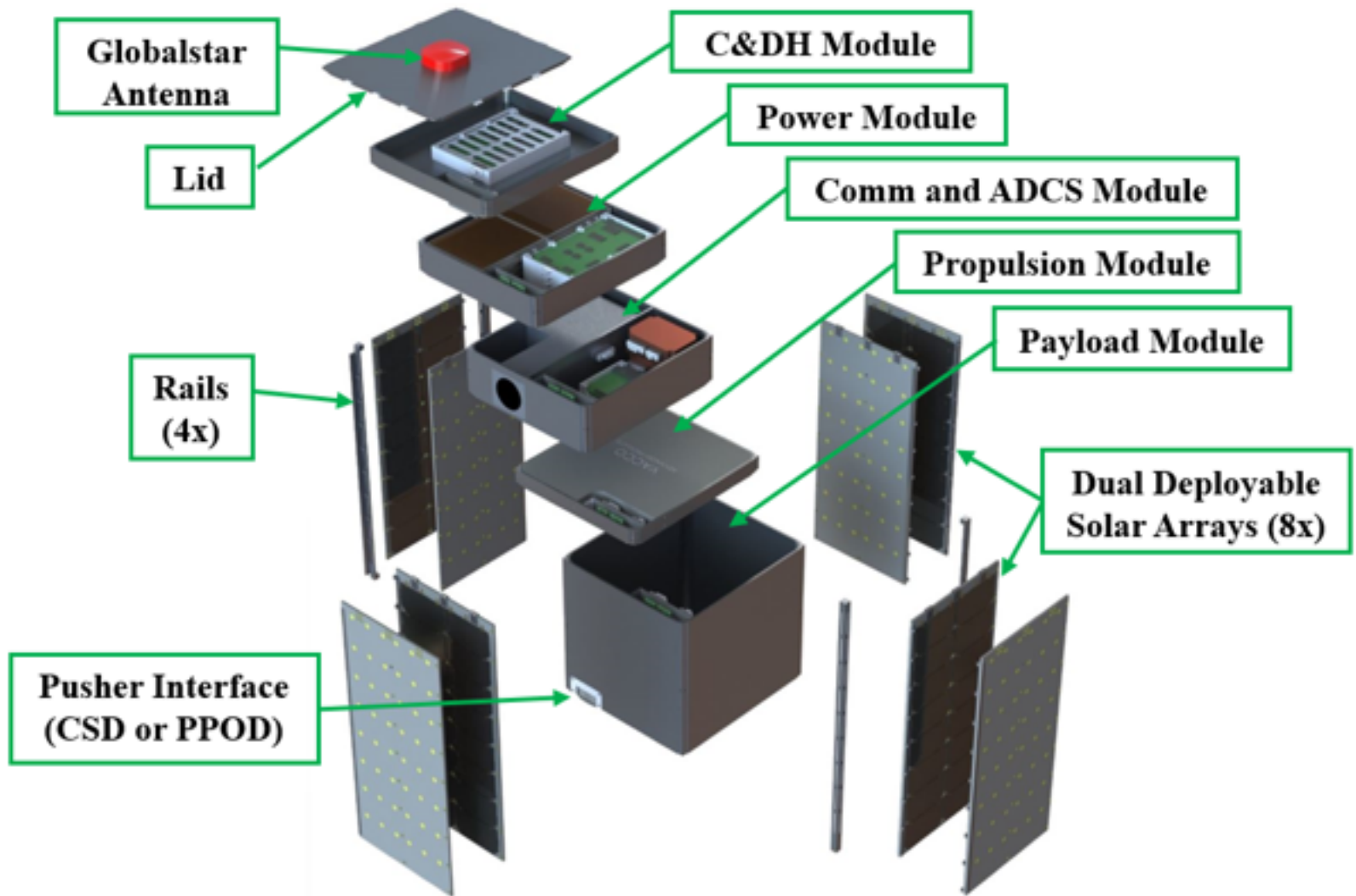
- Open, Modular, Scalable and Reconfigurable (OMSR) Bus
- “Best in Class” COTS or Custom Bus subsystem modules
 - “Win-Win” using CubeSat and SmallSat supplier base
- EMI/RFI chambers within each Bus module
 - Pass MIL-STD 461 EMI/EMC tests for subsystems and payload
- 3D Interconnect backplane system allowing standard interfaces
 - Rapid integration and testing of subsystems and payload
- Fault/Rad Tolerant C&DH Architecture
- Faraday cage and heatsinking capability in each module



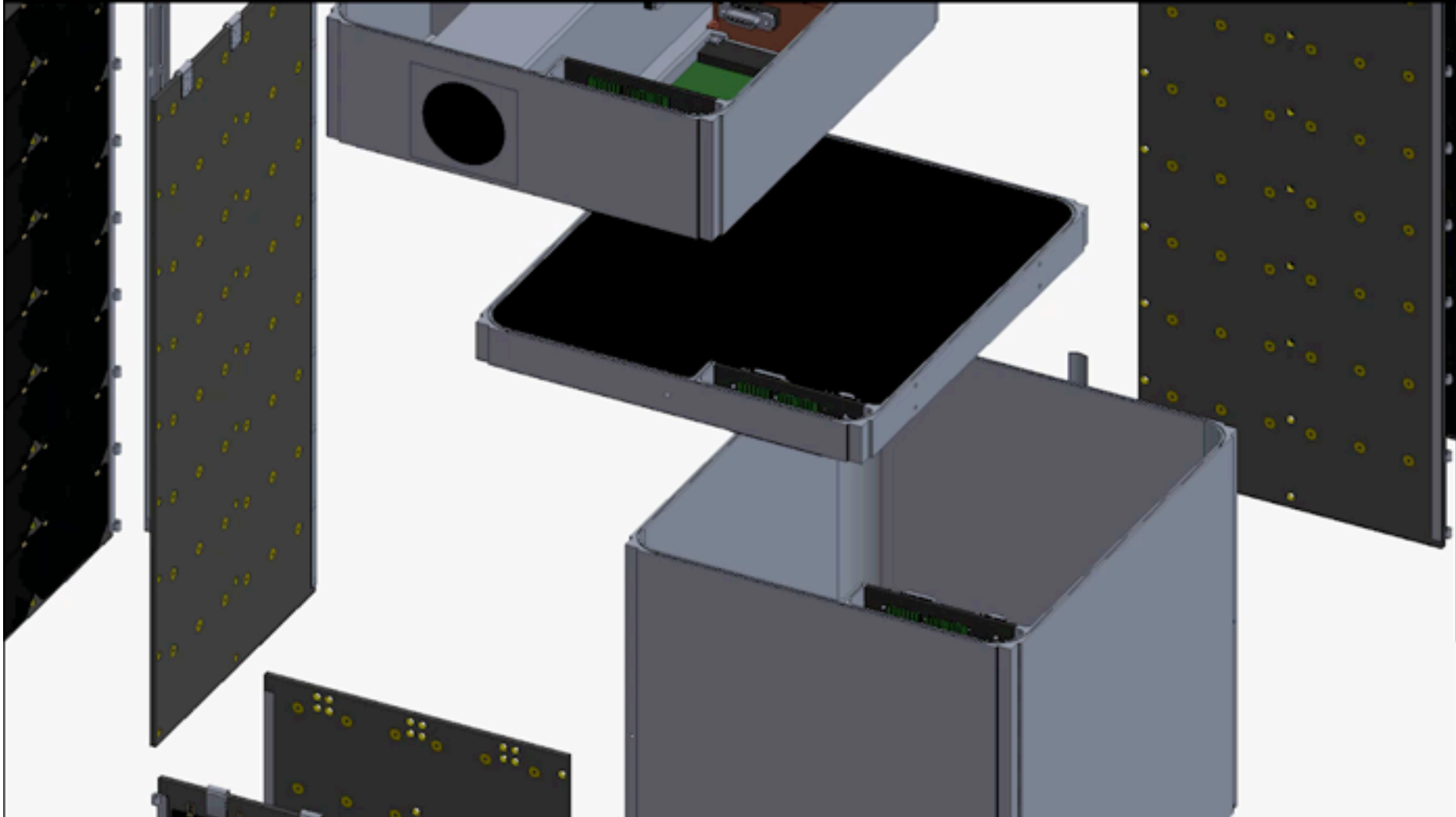
6U to 27U SILSAT OMSR Bus Features (Cont)

- High capacity (200Wh/Kg) Li-Ion Polymer EPS enables high power payload operations and rapid battery recharge
- High accuracy attitude determination and pointing
 - High performance 3-axis reaction-wheel and star tracker system
- Optional scalable propulsion module
- OMSR Bus Designed for Manufacturability and Test (DFMT)
- Space Qualified OMSR modules reduces development time and recurring life cycle cost
- Bus derived from SIL designed, Space qualified, and Intelli-Avionics® OMSR flight unit technology

12U SILSAT OMSR Bus



6U to 27U SILSAT OMSR Bus Technology Video



6U to 27U SILSAT OMSR Bus – Chameleon™

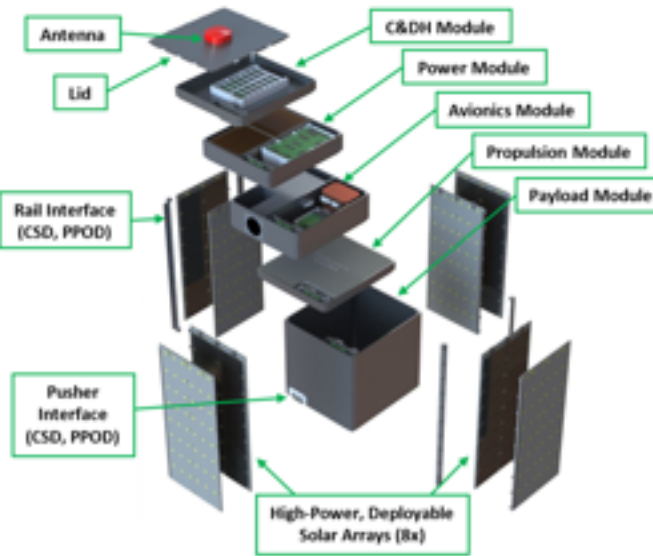
Advanced NASA, DoD and Commercial Missions

OPEN, MODULAR, SCALABLE, AND RECONFIGURABLE CUBESAT BUS

SIL has leveraged our experience and previously qualified Intelli-Avionics® aerospace hardware to fill a technology gap within the CubeSat class platform. The popular open-frame CubeSat design is difficult to space qualify and provides minimal benefits when compared to traditional satellite bus systems. The OMSR CubeSat bus addresses these issues by providing a standard ruggedized CubeSat solution designed to improve functionality, reliability, and efficiency, while simultaneously reducing development time and recurring cost.

The OMSR CubeSat bus is composed of order-independent, stackable subsystem modules. Modules can be independently designed, tested, and qualified to negate redesign costs. Individual modules of the OMSR bus can be custom designed, can be populated with COTS components, or can be obtained from SIL as fully populated COTS subsystems. Modules are vertically integrated and network via an internal power and data backplane system. The OMSR bus provides many protection features and enables utilization of the latest CubeSat technology making it the ideal platform for advanced, extended life missions.

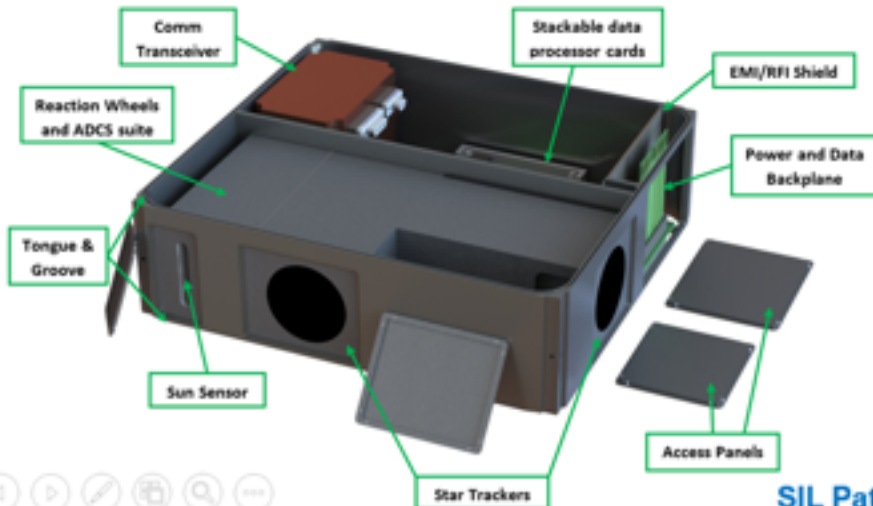
EXPLODED BUS VIEW



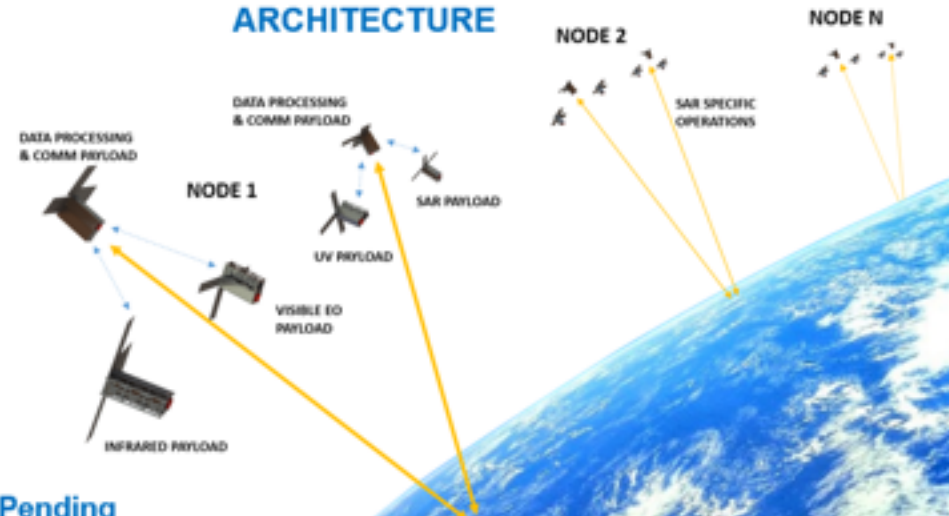
FEATURES

- Modular, scalable, and adaptable CubeSat bus enables longer life, advanced CubeSat missions
- Custom or COTS subsystems plug-n-play modules balance design flexibility with economical solutions
- EMI/RFI chambers within modules provide improved protection and increased reliability
- Scalable propulsion module (~50-200 m/s) supports distributed aperture systems, station keeping, attitude maneuvers, etc.
- Capable of high accuracy attitude determination and pointing (10 arcsec) with reaction-wheel/star tracker systems
- High capacity (200Wh/Kg) Li-Ion Polymer EPS with advanced BMS enables high power CubeSat operations
- Increased radiation shielding enables long duration missions
- Compatible with P-Pod and CSD deployment platforms
- Bus derived from SIL designed, qualified, and flight heritage Intelli-Avionics® technology and hardware
- Modularized plug-n-play design with individual test & qual capability reduces development time and recurring cost

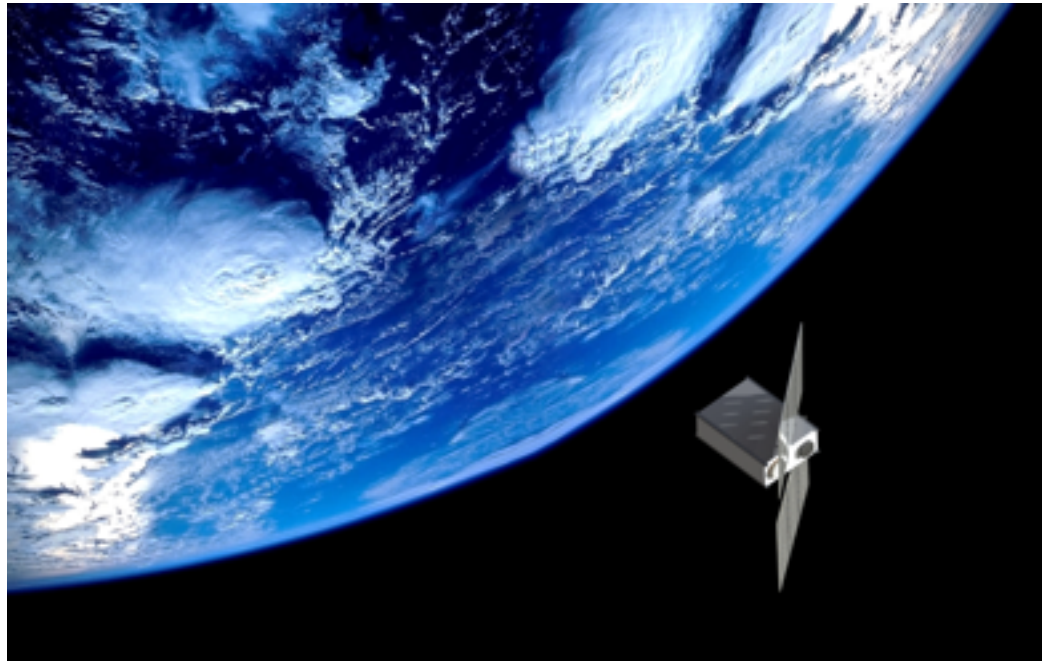
INTERNAL MODULE VIEW



DISAGGREGATION ARCHITECTURE



SIL Patent Pending



**6U to 27U SILSAT – Chameleon™
Open, Modular, Scalable and
Reconfigurable Bus (OMSR) Bus**



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