HISat™ Enables Configurable Satellites

NovaWurks

Advantages

- High Performance Bus can be built in months, not years
- Useful in all orbits with scalable life (2, 5, 8+ Year life)
- Payload Centric
  - Configured to adapt to payload and Launch Vehicle
  - Satellite bus is a configuration, low NRE, not design
  - Soft Ride built-in capability for Payload
- Resiliency
  - n of m improvement from "primary/redundant"
- True Software defined Spacecraft Bus – "APP" for Payload
- Open source Simplified Interface – Plug-n-Play by design
  - Share power, fuel, data, and thermal
- Cost reduction
  - Mass produced, driving quality and cost efficiencies
- Demonstrated EMI/EMC features

Who is NovaWurks

- Founded 2011 by Talbot Jaeger (CTO) in Los Alamitos, CA
- 0ver 15,000 sq ft, engineering, simulation, labs, High Bay, HWIL, 3-D printing and clean room spaces
- Staffed by professionals with 25+ flights & 300+ years of space experience and New Space go getters, eager to learn and change our world for the better.
- Three HISat™ test flights to date (ISS, GTO, and LEO)
  - SIMPL was assembled inside the ISS by Astronauts
    - First in-space on-orbit assembly of fully capable spacecraft from 8 individually delivered modules
    - First non-air propulsion system fully-qualified for ISS both inside (IVA) and outside (EVA)
  - PODSAT-1 demonstrated space environment capability
  - eXCITe was built on ground and launched on ESPA

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The HISat™ Building Block

- Individual HISats™ are connected to aggregate performance as a PAC (Payload Accommodation Configuration)
- Designed for Robotic Handling on ground or on orbit
- Streamlined Integration and Test
- The HISat™ Building Block:
  - Manages, stores, conditions and distributes power
  - Includes sun sensors, star trackers, accelerometers, gyros
  - Provides PAC processing, data handling, storage, metrology
  - Provides reaction wheel, CMG, SADA
  - Includes momentum dumping thrusters
  - Manages PAC thermal
  - Includes SSA sensors – Visual and LIDAR

Configurable Satellites

- TRL 7/8 – Flight tested on-orbit demonstrations
- Operational Mission in 2020 for TRL 8/9
- Multiple payload ride-share capability
- Late life cycle changes can be accommodated by the configurable architecture and software
- Scalable capabilities
  - Payload mass up to 2000kg
  - 3-axis control with <0.01 deg pointing error
  - >7KW power possible
  - Data storage up to 10TB and more
  - High speed comms (RF and/or optical)
  - Available DeltaV for GTO transfer & orbit stationkeeping

Payload Accommodation Configuration *(Examples)*

- **HISat™ Enhanced Configuration**
  - **Frame-based that incorporates HISats™ and payloads**

- **HISat™-Based Structure**
  - **HISats™ interconnect to form structure and mounting locations for payloads**

- **Wrapped Payload**
  - **HISats™ connect directly to a structural payload to provide all bus functions**

- **On-Orbit Assembly**
  - **HISats™ support payloads and enable direct connections via robotic assembly or RPO. Can create a spacecraft larger than could be launched.**