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Group Discussion 10

Standardization Approaches for Efficient Electrical Interfaces of CubeSats





Motivation

for a Standardization of Efficient Electrical Interfaces of CubeSats

- Advantages for suppliers and customers of commercial products
 - supports exchangeability
 - promotes competition



[Image from: CubeSat Kit FM430 Flight Module Hardware Revision: C Manual]



Image from http://www.isde.vanderbilt.edu/wp/ wp-content/uploads/vanderbilt_payload.jpg





Motivation

for a Standardization of Efficient Electrical Interfaces of CubeSats

- Advantages for single CubeSat Projects or long-term programs, especially looking at
 - educational pico-satellite projects
 - emerging mega-constellations and formations of large number of very small satellites
- Key aspects
 - Performance: miniaturization is key driver to limit costs
 - Durability: only 40-50% of miniature satellites reach primary mission objective in orbit
 - Fast Development Cycle: design, iterate, and launch within a few months
 - Modern Production: production, integration & test: from high-tech manufactures to batch production



support for scalability

simplifies re-utilization and extension of subsystem designs

- standardized monitoring and protection of subsystems
- standardized support for testing and debugging
- (in-orbit) re-programming of (integrated) subsystems





Chances

for a Standardization of Efficient Electrical Interfaces of CubeSats

- allow fast and compact integration
- simple maintenance of integrated bus
- support steep learning curve







Preview

of a concept for Efficient Electrical Interfaces of CubeSats







Discussion Group

about a Standardization of Efficient Electrical Interfaces of CubeSats

- Points of discussion
 - advantages and limitations of current approaches
 - ongoing progress and proposed concepts for interface standardization
 - experiences from past and ongoing missions utilizing proposed/similar/better concepts
- Expectations from discussion
 - discussion with both, (academic) customers and commercial suppliers
 - expected outcome: remarks, new ideas, and additional requirements





Thank You