

A large white spacecraft is being worked on in a cleanroom. A person in a white protective suit is visible on the left, interacting with the spacecraft. The spacecraft has a large black antenna and is covered in silver thermal blankets. The cleanroom has a high ceiling with recessed lights and large windows in the background.

Ball Small Payload Rideshare Options and Capabilities

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GO BEYOND WITH BALL.™

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Ball Configurable Platform (BCP) For Rideshare



STPSat-2



STPSat-3



GPIM



IXPE

Heritage / Schedule Information:

- STPSat-2, Launched Nov 2010, 2 payloads
- STPSat-3, Launched Nov 2013, assembled in 47 days, 6 payloads
- GPIM, planned launch Fall 2018, green propellant propulsion system prime payload, 3 secondary payloads; contract start to spacecraft bus complete – 24 months
- IXPE, in development, Mission PDR June 2018; launch planned April 2021

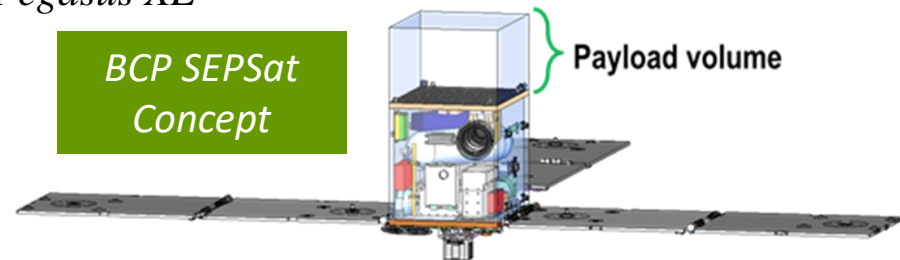
Company Information:

- Dr. W D Deininger
- 303.939.5314
- wdeining@ball.com
- www.ball.com
- Boulder & Broomfield, Colorado, USA,
- ~3000 employees,
- Active SmallSat Projects Include: STPSat-2, STPSat-3, GPIM, IXPE, NeoWISE (WISE)
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Small BCP Product Information:

- Orbit; 400 km to 850 km
- Inclination: 0 deg to sun-synchronous
- Stabilization: 3-axis, zero net momentum
- Attitude knowledge: 0.02° 3σ each axis
- LV Compatibility: ESPA, ESPA Grande, Minotaur, Pegasus XL

BCP SEPSat
Concept

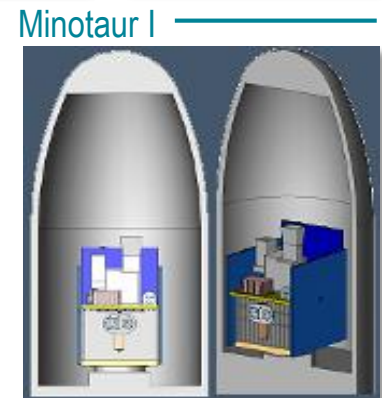
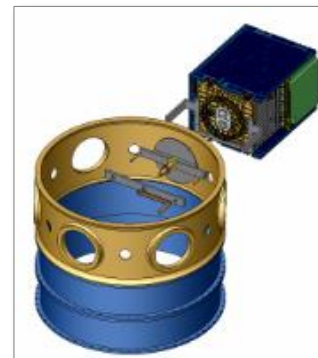
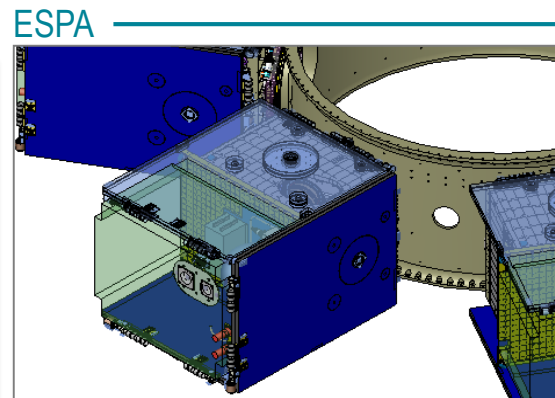
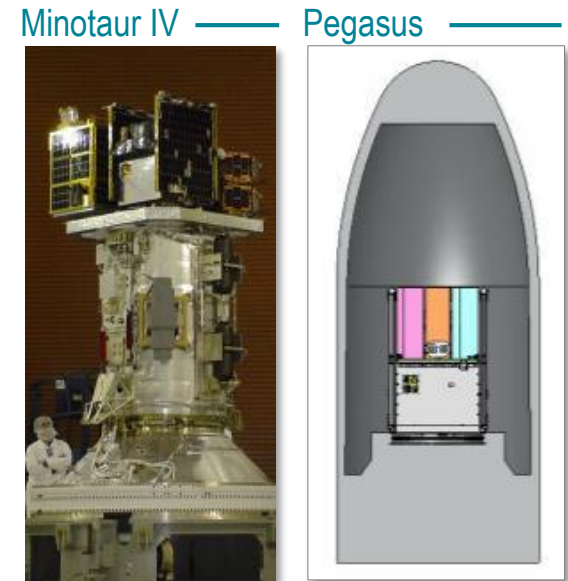


Payload volume

Ball's Small BCP Accommodates Ride Share or Dedicated LV

Small BCP specifically designed to fit on the ESPA Ring

- Designed to be compatible with multiple launch vehicles
 - Provides mission flexibility
 - Environments envelope ESPA, Minotaur I, Minotaur IV, Pegasus, Athena 1
- ESPA – provides cost-effective option when schedule allows dependence on other payloads and orbit is flexible
 - Greatest design driver – volume and environments
- Minotaur IV – with multi-payload adapter, provides cost-effective rideshare opportunities
- Minotaur I, Pegasus – When you need to call the shots
 - Dedicated launch vehicle simplifies packaging, and allows payloads beyond standard envelope
- BCP-100 Compliant to MIL-STD-1540e and MIL-STD-461e
 - Tested to MIL-HDBK-340A for Class B spacecraft per DOD-HDBK-343



*Ball's BCP-100
configuration
maximizes launch
opportunities*

The BCP Provides Versatility with Proven Reliability



- BCP line has more than 85 years of combined flight time across 19 missions
 - Mission design life requirements ranging from 12 to 90 months
- Concept: maintain core spacecraft designs for avionics; configure peripheral subsystems to meet mission needs
 - Power, Propulsion, Agility, and Payload Accommodation
- Common flight software code base across product line
 - Highly modularized and flexible to meet mission-specific needs
 - Fault detection and correction, autonomous operation, on-board data processing, sensor, and actuator control
- Small, Medium and Large class BCP spacecraft
 - Determined by redundancy needs, capability, and size

Ball Continuously Evolving BCP Line to Meet Customer Needs While Maintaining Strong Ties to Design Heritage

- SmallSat specific focus efforts include:
 - Higher ΔV
 - Longer life
 - Reduced cost
 - Shorter build time