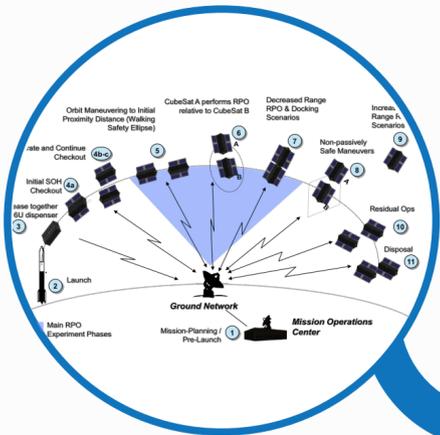


PCB DESIGN PROCESS

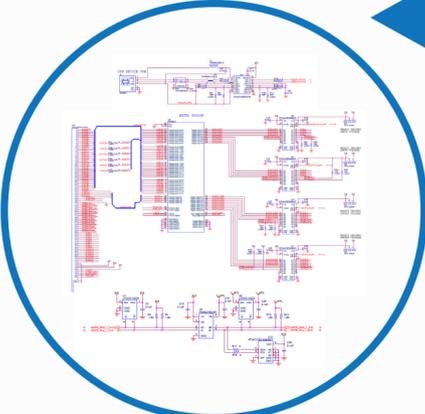
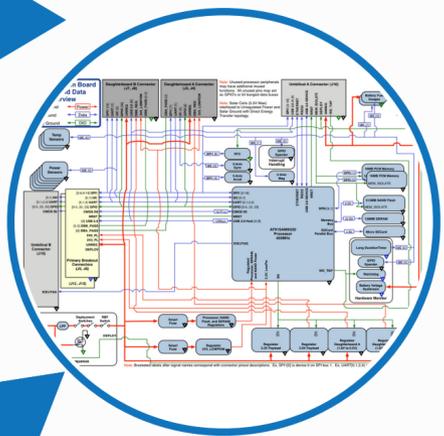
Mission System Requirements

High-level customer mission requirements are translated to spacecraft design specifications through simulation and analysis grounded in real-world operational experience.



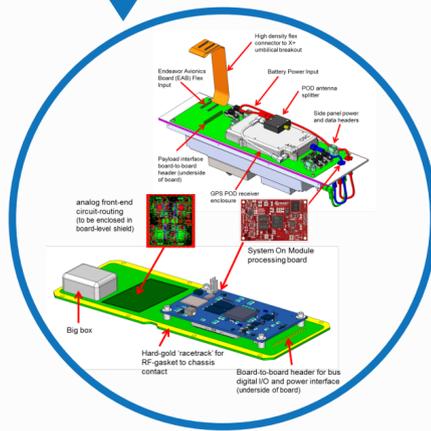
High-Level Design

Electrical and software engineers collaborate to generate high-level system architecture diagrams. The design execution is then validated against requirements through the scrutiny of an experienced multidisciplinary body of engineers.



Schematic Capture

A schematic is drafted under continuous review of embedded software developers and test engineers to ensure a smooth end-to-end development process.

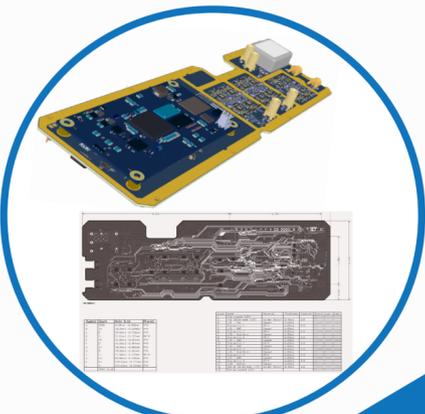


Mechanical Configuration

Engineers work closely to design a tightly coupled electrical and mechanical configuration that satisfies the unique thermal, EMI, and high-vibration survivability demands of a spacecraft.

PCB Layout

PCB developers work closely with electrical and mechanical engineers to consolidate the schematic and mechanical design into a complete PCB assembly design package. Every component is modeled three-dimensionally to precisely control clearances and enable industry-leading hardware miniaturization.



Final Design Review

A final design review dissects every detail of the PCB assembly. Engineers from outside the program examine the schematic and critical routing. The PCB assembly and associated harnessing is brought into the spacecraft model for a final fit check. Through this methodical review process, Tyvak typically achieves a one-rev-to-flight design cycle.



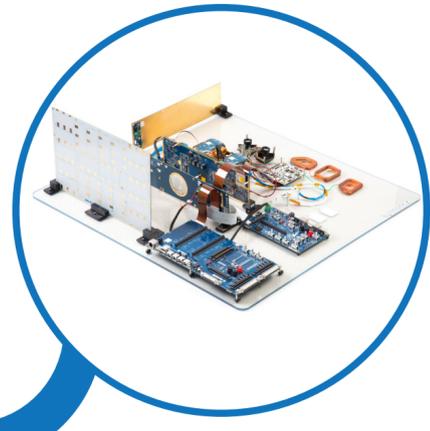
Fabrication and Assembly

Tyvak works closely with preferred board houses to streamline our fabrication and assembly processes. This enables quick-turn, high-quality board runs critical to Tyvak's accelerated program schedule capabilities.



System Integration Test and Verification

Each Tyvak spacecraft program benefits from a "flat-sat" test bed. New components are immediately integrated for system-level design verification. The flat-sat also serves a dual purpose as a development platform facilitating concurrent test and development activities.



Flight Hardware Assembly

Fully-vetted hardware is built into an Engineering Development Unit of identical configuration to a flight vehicle. This final design verification effort exposes any remaining system assembly and test procedures.

