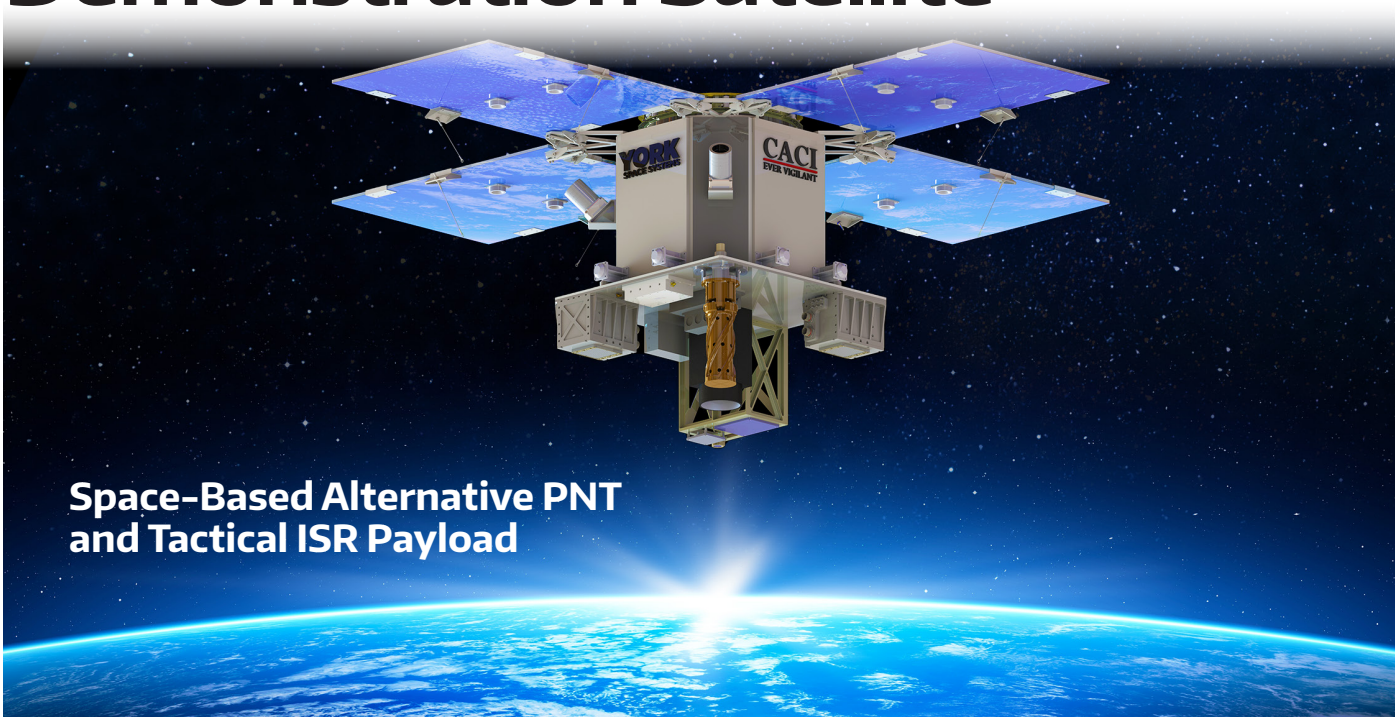
SPOTS Multi-Mission Payload Demonstration Satellite



CACI experts have partnered with York Space Systems to deliver and launch CACI's first-ever DemoSat, which will demonstrate the space-based orbit and time synchronization system (SPOTS) multi-mission space technology payload in orbit.

Our SPOTS technology builds on more than 20 years of expertise developing, integrating, and operating complex end-to-end collection, processing, and space domain awareness systems for the Intelligence Community (IC), the Department of Defense (DoD), combatant commands, and other U.S. Government agencies.

CACI's specialized multi-mission DemoSat payload will test the company's technological advances in precision alternative positioning, navigation, and timing (APNT) and tactical intelligence, surveillance, and reconnaissance (TacISR) technologies in the contested space domain. Our two-way time transfer (TWTT) and clock modeling technologies are at the heart of the DemoSat payload and illustrate a leap in small-platform synchronization capability. Rather than expensive time references or time-sync performance compromises, SPOTS DemoSat APNT and TWTT technology deliver precise timing and long-term frequency stability. SPOTS is also equipped with software-defined radios (SDRs) that run low probability of interception/detection (LPI/D) and frequency-agile spread-spectrum radio frequency (RF) waveforms. The SPOTS payload is also clock/oscillator technology agnostic and can be scaled to support multi-clock ensembles.

SPOTS can also enable a GPS/GNSS-independent time and frequency source – allowing sustained, resilient PNT even in GPS-challenged or -denied environments.

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Features

- High-performance synchronization software in place of expensive clock equipment
- Low-size, weight, and power (SWaP) for small satellites (smallsats) and high-altitude platforms
- Low-cost, low-SWaP GPS-compatible receivers
- Advanced clock-state modeling for flexible stability control and update rate
- Uses commercial, non-atomic, low-cost space-qualified clocks
- Built-in dynamics and reference frame corrections include Doppler and Sagnac effects
- Frequency-agile burst communication waveforms
- Jam and spoof detection, geolocation, and mitigation
- Fully reprogrammable on orbit
- Compatible with smallsats and cube satellites (CubeSats)
- Customizable features and options available

Benefits

- SPOTS enables APNT for airborne and ground assets to reduce outage effects
- Delivers precise navigation for proliferated low Earth orbit (LEO) constellations
- Modular design and machine learning (ML) algorithms ensure rapid signal changes and upgrades
- On-orbit reprogramming supports multiple missions and updates

CACI DemoSat – Delivering Highly Accurate, Uniquely Secure APNT

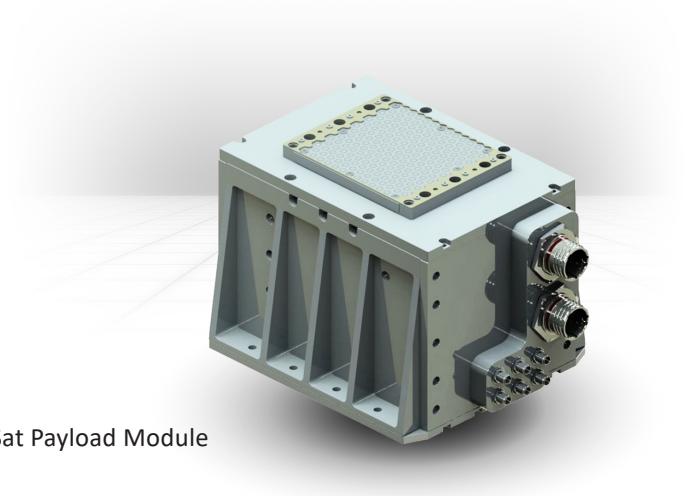
CACI's low-SWaP TWTT technology delivers sub-nanosecond time synchronization accuracy using LPI/D waveforms for observable extraction and advanced clock state estimation for stability maintenance. Our TWTT features end-to-end validated time delivery and remote clock performance, with ML algorithms that track and continually improve clock accuracy in real-time. Private, changeable device registration provides advanced security. Agile transmit/receive frequencies and scheduled space-ground transactions occur via a custom LPI/D waveform. Encrypted data traffic rides on the TWTT waveform for maximum efficiency.

DemoSat Precision Tactical ISR Payload

The CACI DemoSat payload also features high-speed analog-digital converter (A/D)-based ISR capability, aided by sub-nanosecond timing to reduce err ellipses by orders of magnitude. Collection from multiple platforms combined with CACI's advanced low-SWaP timing technology provides operators with precise timing and geolocation of adversary assets in minutes.

Ground, Airborne, High-Altitude, and SmallSat Applications

CACI's low-SWaP, low-cost payload makes precision timing and APNT technology readily accessible for multiple domains. Precision time is transferred between assets from ground to air to high altitude and space for a true multi-domain mission solution.



CACI SPOTS 1U SmallSat Payload Module

This material consists of CACI International Inc general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms Regulations (ITAR), Part 120.10, or Export Administration Regulations (EAR), Part 734.7-10. (PRR ID523)

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