

## 4Links

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4Links design and sell test equipment for SpaceWire that users report is easy to use, reliable, and accurate, and that enabled them to detect and diagnose bugs that simulation and other testers did not expose. The products include simulators, interfaces, analysis and recording, with a wide range of diagnostics and instrumentation of performance and time. Customers world-wide have extolled the quality and usefulness of 4Links SpaceWire test equipment. 4Links is exhibiting along the main aisle between the entrance and registration, and 4Links test equipment is distributed in North America by Aeroflex, exhibiting at booth 73.

## Aeroflex Colorado Springs

### Booth Space: 73 A

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Aeroflex Colorado Springs is a supplier of integrated circuits and custom circuit card assemblies. We supply a broad range of standard products for HiRel applications including our new UT699 LEON 3FT Microprocessor and SpaceWire 4-Port Router, logic, FPGAs, memories, serial communication interfaces for MIL-STD-1553 (databus and transceivers), microcontrollers and an LVDS and SpaceWire family of products. Our RadHard Digital and Mixed-Signal ASICs handle design complexities up to 3,000,000 usable gates, offers advanced technologies down to 0.25um and are RadHard to 1 Mega rad. Aeroflex offers Circuit Card Assembly capabilities, which consists of full assembly, test and coat in a high mix/low to medium volume operation.

## Aeroflex Motion Controls

### Booth Space: 73

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Aeroflex Motion Controls offers a wide range of capabilities in the design and manufacture of components and systems for the space market. Our products include rotary and linear actuators, brushless DC motors, gimbals, scanners, electronic controllers, slip rings and twist capsules. Wherever precision, power and packaging goals need to be manufactured in a design-to-cost environment, Aeroflex is globally competitive.

Aeroflex has been providing motion control products since the early 1940's. Aeroflex entered the motor business in the early 1950's to fulfill internal needs for higher performance motors for gimbaled applications. Aeroflex provides stepper (both hybrid and permanent magnet), brushless, full and limited-angle torquers, arc segment, zero-cogging, solenoid and voice coil motors.

Precision gimbals for pointing and tracking, stabilized platforms and pedestals are a core of the Aeroflex Motion Control division. Coupled with our electronic motion controllers and adaptive software, Aeroflex can provide a complete turn-key multi-axis system to meet your requirements.

### **Aeroflex Plainview**

#### **Booth Space: 74**

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Aeroflex Plainview is a manufacturer of advanced microelectronic Multi-Chip Modules (MCMs) for airborne, space, shipboard, ground based avionics. Our full breadth of space related products include our new line of Voltage Regulators and Analog Muxes, high speed low power PWM controller, Motor Driver, Resolver-to-Digital converter, and Transceivers

Our latest product release is a Battery Electronics Unit (BEU), a Li-Ion battery balancer and cell telemetry electronics unit. It performs autonomous cell balancing, high cell limit indication and low cell limit indication. A 1553 bus is used for individual cell telemetry and commands including closure of a cell bypass relay in the eventuality of a cell failure, and connecting the battery's reconditioning load. The BEU system has fully redundant telemetry, control and balance functions.

Aeroflex also offers a variety of Broadband, RF and Microwave products for aerospace and space applications.

### **Aerojet**

#### **Booth Space: 16**

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Aerojet is recognized as a world leader in the Aerospace and Defense markets, specializing in propulsion solutions for space and missile systems along with defense armaments. Aerojet has a distinguished track record of success in space and defense systems and proudly provide our customers, both government and commercial, with propulsion solutions utilizing solid, liquid, gel, airbreathing, and electrical propellant technologies. Through our lean manufacturing techniques and commitment to operational excellence, as proven by our dedicated employees and Centers of Excellence, Aerojet is able to produce a highly reliable and affordable propulsion solution to fit any of our customers' requirements. Aerojet produces a large array of motors and engines from the main engines used on NASA launch vehicles to small bi- and mono-propellant thrusters used in station-keeping systems. Aerojet has over 3,100 employees in thirteen states. Aerojet is headquartered in Sacramento, California, with main divisions in Washington, Virginia, Tennessee, and Arkansas

### **Air Force Research Laboratory, Space Vehicles Directorate**

#### **Booth Space: 77 T**

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The Space Vehicles Directorate The Space Vehicles Directorate serves as the Air Force's "Center of Excellence" for space research and development.

The Space Vehicles Directorate is headquartered at Kirtland Air Force Base, N.M. In addition, the organization operates a division at Hanscom Air Force Base, Mass. and the High Frequency Active Auroral Research Program (HAARP) located near Gakona, Alaska.

The Space Vehicles Directorate is comprised of a talented and dedicated team of 941 military, federal, and contract employees and has an annual budget of approximately \$378 million.

The mission of the Space Vehicles Directorate is to develop and transition space technologies for more effective, more affordable warfighter missions.

### **Aitech Defense Systems, Inc.**

#### **Booth Space: 64**

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Aitech is a leading supplier of radiation tolerant and radiation hardened computer systems optimized for harsh environments. The product offering includes off-the-shelf cards, powered enclosures, subsystems and hardware integration services for defense and space applications. Aitech promotes open architecture in standard industry and military-specified form factors such as VME, CompactPCI and PCI Mezzanine Card (PMC). Celebrating its 26th Anniversary this year, Aitech has a long and impressive track record delivering superior cost-performance, reliability, and time-to-market benefits to our worldwide customers in launch vehicle, missiles, satellites and human space flight applications. With full real-time operating systems' compatibility across various pedigrees of our off-the-shelf products, Aitech has the solution you are looking to field in high altitude, near space, LEO, MEO, GEO, interplanetary and deep space environments.

### **AMERGINT Technologies**

#### **Booth Space: 55**

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AMERGINT Technologies is pioneering software-based signal and protocol processing for satellite ground and test systems. With our softFEPTM family of products customers can now create their own front end processors for telemetry and command link processing. softFEPTM provides a full suite of software devices, from IF waveform/signal processing through digital recording and frame processing for CCSDS and TDM data. Our FEPlabTM supports customer development and integration of the program-unique functions.

We also offer the TestExecTM framework for verification testing of your satellite/ground systems. TestExec combines test automation, space waveform understanding, requirements tracking, and automated document generation, all in a configuration managed and database controlled environment.

### **Andrews Space, Inc.**

**Booth Space: 34-35**

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Andrews Space, Inc. was founded in 1999 to be a catalyst in the commercialization and development of space. The company is an affordable integrator of aerospace systems and developer of advanced space technologies. To learn more, please visit: [www.andrews-space.com](http://www.andrews-space.com) (206) 342-9934

In 2009, Andrews Space, Inc. formed SpaceFlight Services (SpaceFlight); a service company focused on providing routine access to space for small payloads. SpaceFlight has an affordable price structure by using standard flight interfaces and a streamlined integration process. SpaceFlight's process allows payloads to be rapidly manifested, certified, integrated and flown to space by simplifying launch integration planning and providing a single customer interface.  
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**Applied Technology Associates****Booth Space: 75**

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Applied Technology Associates (ATA) is a precision sensing, measurement and controls company providing custom hardware solutions and services to government, aerospace and commercial customers. Our market applications span Acquisition, Tracking & Pointing (ATP); Guidance, Navigation & Control (GN&C); and Test & Evaluation (T&E) solutions for ground, air and space systems. ATA has expanded to include a new satellite assembly, integration and test facility to support its efforts with the Air Force Research Laboratory (AFRL), Sandia National Laboratories, its partner Space Dynamics Laboratory, and with aerospace primes.

ATA Aerospace, ATA's joint venture with ASRC Aerospace, is the prime contractor on the AFRL Space Technology Research, Analysis, Integration and Test (STRAIT) contract. On this contract ATA Aerospace provides the Program Management, Engineering Services, Integration and Test, Launch Support, On-Orbit Support, and Test Facility O&M for satellite and high altitude systems and subsystems including buses and payloads

**Astro- und Feinwerktechnik Adlershof GmbH****Booth Space: 20**

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Small satellite technology is in the core of Astro- und Feinwerktechnik Adlershof GmbHs business activities. Thanks to the comprehensive knowledge and experience of a large part of the employees in different fields of the space technology, the company has developed in the course of its history from a supplier of parts and components into a system vendor.

In space technology hardware, we are specialized in commercial and scientific payload areas. Our expertise also extends to (electro)-mechanical hardware for micro and small satellites such as reaction wheels and solar panels, including

operational mechanisms. We have further extensive experience in optical (OGSE) and mechanical (MGSE) ground support equipment, such as developing and producing complex test stations, transport containers and handling devices. The scope of the services comprises the mechanical tests and the thermal and thermal-vacuum tests.

## **ATK**

### **Booth Space: 10-12**

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ATK is a world-class provider of satellite subsystems and components as well as launch capabilities. Our products range from composite structures for space and launch applications (optical benches, dimensionally stable satellite assemblies, and launch system structures) to proven propulsion systems such as the space shuttle Reusable Solid Rocket Motor, Graphite Epoxy Motor, CASTOR®, Orion, and STAR™. Our strategy is to build on our core aerospace and defense business by aggressively challenging the status quo with affordable, innovative solutions. From aerospace to defense, ATK is committed to the exploration of new markets and the continued success of our products. News and information can be found on the Internet at <http://www.atk.com>.

## **BAE Systems**

### **Booth Space: 80 T**

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BAE Systems in Manassas, Virginia, produces a wide array of radiation-hardened electronics, including components, single-board computers, and complete space payloads. The company has well over 500 computers and thousands of components on almost 200 satellites in space. These radiation-hardened components include memory, ASICs, FPGAs, and microprocessors. The facility is accredited as a DoD Category 1A Trusted Integrated Circuit Supplier, covering design, foundry, test, packaging, and assembly services.

BAE Systems has leveraged their extensive space experience and flight heritage to design and develop several solutions for smallsat applications.

## **Ball Aerospace**

### **Booth Space: 42**

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Ball Aerospace develops and manufactures spacecraft, advanced instruments and sensors, components, data exploitation systems and RF solutions for strategic, tactical and scientific applications in support of the DoD, NASA and other U.S. government and commercial entities. Ball Aerospace's culture and capabilities foster the agility to innovate, strength to deliver.

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Berlin Space Technologies (BST) is a spin-off from the Technische Universität Berlin (TUB). BST offers a wide range of subsystems as well as full micro satellite systems. BST satellites are based on the heritage of 40 years in orbit experience from the seven satellites of TUB's famous TUBSAT series. BST specialty are cost effective high performance micro satellites for responsive missions with real time operation with up to 1.5m GSD. All our satellites are available with the extensive BST TU-Berlin Satellite Training Program (TTP).

BST key personnel were involved in the design, construction and operation of LAPAN-TUBSAT and in the implementation of the TTP. It is a high performance micro satellite launched in 2007, jointly developed by TUB and the Indonesian Space Agency LAPAN. BST is also involved in the design of key subsystems for its successors LAPAN-Orari and LAPAN-A2 to be launched in 2011.

**Broad Reach Engineering****Booth Space: 65-66**

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Broad Reach Engineering develops hardware and software for space flight missions and ground systems. Products include spacecraft avionics, science payload electronics, spacecraft flight software, ground and space borne GPS receivers for precision orbit determination and occultation science, ground support hardware and software, and mission design and analysis service. [www.broad-reach.net](http://www.broad-reach.net).

**Busek Co. Inc.****Booth Space: 63**

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Electric propulsion systems are Busek's core business. We are the leading source for Hall Effect Thrusters (HETs) and micropropulsion. Our principal products include: HETs (200W to 20kW), RF ion thrusters, electrospray thrusters, micro-pulsed plasma thrusters (micro-PPTs), thermionic cathodes and carbon nanotube field emission cathodes. Busek can deliver fully integrated propulsion systems – including power processing, digital control and propellant management.

Busek's flight heritage includes the BHT-200 system on the TacSat-2 satellite and micro-PPTs on the FalconSat-3. Busek delivered eight colloid thruster systems to JPL for integration on the NASA-ESA ST7 LISA Pathfinder satellite. Busek also delivered a BHT-200, neutral source, plasma probe, propellant management system and power / digital control electronics to AFRL for the FalconSat-5 satellite. Launch is expected this year.

Busek is developing micro-ion engines, micro-resistojets, air-breathing HETs and CubeSat propulsion modules ranging in TRL from 4 to 6. Busek has extensive vacuum test chambers equipped with state-of-the-art diagnostics and performance measuring instrumentation.

**Clyde Space Limited****Booth Space: 33**

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Clyde Space is a leading supplier of small and micro spacecraft systems. Our core activities include the design and production of high performance power subsystems, lithium polymer batteries and high efficiency solar panels for small and miniature satellites. We are also active in the development of Attitude Control and Determination Systems and are developing advanced nanosatellite platforms based on the 'CubeSat' standard in conjunction with other leading academic and commercial organisations around the World.

The team at Clyde Space has extensive experience in the design and production of systems for small satellite missions and our off-the-shelf, heritage products range from our CubeSat power system for 1kg spacecraft up to our rad-hard SmallGEO power system for ESA/NASA type programmes up to 5kW. Our combined experience in over 50 space programmes enables us to support missions at all levels, from conceptual design, development, integration, through to analysis of data from on-orbit operations.

**Comtech AeroAstro****Booth Space: 22-23**

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Comtech AeroAstro is a leader in satellite systems, components, and advanced communications technologies. Our spacecraft and components incorporate modular architectures and plug-n-play technologies in an efficient, agile, and highly responsive design and integration environment.

Comtech AeroAstro has developed and launched a variety of highly capable spacecraft platforms less than 200kg, including STPSat-1 on the first ESPA launch in March 2007 and STPSat-2 delivered in December 2008. In March 2010, the United States Navy's Naval Research Laboratory (NRL) awarded Comtech AeroAstro the bus design and development contract for the Joint Milli-Arcsecond Pathfinder Survey (JMAPS) mission.

Comtech AeroAstro develops enabling technologies, components and sensor systems to support mission needs. We design innovative payload solutions applying systems engineering expertise focused on RF/EO phenomenology, Space Situational Awareness and advanced systems development. In addition, we provide reliable, low SWAP satellite components, all designed and engineered by Comtech AeroAstro for multiple mission applications.

**CTD****Booth Space: 61**

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Based on TEMBO composites, CTD's RAPDAR (Roll-out and Passively Deployed Array), a lightweight deployable solar array is capable of volumetric packaging ratios of over 100-to-1, and offers power densities exceeding 500 W/kg.

TEMBO materials are also used to create large aperture, high frequency satellite antenna reflectors that will provide more bandwidth at a lower cost than current reflector designs.

In related activities, CTD is developing deployable solar arrays and antenna reflectors to significantly increase the capabilities and utility of CubeSats.

Flight experience includes two TEMBO Hinge missions, and the AMS-02 where CTD's Cryocoat UL-79 was employed.

CTD seeks to bring innovation to product development through the integration of advanced composite materials, insightful engineering, and creative design and manufacturing.

### **Design Net Engineering**

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Design\_Net Engineering specializes in the design, development and manufacture of custom electronics and associated software for aerospace instrumentation and avionics. Our systems design approach with supporting disciplines including FMECA, Structural, Radiation, and Thermal analyses, consistently meets the demanding life cycle needs of customers. Our instrumentation and electronics designs supported NASA missions such as the Floating Potential Probe (ISS), FUSE (APL), COS (GSFC Hubble), LTMPF (JPL), NPP (GSFC) as well as DoD programs such as PnPSat.

DNet's core strengths in instrumentation and the supporting avionics hardware and high reliability software are coupled with an exceptional record for meeting aggressive schedules. Our internal "R & D" programs support the DoD responsive space initiative, specifically the Operationally Responsive Space program resulting in highly modular and configurable Plug and Play architectures that reduce cost and increase reliability.

Design\_Net is also very active within the rideshare community having developed substantial enabling technologies and flight hardware.

### **Glenair, Inc.**

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### **Glenair Lightweight Interconnect Cable Systems**

It's possible to reduce the weight of interconnect cabling in satellite systems by pounds—with huge \$ savings at launch—by replacing heavy, metal shielding materials with lightweight composite thermoplastics. Glenair has dozens of weight saving interconnect technologies, from composite EMI braid to ultra miniature circular and rectangular



connectors—all designed with one thing in mind: saving weight in mission-critical interconnect systems. If someone were to offer you \$1 bills for 50 cents each, would you say “yes”? That’s our offer. When you trade the cost of a one pound weight reduction in interconnect hardware for the much more valuable \$ savings you’ll enjoy at launch, you’ll literally be buying \$1 bills for 50 cents each. Visit Glenair at booth 82T for the samples and materials that will make you a weight-reduction hero in your organization. Glenair: A World of Lightweight Interconnect Solutions.

### **Goodrich ISR Systems**

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Goodrich ISR Systems is a leading supplier of mission critical hardware for launch and satellite vehicles. Goodrich provides our products to missile defense programs, commercial, civil and military spacecraft platforms. Products such as flight computers, command & control, telemetry, uplink decoders, data acquisition, encryption, thrust vector control, stage separation control, flight termination and bus monitoring systems are engineered and produced by ISR Systems in Albuquerque. The ISR Systems facility in Ithaca, NY designs and manufactures components for satellite attitude control such as reaction wheels, TORQRODS, Magnetometers, Control Moment Gyros and Earth Sensors. Our 50 years of experience in the development of rugged, man-rated and miniature avionics qualifies Goodrich ISR Systems as the supplier of choice for your Launch Vehicle, Missile and Spacecraft system requirements.

### **Instarsat, LLC**

#### **Booth Space: 1**

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Instarsat is an innovative space technology company that is developing a new generation of small and medium class satellites for commercial, civil, and military markets.

To address the emerging demand for more cost-effective space systems, Instarsat’s focus is on providing value-driven high performance satellites and sub systems that encompass breakthrough improvements in quality and reliability.

Because of our unique product development and test program, Instarsat brings to the space marketplace proven end-to-end space systems solutions that make space more accessible and affordable to a wide range of customers and key stakeholders.

### **ISIS – Innovative Solutions In Space BV**

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ISIS – Innovative Solutions In Space is a company fully dedicated to small satellites. ISIS provides turn-key solutions based on nanosatellites to its customers, including launch and operations of the spacecraft. In addition, we provide a range of products and services for micro- and nano-satellite developers.

ISIS also acts as a launch broker for spacecraft up to 150 kilograms and aims to provide piggyback launch opportunities twice per year for small clusters of nano-satellites. Furthermore, ISIS provides related services and products such as acceptance testing and launch adaptors.

The company currently supports the CubeSat community with launch opportunities and off-the-shelf products such as CubeSat structures, TM/TC systems (UHF/VHF/S-Band), deployable antennas, and ground station solutions.. These products are available through the company web shop [www.cubesatshop.com](http://www.cubesatshop.com), which also features products from a broad range of third party suppliers. Custom solutions can be provided by our engineers in close cooperation with the customer.

### **L-3 Communications**

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L-3 Communications is a prime contractor in Command, Control and Communications, Intelligence, Surveillance and Reconnaissance (C<sup>3</sup>ISR), Government Services, Aircraft Modernization and Maintenance (AM&M) and has the broadest base of Electronic Systems in the industry. L-3 is also a major provider of homeland defense products and services for a variety of emerging markets.

### **Lockheed Martin Space Systems**

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Lockheed Martin has designed, built and launched over 150 small satellites, 100 percent of which have met or exceeded their design life. With a broad inventory of standardized and fully qualified components, and an established supply chain, Lockheed Martin can quickly field reliable systems, for any mission need. Leveraging a 50 year heritage, Lockheed Martin is actively maturing small satellite technologies to eliminate cost, schedule and weight drivers and improve satellite performance.

Built on experience, powered by innovation, Lockheed Martin provides a wide range of capabilities to meet any customer mission focus - large, small, micro or nano.

### **Masten Space Systems**

#### **Booth Space: 5**

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Masten Space Systems is a Mojave, CA based aerospace company developing fully reusable vertical takeoff, vertical landing (VTVL) launch vehicles, rocket-related products, and engineering services. The company's 6000 square foot production facility and 200,000 square foot testing facility is located on the Mojave Air and Space Port. The company designs and builds aerospace solutions that focus on durability, long operational lifetimes, and minimal per-flight maintenance.

## **MDA**

### **Booth Space: 53-54**

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MacDonald, Dettwiler and Associates Ltd. (MDA) is at the forefront of operational smallsats, conventional satellite missions, ground systems, satellite communications, airborne surveillance, defense applications and training, and is a leading provider of mechanical systems engineering, composites structures, and space robotics.

MDA programs include the robotics on the International Space Station, XSS-11, Mars Landers, the RADARSAT family of Synthetic Aperture Radar satellites, the RAPIDEYE and SAPPHIRE programs, a wide array of satellite communications programs, and a broad array of ISR services for the DOD and Intelligence communities.

A premier systems integrator, MDA delivers turnkey solutions that are the foundation of effective decision making. MDA delivers innovation and long-term thinking through its advanced solutions for interplanetary spacecraft, remote sensing and communications satellite missions, and terrestrial applications.

MDA annually generates revenues in excess of \$1 billion and employs over 3,200 people.

## **Micro Aerospace Solutions, Inc.**

### **Booth Space: 78 T**

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Micro Aerospace Solutions, Inc. (MAS) is a small business based in Melbourne, Florida on Florida's spacecoast. Our goal is to provide low-cost yet innovative solutions to new and difficult challenges. Some of our areas of expertise include small spacecraft attitude detection/control, propulsion systems and sensor systems. Other areas include the development of command and data handling, embedded systems and electronics systems. We offer consulting services to help with your system design and test needs. We can assist in system design and analysis during any phase of the system life cycle from initial concept through operations including product and engineering development planning. Our talented staff can provide knowledgeable engineering support on a variety of projects at minimal cost. Our solutions offer great performance with low mass, power and cost. We can accomplish this because of our low overhead and use of commercial-off-the-shelf components where applicable, often in unique ways to provide added value for our customers.

**Microcosm Astronautics Books****Booth Space: 68-69**

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Our unique bookstore carries a huge selection of astronautics books, over 300 titles! These include our world renowned Space Mission Analysis and Design and Reducing Space Mission Cost. We pride ourselves on supplying the space industry with high quality books at very low prices, and providing our professional assistance in finding the right book for your astronautical needs. It's easy to order on-line, by phone, or by email or visit us from 8am-5pm PST, Monday through Thursday at our near-to-LAX location. Our goal is to make access to our books and services incomparable. We also have wholesale prices for retailers and institutes of higher learning.

**MicroSat Systems Canada Inc.****Booth Space: 31**

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Microsat Systems Canada Inc. is a Canadian corporation applying dynamics and control technology in the international space market to provide reaction-wheels, sensors and complete microsatellites. In fact, MSCI is the ONLY Canadian entity that has ever designed, built, integrated, launched, commissioned, and operated a microsatellite. MSCI is Prime Contractor for the Canadian Space Agency (CSA's) highly-successful MOST space astronomy microsatellite, with continuing operations since its 2003 launch. MSCI is also Prime Contractor for Canada's next microsatellite, NEOSat, using MSCI's unparalleled pointing technology to track NEOs from Low Earth Orbit. MSCI's Multi- Mission Bus is CSA's baseline microsatellite standard. MSCI also serves satellite manufacturers world-wide, specializing in high-performance, 3-axis-stabilized attitude control systems/sub-systems for micro and small satellites. Two models of the MSCI MicroWheel™ Reaction Wheel (0.2 and 1.0 Nms) have been delivered including NPSAT, MDA-DSE, STP-SIV, XSAT, Egyptsat, Proba-2, QuickSat, MS-28.

**Moog CSA Engineering****Booth Space: 71-72**

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Moog CSA Engineering provides highly engineered products and services for vibration suppression and precision motion control. Engineering services include mechanical design, finite element analysis, vibration isolation, vibration damping, control systems, dynamic testing, and magnetic actuator design. Products include spacecraft vibration and shock isolation systems, payload adapters including ESPA and the ESPA 6U Mount, hexapod positioning systems, flight motion simulators, vibration absorbers, electromagnetic actuators, vibration generators, ground test equipment and suspension systems that simulate zero gravity environments.

Moog CSA is a division of Moog Inc. which offers components and integrated solutions for space, combining a long heritage with innovations that enable new missions. Spacecraft mechanism products include solar array deployment actuators, antenna positioning mechanisms and instrument motion control. Spacecraft fluid control products include systems, subassemblies and components for chemical, electric and cold gas propulsion. Launch vehicle components and systems include thrust vector and steering controls, electric and hydraulic actuation and avionics.

**NASA Ames Research Center - Nanosatellite Missions Office**

**Booth Space: 27-28**

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The NanoSatellite Missions Office (NMO) performs complete mission definition and development, integration and operations for 5-50kg spacecraft to support NASA science, human exploration, and operational objectives. The NMO utilizes standard NASA processes and tightly focused functional elements that have been adapted and streamlined to suit a rapid 12-15 month mission development timeframe that permits a concentration of efforts in the development of revolutionary payload components and systems in terms of both capability and performance metrics. The NMO's mature infrastructure leverages technical and mission management expertise from strategic partnerships and alliances built with entities from industry, academia, and other government agencies to provide hardware components, launch services, and various engineering and science expertise.

**NASA/Goddard Space Flight Center/Wallops Flight Facility**

**Booth Space: 70**

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NASA's Wallops Flight Facility (WFF), located on Virginia's Eastern Shore, provides low-cost, responsive suborbital and orbital flight project services to government, industry, and academia customers. As WFF is dedicated to furthering science, technology, and commercial responsive access to space, WFF provides facilities and expertise to enable frequent flight opportunities worldwide. WFF manages an array of research carriers, including sounding rockets, scientific balloons, science aircraft, unmanned aerial vehicles, and small spacecraft systems. WFF provides operational support through its launch range, mobile range, research airport, and orbital tracking station. In addition to flight projects, WFF is also home to Earth Science researchers as well as engineers responsible for developing flight systems and advanced technologies. WFF has highly capable flight hardware fabrication and testing capabilities used to support both its NASA and non-NASA customers.

**Operationally Responsive Space Office**

**Booth Space: 21**

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The Operationally Responsive Space Office is working with the broader space enterprise to provide assured space power focused on the timely satisfaction of Joint Force Commanders' needs. The overarching objective of the Office is to address emerging, persistent, and/or unanticipated needs through timely augmentation, reconstitution, and exploitation of space force enhancement, space control, and space support capabilities.

The ORS Office is implementing a rapid innovation process using a Modular Open Systems Architecture (MOSA) to facilitate rapid acquisition, integration, test, deployment, and operations of space assets into the current space architecture in operationally relevant timelines. The ORS Office focuses on material (spacecraft, launch, range, payloads) and non-material solutions (business model, acquisition, policy, industrial base, training, command and control, tasking, exploitation, processing, & dissemination, concept of operations), and collaborates with national and international agencies to leverage existing investments and develop long-term partnerships.

### **Orbital Sciences Corporation**

#### **Booth Space: 6-7**

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As the industry leader in small space and rocket systems, Orbital provides a complete set of reliable, cost-effective products. Our satellites include low Earth orbit (LEO) spacecraft that perform remote sensing and scientific research, small and medium geosynchronous Earth orbit (GEO) satellites for communications and broadcasting, spacecraft for national security missions, and planetary probes to explore deep space. We also provide light- and medium-class launch vehicles to transport satellites into orbit, interceptor booster vehicles to protect against enemy missile attack, and target rockets to test missile defense systems. Orbital is also supplying commercial cargo resupply services for the International Space Station using our new Taurus<sup>®</sup> II rocket and Cygnus<sup>™</sup> advanced maneuvering spacecraft. In addition, Orbital provides full service engineering, production and technical services for NASA, Department of Defense, commercial and academic space programs. Since 1982, Orbital has developed, built and delivered nearly 750 satellites, launch vehicles and other space systems.

### **Planetary Systems Corporation**

#### **Booth Space: 84 T**

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Planetary Systems Corporation (PSC) provides lightweight, cost-effective and test verified separation systems for the aerospace industry.

The Lightband separation systems enable payload deployment and missile staging at lower cost with less shock than any system available today. PSC has invested over two million dollars and over eight years of R&D to develop the Lightband. PSC is entirely US-owned and operated, with all products designed, developed, built and tested at a single location the Washington DC area. Please visit us at: [www.planetarysys.com](http://www.planetarysys.com).

### **PnP Innovations**

#### **Booth Space: 44-45**

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PnP Innovations provides the hardware components and software modules to enable users to rapidly develop modular Plug and Play (PnP) satellites.

Our modular PnP is based upon research and standards originated by the Air Force Research Laboratory (AFRL). A modular approach to designing and building satellites offers a considerable cost and assembly time advantage when compared to traditional satellite architectures. This design and build approach is a key technology to rapidly deployable tactical satellites. The enabling components to support PnP satellites can be found in the SPA Component Catalog, which includes individual PnP satellite support devices (such as reaction wheels, torque rods, magnetometers, etc), PnP structural panels containing embedded power & data routers on which devices may be mounted, and flight software modules consisting of core support elements and autonomy agents that can run on networked PnP processors.

### **Pumpkin, Inc.**

#### **Booth Space: 32**

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Pumpkin is the leading provider of CubeSat technologies. Pumpkin's COTS CubeSat buses provide a rapid and low-cost means of conducting science, testing new technologies, and raising your systems to TRL-9. Focus on the mission, and use a flight proven bus.

Pumpkin's 3-Axis stabilized MISC 2 buses are built using the space-proven and widely adopted CubeSat Kit™ architecture. Deliveries of spacecraft buses to sophisticated government customers are in the double digits. (ask!)

While MISC provides a standard bus for any variety of 1.5U payloads, multiple options are available as to choice of C&DH processor, deployable panel configurations, comms and other system specifications tailored to your requirements. Our engineering team is available to assist in configuring the bus and to develop your payload for CubeSat missions.

### **Raytheon**

#### **Booth Space: 59**

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Raytheon Company is a space systems provider with global space sales ranking number five in 2006. The combined strength of Missile Systems, Space and Airborne Systems, Network Centric Systems, Intelligence and Information Systems, Integrated Defense Systems and the Raytheon Technical Services Company provides a vast array of innovative full system solutions for the space community including the emerging Operationally Responsive Space and growing Space Control markets.

Raytheon offers leading technologies in areas including satellite command and control, mission and resource management, end-to-end information and network management, modeling and simulation, systems engineering, producibility and space sensors.

Other areas of expertise include space packaging and quality, radar and communication technologies, directed energy, plug-and-play designs, networking technologies, missile/space vehicle and avionics design, mission assurance and manufacturing.

Raytheon's focus on low-cost, versatile products and programs allows our customers to expand the envelope of space capabilities.

### **Reagan Test Site- Kwajalein**

#### **Booth Space: 50-51**

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U.S. Equatorial Launch Site..... Space and Missile Defense Commands (SMDC) Reagan Test Site (RTS) has a successful Space Launch history as well as Missile Defense Interceptor operations. The immeasurable value of RTS is based on its proven responsiveness, geographical equatorial location, state-of-the-art instrumentation, deep space operations, multiple launch facilities, and extensive flexibility for complex test scenarios.

SpaceX has chosen RTS for the Falcon 1e test and operations. With five launches from the Omelek Space Launch Complex, SpaceX successfully placed payloads into orbit demonstrating RTS's ability to provide responsive cost effective support.

Launch sites allow for flight trajectories in virtually all azimuths for LEO and Geosynchronous orbits with minimal safety and environmental constraints. Range Distributed Operations will allow for mission management (data collection and payload checkout) from the Huntsville RTS Operations Center.

### **COM DEV, Ltd.**

#### **Booth Space: 36**

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Established in 1974, COM DEV is a world-leading provider of space hardware, having designed and manufactured equipment for more than 700 spacecraft including microwave, RF and electronic subsystems, antennas, scientific payloads, sensor instrumentation, and space optics systems. Customers and partners include academia, research institutions, space agencies, commercial primes, and the military. In 2007, COM DEV established the Mission Development Group (MDG) to offer turnkey microsatellite solutions from mission analysis to design, manufacture, integration and testing, launch procurement, and mission operations. MDG is currently operating NTS (Nanosatellite Tracking Ships) and is developing M3MSat (Maritime Monitoring and Messaging Micro-Satellite) for the Canadian Space Agency (CSA) and Defence Research and Development Canada. M3MSat is based on COM DEV's AIM (Advanced Integrated Microsatellite) bus, which exceeds the requirements of the CSA's Multi-Mission Microsatellite Bus (MMMMB) specification, and is being made available for future missions. COM DEV is certified to ISO 9001:2000 and ISO 14001:96.



## **RT Logic**

### **Booth Space: 52**

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RT Logic will demonstrate its T400CS Channel Simulator that enables comprehensive RF/IF testing of ground and flight communication systems and components without actual flights. The instrument adds precise signal propagation effects to user- or T400CS-generated signals, including smooth phase-continuous Doppler shift (carrier and signal), range delay, range attenuation, fading and noise.

An advanced signal generator produces test and interference signals in many modulation formats. A sophisticated spectrum/interference analyzer displays modulation type, data rate, C/No, BER, Eb/No and C/I along with advanced carrier-under-carrier analysis.

The instrument is controlled locally or remotely by GUI, TCP/IP connections from user-written software, from pre-created profiles, and through Analytical Graphics, Inc.'s STK software.

The T400CS is used for laboratory test, classroom/lab demonstration and instruction, and on-air work with on-station satellites.

Also demonstrated is RT Logic's satID Signal Geolocation System that uses satellites to pinpoint the location of planned, unintentional and interference transmissions, along with unauthorized users.

## **RUAG Space**

### **Booth Space: 83 T**

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RUAG Space is an independent supplier of highly qualified space equipment including former Saab Space with subsidiary Austrian Aerospace, and now also Oerlikon Space. The new constellation has expertise in Command & Data Handling Systems, Computers, Signal processing, Scientific Instruments, Structures, Mechanisms, Microwave Electronics, Antennas, MLI, GSE. RUAG is a leading supplier of adapters and separation systems for launchers offering modular designs with low-shock separation system technology and multiple spacecraft launch solutions. RUAG computer systems and signal processing know-how contributes to a large number of scientific, earth observation and navigation missions. RUAG mechanisms are used in hold down, release and pointing functions. RUAG slip rings transfer power and electrical signals through rotary joints. RUAG family of wide coverage and reflector antennas offer 30 years experience and with frequencies from UHF- to Ka-band.

## **Satellite Services Ltd**

### **Booth Space: 4**

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Satellite Services Ltd. designs and manufactures on-board sub-systems for high reliability smallsat applications. Products include Attitude Sensors and Actuators and TM/TC units. Where Satellite Services do not have their own products, they have a number of agency agreements and can therefore supply a wide variety of sub-systems as a one-stop-shop. If required, designs can be adapted to meet the specifications required. Satellite Services also invests in research and development and licensing of new designs to meet the continually evolving small satellite mission requirements.

Satellite Services has an extensive network of partners and sub-contractors across the globe, which enables the company to offer products in a highly cost efficient way. Satellite Services Ltd. is part of the multi-national SSBV Group. The parent company of The SSBV Group is based in The Netherlands with Satellite Services Ltd. based near London.

**SEAKR Engineering, Inc.**

**Booth Space: 48**

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SEAKR Engineering, Incorporated is a world-leading provider of advanced state-of-the-art electronic avionics for space and airborne applications. Since its inception in 1982, SEAKR has delivered over one hundred flight units. More than eighty of these units have launched and are operating per mission requirements. SEAKR's leading edge space avionics includes layer III IP routers and modems as well as software-defined radios, high-performance payload processors, modular command and data handling systems, and solid state recorders. SEAKR has a reputation for high-level performance and reliability in severe environments. SEAKR is a small business proud to serve its customers and country.

For more information about this and other SEAKR products, please contact Dave Jungkind at SEAKR Engineering, Incorporated, 6221 South Racine Circle; Centennial, CO. 80111-6427, 303.790.8499, or email at [dave.jungkind@seakr.com](mailto:dave.jungkind@seakr.com) and visit our Web Site at [www.seakr.com](http://www.seakr.com).

**Sierra Nevada Corporation**

**Booth Space: 56-58**

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SNC Space Systems designs and manufactures satellites, spacecraft subsystems and components, and rocket propulsion systems for defense, civil government, corporate and international customers. We also provide customers with innovative, responsive, and cost effective design options for power systems, avionics, lightweight structures, and human spacecraft systems.

**Sinclair Interplanetary**

**Booth Space: 76**

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Sinclair Interplanetary has supplied sensors and actuators to satellite programs ranging in scope from large commercial constellations to small university missions. Qualified off-the-shelf products include reaction wheels, digital sun sensors and magnetic torque rods. Custom avionics such as power supplies, actuator drives and C&DH components are available on extremely aggressive schedules.

This year we have a brand new startracker that we'd love to show you. Whether you are getting ready to start phase A of your satellite project, or you are in a last-minute panic as the launch looms, Sinclair Interplanetary can lend a hand. Please take a moment to visit the booth, say 'hello,' and see if we can solve your problems.

### **Southwest Research Institute**

#### **Booth Space: 60**

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Southwest Research Institute (SwRI) was founded in 1947 as a public service scientific corporation to provide contract R&D to both industrial and government clients. The Institute provides extraordinarily technical capabilities through 11 technical operating divisions, with approximately 3300 staff members and gross annual revenue of \$380 million.

SwRI's Department of Space systems has a long and distinguished track record of producing high quality, high reliability spacecraft computers for NASA, DoD, ESA, and commercial space missions. Since the first SC-1 spaceflight computer was developed in 1979, SwRI has developed hardware for over 50 space flight missions without a single on-orbit failure. The track record of the last 26 years is a product of a strong commitment to support the current and future needs of the space community. SwRI is recognized as one of the leaders in space instrument design and development, command and data handling (C&DH) systems and mission management.

### **Space Dynamics Laboratory**

#### **Booth Space: 25-26**

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Since 1959, Space Dynamics Laboratory (SDL) has been a leading university-affiliated research and engineering laboratory, developing innovative solutions for scientific and defense remote sensing challenges. SDL's expertise includes space, air and ground-based IR, visible, UV, and hyperspectral sensors, small-satellite technologies, concept validation studies and demonstrations, and solutions for all stages of intelligence, surveillance, and reconnaissance operations – from data acquisition to end-user data exploitation. SDL's products include a family of miniaturized spacecraft systems and components such as the Digital Imaging Space Camera (DISC), a compact modular avionics system (MODAS), and the PEARL CubeSat platform. SDL is also developing CubeSat technologies to fill capabilities gaps in attitude control and processing performance required for high-value science missions. Headquartered in North Logan,

Utah, SDL also has facilities in Albuquerque, NM; Bedford, MA; Huntsville, AL; Colorado Springs, CO; Los Angeles, CA; Houston, TX; and Washington, DC, and employs 450 professional and technical personnel.

### **Space Electronics LLC**

#### **Booth Space: 46**

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Space Electronics is the leader in mass properties measurement instruments. Our line of products comprises high accuracy instruments to measure mass, center of gravity, moment of inertia, and product of inertia, and perform dynamic balancing. Over the last 50 years we invented most of the concepts in use in modern instruments.

Space Electronics also manufactures spherical and hemispherical air bearings used as space simulating platforms for testing attitude control systems.

Other products include igniter circuit testers, gimbals balancing instruments, moment weight scales, and inertial decay measurement systems.

### **Space Micro Inc.**

#### **Booth Space: 29**

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Space Micro offers best-in-class Radiation Hardened Digital and RF products for size, weight and power utilization.

For Small and Nano Satellites:

Digital Products:

- ProtonX-Box™ Avionics Suite with choice of processors from Multi-core PowerPC to DSP and accessory board from valve/.relay drivers, DIO, AIO, GPS, EPS, Power Switch, 1553, Spacewire /router
- Proton Series Radiation Hardened Space SBCs with choice of RTOS from VX Works™ to Integrity™ and language support from C to Linux
- IPC5000 Image Processing System takes high speed sensor inputs and compress or custom process to user needs. Programmable on ground or in space. An application of Proton300k FPGA based Reconfiguration Computer

RF Products:

- S-Band : USB; STDN and SGLS Transponders
- X-Band: Transmitter/Receiver/Amps
- Ka-Band: Transmitter
- UTR: Universal Transmit/Receive multi-frequency radios in development

### **SpaceX**

#### **Booth Space: 37-38**

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SpaceX is developing a family of launch vehicles intended to increase the reliability and reduce the cost of both manned and unmanned space transportation, ultimately by a factor of ten. With its Falcon line of launch vehicles, SpaceX offers light, medium and heavy lift capabilities to deliver spacecraft into any inclination and altitude, from low Earth orbit to geosynchronous orbit to planetary missions.

Falcon 1, ideally suited for small satellite missions, is the world's lowest cost per flight to orbit of a production rocket. On July 13, 2009, Falcon 1 became the first privately developed liquid fuel rocket to insert a commercial satellite into Earth orbit.

In addition, NASA selected SpaceX's Falcon 9 launch vehicle and Dragon spacecraft for the ISS Cargo Resupply Services (CRS) contract award. The contract includes 12 flights between 2010 and 2015, representing a guaranteed minimum of 20,000 kg to be carried to the ISS.

#### **STAR-Dundee Ltd.**

##### **Booth Space: 3**

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STAR-Dundee Ltd. specialises in supporting users and developers of SpaceWire, a standard for data communications onboard satellites and spacecraft. SpaceWire has emerged as one of the main spacecraft data-handling networks since official publication in January 2003. It is now being used on many ESA, NASA, and JAXA spacecraft, by research organizations, and throughout the space industry across the world. SpaceWire's speed, simplicity, flexibility and interoperability have contributed to its popularity, something which staff at STAR-Dundee have been instrumental in for more than 17 years.

STAR-Dundee produces a wide range of equipment to facilitate the development, simulation and testing of SpaceWire networks and devices.

STAR-Dundee also provides first-class and acclaimed technical support to SpaceWire developers, making available well over 60 person-years experience in SpaceWire technology which includes authorship of the SpaceWire standard. Our immense experience and extensive knowledge of SpaceWire has enabled us to support customers in over 20 countries.

#### **Surrey Satellite Technology**

##### **Booth Space: 18-19**

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Surrey Satellite Technology is the world's leading small satellite company, delivering operational space missions for a range of applications including Earth observation, communications and science. The Company designs, manufactures and operates high performance satellites and ground systems for a fraction of the price normally associated with space missions.

We have built our reputation as the world's premier provider of small satellite missions over 28 years. We launched our first satellite in partnership with NASA in 1981. Since then our global business has reached across five continents. We have launched 34 satellites - more than anyone else in the small satellite industry.

We specialize in designing, building and launching small satellites quickly and cost-effectively, making space accessible and affordable.

Surrey Satellite Technology is "Changing the Economics of Space" as the world's premier provider of space missions and products by combining cost effectiveness, reliability and rapid response.

**Tiger Innovations LLC**

**Booth Space: 67**

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Tiger Innovations, L.L.C. is a well-qualified small business with a broad range of experience in specialty software/computer architecture design and implementation. We have extensive experience with custom hardware, software, and communication protocol design and implementation. Our focus is on providing highly capable, low cost spacecraft avionics and ground support equipment ideally suited for small satellite missions.

Tiger Innovations avionics products include the Integrated Electronics Module, a low mass, low power avionics unit, with STPSat-1 flight heritage. Our RFX-400 provides a cost effective, extremely small form-factor UHF transceiver for spacecraft communication. RFX-400 applications include ground terminals, cubesat RF modules, and ground gateway stations.

Tiger Innovations Spacecraft Ground Support Products include a Spacecraft Control Box, SGLS Simulator, Two-Channel Frame Synchronizer, 16-channel Solar Array Simulator, and the StreamLINK Command and Telemetry Software.

**TriSept Corporation**

**Booth Space: 2**

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TriSept Corporation is a leading technical services small business comprised of elite industry and technology veterans possessing broad-based space experience to integrate the full program lifecycle. TriSept's main areas of expertise (space systems, software engineering and security services) provide the satellite and launch vehicle communities with seasoned program managers, systems engineers, and technical consultants.

TriSept's personnel have an average of 28+ years experience in all aspects of mission integration. Having performed launch integration services for a wide variety of missions on fourteen different boosters at six different launch sites, TriSept has successfully integrated payloads ranging from over 22,000kgs to P-PODs, including dedicated primary, multi-payload, and rideshare missions.

Launch brokering through TriSept enables seamless multi-payload mission planning, execution and contracting, allowing each individual payload to buy their own piece of a mission. We have missions in the planning stage, so please ask about our open slots.

TriSept Corporation: Integrity, Expertise, Innovation...

**Universal Space Network, Inc.** *A U.S. subsidiary of Swedish Space Corporation*

**Booth Space: 62**

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Universal Space Network, Inc. (USN) provides satellite telemetry, tracking and communications services from a global network of remote ground stations called PioraNet. PioraNet offers worldwide satellite tracking, telemetry and control (TT&C) and data downlink services on a lease 'by the pass' basis. Customers gain access to PioraNet services through Network Management Center (NMC) facilities in Pennsylvania, California and Sweden, which is owned by PioraNet partner the Swedish Space Corporation. Through this single point of interface a subscriber gains access to satellite ground stations in strategically selected locations around the world.

**University of Toronto – Space Flight Laboratory**

**Booth Space: 17**

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The Space Flight Laboratory (SFL) is Canada's premier microspace organization. SFL builds low-cost microsatellites and nanosatellites that continually push the performance envelope. Missions are typically developed with stringent attitude control and data requirements that are striking relative to the budget available. SFL must be innovative while adopting a highly focused approach to development in order to achieve costs as low as 1/100<sup>th</sup> the price of similar satellites developed elsewhere. SFL's credits include: MOST, Canada's first space telescope; CanX-2, a technology demonstrator and atmospheric science satellite; and NTS, a ship-tracking satellite developed in only six months and launched in the seventh. SFL arranges launches through its Nanosatellite Launch Service (NLS) and provides customizable separation systems called "XPODs" for those

launches. As part of its complete end-to-end mission capabilities, SFL maintains a mission control center consisting of multiple ground stations. Come visit us to discuss your microspace mission needs today!

**U.S. Army Space and Missile Defense/ ARSTRAT**

**Booth Space: 81 T**

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USASMDC/ARSTRAT conducts space and missile defense operations and provides planning, integration, control, and coordination of Army Forces and capabilities in support of US Strategic Command missions. The SMDC/ARSTRAT Technology Center is focused on the development and transition of space technologies for the Army and Joint Warfighter. Due to the increasing demand by Army and Joint commanders for persistent and responsive Intelligence, Surveillance and Reconnaissance (ISR), and Beyond Line of Sight (BLOS) communications, the Technology Center is investing in technology development of small satellites that can help relieve some of those Warfighter demands. Our role is to provide our Soldiers and Joint Warfighters with superior technical advantages in time to meet rapidly evolving threats.

**Vanguard Composites Group, Inc.**

**Booth Space: 24**

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DR Technologies, Inc. and its Vanguard Composites Group subsidiary specialize in the application of advanced composites for spacecraft structures that need stiffness, precision and stability, as well as multi-functional applications such as electronic packaging and space power.

Vanguard specializes in spacecraft bus structures, antenna reflectors, dimensionally-stable optical benches for space telescopes and sensors, and multi-functional composite structures including lightweight thermal management electronics enclosures. Vanguard's capabilities include full engineering, with extensive capabilities in advanced composites design and analysis. We can work in a design-to-spec or build-to-print environment, to build, test, and deliver anything from simple composite components to challenging structural assemblies.

DR also has an emerging business in Space Power, Optical and Thermal products which includes advanced, low cost solar panels, high accuracy ultra-lightweight reflective optics, and thermal control radiators.

Ongoing SBIR efforts have developed these technologies for small spacecraft and special applications. This area features high performance advanced technology products such as standardized modular solar arrays, loop heat pipe radiator panels, infra-red and submillimeter mirrors, and solar concentrators.

**ViaSat, Inc.**



**Booth Space: 39**

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ViaSat Antenna Systems is a manufacturer of high-performance "RF to Bits" tracking antenna systems for the telemetry, data link, remote sensing, satellite TT&C, and satellite communications markets. Our ground system products are available in both fixed and mobile configurations, and range in size from 1 meter to 13.56 meters in diameter.

We are also a manufacturer of high performance S-Band antennas for small and micro satellites.

**Virginia Commercial Space Flight Authority / Mid-Atlantic Regional Spaceport (VCSFA / MARS)****Booth Space: 49**

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The Mid-Atlantic Regional Spaceport (MARS) is an FAA licensed, operational spaceport located at the NASA Wallops Flight Facility on the mid-Atlantic coast. MARS provides low cost access to mid-inclination orbits for small, medium and medium-heavy class ELVs, sub-orbital launchers, RLV launch and landing, and payload recovery. Its location provides unobstructed access to the ISS orbit and is the primary launch site for Taurus II ISS cargo re-supply services. MARS offers two FAA licensed launch pads, sub-orbital launch rails, vehicle/payload storage and processing facilities, horizontal vehicle assembly facility, hypergolic fueling facility, large capacity ELV liquid fueling facility, co-located airport, flexible mission support, and an accommodating schedule for commercial and government aerospace customers. The MARS facilities readily support the Pegasus, Minotaur, Taurus, and Taurus II family of LVs. Its unique location, capabilities, and cost advantages make it the test, demonstration, and operational launch site of choice for government, commercial, and academic missions.

**Vulcan Wireless, Inc.****Booth Space: 14**

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A Proven Partner in Digital Communications.

Vulcan Wireless Inc. provides complete turn key wireless designs for our domestic and international customers. We provide comprehensive, cost effective, engineering services as well as product development. We enable our

customers to smoothly transition from marketing concept to mass production. We enable our customers to meet the critical market window and aggressively support our customers scheduling needs.

Vulcan Wireless Inc. is focusing on advanced communications and software defined radios for the small satellite and CubeSat applications. Vulcan provides turn key radio and antenna systems and ground terminals for small satellite systems.

Our designs are capable of operating in harsh space environments such as radiation, vibration, vacuum and thermal cycling. Our radios are software defined which provides the customer flexibility in waveforms, protocols, and encryption. The radios implement high performance RF transceivers which provide improved sensitivity, wideband acquisitions, high intercept points and adjacent channel rejection.

Our second generation space flight product, the CSR-SDR, is a software defined radio and has expands the waveform set and functionality. The CSR-SDR is part of a complete turnkey telemetry system including flight antenna, tracking ground terminal, AES encryption, and web based control of ground terminal. VHF to S-Band telemetry options are available. The CSR-SDR is compatible with many CubeSat form factors.

## **Wyle**

### **Booth Space: 47**

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Wyle Laboratories is a leading provider of environmental simulation test services for the scientific, commercial, and DoD Aerospace development communities. Wyle offers thermal vacuum, vibration, shock, acceleration, acoustics, structural, cryogenic/ propulsion systems, electromagnetic, and combined environments test capabilities to support spacecraft and space vehicle component qualification. Wyle supports NASA GEVS, MIL STD 1541, 810, 461 and other key test standards as well as providing custom engineered test solutions for unique environmental simulation requirements. From PicoSats to launch vehicles, Wyle provides the experience, knowledge, and responsiveness to support all your test needs.

<http://www.wyle.com/services/testandevaluationservices/aerospacedodtesting.html>