May 3rd, 2:00 PM

Paper Session II-B - CSTA Working for California's Future Today

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California Space and Technology Alliance (CSTA)
Working For California’s Future Today
By
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The California Space and Technology Alliance (CSTA), is a nonprofit public/private partnership governed by a statewide board of directors representing diverse sectors of the space technology community. Designated as the California Spaceport Authority by the State Legislature, CSTA serves as the official policy advisor to the Governor and State Legislature on all space-related matters and as the official voice of the State of California on space technology issues to the federal government, other states, and local and regional government entities.

CSTA is focusing the efforts of California’s vast space related resources on the substantial opportunities that exist in Space and Technology endeavors. The potential of this market is clear and the opportunities virtually endless. Commercial markets are booming, bringing tremendous opportunities to California’s entire aerospace community, from booster providers and satellite builders, to integration, services, and support contractors, including our university and research centers. California is truly a global leader in aerospace, research, and high technology. CSTA’s goal is to maintain California’s leadership and facilitate expansion into new and exciting markets.

History has shown that those who prepare for and embrace change are likely to benefit from the opportunities that change produces. CSTA works to encourage these changes while positioning California to maximize the benefit for all.

California: Where Space Resources and Opportunities Converge

Increasing worldwide demand for space technology services is driving an unparalleled global industry expansion. States and countries never before involved in space activities are investing millions to take advantage of this booming market. Today’s space industry is market-driven, with an ever-increasing focus on commercial products and services derived from space technologies.

Spacelift as a 21st century transportation system will nearly triple in the next decade. The number of orbiting satellites is expected to double within the next few years. Projections show technologies developed to meet worldwide customer demand for space-based telecommunications, GPS navigation and remote sensing will be fueling a $70 billion space services/applications industry by 2002.

With its legacy as an aerospace powerhouse, a wealth of statewide space resources and a new commitment to statewide space development, California promises to be a major player in the global space industry of the 21st century.

California leads the world in information technology and entertainment. In these and other major California industries like agriculture, biotech, multi-media and telecommunications, space-related technologies are enhancing goods and services while enabling quantum leaps in industry capabilities and consumer benefits. California is the center of activity surrounding the
convergence of technologies between the space industry and other economic sectors, providing access to customers and remarkable partner opportunities for all.

Operating in the world’s seventh largest economy, California companies receive well over half of U.S. venture capital investment. Home to the world’s third largest port complex and a leading global trade partner, the State of California maintains numerous on-site trade offices in major international markets. Resident financial and international banking expertise, international transportation access and trade opportunities support California’s growing space enterprises and their stakeholders. The synergy of the state’s universities, its’ workforce, economic development partnerships, premier space assets and over 42,000 aerospace suppliers ensures that the Golden State will serve as a leading center of space and technology development for many years to come.

Next Generation Spacelift
The world’s largest concentration of reusable launch vehicle (RLV) developers is located in California, as are several of NASA’s X-programs: X-33, X-34 and X-37. California provides these programs premier spacelift-related research, test sites and a statewide pool of seasoned aerospace engineering talent unmatched anywhere on the globe.

Next generation spacelift programs benefit from one-of-a-kind California-based assets such as the Air Force Space Command’s Western Range, Air Force Flight Test Center; NASA Ames Research Center, a NASA Center of Excellence for flight study; NASA’s Dryden Flight Research Center; the Air Force Research Laboratory’s Propulsion Directorate, and others.

Launch Capabilities
Vandenberg Air Force Base is a premier U.S. space launch site, providing infrastructure and program support for launches requiring polar inclination, as well as for ballistic and sub-orbital military and science missions.

Edwards Air Force Base provides state-of-the-art aerospace research, development, test and evaluation support to manned and unmanned missions. It hosts the Space Shuttle refurbishment program and operates as an alternate landing site for the Shuttle. Edwards AFB has supported the flight testing of every Air Force vehicle developed since the breaking of the sound barrier.

Operated from its home port in southern California, U.S. Sea Launch offers a launch capability not previously available from California-land based launch complexes, access to equatorial orbits.

Satellite Manufacturing
California’s satellite development and satellite manufacturing capabilities are unmatched anywhere in the world. Our satellite manufacturers have captured more than two thirds of the multi-billion dollar global commercial satellite market.
Additionally, our manufacturers benefit from the availability of world-class systems and software support provided by California’s internationally recognized information technology, defense electronics, and software development companies.

**Statewide Suppliers**
California’s vast supplier base is a key asset in providing end-to-end space capabilities and world-class aerospace workforce. Over 42,000 California companies supply the global space industry. From electronic components, software programming, materials development, exotic fuels and commodities, to total launch service and on-orbit support, California provides a complete supplier capability.

Forty years experience in large-scale mission planning and systems integration is resident in many California-based aerospace companies; the state’s ever expanding entrepreneurial space sector serves to stimulate innovation and competitiveness.

**World-Class University Science/Research Education/Workforce Resources**
California universities offer a wealth of science/research capabilities/assets unmatched anywhere in the world. In addition to world-class engineering, physics and math research programs, there are a number of institutes at all University of California (UC) campuses, Stanford, Caltech and affiliated labs that are assets in support of space development.

The University of California provides the aerospace industry a world-class system of science and research resources. UC and the three national laboratories it operates have collectively produced more research leading to patents than any other research institution. University of California research programs and industry-collaborative research projects offer a multitude of research partnership opportunities, many with project funding support. Every UC campus now offers space-related curricula, with the California Space Institute, headquartered at University of California San Diego, linking campus space programs and also supporting K-12 space education.

The 22-campus California State University (CSU) system graduates 4,000 engineers annually. The university frequently rated “best engineering school in the U.S.” is a CSU campus. Several CSU sites feature space and manufacturing-related curricula as well as mature aerospace engineering programs.

California’s community college network of 106 campuses is the largest higher education system in the world and provides strong statewide linkage and support for regional economic development and workforce efforts.

**Federal Assets/Research Centers**
Three world-renowned California-based NASA research labs offer state-of-the-art science and research:

- NASA Ames Research Center
- NASA’s Dryden Flight Research Center
- NASA’s Jet Propulsion Laboratory (JPL),
Los Angeles Air Force Base houses the Space & Missile Systems Center (SMC), which is responsible for the Research, Development and Acquisition of military space, launch, and on-orbit command and control systems. The Aerospace Corporation, which supports SMC, Air Force and other government space programs, is a Federally Funded Research and Development Center headquartered adjacent to the Los Angeles Air Force Base.

California boasts dozens of Department of Defense sites related to space, communications and technology: Space and Naval Warfare Systems Command (SPAWAR), the Air Force Research Laboratory, Onizuka Air Station, the Point Mugu Sea Range, the China Lake Naval Air Weapons Station and the Air Force Flight Test Center, among others. Many of these assets offer extensive technology partnership opportunities and resources to the aerospace industry. Additionally, dozens of Federal Labs are located in California, including respected research institutions such as the Lawrence Livermore National Lab, Ernest Orlando Berkeley Laboratory and the Stanford Linear Accelerator Center.

The California Space Strategic Plan

With this wealth of knowledge and capability clearly identified and understood, CSTA set about the task of focusing the States efforts. From November of 1997 to August 1998, CSTA initiated the creation of the California Space Strategic Plan. It was developed in collaboration with nearly 300 California space community stakeholders who represented over 130 different organizations. From this monumental effort flowed 21 space related strategic priorities for the 21st century. For the most part each of the 21 priorities fall into one of five broad categories which now focus the efforts of CSTA today. These categories are:

1. **Policymaker Support/Advocacy/Investment:** Work with Federal, State, regional, and local policymakers to focus their understanding and gain their support for continued space development.
2. **Regulatory Streamlining:** Unfortunately, California’s regulatory environment has a reputation for being unfriendly to business, difficult to negotiate, anti-growth, and anti-business. CSTA will work with industry to find an acceptable middle ground which supports industry needs while maintaining high environmental standards.
3. **Incentivization of Space Technology Development Efforts:** Investigate and recommend incentive options/programs which can be initiated to offset the cost of doing business within the State.
4. **Enhancement of Spacelift Capability:** Evaluate the future market and associated Spacelift requirements. Use this analysis to guide future action planning.
5. **Transition Planning:** The spacelift industry will experience significant change in regulatory climate, technology, and roles and responsibility in the near future. Ensure that critical legislation is updated and/or created to support this transition. Ensure that infrastructure needs are identified and supported by appropriate plans, incentives, and policies.

**Space Infrastructure Study**

An activity that will be the focus of much of CSTA’s efforts is the recently initiated Space Infrastructure Study. Congress has appropriated $8.5 million for a 2-year study of existing space infrastructure at Vandenberg Air Force Base, Edwards Air Base, and other DoD sites.
within the State of California. CSTA will manage the study, which is to include engineering designs and architectural plans, by utilizing the expertise of professionals at Booz-Allen and Hamilton.

Conclusion

CSTA has experienced tremendous success since its inception. As we look to the coming year we are encouraged by that success and we look with excitement at the challenges before us. Change is clearly a constant. The commercial market brings with it new imperatives, technology generates ever expanding horizons, and CSTA will continue to work to maximize the benefits and opportunities for California’s Space and Technology stakeholders.

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