DBEDT
THE DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
STATE OF HAWAII

YEARLY ACTIVITY PLAN (YAP): FB '09 – '11

Division/Attached Agency:	**Strategic Marketing and Support Division**
Program Name:	**Office of Aerospace Development (OAD)**
Program ID:	**BED 100-SM**

I. PROGRAM PLANNING

Problem, issue or opportunity statement: Describe the problem, issue and/or opportunity your program is attempting to respond to.

The aerospace industry has played a pivotal role in expanding and diversifying our national economy. From aviation to space exploration, aerospace research and development has forged new inroads in science and technology, dramatically advanced our national engineering and manufacturing expertise, spurred spinoffs of commercial products that have significantly enhanced our qualities of life, provided rich educational and training opportunities for K-12 and college students, and ultimately afforded new frontiers for humankind to explore and develop.

In 2006, NASA outlined a new roadmap for implementing our national Vision for Space Exploration (VSE) – one that embraces the development of innovative technologies, knowledge and infrastructure, articulated through multinational partnerships, that can lead us back to the moon, to Mars and beyond. To meet this substantial challenge, considerable resources will need to be devoted to the development, testing and evaluation of new technologies to support both robotic and human missions, to the training of scientists, engineers and astronauts to help design and implement these missions, and to educating the general public. *Hawaii's diverse natural resources, unique geographic terrain and location, strategic technological assets, and resident scientific and engineering expertise make our state an ideal venue to seed, grow and sustain a wide variety of aerospace-related activities that can support our national space efforts while providing unique opportunities to help expand and diversify our local technology sectors.*

For nearly half a century, our state has been a major contributor to and beneficiary of space exploration, beginning in the 1960s with education and training programs for the Apollo astronauts and the development of world-class astronomical facilities atop Mauna Kea. The University of Hawaii, the U.S. military, and numerous companies statewide have engaged in nationally-funded programs pioneering planetary geosciences, satellite communications, remote sensing, and space reconnaissance. Each county has established world-class space-related facilities and programs providing major scientific, educational and commercial benefits – e.g., the Mauna Kea Science Reserve on the Big Island, attracting more than $1billion to support 13 major international telescopes; Science City atop Mt. Haleakala on Maui supporting our nation's largest space surveillance site; the Institute of Geophysics and Planetology on Oahu, which has fielded more than 40 NASA principal investigators engaged in both basic and applied research; and the Pacific Missile Range Facility on Kauai (the island's largest employer) providing the world's leading multi-environment range supporting sea, air and space operations.

Looking to the future, the University is applying its resident expertise in adaptive optics, lidar/laser technology and remote sensing to develop and commercialize advanced sensor technologies for astronomical research, atmospheric/oceanic monitoring and modeling, terrestrial/coastal resource mapping, and disaster management and mitigation. Local companies such as Oceanit, Solipsys, Trex Enterprises, Hoku Scientific and NovaSol are working to develop new commercial products and services to support weather forecasting, land and coastal resource assessment, advanced air traffic control, clean energy technologies, air defense and military command & control systems, and advanced optical communications and electro-optical tracking systems. Major aerospace corporations (e.g., Boeing, BAE

Systems, Lockheed Martin, Northrop Grumman, Raytheon), already operating in our State, have the potential of expanding operations through Hawaii as a bridge to Asia-Pacific markets, with the goal of developing advanced systems for aviation maintenance and training, satellite communications, and space tracking, surveillance & reconnaissance systems servicing the Pacific Basin. And our mid-Pacific, near equatorial location and long-standing ties with nations throughout the Asia-Pacific region make Hawaii an ideal location for commercial space launch activities – including land, sea, and air-based operations – and both the University of Hawaii and entrepreneurial companies such as Rocketplane Kistler, Microcosm, and Space Systems/LORAL are exploring opportunities to launch both staged rockets and spaceplanes from various locations statewide to transport scientific experiments, satellites and tourists to space.

Need and partners: Provide quantitative evidence to show the scope and nature of the problem or opportunity you are working on. Identify partners you will be working with to address the problem, issue and/or opportunity. Describe why government should be part of the solution.

The aerospace industry is a significant and growing component of the world economy. Global space revenues from government and private sources reached $251 billion in 2007, representing a strong growth rate of 11 percent over 2006. More than three-quarters of global space economic activity stemmed from purchases of commercial satellite-based products and services (55%) and U.S. government spending (25%). Total revenue for space products and services in 2007 is estimated at $138.83 billion, an increase of approximately 20 percent over 2006.*

Starting from a strong base in the communication and media sectors, space products and services have extended their impact and now deliver value across virtually all economic areas, from transportation to healthcare to financial services. Applications range from travel planning and tourism, traveler navigation, and mobile satellite radio services, to entertainment and internet connectivity aboard cruise ships, improved telemedicine services, and resource management. The combination of global positioning systems with other technologies is opening new horizons in space products and services. For example, heart rate monitors designed for cyclists and runners have been combined with positioning equipment to create route maps correlated to speed and heart rate. Similarly, novel vehicle tracking devices allow users to access information on speed, location and use of safety equipment in real-time over the Internet.

Space exploration and the enhancement of life on Earth made possible through space products and services ultimately depend on the engineers, scientists, educators, and both industry and government leaders that drive the industry. In the U.S., the skills of these workers and the economic growth they generate translate into wage levels far above the national average. As a result, geographical areas where the space industry is concentrated experience significant positive economic impacts. Studies focusing on regional economic effects of space activities and related spinoffs have documented evidence of both direct and indirect economic benefits. For example, a NASA Kennedy Space Center report estimated that the Florida economy gained $1.68 billion in fiscal year 2006 from space operations and research. Overall, job growth in the U.S. space industry exceeded job growth in the private sector at pay levels roughly twice the U.S. national average, accounting for 266,700 jobs.**

The Office of Aerospace Development (OAD) was established in 2007 to help bring aerospace "down to earth" for Hawaii and tap into the significant economic development potential provided through this industry (per above). OAD's mission is to serve as a focal point within State government to facilitate dialogue and coordination among Hawaii's government, private and academic sectors, and between State-based organizations and overseas entities, both public and private, to promote the growth of Hawaii's aerospace industry. To date, 28 mainland states (Alabama, Alaska, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Montana, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Tennessee, Texas, Vermont, Virginia, Washington, Wisconsin, Wyoming) also have recognized the strategic role governments can play in advancing their aerospace industries, and have established similar

governmental or quasi-governmental offices, agencies and/or programs to (1) serve as a point of contact representing state aerospace interests and activities, and (2) help coordinate public and private assets toward the development of new aerospace products and services.

For nearly two decades, DBEDT has promoted and facilitated aerospace activities in Hawaii, including international conferences and workshops, public exhibitions, research and development projects, and community outreach programs. In doing so, the department has networked and forged collaborative partnerships with multiple local (state agencies, the University of Hawaii and community colleges, public and private schools, and local companies), and both national and international aerospace agencies and institutions (e.g., NASA, the National Oceanographic and Atmospheric Administration (NOAA), the U.S. Geological Service, the National Science Foundation, the U.S. Departments of Commerce and Education, the Office of Science & Technology Policy, and international institutions such as the Japan, Canadian and European Space Agencies), and is well positioned to continue its efforts toward expanding aerospace in the islands.

By establishing a formal office within DBEDT dedicated to aerospace development in Hawaii, our State government will further realize the growth potential of this sector by: (1) greatly enhancing the public visibility of these efforts; (2) providing a centralized point of contact for both local and out-of-state inquiries on Hawaii's aerospace activities; (3) facilitating coordination among public and private entities to help catalyze new aerospace enterprise; (4) helping identify and assess federal and other external resources to facilitate this development; and (5) demonstrating the state's commitment to advancing an industry with significant scientific, educational and commercial potential.

*2008 Space Report (Executive Summary, pp. 4-7) – The Space Foundation. ** *Ibid*. , p. 10

Desired results (outputs, outcomes and impacts): What will success look like? Describe what you expect to achieve in the short-term (0-2 years) and long-term (2-6 years).

Near-Term (0-2 years):

1. Conduct a preliminary assessment of the current status and future potential of Hawaii's aerospace industry through (a) a review of state, federal and international aerospace initiatives and priorities, including an analysis of current aerospace demands and projected trends, both national and global; and (b) a comprehensive survey of Hawaii's existing resources, infrastructure, ongoing R&D, and other factors impacting the State's capabilities and strategic advantages in aerospace-related fields, including an assessment of how these resources and capabilities can be utilized to meet current/projected global aerospace requirements and thereby grow/diversify the State's economy.

2. Establish an Aerospace Advisory Committee, comprised of distinguished leaders from Hawaii's government, academic and private sectors, as well as globally-renown aerospace professionals, that will convene semi-annually to help monitor and assess aerospace development statewide, providing written reviews and policy recommendations to the State Administration and Legislature to (a) identify strategic areas for Hawaii to expand and diversify aerospace-related activities statewide; and (b) propose innovative strategies by which workforce and business development programs in aerospace-related fields may be realized.

3. Represent Hawaii at national/global aerospace meetings, conferences and exhibitions, including the Aerospace States Association (ASA) semi-annual board meetings (Washington, D.C.); the National Space Foundation Symposium (Colorado Springs); the American Institute of Aviation & Aeronautics (AIAA) National Symposium (San Diego); and the NASA Space Exploration Symposium (various locations) to promote interest in and support for Hawaii-based aerospace activities.

4. Conduct the 2008 and 2009 annual JUSTSAP-PISCES* Symposium in Hawaii, providing unique opportunities for researchers at local universities, entrepreneurs from Hawaii's private sector, State and County government officials, and educators statewide to form collaborative R&D, education and training partnerships with top aerospace professionals from government (e.g., NASA; the Japan Space Exploration Agency), industry (e.g., Boeing, Lockheed Martin, Mitsubishi Corp., NEC Corp.), and major research universities (e.g., the Tokyo Institute of Technology, the University of Tokyo, Stanford, Caltech), while generating approximately $200K in annual tourist-related revenues.

5. Network with aerospace professionals at NASA Headquarters and NASA Regional Centers (Johnson Space Center/Houston; Kennedy Space Center/Florida; Marshall Space Flight Center/Alabama; Ames Research Center and the Jet Propulsion Laboratory/California), and at aerospace companies nationwide (Boeing, Lockheed Martin, Raytheon, SAIC, Northrop Grumman) to build public-private partnerships supporting collaborative aerospace ventures.

6. Promote public education and community outreach activities to help inform local citizens about the educational and career options in aerospace, as well as Hawaii's current activities and future potential in this industry, with the goal of inspiring young adults to pursue STEM-related disciplines and ultimately help grow our local tech industries.

7. Publish annual reports and establish/maintain a website highlighting Hawaii's current activities and future potential in aerospace.

8. Develop a strategic build-out plan for the Pacific International Space Center for Exploration Systems (PISCES) in Hawaii, and conduct preliminary robotic and in-situ resource utilization field tests on Mauna Kea and at other locations statewide.

9. Obtain a commercial spaceport license for Honolulu International Airport to enable spaceplanes to launch and land in Hawaii. *(NOTE: This desired result will depend upon the appropriation of additional funds during the 2009 Legislative Session to conduct the environmental and safety studies required by the FAA to obtain a commercial spaceport license for Hawaii. We understand legislation is being introduced by the State Senate to request the required funding).*

*** JUSTSAP:** Japan-U.S. Science, Technology & Space Applications Program; **PISCES**: Pacific International Space Center for Exploration Systems

Long-Term (2-6 years):

1. Continue to monitor and report on trends/opportunities in the global space industry.

2. Maintain the Aerospace Advisory Committee and continue to provide industry updates and policy recommendations to the Administration and State Legislature.

3. Continue to coordinate the annual symposia and year-round project team activities of JUSTSAP, as well as other national and international space conferences and exhibitions in Hawaii, leading to the development of new aerospace programs and activities in Hawaii.

4. Continue to represent Hawaii at national and global aerospace meetings, conference and exhibitions, and to network our state with aerospace agencies, institutions and corporations to catalyze public-private partnerships between Hawaii and these entities to promote international collaboration in space exploration and related scientific, educational and commercial benefits for Hawaii.

5. Expand public education and community outreach activities to help inform local citizens about the educational and career options in aerospace, as well as Hawaii's current activities and future potential in this industry, with the goal of inspiring young adults to pursue STEM-related disciplines and expand our state's technically-training workforce. Targeted activities will include:

- Promoting summer/year-round internship and certification programs, sponsored by university laboratories and Hawaii-based companies, that will enable high school and college students to gain practical, "hands-on" experience in applied research, including the design, development, and utilization of research equipment and protocols, as well as to make invaluable professional contacts for developing their future careers.
- Developing "career-pathing" materials and activities (interactive CD-ROMs; community-based career workshops) that highlight options and opportunities in aerospace.
- Sponsoring community outreach activities (aerospace exhibitions at local museums, shopping malls); astronaut/aerospace engineer visits to local schools.
- Supporting aerospace design competitions (e.g., for the development of PISCES' simulated lunar facility), with winners awarded trips to mainland NASA facilities and aerospace companies to participate in aerospace-related R&D (e.g., project team meetings; space launch activities).
- Identifying and promoting opportunities for local science teachers to engage in mainland internship and certification programs with NASA and private industry.

6. Establish PISCES as an independent, financially self-supporting entity conducting field testing and technology development activities; simulation and training exercises; the design, testing and evaluation of space communications, power, and life support systems; and the development of an analog lunar outpost for technology demonstration and astronaut training supporting human missions to the Moon.

7. Expand Hawaii's operation as a commercial spaceport, facilitating space tourism (e.g., through launches of spaceplanes and other suborbital vehicles development by Rocketplane Kistler, Zero-G Corporation, Space Adventures, and other firms) and the launch of small satellites and scientific experiments (using "next generation" hybridized launch vehicles) from the Pacific Missile Range Facility, floating sea platforms, and commercial aircraft (using "underbelly" deploys).

8. Explore and promote new opportunities for aerospace-related research, education and commercial development in Hawaii (e.g., prototyping space-based technologies and systems to provide alternative and renewable sources of energy).

Influential Factors: List the factors you believe will support or hinder your ability to impact the problem or opportunity.

1. Sustained internal support (a programmatic and financial commitment from our State Administration and Legislature to make aerospace development a high priority for Hawaii).

2. Continued external support (through federal/corporate alliances and funding).

3. Our ability to successfully market Hawaii overseas as an international leader in space exploration.

4. Our ability to successfully communicate to local communities the diverse scientific, educational and economic opportunities and benefits that aerospace can bring to our state, as well as to establish a "common vision" for developing Hawaii's aerospace industry (based upon these opportunities and benefits) to help guide/coordinate our collective efforts.

5. Our ability to engage all sectors of our economy, public and private, in this enterprise.

6. Our federal government's ability to chart a sustainable course for space exploration, with long-term programmatic and fiduciary commitments.

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Strategies: List the "best practices" that have helped other programs achieve the kind of results your program promises.

1. Involve input and participation from all three economic development sectors (government, academia and industry) in assessing opportunities, developing strategies, and implementing activities to support aerospace development in Hawaii.

2. Link Hawaii's aerospace assets and capabilities (supply) to national and global aerospace industry trends and projected needs (demand) in formulating action plans (or logic models!).

3. Use "alternative futures" scenarios (similar to those adopted by NASA's Advanced Concepts Office) to project desirable futures and define critical paths to achieve desired results.

4. Wherever possible, couple aerospace education/training programs with industry development initiatives to balance evolution of employment creation and workforce development.

Assumptions: State the assumptions behind *how* and *why* the change strategies you have identified will work. Use 'If - then" statements, i.e. "if _____then_____ happens."

1. If partnerships among Hawaii's government, academic and industry sectors are formed, (then) this will help leverage/synergize strategic resources and ensure that a broader cross-section of societal needs are addressed in assessing opportunities, developing strategies, and implementing activities to support aerospace development in Hawaii.

2. If Hawaii's significant and comparatively unique geographical, scientific, technological and environmental assets are effectively integrated into development planning, (then) this will maximize the State's competitiveness in bidding for federal and other external funding support.

3. If an "alternative futures" approach is used for long-term strategic planning, (then) this will provide critical insights into the best methodologies for utilizing present-day assets and capabilities to help achieve long-term visions and goals.

4. If education/training programs are coupled with industry development, (then) this will help ensure that (a) we have an adequately trained workforce to meet industry demands (short- and long-term), and (b) there will be adequate local employment opportunities for Hawaii's high school/college students when they graduate.

II. PROGRAM IMPLEMENTATION

Resources: Describe the resources available to support your program.

- State funding appropriated through ACT 149 (HRS 2007) to support PISCES, JUSTSAP, and State participation at national and global aerospace conferences and exhibitions.
- Legislative Resolution (from 2006 Session) supporting the design, development and implementation of PISCES.

- Matching funds being solicited through NASA's Innovative Partnership Program (IPP) and other federal programs to support the field-testing and evaluation of intelligent robotic systems, *in-situ* resource utilization technologies, and other activities designed to facilitate future robotic and human lunar missions.
- Memorandum of Understanding between NASA Ames Research Center and the State of Hawaii to promote collaborative ventures supporting space exploration.
- Growing university and private sector interest in and support for developing/diversifying aerospace-related activities statewide.
- Ongoing inquiries by major and entrepreneurial mainland aerospace corporations wishing to establish or expand operations in Hawaii, leading to the development of new industry in Hawaii.
- State's expanding collaboration with Japan and other Pacific-rim nations to promote and cost-share multinational space ventures.
- Early and proactive action! Aerospace industry at turning point in developing new space technologies/applications/missions; those states that "get in on ground floor" (over next 12-18 months) will reap the rewards.

Activities: Describe each of the activities you plan to conduct within your program.

As mandated through Act 149 (2007 HRS), the primary goals **(G)** and associated activities **(A)** of OAD will be as follows (Note: Activities supporting each goal are listed in parentheses, and some activities support more than one goal):

Program Goals

G1: Identify and promote opportunities for expanding and diversifying aerospace activities in Hawaii, including but not limited to programs related to applied optics, astronomy and astrophysics, aviation, dual-use technology, environmental monitoring, meteorology, remote sensing, satellite communications, and commercial space launch. (A1, A2, A3, A4, A5, A7, A11)

G2: Serve as a catalyst in forging partnerships between the University of Hawaii and local businesses to (1) improve the relevance and quality of university training to support the growth and diversification of Hawaii's aerospace industry; (2) identify entrepreneurial opportunities for commercializing innovative spinoffs from basic research; and (3) facilitate technology transfer from the university to the private sector to expedite commercialization. (A2, A4, A5, A7)

G3: Assist the University of Hawaii, local companies, research institutions, and other interested organizations in establishing partnerships with corporate, government, and university entities overseas that can promote and enhance Hawaii's aerospace industry. (A2, A3, A4, A5, A7, A11)

G4: Help leverage aerospace and related technological capabilities in Hawaii's government, academic and private sectors to enhance our State's ability to procure both federal and private research and development grants and to make Hawaii more competitive in national and global aerospace markets. (A2, A3, A4, A5, A7, A8, A9, A10).

G5: Promote innovative education and workforce development programs that will enhance public awareness of our State's aerospace potential and enable local citizens to pursue employment in Hawaii's aerospace industry. (A2, A5, A6, A7, A9, A10)

G6: Assess the effectiveness of existing and develop new publications, exhibits, and other sources of information marketing Hawaii's space-related activities to both professional communities and the general public. (A1, A2, A10)

G7: Monitor national and global trends in the aerospace industry and recommend programs and policies that can support aerospace industry development statewide. (A1, A2, A11)

G8: Increase contact and maintain liaison with the National Aeronautics & Space Administration (NASA) and other federal agencies and facilities supporting aerospace development. (A2, A3, A4, A5, A7).

G9: Serve as a central point of contact for State government that can respond to both local and out-of-state inquiries concerning Hawaii's aerospace-related interests and activities. (A9, A10, A12)

Program Activities

A1: Conduct aerospace survey.

A2: Establish and maintain Aerospace Advisory Committee.

A3: Attend national and global aerospace conferences and exhibitions.

A4: Participate in networking telecons/meetings with aerospace agencies, institutions and companies.

A5: Coordinate the annual JUSTSAP-PISCES Symposium in Hawaii.

A6: Conduct public education and community outreach activities.

A7: Work with UHH, NASA and other institutions to expand and diversify PISCES.

A8: Work with the FAA to obtain commercial space transportation license for Hawaii.

A9: Establish expanded websites for Hawaii's aerospace industry.

A10: Review existing and develop new marketing materials for Hawaii's aerospace industry.

A11: Monitor trends and opportunities in the global aerospace industry.

A12: Respond (via phone/e-mail/other correspondence) to inquiries on Hawaii's aerospace industry.

A13: Formerly establish OAD and the OAD director on DBEDT's organization chart (per Act 149).

Outputs: For each program activity, identify what outputs you aim to produce.

For **A1** – A comprehensive and detailed assessment of current status and future potential of Hawaii's aerospace industry.

For **A2** – A set of recommended policies and guidelines to help identify strategic opportunities for aerospace in Hawaii and innovative strategies to help realize them.

For **A3** – Enhanced awareness of Hawaii's aerospace resources/programs/potential and increased professional contacts with and support from major NASA centers, aerospace companies, and other institutions engaged in aerospace research, education and commercial development.

For **A4** – Enhanced awareness of Hawaii's aerospace resources/programs/potential and increased professional contacts with and support from major NASA centers, aerospace companies, and other institutions engaged in aerospace research, education and commercial development.

For **A5** – An international conference supporting delegates from around the Pacific Rim to discuss opportunities for multinational collaboration in space exploration that engage resources and researchers from Hawaii.

For **A6** – The development of new internship and certification programs for students; the development of career pathing materials and related career workshops; the development and implementation of student aerospace design competitions; and the development and implementation of teacher internship and certification programs.

For **A7** – The build-out of PISCES as a globally-recognized center facilitating and supporting multinational space exploration programs.

For **A8** – Transforming Honolulu International Airport into the central commercial spaceport for the Asia-Pacific region and a regional hub on the emerging global spaceplane highway.

For **A9** – A website containing up-to-date information on Hawaii's aerospace resources and programs.

For **A10** – The development of updated marketing materials (e.g., brochures, video clips) to be used to promote Hawaii's aerospace industry.

For **A11** – A detailed inventory of trends and opportunities in the aerospace industry.

For **A12** – Enhanced links between Hawaii and the global aerospace industry.

For **A13** – Establishment of OAD and the position of OAD Director within DBEDT.

Outcomes: Identify the short-term (0-2 years) and long-term (2-6 years) outcomes you expect to achieve.

Near-Term (0-2 years):

- A comprehensive understanding of the current priorities/demands/trends in the global space industry and the scientific, educational and economic opportunities they present for Hawaii.
- A strong alliance among Hawaii's government, university and industry sectors supporting aerospace development statewide.
- New legislation promoting and supporting aerospace development in Hawaii.
- The build-out of PISCES, with expanded research & educational programs statewide.
- An expanded network of public and private sector contacts linking Hawaii with both national and international aerospace agencies, institutions and corporations.
- A commercial spaceport license for the State of Hawaii.
- A comprehensive website and periodic publications providing detailed information on scientific, educational and commercial aerospace activities and programs statewide, leading to enhanced public awareness of and interest in Hawaii's aerospace industry.

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Long-Term (2-6 years):

- Expanded MOUs and space act agreements between Hawaii and NASA centers nationwide supporting a broad range of aerospace-related R&D activities (primarily related to robotics, renewable energy, and remote sensing).
- The launch and landings of spaceplanes in Hawaii carrying experimental payloads, satellites and tourists to space, and the development of alternative programs supporting the launch of small payloads from PMRF, sea-based platforms and commercial aircraft.
- An expansion and diversification of JUSTSAP into a multinational, Asia-Pacific Forum (and the programs this forum supports), coupled with an increase in the number and diversity of international conferences in Hawaii focusing on space exploration and opportunities for international collaboration.
- Comprehensive aerospace education and training programs at the University of Hawaii and at community colleges statewide, and expanded interest and participation in STEM-related K-12 education programs.
- Expanded space-related internship programs with local companies and both NASA Centers and aerospace corporations nationwide.

Impact: Describe the lasting impact you anticipate.

Expanded research and development opportunities statewide in aerospace-related fields; diversified aerospace education and training opportunities at Hawaii's public and private schools, community colleges and universities; multiple professional agreements between Hawaii and NASA Centers, major aerospace corporations and international space associations to promote collaborative ventures in space exploration; a unique international space center facilitating the design, development, testing and evaluation of new technologies and integrated systems supporting robotic and human missions to the Moon and Mars; and widespread recognition of the State of Hawaii as a major contributor to and beneficiary of the global aerospace industry.

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III. PROGRAM EVALUATION

Indicators: Describe what SMART ('specific; measurable; action-oriented; realistic; and timed') indicators can be collected that would convey the status of your program.

1. The number and types of new research programs created; amount of extramural research funding generated; number of research/intern positions created.
2. The number and types of education/training programs developed/implemented (e.g., in schools, businesses); amount of $ generated to support these; number of students/teachers enrolled/graduated from these programs; number of job placements resulting from training programs.
3. The number of commercial spinoffs generated from basic/applied research; number of new commercial programs/activities/companies developed; number of $ generated through "space tourism" (e.g., professional conferences, visits to aerospace facilities, suborbital flights).
4. The types and volume of data generated on aerospace industry programs/demand/trends; recommendations produced from database analyses.
5. Creation of State websites about/supporting Hawaii's aerospace industry; number and types of public reports generated; number and type of public programs sponsored (e.g., space exhibitions at shopping centers; astronaut visits to local schools).
6. The number and types of aerospace meetings/workshops/conferences/exhibitions held in Hawaii; number of meetings/workshops/conferences/exhibitions attended overseas; number of new professional contacts made; number of new MOU/collaborative agreements signed; number and type of new aerospace projects implemented.
7. The number and types of legislation introduced/passed supporting aerospace development; identification of niche areas and priorities for development; establishment of administrative guidelines to support aerospace development.
8. Formation of an aerospace advisory Committee; number and types of articles/news stories featuring aerospace (in newspapers/magazines and on TV/radio); corporate and government sponsorship of aerospace-related activities (e.g., local exhibits; participation at national and international conferences); types and frequency of public inputs to State aerospace website.

IV. ALIGNMENT

Is your program linked to DBEDT's six strategic objectives?		
1.	**Yes**	Hawaii Five Point Economic Plan
2.	**Yes**	Hawai'i Clean Energy Initiative
3.	**Yes**	Hawai'i Innovation Initiative
4.	**Yes**	Global Links

Note: This form was created using the *W. K. Kellogg Foundation Logic Model Development Guide*, *January 2004*.

5.	**Yes**	Economic research and data analysis
6.	**Yes**	Hawai'i Open for Business
7.	**No**	Workforce Housing
8.	**Yes**	Planning and Land Use
9.	**Yes**	World Class Infrastructure

Emerging Industries: Does your program impact Hawai'i's emerging industries?	**YES**	**X**
	NO	

V. APPROVALS

a. **Jim Crisafulli** _____ _____ **1/12/09**
Submitted by - Print Name | Submitted by - Signature | Date

b. ☐ APPROVED ☐ DISAPPROVED _____ _____
Division/Agency Head - Signature | Date

c. ☐ APPROVED ☐ DISAPPROVED _____ _____
Director - Signature | Date