International Cooperation on Space Technology Initiatives

November 8, 2012
2012 Beijing Space Sustainability Conference
Beihang University - - - Secure World Foundation

Jim Grady, Global Enterprise Initiative, LLC
Global Enterprise Initiative, LLC
Introduction

GEI’s main offices are located in the NASA Research Park (NRP)* adjacent to the NASA Ames Center in California’s Silicon Valley:

GEI engages in advanced technology enterprises including space technology, communication technology, information technology, biotech, energy tech, green tech, and others. This involves cooperation with Silicon Valley industry, universities, the venture capital community, and other organizations, locally and around the globe.

GEI includes people (employees, partners, associates, etc.) at or near the GEI offices in Silicon Valley and people at key locations around the globe, including:

- Asia, Middle East, and Europe
- also, as needed, Canada, South America, Africa and other areas.

*Note: Activities of GEI (and other companies at the NRP industry park) are independent of NASA but could result in products and services benefiting NASA.
TRACE Certificate

Vetting by an independent organization such as Trace International is becoming essential for support of international business development.

Note: GEI has recently completed TRACE certification for 2013.
Kongsberg (the major aerospace company in Norway) and a U.S. company formed a joint venture to develop the Svalbard satellite ground station on Spitsbergen Island. The business case for the enterprise included potential “anchor clients” such as NASA and other organizations needing a polar ground station essential to satellites in polar orbit viewing indications of climate change, disaster monitoring, and performing other global environment related missions. The U.S. company sold its interest to Kongsberg and Kongsberg Satellite Services (www.ksat.no) now operates the ground station.
As an offset project for the Sukhoi jet, the Russians flew a Malaysian astronaut to the International Space Station. Also included was support of Malay science hardware companies, student participation, etc.

(Article in Space News)
Examples of Sources of Support for International Space Technology Initiatives

Venture Capital
- E.g: Silicon Valley venture capital (VC) community and/or other VC sources in many global locations
- VC business development support is often more important than VC financial support; the VCs have their own “skin in the game” and are therefore often more motivated than (for example) government agencies giving out grants.

Government Grants
- Educational support grants
- Grants for development of otherwise unsupported technology

Grants from International Organizations
- Philanthropic pursuits and other worthwhile causes

Offset (also known as Industrial Participation, Industrial Cooperation, etc.)
- Financial, technical, and business development support from major contractors (e.g.: Boeing, EADS, Caterpillar, etc.)
- $.5 Trillion in offset by 2016 (now ~$.2T), see next Chart.
- Offset is not well understood in China or in the U.S.
- Offset (or industrial participation, etc.) is discussed at www.strategicoffsets.com, a website associated with Avascent and Fleishman Hillard, and at other websites such as www.globaloffset.org.

- A definition of offset: Offset occurs when a government makes a purchase from a foreign contractor and the contractor is required to provide compensation (typically projects) for the perceived loss to the economy of the purchasing country. Offset inherently involves international cooperation.

- *China does not yet have an offset policy.

- *The U.S does not have an offset policy but has “Buy America”, the Jones Act, the Berry Amendment, etc. which are effectively the same as offset *hence offset is not well understood in China or the US

- Most major trading nations have an offset policy for purchases greater that about $10 million.

- Many object to the concept of offset. However, until the world is a “free trade utopia”, it is better to have offset than any of the likely alternatives. Also it has been argued that offset is a “necessary condition” for trade among enterprise based democracies like the U.S. and most of its trading partners.

- Since offset is a “fact of life,” offset should be used more for worthwhile causes such as environmental or educational related projects, or for projects involving business enterprise cooperation between adversarial nations. Peaceful space technology projects would also represent worthwhile causes.

- Contractors with offset obligations support projects with relative enthusiasm providing financial support, technical support, and marketing, and other business development support, for one reason they want to win the next contract from the customer county.
Examples of Potential Areas for International Cooperation in Space

Green Energy; Space Based Solar Power

Green Computing; On-orbit Cloud Computing

Space Tourism/Orbital or Suborbital
(vehicles shown below exemplify potential candidate vehicles for space tourism)

Ocean Monitoring
Radar Imaging
Thermal Imaging

Global Enterprise Initiative, LLC (GEI) proprietary and protected by copyright. Material appearing herein may be reproduced or translated with appropriate credit.
Examples of Potential Areas for International Cooperation in Space

RF Spectrum Mapping

Microgravity Integration

Low Cost Launch
vehicles shown below exemplify potential candidate vehicles for low cost launch

Space Situational Awareness and Debris Mitigation

Global Enterprise Initiative, LLC (GEI) proprietary and protected by copyright. Material appearing herein may be reproduced or translated with appropriate credit.
Potential Spaceport Project
Concept developed by Brenda Chang, a student intern.

Point to Point (P to P) destinations. Long distance P to P space tourism definition/development is underway.
- The Silicon Valley Innovation Center (SVIC) will provide marketing support and business development opportunities taking advantage of the Silicon Valley high tech “gateway”.
- Aerospace products and other defense and high-tech products will benefit from potential technology transfer, partnerships with local technology companies, etc.
- SVIC can be a model for other key global locations (Shanghai, Singapore, etc.).

- Silicon Valley is known for bio tech, info tech, clean energy tech, and other high tech ventures.
- SVIC can be used to bring Silicon Valley support for offset projects as well as create an international markets.
- Sand Hill Road in Silicon Valley is called the venture capital (VC) “capital” of the world. The VC industry is, of course, a key reason for the existence of Silicon Valley, and represents an opportunity for innovative leveraging of venture capital, offset resources, marketing and related business development support.

Google: info tech

NASA Ames, Moffett Field

Sand Hill Road, venture capital industry

Bloom Energy: energy tech

Lockheed Martin: space tech

Universities

Map by Silicon Maps, Inc. and Trestria
Silicon Valley Innovation Center (SVIC) for China, examples of potential locations. Many other locations are available.

Potential SVIC Location #1
625 Ellis St.

Potential SVIC Location #2
465 Fairchild Drive

Potential SVIC Location #3
320 Logue Avenue

Current GEI Offices

900-4000 sqft

400-800+ sqft

3rd Floor – 8874 sqft, 2nd Floor – 175+ sqft

Global Enterprise Initiative, LLC (GEI) proprietary and protected by copyright. Material appearing herein may be reproduced or translated with appropriate credit.
Silicon Valley Innovation Center (SVIC), for China Would Build Upon Other Chinese Related Efforts in the Silicon Valley

- Chinese related efforts include:

And the **China-US Technology Association** (ChinaUSTech),
The **Chinese Enterprise Association**, The **Chinese Information and Networking Association** (CINA), The **Chinese Software Professionals Association**, The **Hua Yuan Science and Technology Association**, And **Others**

- The Silicon Valley Innovation Center for China would have a space technology focus.
BACK-UP CHARTS
• Definition of Offset, by an international seller and buyer, the British government: “...offset is the term used to describe the situation where, in the event of an overseas procurement..., the seller is required to compensate the buyer for a perceived loss to the economy of the purchasing country.”

• Offset is required for most large sales to foreign governments.

• Other terms used for offset and related nomenclature:
  – Industrial Cooperation is used by Norway, Chile, etc.
  – Industrial Participation is used by UK and other countries
  – Counter Purchase, Countertrade, Industrial Coproduction are also terms related to offset
  – Direct (directly related to the contract) offset, indirect offset, etc.

The space-related projects in the following two charts are examples of indirect offset (not related to the contract)
Some Opinions About Offset

- The U.S. does not have a formal offset requirement for imports; but countries importing to the U.S. claim that current U.S. import requirements (the Jones Act, “buy America”, the Berry Amendment, etc.) are much more difficult than offset.

- Examples of U.S. “import requirements” (or the “informal” U.S. offset policy) included the need for UK Harrier jump-jets to be manufactured in Missouri (not the UK) and the proposal by EADS for assembly of U.S. Air Force tankers in Alabama (plus significant Airbus tanker work in many other states) in the recent competition that was won by Boeing. These examples, and others, have provided support to the idea that the U.S. should have a formal offset policy instead of its current “informal” offset policy. One argument is that a formal U.S. offset policy would help quantify jobs and other economic improvements resulting from large purchases from foreign countries. (EADS example shown on next chart)

- Many object to the concept of offset. However, until the world is a “free trade utopia”, it is better to have offset than any of the likely alternatives. Also it has been argued that offset is a “necessary condition” for trade among enterprise based democracies like the U.S. and most of its trading partners.

- Since offset is a “fact of life,” let’s use offset proactively for worthwhile causes such as environmental or educational related projects, or for projects involving business enterprise cooperation between adversarial nations. Note: peaceful space projects or other high tech offset projects could also represent worthwhile causes.
Defense News, Oct. 11, 2010 Full Page Adds for ~$50B USAF Tanker contract (including EADS “offset” to the U.S.)

Boeing add, pg. 5

EADS add, pg. 15

Note: the EADS “offset” proposal to the U.S.A.F. included a factory in Alabama and significant work in many other states, as reported by EADS at offset conferences.
The Growing Importance of International Offset

• 30 Years ago about 10 countries had offset policies. Today over 100 countries have offset policies.

• According to offset associations (GOCA, DMA, DIOA, etc.), offset now accounts for an estimated 10% to 15% of world trade; i.e.: about 1 Trillion Dollars/year (based on world trade at ~$8T/year).

• Offset costs (to sellers) are increasing: from ~2% or ~3% of contract value to ~4% or ~5% or more in some areas; i.e.: at 4%, $40M is budgeted for offset for each $1B of contract value.

• Offset is becoming mandatory in international competitions; no offset = no sale.

• International trade is growing; “… go global or go broke …”

• Most people in U.S. are not familiar with offset because U.S. does not have a formal offset policy. Most countries have formal offset policies, including almost all U.S. trading partners.
White House Initiative on “Big Data” and other agencies

Space offset projects, involving value added processing, including processing of large amounts of imaging data and other data could complement and take advantage of the “Big Data” initiative.

The White House announced a 2012 “Big Data Research and Development Initiative.” This initiative “promises to transform our ability to use Big Data for scientific discovery, environmental and biomedical research, education, and national security.” (Office of Science and Technology Policy, OSTP)
Potential South Korea Spaceport

- A non-profit educational and research entity established in the city of Yecheon-gun, state of Gyeongsangbuk-do, South Korea.
- The Center is home to an astronomical research center that houses a collection of research telescopes, auxiliary telescopes, and other research apparatus; a space camp training center with centrifuge, aerial rooftop training device and reduced gravity simulators; a planetarium; a conference center and dormitories; and a helicopter tour operation.
- XCOR was selected for suborbital operations, space tourism, educational, scientific and environmental monitoring missions.

OffThe Yecheon Astro Space Center selected XCOR Aerospace as its preferred supplier of suborbital space launch services. Operating under a wet lease model, XCOR intends to supply services to the Center using the Lynx Mark II suborbital vehicle, pending United States government approvals to station the vehicle in the Republic of Korea.
Potential use of new airport as a horizontal space launch site

- The airport will cost 1.2€ billion for construction
- Existing International airport of Heraklion will be given back to public lands and made into a large urban area (278 hectares (687 acres)).
Google Earth, GeoEye, Digital Globe, etc. represent the commercialization of “I-lint” (imagery intelligence); Spectrum Mapper offset project could be considered the commercialization of “E-lint” (electronic intelligence*).

One of many ways to show SM data: mobile phone reception using Google Earth

*Note: E-lint is an older term, now often replaced by comlint, siglint, etc.
FALL 2006, October 9-11
Lake George, New York.

Winter 2007, December 6-7, Asia
Regional Offset Conference DMA-GOCA
Langkawi, Malaysia

Winter 2008, February 12-13
Joint CII-DMA-GOCA Conference
New Delhi, India

European Offset Conference
Bucharest, Romania

Fall 2008, October 13-16, 2008
Coeur d'Alene, Idaho

Spring 2009, May 13-16, 2009
Spring Offset Conference
Las Vegas, Nevada

Fall 2009, October 12-15, 2009
Hilton Head Island, South Carolina

Spring 2010, April 25-28, 2010
GOCA Spring Offset Conference
Budapest, Hungary

Summer 2010, June 3, 2010
Netherlands Offset Conference
Amsterdam, the Netherlands

Fall 2010, September 13-16, 2010
Fall 2010 Offset Conference
Chicago, Illinois

Winter 2011 February 14-16 Abu Dhabi, UAE

Spring 2011, April 10-13, 2011
Spring Offset Conference
Amsterdam, the Netherlands

Spring 2012, Izmir, Turkey

Global Enterprise Initiative, LLC (GEI) proprietary and protected by copyright. Material appearing herein may be reproduced or translated with appropriate credit.