Infusion and Commercialization: Some SBIR Best Practices

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Measuring SBIR Infusion Success

- Technology is directly picked up by a flight project, mission or instrument – This is the ultimate prize, but not the only one.
- Technology is targeted for further specific development, under an advanced technology program which a flight project, mission or instrument supports.
- Technology significantly benefits direction of overall portfolio (is used in the "trade space").
- Small business either (a) sells their technology to a larger company, or (b) is bought out by a larger company, which in turn incorporates the technology into one of their product lines and/or uses it on a flight program.

(1/3) What's Working in Technology Infusion and Commercialization

- Focusing on technologies that have clear **economic and/or risk reduction impact.**
  - e. g. Significant savings in design time/effort, mass, volume, power, integration costs, etc.
- Emphasizing technical areas where **other funding sources are lacking.**
- Publicizing SBIR solicitation at relevant technical conferences. Includes technical/engineering staff and project/mission people **encouraging their small business contacts to propose.**
- **Publicizing SBIR successes**, so that program and project managers can see concrete examples of the benefits.

(2/3) What's Working in Technology Infusion and Commercialization

- **Technical Monitors or COTRs** who:
  - Make your company aware of agency technology requirements (and changes to these requirements) and **effectively "champion" the technology** to agency programs and projects.
  - **Communicate consistently** with your company and help it stay on track towards agency applications.
  - Successful infusion often requires **specialized knowledge** of how the relevant technology dovetails with specific mission needs.
  - Encourage your company to take a **proactive role** in finding post Phase II funding and customers (see next page).

(3/3) What's Working in Technology Infusion and Commercialization

- Your company has **realistically assessed prospective agency applications,** including specific projects, instruments or advanced technology programs - and confirmed these interests via direct communication and contacts (not just via reading documents or websites).

- Your company has **a realistic, well thought out, clearly defined plan – preferably in writing - and mechanism to proceed beyond Phase II**, either via internal funding, non-SBIR government agency funds, angel investments, venture capital, other private capital (such as a prime's IR&D), teaming with a larger organization, or a combination.

Infusion Funding and Commercialization Funding

- If a particular technology has only government applications, that is fine….if other technologies your company is developing do have commercial applications.
  - **Broad overall customer/product base needed for long term company success.**
- Angel investors, private investment or early VC funding that supports commercialization can often be same funding that supports DoD product development.
  - DoD wants to buy products, not technology, to insert into DoD acquisition process.
  - VCs fund product development, but not R&D. VCs consider it the government's responsibility to fund R&D.
  - For NASA, this is more difficult to dovetail, since NASA niche needs are often not the same as company commercial needs.
- **NASA needs are more likely to be met if they can be engineered to overlap significantly with commercial or DoD needs** – good business strategy for your company. Also allows leverage of DoD transition funds.
  - But if a NASA need is truly unique, often the only realistic option is for NASA to fund post Phase II.

Summary: Some Phase II Strategies that Increase the Odds of Follow-on Work

- **Good Technical Monitors and Subtopic Managers** are among the most valuable resources. They provide technical/programmatic credibility and also connections with program and project personnel.
- **Good Technology Infusion Managers (TIMs)** provide overall programmatic infusion framework, help plan and implement infusion strategies, help identify applications and funding sources, report successes, keep prospective users informed of relevant available and developing technologies, and keep SBIR advocates motivated.
- SBIR technologies that are **well integrated** with larger technology development programs.
- **Line and program management that are well informed** about your company's SBIR successes and how their work directly benefits the agency.
- Companies that are **proactive** in pursuing agency applications, post Phase II funding, and connections with primes, as well as commercial applications.

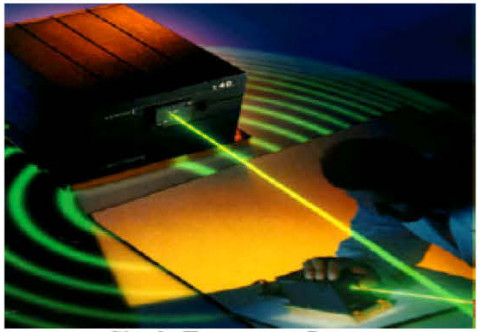
Some Examples of Successful Extension of NASA Applications to Commercial Applications

Jet Propulsion Laboratory
1985 Phase II

Single-Frequency Solid-State Laser

Lightwave Electronics

Mountain View, CA



Single Frequency Laser

INNOVATION

Laser diode pumped, solid state lasers with precise, high output power, and increased durability at wavelengths suitable for optical communications

ACCOMPLISHMENTS

- Achieved the sharpest signal available (narrowest line width) on the market
- Innovative laser oscillator with short pulse width (sub nanosecond)
- Significantly more compact and efficient than previously available technology

COMMERCIALIZATION

- Sales of these lasers based on this technology exceed 1,500 units, providing over $15 million in revenue
- Worldwide markets, 40% of sales overseas
- Company has been purchased by JDS Uniphase

GOVERNMENT/SCIENCE APPLICATIONS

- Supported research and development work of optical communication technology
- The technology evolved into lasers produced for the Tropospheric Emission Spectrometer (TES) flying on the EOS Aura mission

For more information about this firm, please send e-mail to company representative

Communications

Return to NASA SBIR Success Listings

Curator: SBIR/STTR Support 6/24/06

Jet Propulsion Laboratory
1994 Phase II

Compact High Speed, High Power Laser

SDL, Inc.

Sunnyvale, CA

INNOVATION

High power laser suitable for optical communication systems operating at rates up to 2.5 gigabits per second

ACCOMPLISHMENTS

- Demonstrated a protype high power optical link for satellite communications
- Compact laser operates at 1072 nm with output power of 6 watts

Optical Systems Will Improve Space Communications

COMMERCIALIZATION

- Commercial sales of products based on technology are significant
- High power laser for precision cutting and welding, high resolution soldering, thin film etching and drilling
- High speed laser marking system for semiconductors and other materials
- Lasers for research and development work
- Company purchased by JDS Uniphase Corporation

GOVERNMENT/SCIENCE APPLICATIONS

- Contributed toward the development of deep space optical communications

Jet Propulsion Laboratory
1995 Phase II

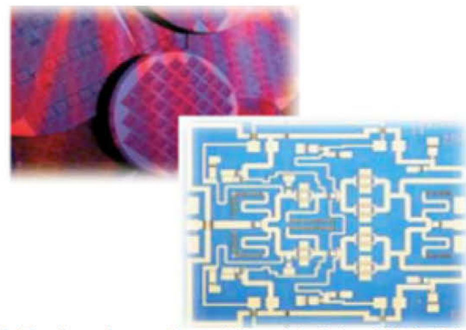
MMIC-Based Modulators for Ka-Band Communications

TLC Precision Wafer Technology, Inc.

Minneapolis, MN

INNOVATION

Small, efficient Monolithic Microwave Integrated Circuits (MMIC)-based phase modulators for Ka-band deep space communications



MMIC Technology Provides Lighter Weight, More Power Efficient Ka-Band Communications Systems

ACCOMPLISHMENTS

- Designed and demonstrated a Ka-band BPSK/QPSK digital phase modulator
- Designed and demonstrated a Ka-band linear phase modulator
- Utilized MMIC integrated circuit technology to provide smaller size and increased efficiency

COMMERCIALIZATION

- Both the BPSK/QPSK and linear modulators have been introduced as commercial products
- Commercial sales have reached $500,000

GOVERNMENT/SCIENCE APPLICATIONS

- Potential technology for future Ka-Band deep space communications

For more information about this firm, please send e-mail to company representative

Communications, Electronic Circuits

Return to NASA SBIR Success Listings

Curator: SBIR/STTR Support 5/15/06

From the NASA SBIR public website - Success Story Gateway, http://sbir.nasa.gov/SBIR/success.htm