Sustainable Technology Commercialization Gap Funds

Moderator:
Mark Allen
Sandia National Laboratories
Purpose

Discuss how to set up and effectively invest and manage a technology commercialization accelerator fund within a laboratory
Panel Members

Wendolyn Holland
DOE Office of Energy Efficiency and Renewable Energy (EERE)

Wes Jurey
Center for Innovation, Arlington Chamber of Commerce

Ron Kaese
Maryland Technology Development Corporation (TEDCO)

Richard Miller
National Association of Seed and Venture Funds (NASVF)

John Mott
Los Alamos National Laboratory
“A Catalyst for Technology Led Economic Development”

Achieving economic sustainability in a globally competitive, knowledge based, innovation driven economy.
Premise

The Center for Innovation, a U.S. Department of Defense (DoD) Partnership Intermediary, is premised on the belief that our future economic sustainability is dependent upon our ability to foster collaboration among and between our nation’s federal labs, research oriented universities, technology focused economic development entities, and the venture capital industry.
Center for Innovation’s Role

- Center has established TechComm, focused on building a new interagency model to facilitate access to federal labs and patented technologies.
- Market research is accelerated into the federal labs under Cooperative Research and Development Agreements (CRADAs).
- Federal technology discoveries are commercialized from the federal labs through Patent License Agreements (PLAs).

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Proof of Concept Fund

★ Provide grants for Proof of Concept
★ Funded through participating universities, industry partners, and foundations.
★ $100K per grant
★ RFP: Industry defined challenges
★ Applications in response to RFPs accepted from participating universities
★ Exploring interest from Federal Labs to join Research Collaborative
TxDMED Proof of Concept Fund

- UT Arlington, UT Dallas, Texas Health Resources and Texas Instruments each contributed $150,000 and the State of Texas contributed $100,000 (TRIP funds) to create a $700,000 fund in 2010.
- 18 proposals were received in response to RFP
- 7 were selected with PIs from UTA, UTD, & Texas Health Resources
- The 2011 Fund has an additional member (UNT Health Science Center).
Maryland TEDCO does Technology Based Economic Development

Ronald W. Kaese
TEDCO
Director of Federal Programs
Maryland TEDCO

- **An independent entity** established by the Maryland General Assembly 1998
- **Facilitate the creation of technology businesses** and foster their growth
- **To be Maryland's leading source of seed capital and entrepreneurial business assistance** for the development, transfer and commercialization of technology
- **Connect emerging technology companies with federal laboratories**, research universities, business incubators and specialized technical assistance
Sustainable Technology
Commercialization Gap Funds

INNOVATION CAPITAL – MORE THAN JUST MONEY!

Presented by
Richard A. Miller
Vice President Marketing and Editor, NetNews
Why Is Innovation Essential?

“INNOVATION DISTINGUISHES BETWEEN A LEADER AND A FOLLOWER.”

-STEVE JOBS
Innovation Paradigm Shift

PROOF OF CONCEPT (Technological Feasibility) “It Works!”

PROOF OF RELEVANCE (Market Pull) “I’ll Buy It”

- return on invested capital
- cost of capital
- organic growth
- m&a

economic value creation

NASVF
Advancing Innovation Capital
Innovation Ecosystem Components

- Technology Commercialization
- Industry
- Capital
- Government
- Research Universities
- Talent
Innovation Capital

- Invested before commercial success
  - $100,000 - $2,500,000
    - Seed Capital $100,000 - $250,000
    - Early Stage $250,000 - $2,500,000
- High risk - vital to new innovative companies
- Scarce for new entrepreneurs

Innovation Capital Providers
- Angels
- Tech and innovation-based economic development organizations
- VC’s
Innovation Capita

- Generates 60 to 80% of net new jobs annually
- Employs 30% of high-tech scientists, engineers, and computer workers
- Produces 13 to 14 times more patents per employee than large firms
Most Common Ways To Raise Capital

1. **Self Funded**
   - Be Your Own Boss
   - Grow 20% per year

2. **Friends and Family**
   - People That You Already Know

3. **Strategic Partners**
   - Non-Recurring Engineering
   - Purchases of Beta Units

4. **Angels**
   - Clubs / Funds
   - Individuals

5. **Grants**
   - SBIR Phase II up to $1 million

6. **Early Stage Venture Capital**
   - About 75 Pre-Revenue VCs left

7. **License Royalties**
   - Average is $375,000 over 5 years
   - For $9 million of funded research
## Funding & Resources for Innovation Capital

<table>
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<tr>
<th>Seed</th>
<th>TBED</th>
<th>Federal</th>
<th>Angel/VC</th>
<th>Entrepreneur</th>
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<tr>
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<td>Michigan Economic Development Corporation</td>
<td>SBIR &amp; STTR</td>
<td>Battelle Ventures</td>
<td>Astralis Group LLC</td>
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<td>BioEnterprise</td>
<td>NorTech</td>
<td>NGA CRADAs</td>
<td>Robin Hood Ventures</td>
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<td>BioAdvance</td>
<td>Maryland Technology Development Corporation</td>
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<td>Edison Venture Fund</td>
<td>TIP</td>
<td>SouthCoast Angels</td>
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<td>Dreamit Ventures</td>
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<td>First Round Capital</td>
<td>Ben Franklin Technology Partners</td>
<td>TIP</td>
<td>Ohio Tech Angels</td>
<td>Seedcamp</td>
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<td>Delaware Innovation Fund</td>
<td>New Jersey Economic Development Authority</td>
<td>SBIR</td>
<td>New York ANGELS</td>
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<td>NYSTAR</td>
<td>First State Innovation</td>
<td>Innovate Delaware’s Entrepreneur’s Fund</td>
<td>Dreamit Ventures</td>
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<td>NASVF</td>
<td>SSI</td>
<td>FLC</td>
<td>Angel Capital Association</td>
<td>nbia</td>
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The term comes from the German legend of Baron Münchhausen pulling himself out of the sea by pulling on his own bootstraps.

**Definition:** “The act of starting a business with little or no external funding”
Crowdfunding—as its name implies—aims to reach a funding goal by getting many investors to put in small amounts.
# Innovation Capital Valley of Death

<table>
<thead>
<tr>
<th>Stage</th>
<th>POR / Pre-Seed</th>
<th>Seed/ Start-Up</th>
<th>Early</th>
<th>Later</th>
</tr>
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<tbody>
<tr>
<td>Source</td>
<td>Founders, FFF</td>
<td>Angel Groups, I/BED, SBr</td>
<td>Accelerators Seed Funds,</td>
<td>Venture Funds</td>
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<td></td>
<td>Bootstrapping</td>
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<td></td>
<td>Crowdfunding</td>
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<tr>
<td>Demand</td>
<td>$0K</td>
<td>$500K</td>
<td>$2.5M</td>
<td>$5.0M</td>
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<tr>
<td>Supply</td>
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"VALLEY OF DEATH"

Funding Gap

Secondary Funding Gap

[Image: Innovation Capital Valley of Death diagram]

[Image: NASVF logo]

Advancing Innovation Capital
The Innovation Coalition is a collaborative group of innovation-based associations supporting the key elements of the continuum for commercialization and job creation.
Summary

• Ecosystems advance technology commercialization, innovation, funding and economic growth
• Innovation Road Maps provide the strategy to grow technology, commercialization and market the region
• Seed and early-stage funding is critical to success
• High risk - years to bear fruit
• Significant job creation
• BIG potential payoff!
The Commercialization “Secret”

• Its not about
  • TECHNOLOGY!
• Its about
  • REVENUE
  • SCALABILITY
  • CASH FLOW
  • PROFITS IN TWO YEARS
  • COMPETITIVE ADVANTAGE
Get a FREE subscription to Innovation America’s innovationDAILY newsletter
www.innovationamerica.us

NASVF’s Weekly Innovation Capital newsletter
NetNews
www.nasvf.org/netnews
Sustainable Technology Commercialization Gap Funds

John B. Mott
Los Alamos National Laboratory

FLC Annual Meeting
May 2011
The Gaps We Address

• Technology maturation gap
  – Reducing technology risk
  – Moving technology from early TRL to readiness attractive to potential licensee or co-development partner

• Business maturation gap
  – Reducing risks/challenges on new venture creation
  – Reducing risks companies, especially NEWCOs, face in product development to market entry stage
Investments to Address the Gaps

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<th>TRL</th>
<th>1</th>
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<td>Technology Concept</td>
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<td>Component Validation</td>
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<td>System Demo.</td>
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<td>Product in use</td>
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- **Tech Maturation**
  - LANS Fee Investments
  - LANS Royalty Investments
  - Strategic Innovation
  - Venture Acceleration Fund

- **Co-Development CRADA/License**
- **EERE Tech Commercialization**
- **ARPA-E**

- **Leveraged DOE Programs**
- **Industry Partnerships**

- **Los Alamos Venture Acceleration (LabStart)**
  - Co-Development CRADA/License
  - EERE Tech Commercialization
  - ARPA-E

- **Venture Acceleration Fund**
  - $1M/yr, 3 yrs
  - $350K/yr
  - $250K/yr
  - $200K/yr
Los Alamos Venture Acceleration Initiative

Partnership with LabStart, LLC

• Joint venture of Verge Fund and ARCH Ventures—*putting national venture capital leaders to work at LANL*
• Selected through competitive solicitation
• LabStart provides external business guidance, market validation, and maturation direction and funding, and assembles the external technical and management team required to bring promising technologies to equity-financing stage and create new companies

Features

• Program launched Q2 FY09
• LANL investment
  – $1M, 3-yr investment of LANL royalties
• LabStart investment
  – 50% in-kind investment
  – Cash investments in technology development
  – Financing of startup companies
• Market due diligence completed on over 70 technologies

Impacts

• First startup company launched Q2 FY10
• Second startup company launched Q3 FY10
• Third startup company launch expected Q2 FY11
• Building business case for 9 additional new ventures
• Facilitated relationships with Boeing, Dow, Verizon, GM Ventures, NVIDIA, NVP Venture Partners, Chart Ventures
• Opportunities passed to other State VC firms
Scope of LabStart

- Early contact with PIs
- Technology Assessment
- Diligence
- Valuation
- Business Model
- Structuring the deal
- Negotiation
- Deal

LANL TT

Job Creation
Mission Relevance
Startup Deals
Regional Economic Development
Fees and Royalties
The Los Alamos Plant Growth Technology is a version of a naturally occurring plant metabolite that speeds plants to maturity and harvest without the use of growth hormones. The technology also increases plants’ nitrogen use efficiency, with the potential to decrease the cost and environmental impact of agriculture worldwide.
Impacts

14 license/options with $\sum 10\text{-yr value of }$4.4M

24 invention disclosures

8 patent applications

6 CRADAs with lifetime value of $4M$

3 new CRADA PTSs with existing partners

4 companies raised $5.4M in equity investment

10 NEWCOs

4 NF:WFOs with lifetime value of $1.2M

LANS Fee Investments

Tech Maturation

LANS Venture Acceleration (LabStart)

Co-Development CRADA/License

ARPA-E

EERE Tech Commercialization

Industry Partners

Leveraged DOE Programs

TRL

1. Basic Principles
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10 NEWCOs
The Maturation Problem

Stage of Development of most LANL technologies

Stage of Development required to attract entrepreneurs & investors

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High Technical Risk: $250K to $600K / 24 to 36 months required to mature technology

Los Alamos Venture Acceleration (LabStart)

Co-Development CRADA/License

Private-Public Technology Maturation Funds: market-driven investments to close the gap
Backup Slides
Building the Innovation Economy

**Research** leading to commercializable discoveries

**Venture Capital** to fund proof of (1) concept, (2) product, and (3) market

**Technical Assistance** to license, patent, incorporate

**Entrepreneurs** to start companies

**Business & Industry** to commercialize and produce
The Center’s Strategic Goals

★ Create world class deal flow, fostering technology discoveries, transfer, and commercialization

★ Catalyze a strong regional venture capital industry, creating access to venture capital, through proof of concept, product, market

★ Develop and attract talent and know how, through entrepreneurial development & start-up assistance
Connecting The Network: The “Portal” Connection

**Federal Agencies/Labs**
- **Inputs:** – Patent Portfolios
  – Research Priorities
- **Outputs:** – CRADA proposals
  – Licensing partners

**Industry**
- **Inputs:** – Capacity
  – Technology gaps
- **Outputs:** – Patents
  – CRADAs

**University**
- **Inputs:** – Centers of Excellence
  – Research Portfolios
- **Outputs:** – CRADA proposals

**Industry/Academic Partnerships**
The TechComm Network Provides Direct Support To Federal Labs

- Guide industry and university research proposals to appropriate federal lab/scientist for research partnership (CRADA).
- Triage business plans, industry capacity, and technology gaps of private sector to propose candidates for Patent License Agreements (PLAs).
- Marketing assessment of federal technologies from 3rd party sources (industry, colleges, angel investors).
- Regional “technology showcase” events to facilitate partnerships with private sector companies and universities.
TechComm represents multiple federal agencies as a partnership intermediary

- Defense (1 of 4) 120 labs
- Agriculture (1 of 9) 80 labs
- Homeland Security (1 of 1) 8 centers
- National Institutes of Health (1 of 1) 27 institutes
- Agreements with Transportation, NASA, and Energy are pending
TechComm Affiliate Network

**Vision** – to provide an effective national network of affiliate partners with each partner serving as a conduit to a greater number of local, regional and state entities, including venture funds and research institutions

**Structure** – selection of affiliate partners at state, regional, and local levels

- corporations
- universities
- economic development organizations
- venture funds
TechComm has engaged additional federal agencies as partners

★ Commerce

– National Institute for Standards & Technology
– Manufacturing Extension Partnership Offices

★ Small Business Administration

– District offices
– Certified Development Finance Institutions (CDFIs)
– Small Business Development Centers (SBDCs)
Center Facilitates Funding for Federal Technology

- Proof of Concept Funds
- Angel Investor Network
- Venture Capital Network
Backup Slides
TEDCO Today

- UTDF -
  - 92 Projects completed
  - 38 Patent Licenses (41% of projects)
  - 28 Startups (30% of projects) & 74% of licenses
  - 24 Md. Startups (26% of the projects) & 63% licenses
  - 13 Companies received MTTCF awards
TEDCO Today

- **TechStart** -
  - 27 Projects completed
  - 18 Startup companies (67%)
  - 6 Companies receiving MTTCF awards

- **Successes**
  - Program in operation for 4 years and the 18 companies have raised $5.7M in follow on funding
TEDCO Today

- MTTCF continuation funding
  - 158 projects completed (as of 3/10/11)
  - 189 projects funded; 51% rate
  - $9.9M in TEDCO support
  - $415.7M in continuation funding
  - $42 : 1 leverage
  - Funds were raised from Angel, VC, SBIR, ATP, State, Debt Capital, Fed Contracts, Strategic Partners, etc.
TEDCO Today

Federal Lab Tech Transfer Initiatives

- 72 (60 in MD) Federal Lab and Small Business collaborative projects
- Technology of interest to the government
- Spin-out and Spin-in
- Diverse technology
  - Anti-microbial fabrics
  - Digitized and Modernized Cockpit Display
  - Noise Immune Stethoscope
  - Energy Harvesting Outhouse
Ronald W. Kaese  
Director, Federal Programs  
Maryland Technology Development Corporation  
5565 Sterrett Place Suite 214  
Columbia, Maryland 21044  
(410) 715-4170 (Direct)  
(410) 740-9442 (Corporate)  
(410) 740-9422 (fax)  
[website link]  
Follow us at [twitter link]
INNOVATION CAPITAL – MORE THAN JUST MONEY!

Presented by
Richard A. Miller
Vice President Marketing and Editor, NetNews
Established in 1995
Non profit
Headquarters Philadelphia, PA
175 member organizations
  43 states
  Five countries
800 members
  1/3 Equity funds
  1/3 Public TBED
  1/3 Technology
NASVF'S Mission: Advancing Innovation Capital.

**GOALS**
- Increase availability, effectiveness and impact of innovation capital
- Expand and enhance membership value

**STRATEGIES**
- Advocacy
- Federal Programs
- Membership
- Conference
- Communications

**OUTCOMES**
- Funding
- Commercialization
- Job Creation
“Never before in history has innovation offered promise of so much to so many in so short a time.”
More Information from John Mott
Los Alamos National Laboratory
Strategic Innovation Investments

Provides small grants to create or seed new IP; demonstrate proof-of-concept to enable invention disclosure and/or patent application

Activities
- Program launched Q1 FY09
- Average award of $20K
- $204K invested in 10 projects in FY09
- $140K invested in 7 projects in FY10

Impacts
- $1.2M Funds-In CRADA
- 3 CRADA PTS / 3 in process
- 1 license agreement
- 3 provisional patent application
- 14 invention disclosures
- 1 software disclosure
- 4 LDRD-DR proposals
- 6 LDRD-ER proposals
Technology Maturation Fund

Provides small amounts of funding to move early stage technologies to proof-of-concept or prototype stage to attract potential licensees or investors. Awards are given to achieve a specific milestone or set of milestones.

**Activities**
- Program launched Q1 FY03
- Average award size $50K
- $2.6M invested in 61 projects

**Impacts**
- 5 CRADAs with lifetime value of $2.5M
- 4 NF:WFO with lifetime value of $1.2M
- 7 regional startup companies
- 13 License & Option Agreements with estimated 10-yr value of $4.4M
- 9 New Disclosures; 5 patent applications
LANS Venture Acceleration Fund

Invests LANS fee in Northern New Mexico businesses that have an association with LANL technology or expertise to reduce commercialization risks and retain and grow jobs.

**Activities**
- Program launched October 2006
- Provides up to $100K investment per company
- $350K annual investment

**Impacts**
- 16 company projects funded at a total of $1.45M
- 4 companies parlayed the VAF funds into an additional $5.4M in equity investment
**EERE Technology Commercialization Fund**

Funds highly focused, cost-shared laboratory-industry partnerships that move early-stage energy technologies past the R&D stage by removing specific hurdles to early-stage.

**Activities**
- Responded to solicitation in July 2008
- Received project Award of $631K in August 2008
- Received final work authorization in January 2009
- Initiated first projects in February 2009
- Concentrated on collaborative projects with significant cost-sharing

**Impacts**
- 3 cost-shared CRADAs
- 1 in-house cost-shared maturation project