Partnering of Small Business and University in the SBIR Program: Opportunities and Lessons Learned in Practice

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Abstract:

The general motivation for universities and small business to partner in the SBIR/STTR program is discussed in terms of innovation and growth. Reasonable expectations for each party, the commitments needed, and the benefits realized are described based on our experience. Several lessons learned are also discussed. We conclude that several key matches between the University and the small business are important for success and that there can be significant educational benefits as well, when the partners agree on reasonable levels of risk concerning intellectual property.

The motivation for small business and university partners is discussed, not only in terms of funding, but also in its relation to the mission of the University, the growth in importance of innovation, and the benefits to students and faculty. Based on our experience, some of the key points for a successful relationship involve: alignment of Interests, the importance of communication, ways to use each other's strengths, avoiding annoying the other partner, managing the mission, appreciating issues and rewards for university faculty, and appreciation of student roles and contributions.

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The Innovation Imperative

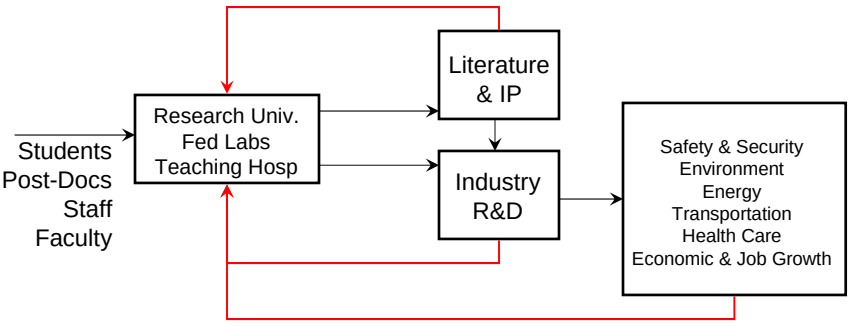
"America's enterprises, educational institutions, labor and public sector organizations and citizens must make innovation – across all sectors of business, society and government – the underlying strategic priority for ensuring the nation's economic strength and security." …

"Where once we optimized our organizations for efficiency and quality, now we must optimize our entire society for innovation."

--- *Innovate America*
National Innovation Initiative Interim Report
Council on Competitiveness, July 23, 2004. p. 2.

Traditional Model – Sustainable?

Public funding of research universities and federal labs provides fundamental S&T knowledge & workforce to address societal needs; implementation by industry.



Innovation Models

"Closed" (Traditional)

- Knowledge scarce, diffuses slowly
- Hire all key experts
- Discover, develop and manufacture internally
- First to market wins
- Largest number of best ideas wins
- Control IP to prevent competitors

"Open" (H. Chesbrough)*

- Knowledge plentiful, diffuses rapidly
- Cooperate with experts
- Capture value of external R&D using internal R&D
- Better business model wins
- Best integrator of internal and external ideas wins
- Market internal IP; buy external IP to advance business model

* Chesbrough, H. W., *Open Innovation: The New Imperative for Creating and Profiting from Technology*, HBS Press (2003).

Making it Work

- Alignment of Interests
- Importance of Communication
- How to Use Each Others Strengths
- Avoid Annoying the Other Partner
- Manage the Mission
- Student Role and Contributions

Alignment of Interests

- Common Interests
  - Completion of Objectives
  - Technical Understanding of the Technology
  - Success in Phase II Proposal
  - Commercialization
  - Income Benefits
- Parallel Interests
  - Potentially different time frames
  - Publications
  - Patents
  - Educational Mission versus Confidentiality

Alignment of Interests

- Alignment through Contract
  - Field of the Agreement to limit relationship
  - Patent Sharing
  - Publication terms
  - Profit Sharing

Importance of Communication

- Recognition of Impact of Short Time Frame of Phase I: Over before prepared
- Clarity of Tasks to be Completed for University/Small Business
- Maintain Urgency of Effort
- Communication to Divide Efforts
- Communication to Maintain Focus
- Communication for Emerging, previously Unrecognized Needs

Importance of Communication

- Considerations
  - Frequency - Weekly Meetings
  - Involvement of Principals
  - Student Participation and constraints
  - Other Faculty
  - Industrial Sponsors

How to Use Each Other's Strengths

- Explicit Consideration and Identification of Strengths/Weaknesses
  - Theoretical Capabilities
  - Simulation Capabilities
  - Small Scale Experimental Capabilities
  - Large Scale Experimental Capabilities
  - Full Time Employees: 24/7
  - Constraints of Academic Calendar
  - Six Month Timing of Phase I
  - Academic Insights
  - Unique Insights into Problem Requirements
  - Industrial Contacts
  - Commercial/Economic Insights
- Contractual Embodiment of Strengths/Weaknesses
- Responsiveness to Partner's Needs

Avoid Annoying Other Partner

- Recognize the Differences in the Partners
  - University Students May Encounter Conflicts:
  - A Scholar, not a Technician
  - What does this project have to do with my GPA?
  - 8AM activities are unreasonable
  - Can't work this week: exam deadlines
  - Prefer to Work Weekends

Avoid Annoying Other Partner

- Small Business Employees May Encounter Conflicts
  - Students Don't Work with Focus
  - Student's Aren't Responsive
  - Students Aren't Practical
  - Students Not Available 8 hour Days
  - Not Being Paid for Weekend Duty
- Resolved by Attention and Attitudes of Partners
  - Clear explanations of roles
  - Clear explanations of benefits
  - Clear division of responsibilities

Manage the Mission

- Phase I is Brief: Have the Contract Language Agreed Before Award
- Be Sure Milestone Chart is Clear and Agreed
- Identify the Specific Major Technical Accomplishments Needed for Phase II
- Identify the Phase III Partner, and their Requirements
- Plan the Report Timing and Responsibilities
- Plan the Phase II Proposal Timing and Responsibilities
- Plan the Patents and Publications

Issues & Rewards for University Faculty

- Institutional value for Innovation and understanding role of SBIR/STTR
- Potential for Spin-Out companies
- Develop mutually beneficial relationships with small business
- Opportunities for students
- Outreach mechanism for larger research efforts
- Test bed for research results
- Define new research questions

Student Role & Contributions

- Curriculum Impact
  - Independent Study
  - Classroom Use for Case Study
  - Manage Confidentiality
- Co-Op/Internship during and after project
- Differences for
  - Undergraduates
  - MS students
  - PhD students
  - Post Doctoral staff