

SBIR 101

Introduction to SBIR/STTR Funding

University of Pittsburgh Innovation Institute

Paul J. Petrovich, CPA, Assistant Director
Technology Commercialization
ppetrovich@innovation.pitt.edu
412.624.3138

My Background ...

- SBIR Consultant
- Consulted with over 80 participant companies, with successful awards in excess of \$25 million
- 2006 National Tibbetts Awardee
- Assistant Director, Enterprise Development
- Certified Public Accountant; Member, AICPA and PICPA
- Prior Chair - Pennsylvania Innovation Partnership Funding Committee
- Publication – “A Guide to Federally Funded Research, Budgeting and Accounting. 2008”

Innovation Institute formed November 2013



The University of Pittsburgh Innovation Institute brings together the staff and resources of three existing Pitt organizations

Innovation Institute is Hub for Commercialization Efforts

IP Management

Opportunity
Licensing and
Marketing

Commercialization
Classes and
Workshops

Startup Development

Technology
Showcases

Business Plan
Competitions

Student Accelerator

Gap Funding and
SBIR training

Entrepreneurial
Mentoring and
Networking

Outline:

- **Federal SBIR / STTR Program**
 - History
 - Overview
- **Participating Agencies** (*who's your customer?*)
 - Differences
- **Succeeding in SBIR/STTR**
 - The long term view
 - Partnerships
 - Proposal Elements

The SBIR / STTR Program

- Over **\$2 BILLION** in new funding is awarded each year for early-stage, high-risk innovative technology leading to commercialization – for small businesses only
- FY14 Budgets:
 - SBIR: ~\$2.7 Billion
 - 2.7% of extramural R/R&D for agencies >\$100M (3.2% by FY17)
 - STTR: ~\$300 Million
 - 0.35% of extramural R/R&D for agencies >\$1B (0.45% by FY16)

History of the SBIR Program – in the beginning ...

- **SBIR was created by Federal legislation in 1982.**

- SBIR was created to provide funding for some of the best **early-stage** innovation ideas, ideas that however promising, are too **high risk** for private investment.

*Roland Tibbets
Ronald Regan*

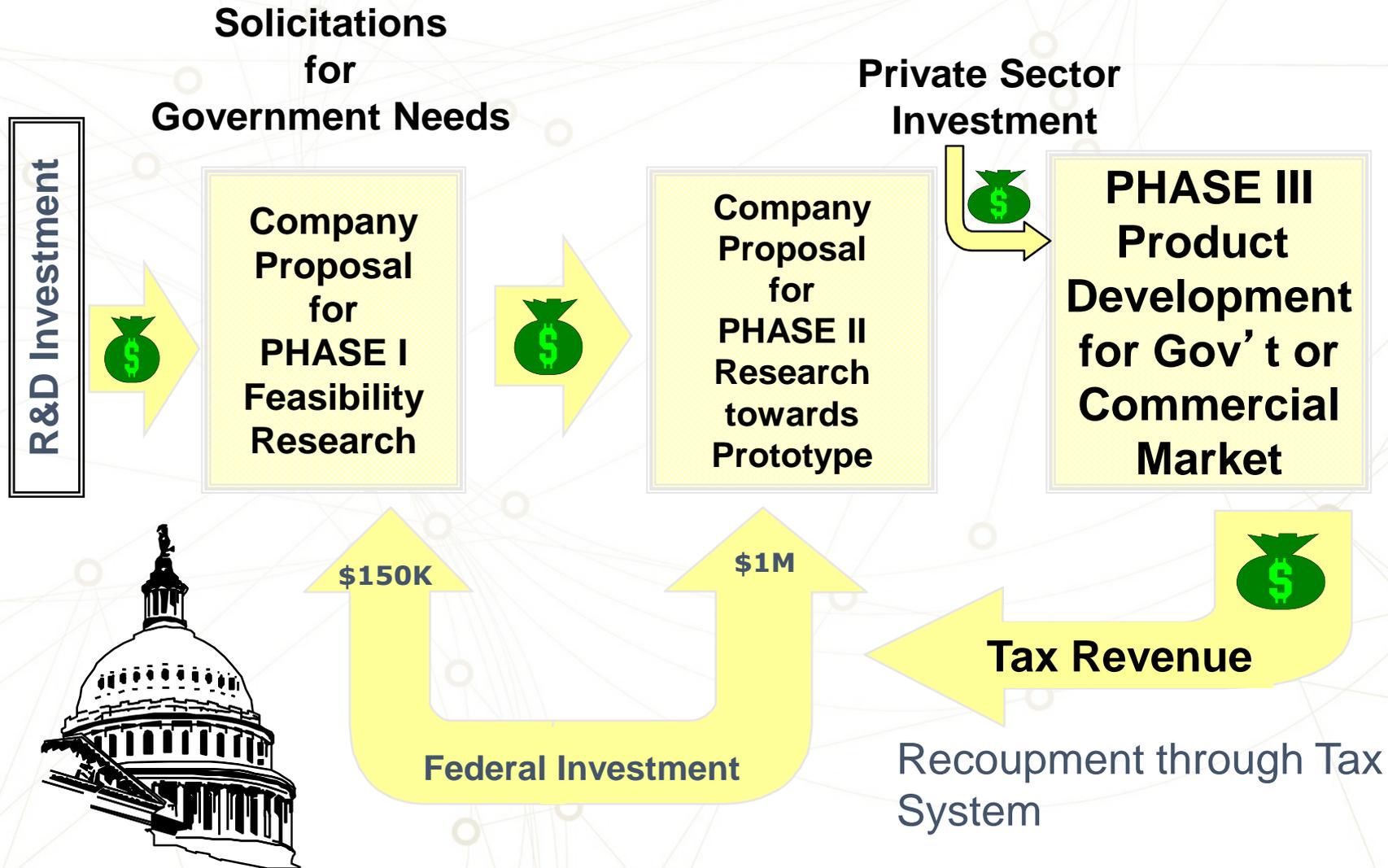
- **Envisioned as “Economic Stimulus”**

- SBIR is not an allocation to help needy small companies. It is strong signal to Federal Agencies to make more effective use of the innovative scientists and engineers employed by aggressive small companies that have the potential to convert R&D funds into **new products** and **create new jobs** – to optimize return on taxpayers’ dollars.

➤ \$40 B
➤ 450K
*engineers and
scientists
involved*

*Largest and most important source of early-stage technology
R&D financing for America’s Entrepreneurs !!!!*

SBIR/STTR “Innovation” Model



Legislative History

- **1992 Reauthorization:**
 - Greater emphasis on increasing private sector commercialization;
 - Creation of STTR program
- **2000 Reauthorization:**
 - Expanded Phase II program; larger grants & commercialization plan
 - Phase III follow-on funding agreements
- **2011 Reauthorization:**
 - Extends Program to 2017
 - Increases SBIR set-aside from 2.5% to 3.2% by 2017
 - Increases STTR set-aside from .3% to .45% by 2016
 - Authorizes Phase 1 Awards up to \$150,000 (50% increase) & Phase II Awards up to \$1M (33% increase)
 - Crossover Flexibility – Allows Ph II Awards to be funded by different agency
 - Allows STTR Ph II follow-on to SBIR Ph I and visa-versa

A Mature Program

Let's do the numbers

<http://www.innovation.com/sbir/sbir-stats>

Total SBIR-STTR Awardees | **21,551**

Estimated FY14 SBIR STTR Budget | **\$2.75B**

VC Funded SBIR-STTR Awardees | **2,472**

Currently Active Awardees | **5,918**

SBIR Firms with issued US patents | **8,278**

Calculated VC in SBIR Firms
\$76.48 Billion

Total SBIR-STTR \$\$ to date
\$42,393,933,744

Total SBIR Publicly Traded | **791**

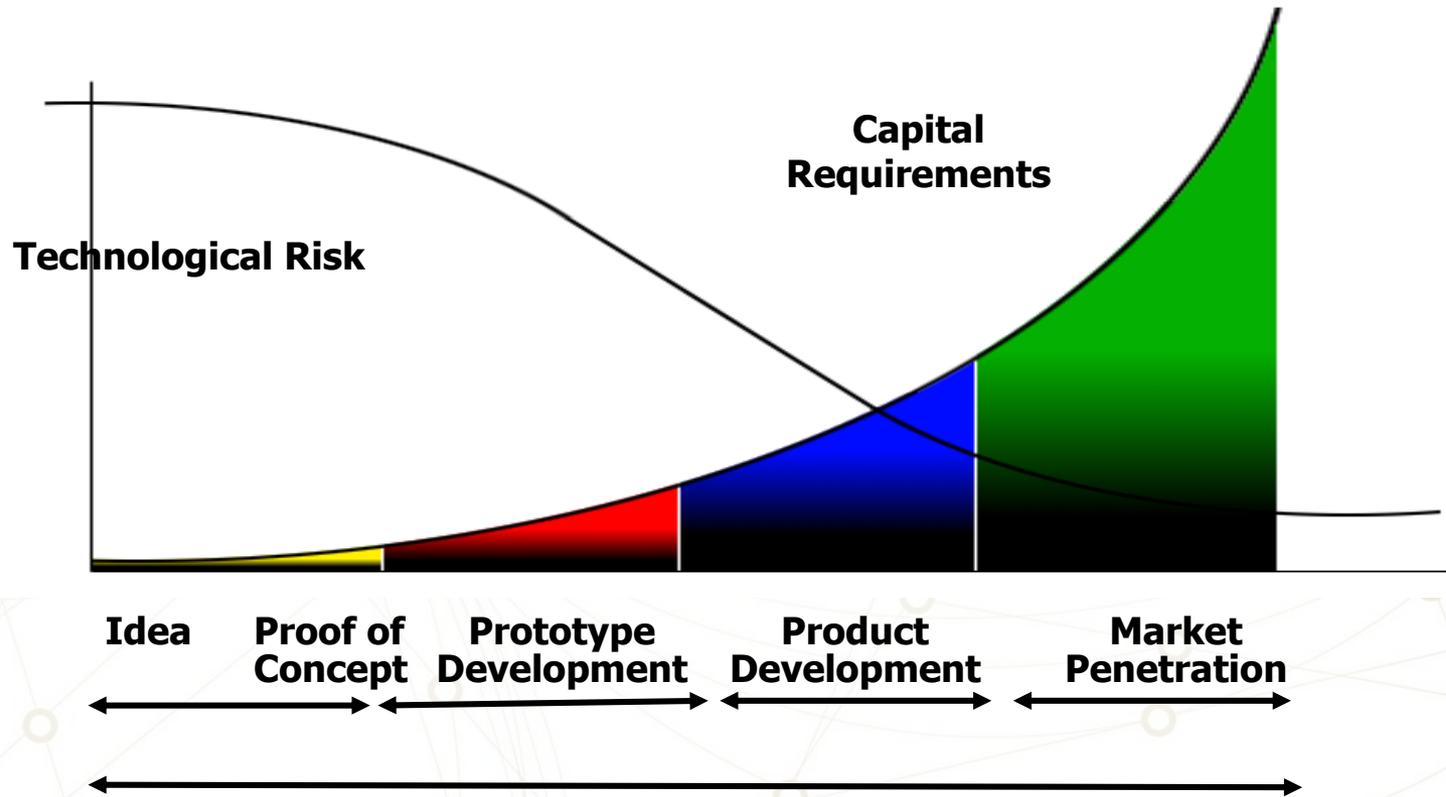
Extent of VC SBIR involvement
One of every 7-8 VC invested dollar in US to an SBIR firm

- Largest source of early-stage technology financing and the Nation's most successful program in moving cutting-edge technology into the marketplace
- Results meet important societal and/or government and Defense mission needs

What is the SBIR / STTR Program?

- Goal is **commercialization** of new innovations from U.S. small businesses:
 - Meet Federal research and development needs
 - Increase commercialization of innovations derived from Federal R&D funding
 - **Stimulate technological innovation (Develop Products w/ Commercial Merit)**
 - Encourage participation by socially and economically disadvantaged persons
- Significant risk reduction:
 - Funds projects that are too early to attract investment capital
- Review process adds credibility to your company in the commercial marketplace:
 - Technology validation

Innovation Process

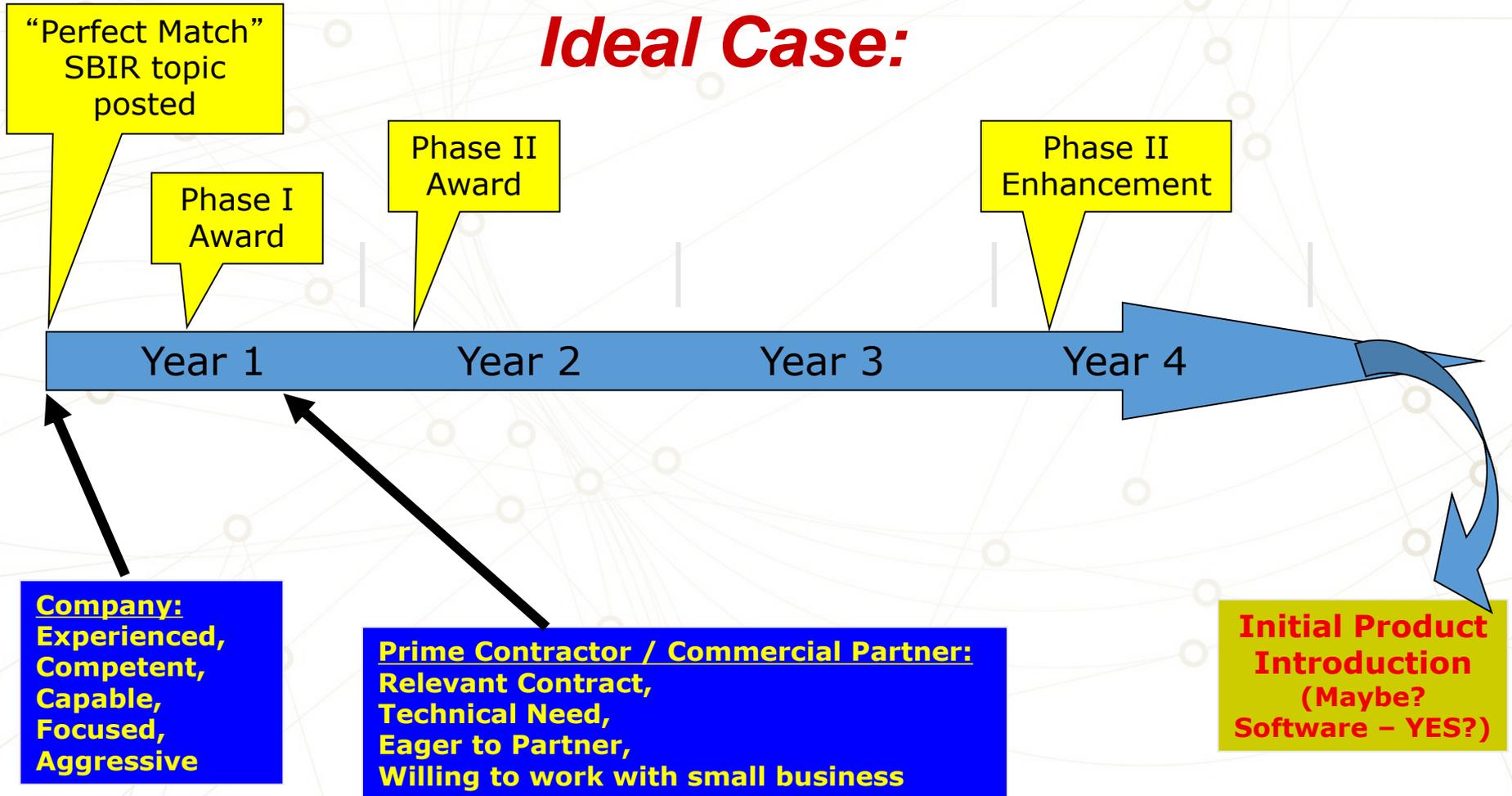


SBIR/STTR Advantages:

- Provides very early stage high-risk (high-payoff) R&D product development funding
- Not a loan – no repayment required;
- No loss of equity ownership
- No royalty payback
- Provides leverage for follow on funding
- Intellectual property rights remain with the small business
- Preferences, including sole source contracts, for follow-on Phase III government funding or procurement possible



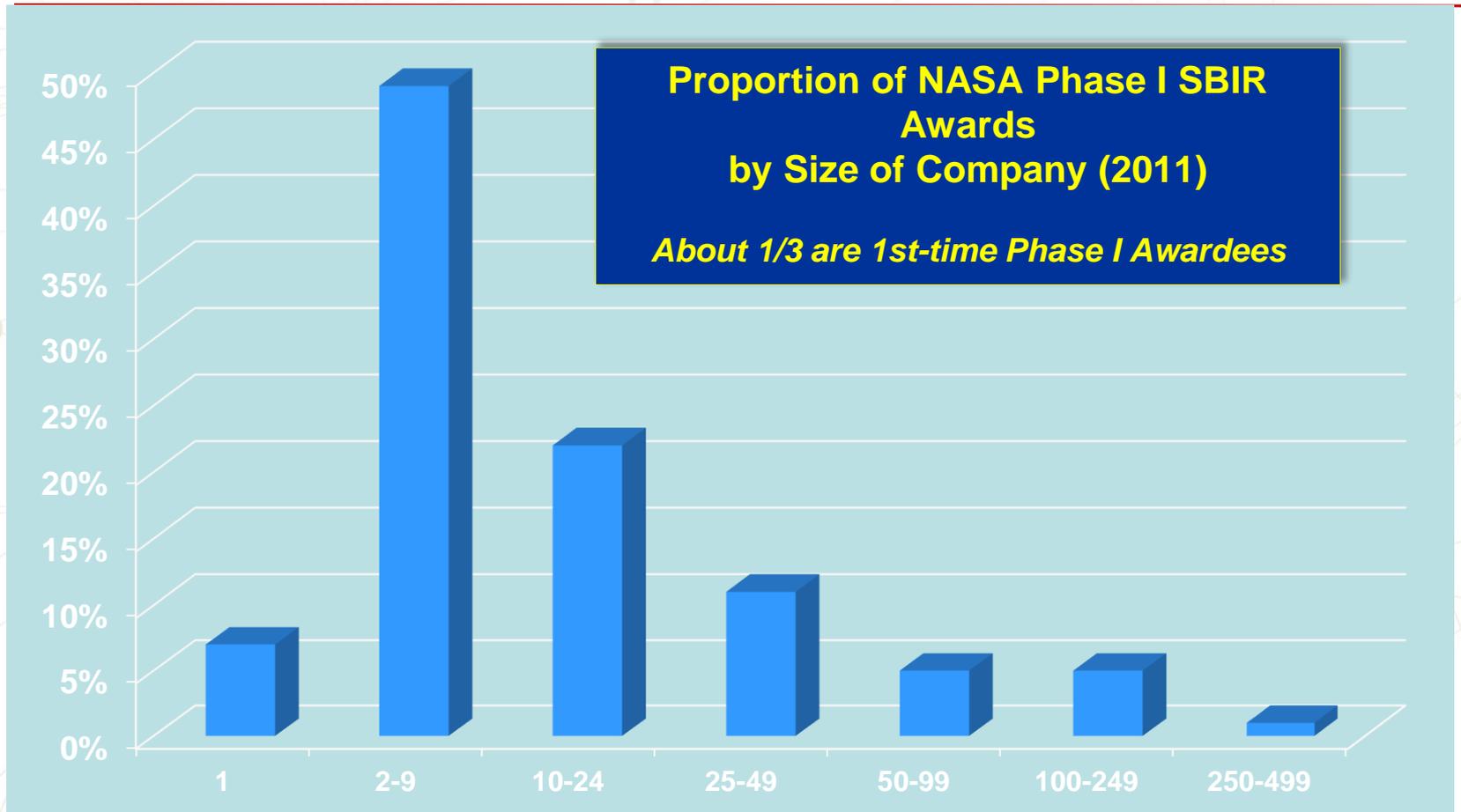
Timeline: SBIR to Commercialization



Is SBIR/STTR Program Right for Me?

- Do you have an idea for a technology that is:
 - Revolutionary not evolutionary, or a novel application of an existing technology
 - Improves the social, medical or other aspects of a person's life
 - Advances the existing state of science
- Want to start a business or keep your company growing
 - Once commercialized, provides jobs, benefits & taxes

Who Participates?



Typical SBIR/STTR Award Winner Profile

- Proposed solution meets agency need
- Understands the current state of the art and can relate it to their innovation
- Proposal
 - Adequately communicates path to market
 - Adequately describes qualifications & experience for research & commercialization
 - Demonstrates adequate support staff, facilities & equipment

The SBIR & STTR Programs

Small Business Innovation Research (SBIR)

- A set-aside program for small business to engage in Federal R&D – with potential for commercialization
- **2.9% of the extramural research budget (FY 2015 ~ \$2.0 Billion in summation) for all agencies with a budget greater than \$100M per year. Growing to 3.2% by 2017.**

Small Business Technology Transfer (STTR)

- A sister set-aside program to facilitate cooperative R&D between small business concerns and U.S. research institutions – with potential for commercialization.
- 0.35% of the extramural research budget (>\$250 million) for all agencies with a budget greater than \$1B per year. Growing to .4% by 2017.

Milestone-Driven Award Process

Phase I | Feasibility Study or Prototype

~\$150 thousand and 6 months

Phase II | Full Research and Development Effort

~\$1 million and 24 months

Phase III | Commercialization Effort

Private and Non-SBIR funding

Pittsburgh SBIR/STTR Companies

Cohera Medical

RE2

Blue Belt
Technologies

Wombat Securities

SBIR/STTR Program

How does the SBIR/STTR program work?

Phase I – Feasibility Study

- Will your idea work?
- Submit ~25 page proposal
- Performance period – 6-9 months
- Funding level – Up to \$150,000
- Average success rate 10% - 13%

SBIR/STTR Program

How does the SBIR/STTR program work?

Phase II – Prototype Development

- **Bench level – develop commercialization potential**
- **General submission from Ph I typically**
- **Submit ~25-50 page proposal**
- **Performance period – 2 years**
- **Funding level – Up to \$1,000,000**
- **Average success rate 40-50%**

SBIR/STTR Program

How does the SBIR/STTR program work?

Phase III – Commercialization

- **No SBIR/STTR funding, but other Federal funding may be available**
- **Three “F’s”, Angels, Venture Capital**

SBIR/STTR Eligibility Requirements

SBIR/STTR

- Applicant is a small business located in the U.S. (500 employees or less) organized for-profit
- At least 51% owned and controlled by US individuals

STTR

- Formal cooperative R&D effort: Minimum 40% by small business; Minimum 30% by U.S. research institution
- Intellectual property agreement Allocation of rights in IP and rights to carry out follow-on R&D and commercialization

SBIR Participation & VC Funded Company

- **For SBIR only** – agencies may make a portion of their awards to companies that are majority-owned by VC operating companies, hedge funds, or private equity firms.
 - Up to 25% for NIH, DOE, & NSF
 - Up to 15% for all others
- Provided that no one Group holds more than 50% of the stock.
- Agency must submit a written determination to SBA indicating how allowing participation will induce additional VC funding & contribute to agency's mission:
 - HHS & DOE have opted to allow VC Participation
 - Between the two, 12 SBIR awards totaling \$7.9M were awarded during fiscal years 2013 & 2014.

SBIR/STTR Eligibility Requirements

- ▶ **SBIR Program:**
 - Primary employment of the Principal Investigator must be with the small business. (51% or more)
 - Spend ~ 10% or more of time on project

- ▶ **STTR Program:**
 - The Principal Investigator may be from either the small business or the partnering institution
 - If from institution may have to reduce faculty time
 - Check with institution

- ▶ **Company-controlled research facilities**

Basic Elements of the Program

▶ **SBIR Program:**

- Small Business MAY subcontract with a non-profit research institute
- Must perform up 2/3 of the work based on budget in Phase I. Phase II – 50%
- Intellectual Property rights remain with the small business
- Average success rate varies by agency.

Overall agencies:

- 15% Phase I
- 54% Phase II

Basic Elements of the Program

- ▶ **STTR Program:**
 - Small Business **MUST** partner with a non-profit research institution
 - Must perform 40% of the effort
 - Research Institution must perform 30% of the effort
 - Balance of effort for either or additional parties
 - IP agreement must be negotiated between parties
 - Average success rate varies by agency. Overall agencies:
 - 20% Phase I
 - 48% Phase II

Small business is ALWAYS the applicant & awardee!

SBIR/STTR Agency Participation

- 11 different agencies participate in SBIR
 - 5 of these also have STTR programs
- Each agency manages its own programs
- SBA sets general rules (SBIR & STTR Program Policy Directives)
 - per law set by Congress (SBIR/STTR Reauthorization Act of 2011, in NDAA of FY2012, Public Law 112-81)
- Agencies report as required to SBA

Participating Agencies

<u>Agency</u>	<u>Programs</u>	<u>Budget</u>
DoD	SBIR/STTR	\$1.2 B / \$154 M
HHS/NIH	SBIR/STTR	\$617 M / \$80 M
DOE	SBIR/STTR	\$166 M / \$22 M
NASA	SBIR/STTR	\$145 M / \$19 M
NSF	SBIR/STTR	\$133 M / \$18 M
USDA	SBIR	\$19.3 M
ED	SBIR	\$13.7 M
DHS	SBIR/ -	\$12.6 M
DOT	SBIR	\$8.6 M
EPA	SBIR	\$4.8 M
DOC	SBIR	\$4.7 M
(NOAA & NIST)		



Agency Perspectives: DoD

General DoD Descriptions

- Primary focus is on the warfighter
 - Additional Service requirements also
 - Topics may cover nearly any technology area
 - Many medical topics in Army solicitation
 - DARPA seeks most advanced technologies
 - Moving back to longer-range insertion
 - Applicants should show strong connections to Service users
 - DARPA PMs often “adopt” other Phase II proposals
 - SOCOM wants quick deployment of practical technology
 - Navy has had most successful Phase III program
 - Other Services modifying programs to improve transition
- **LARGEST** SBIR program in the Federal Government
 - DoD is both an **INVESTOR** and a **CUSTOMER**
 - Sole-sourcing allowed for follow-on awards

Agency Perspectives: NIH

- Largest part of HHS (NIH, CDC, FDA, ACF)
- 24 Institutes & Centers
- “Parent” SBIR & STTR FOAs releases January
 - **The next SBIR/STTR Omnibus Solicitation Deadline April 5, 2015. There after for 2016 SBIR/STTR due dates will fall on September 5, January 5, 2017**
- NIH SBIR Contract Solicitation (CDC) releases in August
 - Closes November
- Additional FOAs (PAs, RFAs) released periodically
- Budgets (2012)

NIH SBIR: \$632M
CDC SBIR: \$8.3M
ACF SBIR: \$350K

NIH STTR: \$85M
FDA SBIR: \$1M

Agency Perspectives: DOE



- “Granting agency that acts like a contracting agency”
- Mission:
 - To ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.
- DOE Program focus on 3 Goals that include:
 - Clean Energy Technologies
 - Science & Engineering Leadership
 - Nuclear Security

CE Topics

- Solar Power
- Water Power
- Wind Energy
- Energy Storage

SEL Topics

- Advanced Detectors
- Accelerator technology
- Fusion Energy Systems
- Biotechnologies

NS Topics

- Novel Radiation Monitoring Concepts
- In Situ Remediation
- Remote Sensing



Agency Perspectives: NSF

- **National Science Foundation wants to see transformational, game-changing technology based upon good science, real innovation, real risk**
 - Peer reviews typically by university faculty in relevant fields
 - Your team should have recognized experts, published scientists in relevant fields of science or technology, doing real research
 - NSF values strong industry/university collaborations
 - Likes to see commercialization of prior NSF-funded research
 - Especially values university spin-outs
- **NSF has very strong focus on commercialization**
 - Need to show significant market opportunity, ability to address it (e.g. partner/customer support, incl. relevant letters of support)
 - NSF has led other agencies in support for, emphasis on commercialization planning and broader impacts

Agency Differences

- ▶ Agency mission and success metrics
 - Never judge an agency by its title!
 - Wide variety of topic areas
 - Dual-use technologies
- ▶ Number and timing of Solicitations, proposal instructions, receipt dates, and review process.
- ▶ Award type, size and structure – contract vs. grant; base-and-options, etc.
- ▶ R&D Topic areas -- broad vs. specific, commercial market vs. acquisition focus
- ▶ Assistance available to awardees for commercialization

Grants vs. Contracts:

Contracting Agencies

- Highly focused topics
- Agency establishes plans, protocols, requirements
- More fiscal requirements
- Subject to FARs, DFARs
- Restricted communications
- Agency may be buyer – procurement mechanism for DoD, NASA
- Usually line-reviewed

DOD
HHS/NIH
ED
DOT

DHS
NASA
EPA
DOC

Granting Agencies

- Less-specific topics
- Investigator initiates approach
- Assistance mechanism
- More flexibility
- More open communication
- Usually peer-reviewed

HHS/NIH
ED
DOE

NSF
USDA

Critical To Compete for SBIR/STTR:

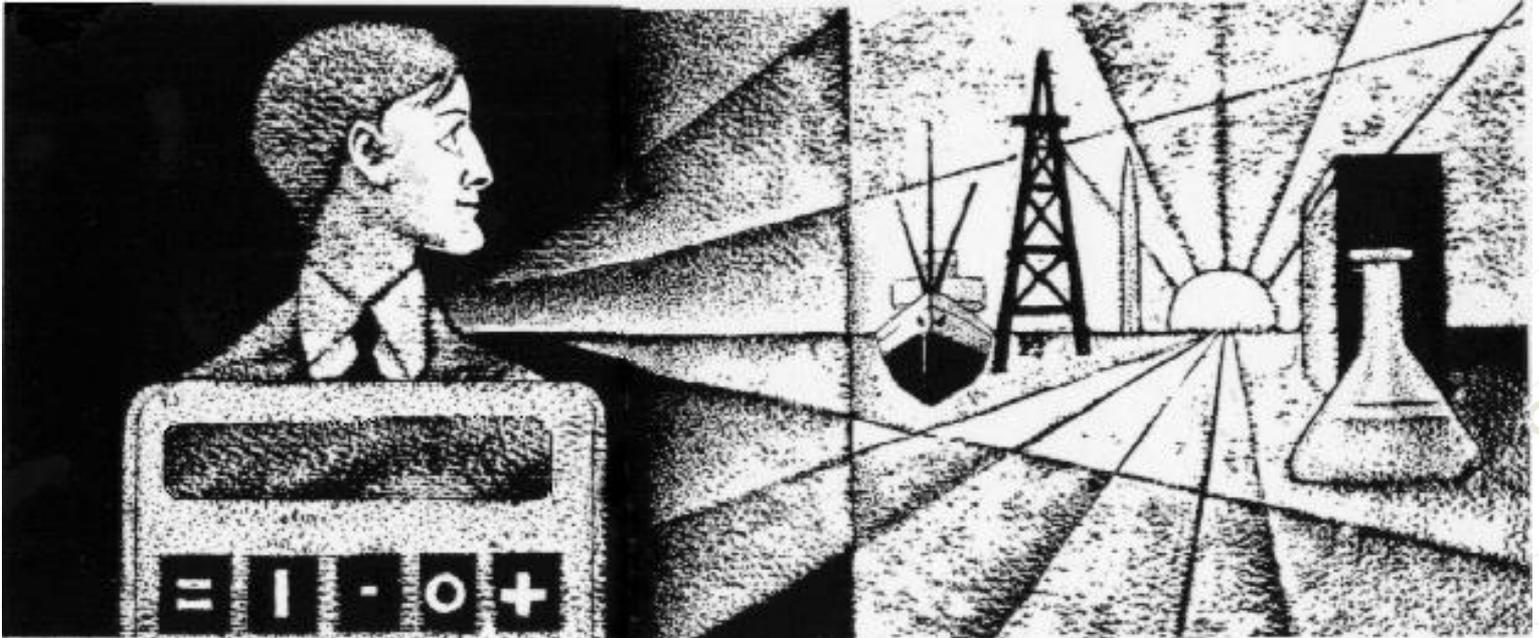
- **Know Your Customer!**

- Significant agency differences in proposal requirements, technical focus, evaluation processes
- For “peer review” agencies (e.g. NSF, NIH), reviewers are typically subject matter experts at universities – consider what they might want to see
- For “line review” agencies (e.g. DoD, NASA), personal knowledge, interaction, & relationships are much more important
 - Talk to TPOC before solicitation opens, if at all possible
 - Do in-depth background research before talking to TPOC, to leave a good impression

Succeeding in SBIR/STTR

Bringing Science to Market

Taking the long-term view...



There Should Be a Significant Market Awaiting Your New Product or Process, and a Realistic Plan for Getting There

Plan Ahead for SBIR Success:

- **Phase I is Required Step, Not Objective**
 - Most companies actually lose money in Phase I
 - Phase I required before Phase II
- **Phase II Much More \$\$ - Still Just a Step**
 - Strong Commercialization Plan is one key to winning
 - Need to show intent and ability to develop the product or service and get it to the customer (market).
- **Commercialization is Goal – Phase III!**
 - Commercial or other sales
 - Follow-on gov' t contracts for DoD, NASA, others

Keys to Long-Term Success:

- **Focus Strategically**

- Don't chase money opportunities "just 'cause we can"
- Focus on opportunities that take you towards goals
 - Work with customers (agencies) to create new opportunities

- **Network, Collaborate, Partner!**

- Work with university researchers wherever possible
 - Biggest single factor in winning Phase I SBIR
- Partner with fed. labs, esp. if agency is target customer
 - Cooperative R&D Agreements (CRADAs), Test Service Agreements may be paid for with SBIR/STTR funds
- Work with Prime Contractors where relevant
 - Can be subcontractor on SBIR/STTR
- Other partners for design, mfg., dist., service, etc.

University Partnership:

The single greatest factor for SBIR success is partnering with a research institution (esp. a university).

- Observation noted by top SBIR experts and Program Managers

- Recognized scientific expertise adds credibility
- University labs are significant sources of innovation
- University laboratory research facilities may be needed
- University scientists have lots of technical proposal experience.

Writing for SBIR/STTR Submitting Winning Proposals

- Decide to apply – Commercialization Focus
- Look at past awards to find focus areas
- Talk to the Government P.I. about your idea
- Register early – may take a few weeks
- Carefully read the entire solicitation
- Assemble a strong technical team
- Get access to facilities and equipment

Win Rate: 17% for Phase I; 55% for Phase II

Writing for SBIR/STTR

Submitting Winning Proposals

- Solve their problem (not a problem, or your problem)
- Never educate them on their problem, or tell them they are off-base
- Be innovative but also practical
- The proposal is a **selling document**, not a scientific paper
- Demonstrate a clear understanding of the problem
- Provide a clear, concise and compelling central idea/concept as your approach to solving the problem
- Show benefits and demonstrate ability (proof)

Guide the reviewer to a clear, believable solution

Fundamental Elements of Ph I & Ph II Proposals

- Detailed Research Plan
- Vision for commercialization, and detailed commercialization plan for Phase II
- PI and Team—Including Business Expertise
- Facilities and Resources
- Credible budget and justification
- Consultant and commitment letters

SBIR Proposal Review

For Phase I, reviewers examine proposals for:

- **Evaluation Criteria**
- Responsive to Solicitation Topic
- Scientific/Technical Merit
- Probability of commercial success
- Adequacy of research plan
- Qualifications of PI and other key personnel
- Adequacy of facilities

Getting Started in SBIR/STTR

- Attend SBIR conferences and workshops
 - Network at relevant industry/ technology conferences
 - For Defense, check out NDIA (<http://www.ndia.org/>)
- Other relevant SBIR resources:
 - SBIR Gateway: www.zyn.com/sbir & “Official” government SBIR website <http://sbir.gov/> –
 - Links to all 11 SBIR/STTR agencies
 - Key word search on topics – search both open and closed solicitations
 - Past award information
 - Agency solicitation release/proposal due dates agency
 - SBIR/STTR Conference information
 - Greenwood Consulting Group, proposal writing tips:
 - http://www.g-jgreenwood.com/sbir_proposal_writing_articles.htm

Plan Ahead: Registration Requirements

	DoD	HHS/NI H	DOE	NASA	NSF	DHS	USD A	ED	DO C	EPA	DO T
SBIR.gov	√	√	√	√	√	√	√	√	√	√	√
SAM (sam.gov)	√	√	√	√	√	√	√	√	√	√	√
DUNS (dnb.com)	√	√	√	√	√	√	√	√	√	√	√
EIN (irs.gov)	√	√	√	√	√	√	√	√	√	√	√
Grants.gov		√	√				√	√			
DoDSBIR.net	√										
eRA Commons (NIH.gov)		√									
FastLane (nsf.gov)					√						
PAMS (energy.gov)			√								
ASAP (asap.gov)			√								
FedConnect (fedconnect.net)			√								
EHB (nasa.gov)				√							

Advice from Awardees

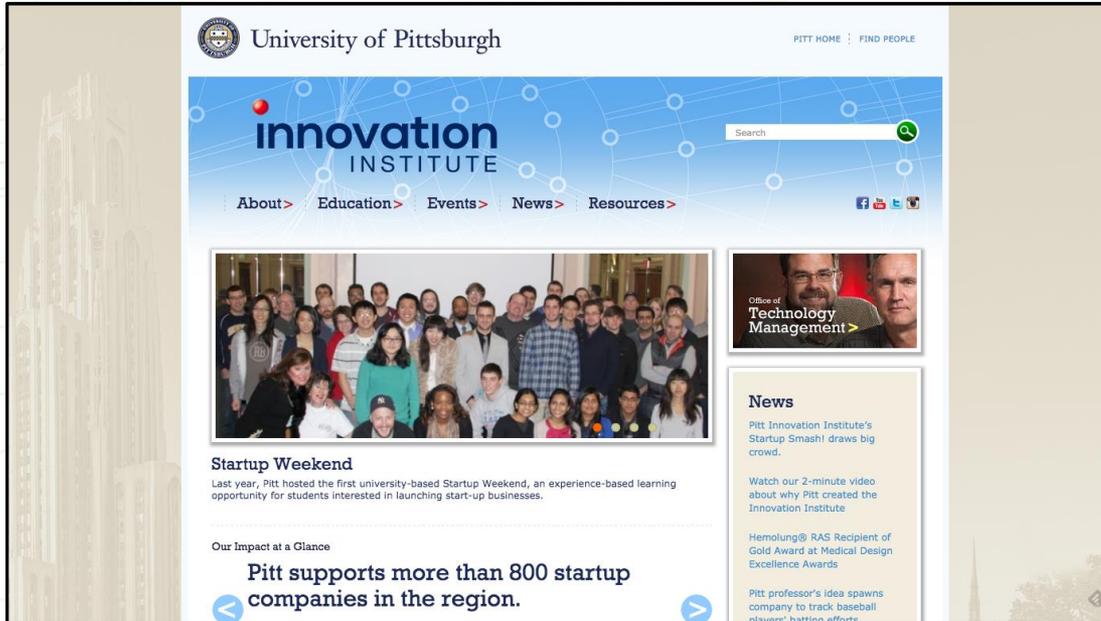
- ✓ Don't judge an agency's interests by its "name"
- ✓ Understand agency's mission & needs
- ✓ Get to know your agency Program Manager
- ✓ Read solicitation and follow instructions
- ✓ Don't depend solely on SBIR funding
- ✓ Don't go it alone - use support systems
- ✓ Have an outcome
- ✓ Win or lose - get and review evaluations
- ✓ Be PERSISTENT

Summary

- Highly competitive -- requires excellence in all aspects of competition process
- A credible project team must be assembled
- A viable commercialization plan is critical
- Write a **good** proposal to an **appropriate** topic that will excite reviewers
- Involve help early and often

SBIR/STTR is a great program that we as a community can use to make an Economic & Societal Contribution to our Region and to the Nation!

Questions?



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2014 Annual Report

innovation.pitt.edu

Paul J. Petrovich, CPA

412-624-3138

ppetrovich@innovation.pitt.edu