NSF Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) Programs

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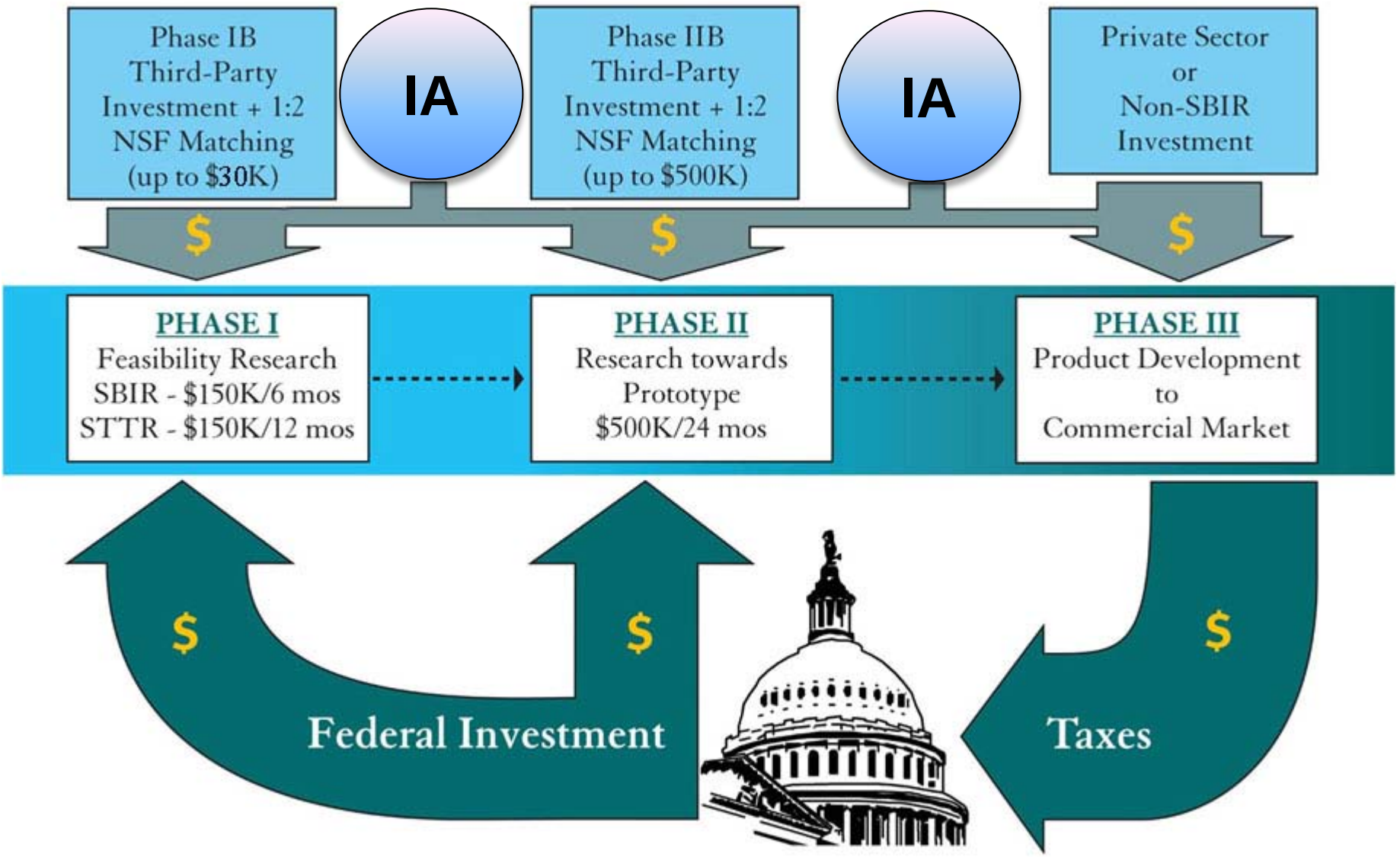
NSF SBIR/STTR Innovation Model



IA = Innovation Accelerator

Funding Mechanism: Grants

- **NSF is not the final customer**
- **NSF SBIR/STTR programs are not for procurement purposes**
- **The programs strongly focus on technology commercialization**

Review Criteria

Intellectual Merit
Broader/Commercial Impacts

- **Sound technical plan and innovative concept**
- **Well-qualified technical AND business team**
- **Leads to a market-viable product/process/service that has significant market potential**

Phase II Commercialization Plan

- **Market opportunity**
- **Company/team**
- **Product/technology and competition**
- **Financing and revenue model**

Funding Criteria

- **High-risk, high-payback innovations**
- **High commercialization potential is a must**

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How Do We Make Award Decisions?

Peer-review and due-diligence process

Step 1: Panels and Panelists

- Program Directors group proposals into panels based on technical areas

- Select panelists
  - **Technical reviewers**
    - ✓ Technical expertise/research interests
    - ✓ Industrial experience
    - ✓ Diversity
  - **Commercial reviewers**
    - ✓ Business experience
    - ✓ Market knowledge
    - ✓ Diversity

Step 2: Individual Peer Reviews

Panelists provide individual reviews before the panel meeting

Step 3: Panel Meeting

- **Panel discussions**

- **Phase II panels**
  - ✓ **3 technical reviewers + 3 business reviewers**
  - ✓ **Equal emphasis on technical and business merits**

Step 4: Program Director Due-Diligence

- **Requests the PI to address the panel's concerns**
- **Requests more information about the company's revenue history, IP status, business model, etc.**
- **Requests administrative information**

Step 5: Financial Viability Evaluation

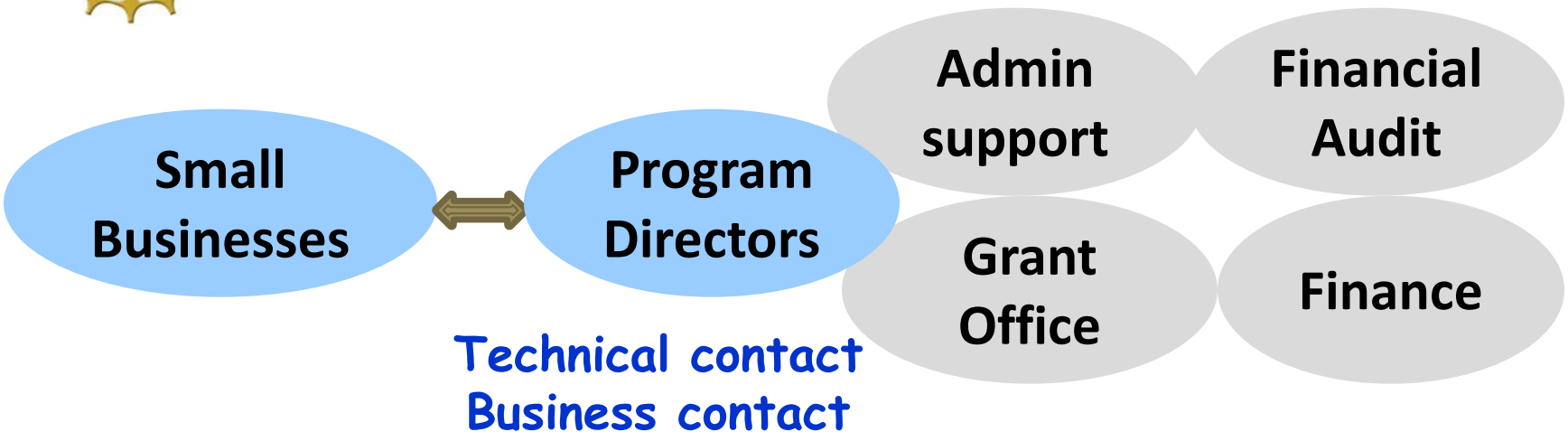
All Phase II companies are financially audited before awards are made

An Excellent Team of Program Directors

Strong technical expertise that aligns with their portfolios
Extensive business/industry background

- 6/7 were former founders of startups
- 6/7 have extensive research experience
- 4/7 have successful fundraising/investment experience
- 4/7 previously worked for large corporations

Program Director Responsibilities



- ✓ Select panelists
- ✓ Convey panels
- ✓ Award recommendations
- ✓ Award due-diligence (except financial audit)
- ✓ Award management (approve reports and payment)
- ✓ Provide business advice
- ✓ Draft solicitations
- ✓ Outreach activities

Actively Engage Technology-Based Small Business Community

- University spin-offs
  - Academic conferences
  - NSF conferences/workshops
  - Large technology-based incubators

- Other technology-based startups
  - Industry network
  - Investor network (VC firms, angels and venture fairs)
  - Trade shows

Assistance in Proposal Preparation

- Before proposal submission
  - Encourage all applicants to send an executive summary to the cognizant Program Officer
- For proposal preparation
  - Step-by-step instructions on proposal submission
  - Line-by-line budget instructions
  - Transparent review and funding criteria
  - Comprehensive instructions during Phase I Grantees Conference for Phase II preparation
- After declination
  - Provide constructive feedback

Commercialization Driven

- **Phase IIB**
  - Incentivize fundraising from private sectors
- **TECP (Technology Enhancement for Commercial Partnerships)**
  - Incentivize collaboration with strategic customers
- **Entrepreneurial training (Grantees Conferences)**
  - Stimulate entrepreneurial potential
  - Apply in real-world settings

Outcome Evaluation

- **External evaluation**
  - **National Academy of Sciences**

- **Internal evaluation**
  - **An expert who evaluates graduated grantees at 3, 5 and 8 years anniversaries**

Backup

Review Criteria 1: Intellectual Merit

- Is the proposed plan a **sound approach** for establishing technical and commercial feasibility?
- To what extent does the proposal suggest and explore **unique or ingenious concepts or applications**?
- How **well qualified is the team** (the PI, other key staff, consultants, and subawardees) to conduct the proposed activity?
- Is there **sufficient access to resources** (materials, supplies, analytical services, equipment, facilities, etc.)?
- Does the proposal **reflect state-of-the-art** in the major research activities proposed? (Are advancements in state-of-the-art likely?)
- **As a result of Phase I, did the firm succeed in providing a solid foundation for the proposed Phase II activity?**

Review Criteria 2: Broader/Commercial Impacts

- What may be the **commercial** and societal benefits of the proposed activity?
- Does the proposal **lead to enabling technologies** (instrumentation, software, etc.) for further discoveries?
- Does the outcome of the proposed activity lead to a **marketable product or process**?
- Evaluate the **competitive advantage** of this technology vs. alternate technologies that can meet the same market needs.
- How well is the proposed activity positioned to **attract funding from non-SBIR sources** once the SBIR project ends?
- Can the product or process developed in the project advance NSF's goals in research and education?
- Does the proposed activity broaden the participation of underrepresented groups (e.g. gender, ethnicity, disability, geography, etc)?
- Has the proposing firm **successfully commercialized SBIR/STTR supported technology** where prior awards have been made?