

**Committee of Visitors**  
**IIP Division**  
**2004-2006 COV**

**Kesh Narayanan**

**Division Director**

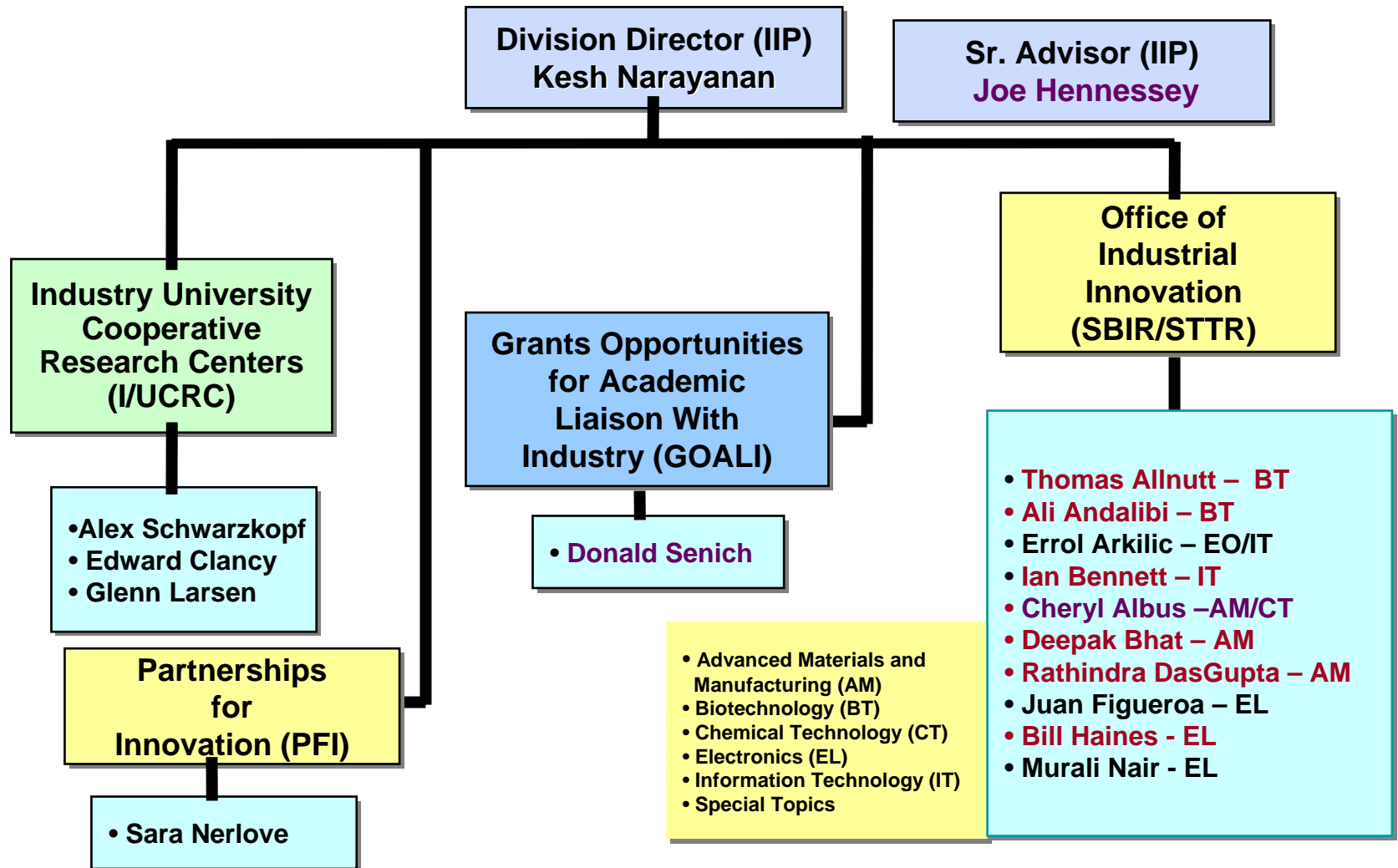
**Industrial Innovation and Partnerships**

**Directorate for Engineering**

**National Science Foundation**

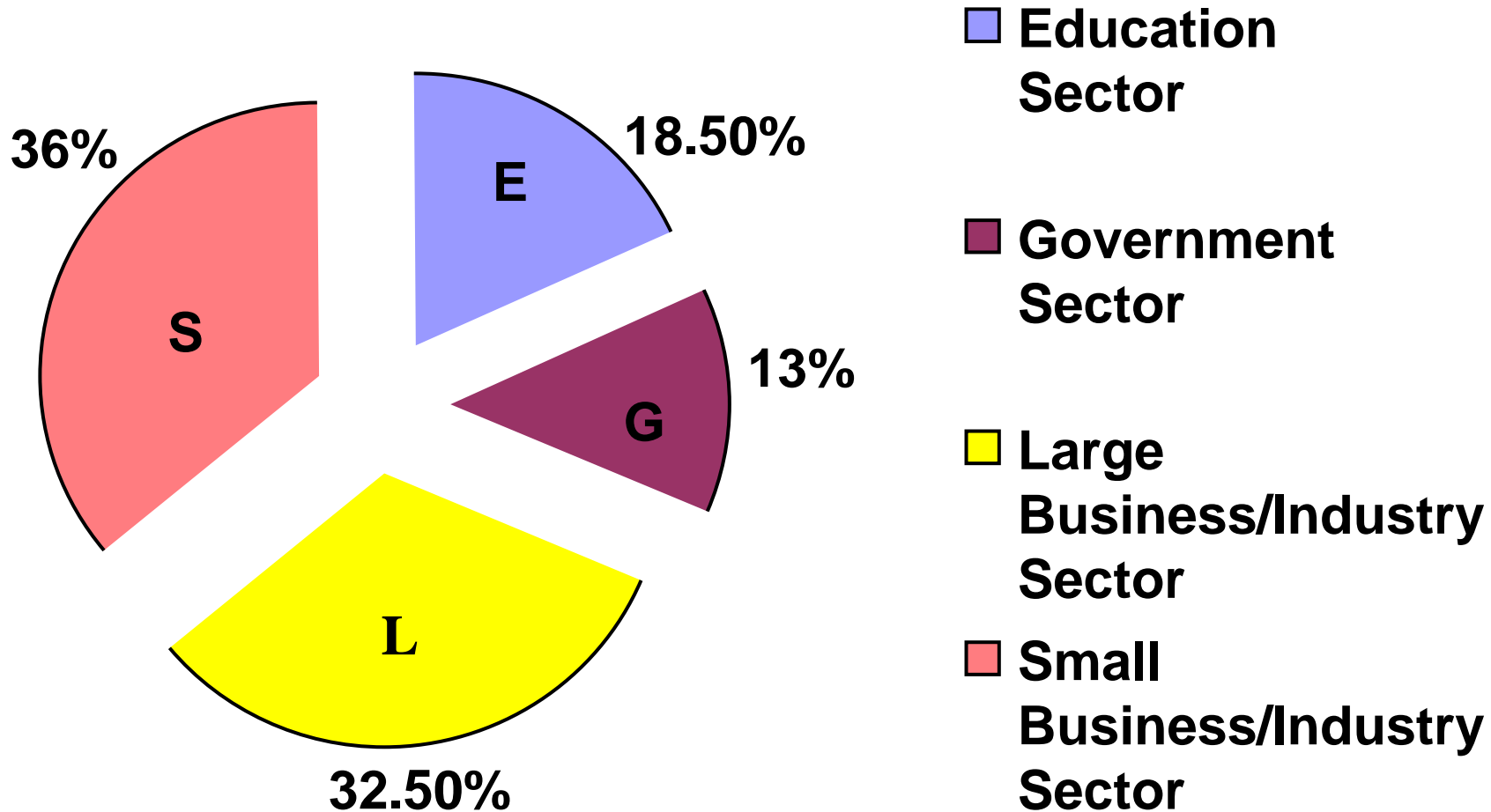
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# Industrial Innovation and Partnerships



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# Employment of Scientists and Engineers\*



*Innovation*

\* Data from NSF Science Indicators

# Sources of Funding for New Startups

<b>Individuals</b>	<b>Number</b>	<b>%</b>
Friends and Family	94	20.5%
No External Funding	57	12.4%
Individual Angel(s)	49	10.7%
Angel Network	26	5.7%
<b>Institutional Sources</b>		
Venture Capital	85	18.6%
State Funding	36	7.9%
SBIR/STTR	32	7.0%
Corporate Partner	25	5.5%
Institutional Funding	26	5.7%
<b>Other</b>	28	6.1%
<b>Total</b>	<b>458</b>	<b>100.1%*</b>
Number of U.S. Respondents	155	

\* Because of rounding, total does not equal 100%.

# SBIR / STTR

## Participating Agencies

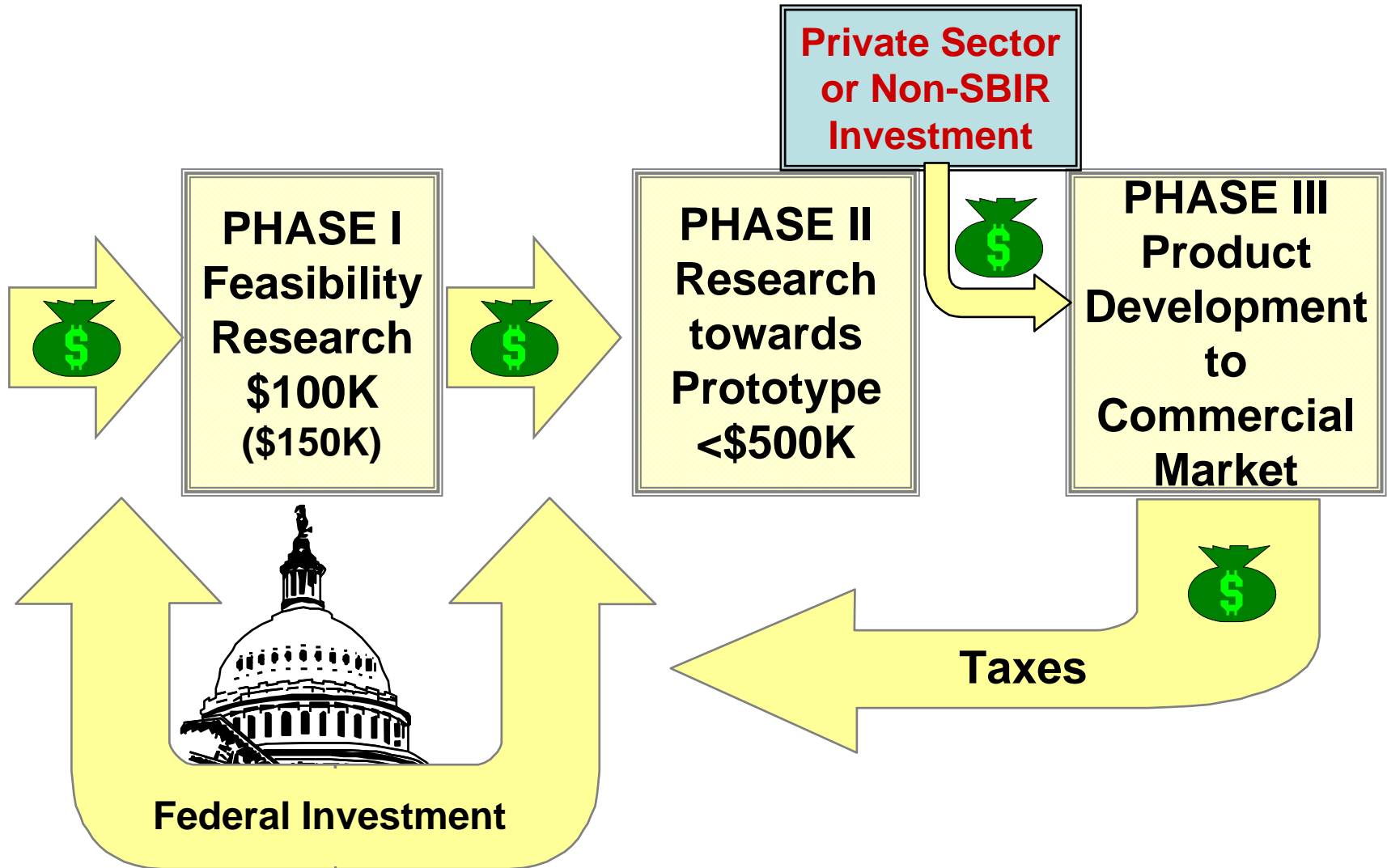


**TOTAL > \$2.0+ B  
FY 2007**

- DOD Defense
- HHS Health
- NASA Space
- DOE Energy
- **NSF Science & Eng**
- DHS Security
- USDA Agriculture
- DOC Commerce
- ED Education
- EPA Environment
- DOT Transportatio

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# NSF SBIR “Innovation” Model



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# Partnerships Opportunities in SBIR/STTR

- Partnership Optional in SBIR (up to \$100K)
  - Small Business Prime
  - In Phase I up to 1/3 can be other
  - In Phase II up to 1/2 can be other
- Partnership Mandatory in STTR (up to \$150K)
  - 40% to 70% can be Small Business
  - 30% to 60% can be Academia/FFRDC

# Faculty Partnership in Small Businesses

- Faculty members can own small firms
- Faculty members can be “Senior Personnel” on a grant budget
- Faculty members can consult
- Faculty members can be part of a university subcontract
- University laboratories can do analytical and other service support
- Faculty members can be Principal Investigators (must have documentation as not primarily employed by the university)



# NSF Merit Review Process

- Typically reviewed by panel meetings
- Panelists come from  
Academia/Industry/Government Labs

- **Intellectual Merit**
  - Quality of the Research
- **Broader Impact**

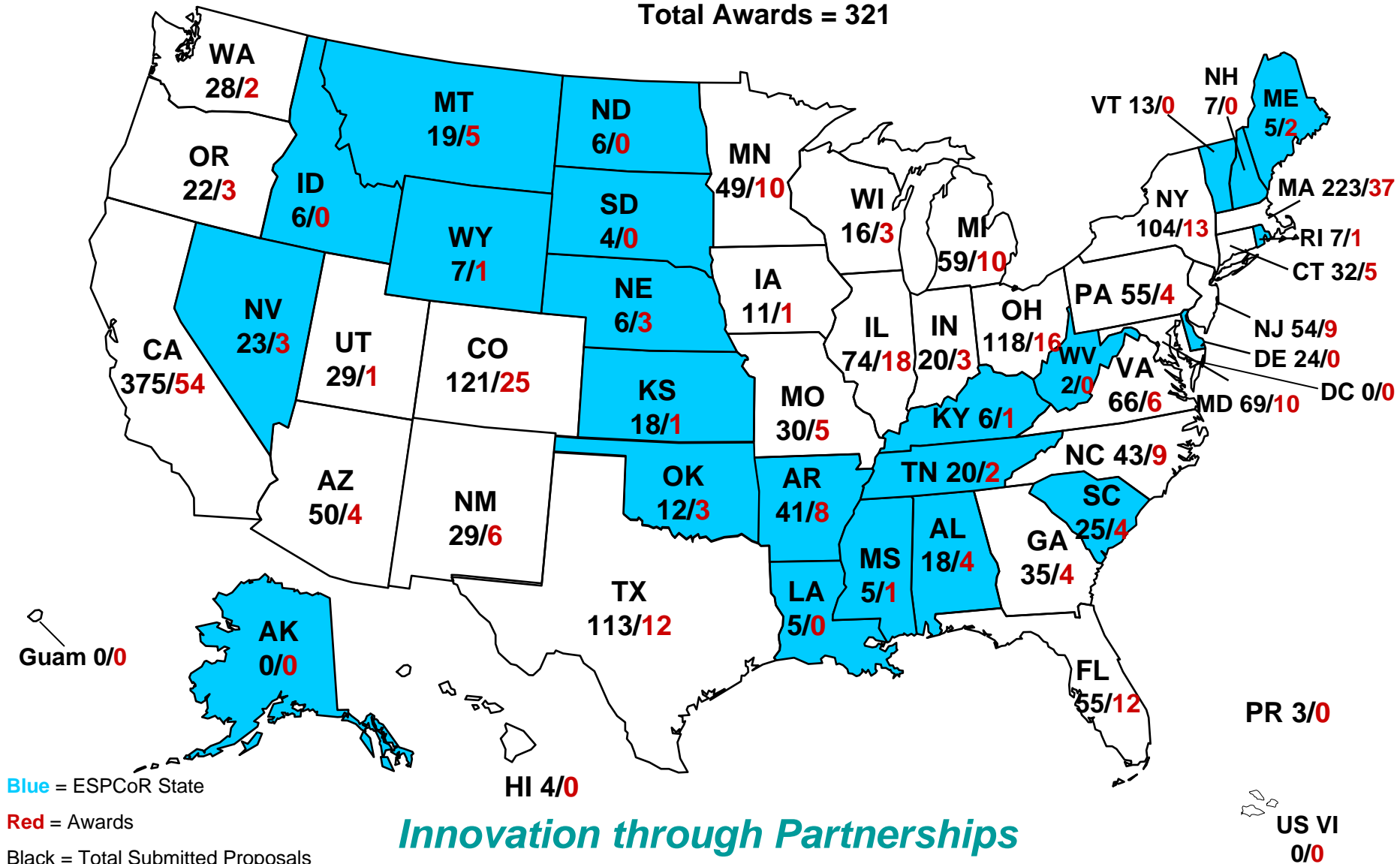
**Commercialization Potential  
& Commercialization Path**

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# 2006 Phase I Proposals

Total Submitted = 2166

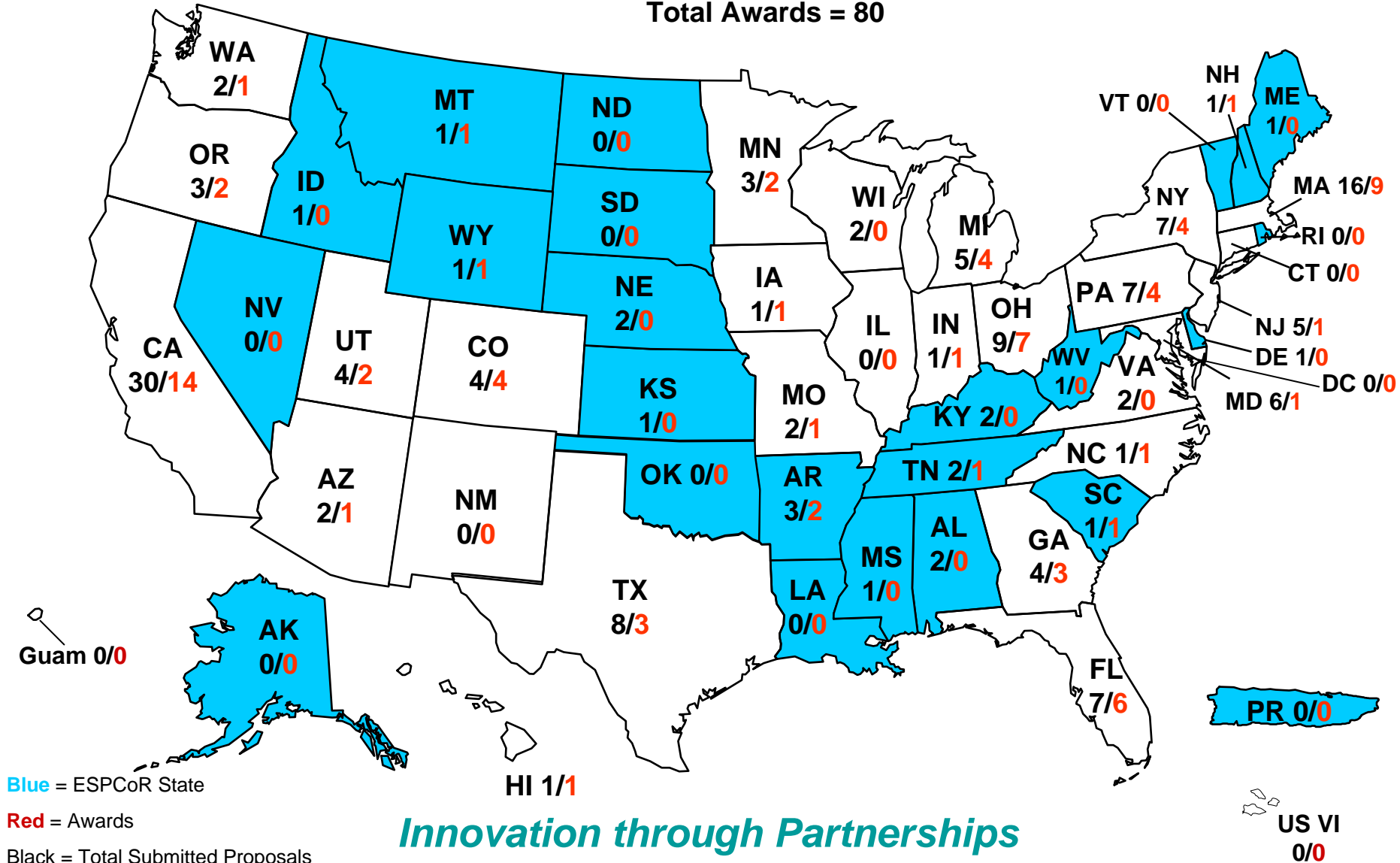
Total Awards = 321



# 2006 Phase II Proposals

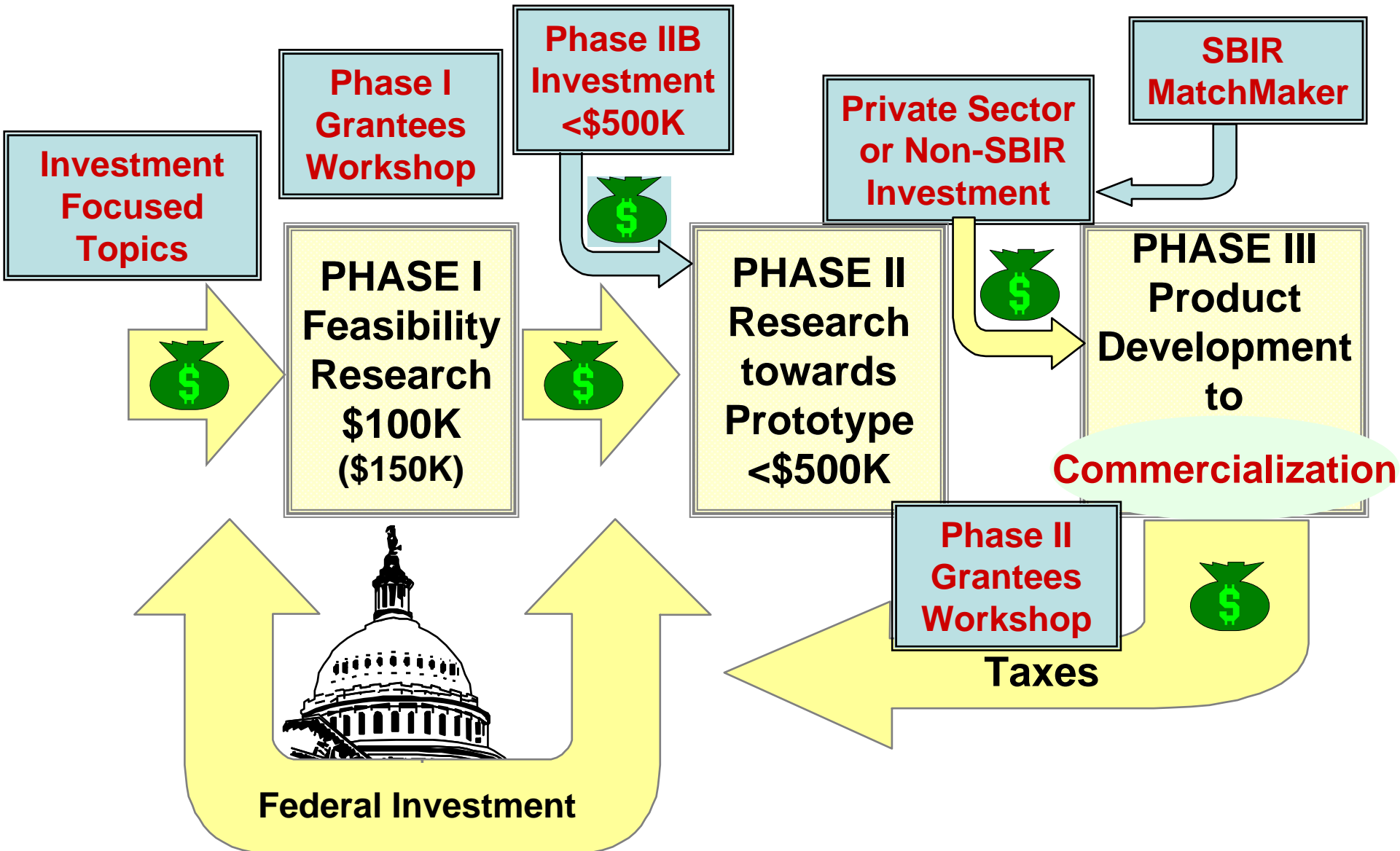
Total Submitted = 155

Total Awards = 80



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# NSF SBIR “Innovation” Model



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# Supplements

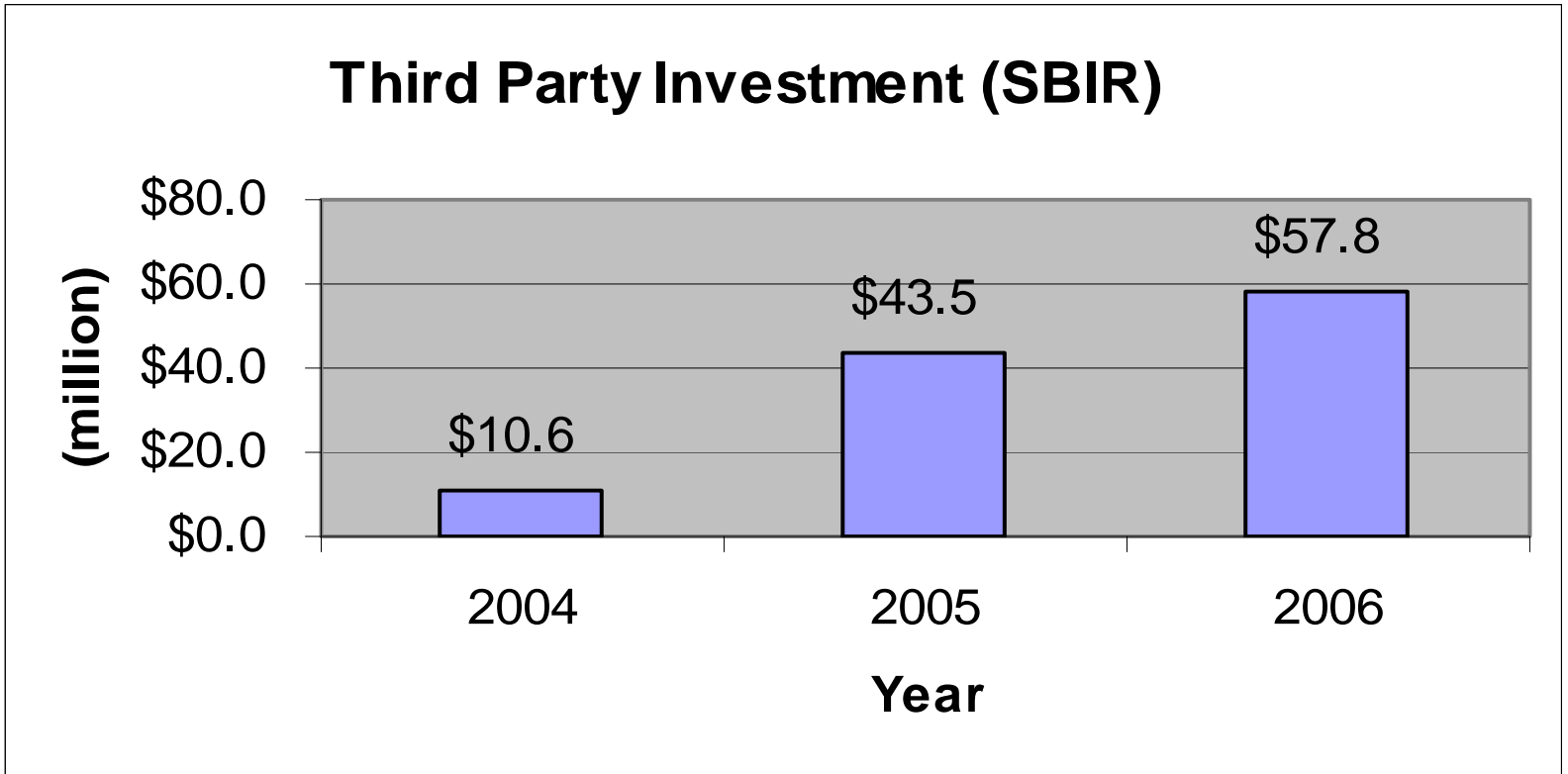
## Economic Impact

- **Workforce**
  - Membership in I/UCRC
  - Students and Teachers
    - REU, RET, RAHSS, GRS (broaden participation)
  - Community Colleges
    - Phase IICC (broaden participation)
  - Phase IIA
    - Graduate and Faculty (broaden participation)
- **Commercialization Incentives**
  - Phase IIB
  - Phase IB

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# SBIR/STTR Phase IIB

Economic Impact



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# Grantees' Profile\*

- **Invistics**
  - IT applied to Manufacturing
- **Key Bowl**
  - Assistive Technology
- **Sensant**
  - Electronics applied to Biotech

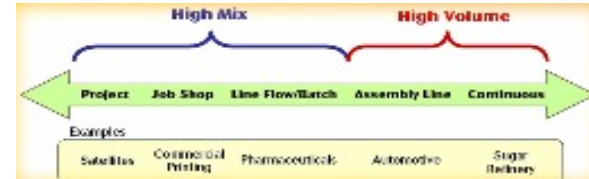
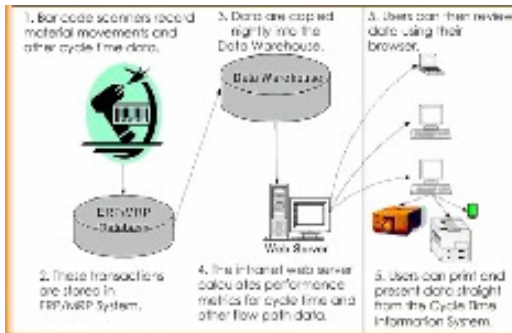
\*selected posters of grantees

Provides manufacturing performance software designed specifically for high-mix manufacturing environments  
 Invistics' **Flow Path Management System (FPMS)** improves upon current Enterprise Resource Planning (ERP) & Supply Chain Management (SCM) software by incorporating:



Lean Manufacturing  
 Inventory Management  
 Factory Simulation  
 Manufacturing Production

FPMS enables high mix manufacturers to more accurately:  
 Set performance goals  
 Unmask barriers to achieving goals  
 Measure effectiveness and model outcomes for continuous improvement



**Performance Workbench**

Optimizes operating policies to maximize performance and identifies which capabilities need attention to reach higher goals



**Design Workbench**

Assists in designing flow of materials through manufacturing networks

**Execution Workbench**

Enables effective, easy-to-use supply chain execution





## Creates advanced text input systems

Flagship product orbiTouch reduces harmful hand and wrist motion that cause:

Carpal tunnel syndrome

Arthritis

Neuro-muscular control problems

Age-related conditions

Other physical or cognitive disabilities



Fully functional 128 “key” capability and 3-button mouse function

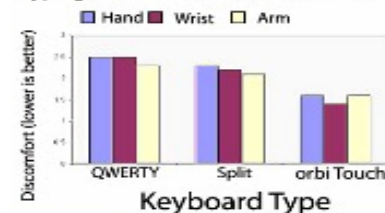


Typist creates a keystroke by sliding the two domes into one of their eight respective positions

Ten years of research show orbiTouch reduce repetitive strain injury (RSI) by up to 82% over standard keyboards and 60% over ergonomic keyboards



Typing Discomfort in Hand, Wrist, and Arm

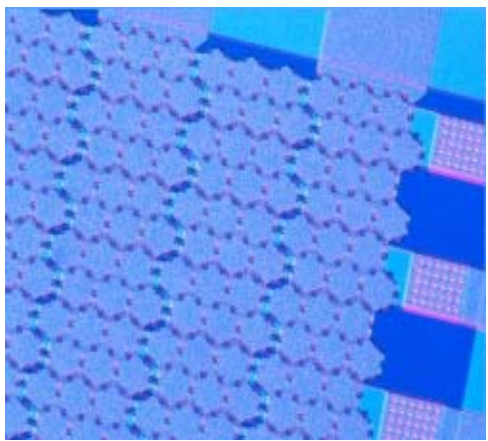




San Leandro, CA

Sensant's Silicon Ultrasound™ probe technology features electronic scanning, novel Fresnel focusing, and high frequency operation , for state of the art volume imaging

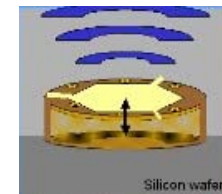
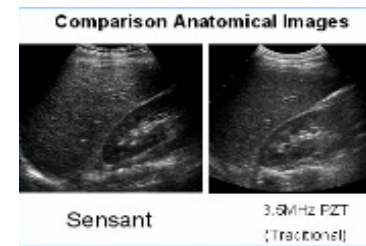
Silicon capacitive microfabricated transducer (CMUT) produces superior image quality compared to piezoelectric crystal technology used in conventional ultrasound imaging equipment



Incorporation of integrated circuit technology allows for a more exact manufacturing process and fluent integration into ultrasound systems

CMUT delivers superior volumetric 4D imaging for a wide range of applications, including:

- Improved manufacturing process
- Detecting irregular or diseased tissue



50% detection of breast cancer with mammography  
 97% detection of breast cancer with ultrasound as adjunct

Acquired by Siemens Medical Solutions Ultrasound Division in 2005, after 7 years as Sensant



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<http://www.sensant.com>  
<http://www.medical.siemens.com>

# 2004 COV Recommendation

## Recommendation

1. Reorganization
2. National Conferences
3. Good Phase II Comm Reviews
4. Ph I Comm Reviews
5. Documentation on Decisions ~Borderline
6. Commercialization Showcase
7. Track Phase IIB

## Action

1. DMII to OII to IIP
2. NSF to States
3. Strengthened Commercial Plan
4. EO, New CAP
5. Strength-Weakness, Fund with Revision
6. MatchMaker, Ph II Workshop, Telephone Follow-up
7. Highlight to Director

# Economic Impact

**Jobs and Sales Growth (SBIR)**  
Telephone Survey ~ 300 Phase II Grantees

