Driving the Next Generation of Economic Development

Research
Education
Outreach
Economic Engagement
Science, Technology, and Economic Growth

“Prospects for economic growth now depend importantly on a country's capacity to develop and apply new technologies.”

“Leadership of state policymakers will be a key element in promoting an environment in which states can join with others in business, labor and education to realize the potential that technological change has for bringing substantial and lasting benefits to our economy.”

- Alan Greenspan
  Chairman of the Federal Reserve Board
Science, Technology, Economic Growth
Multi-directionality

Public Investment → Science Research → Technological Advance → Productivity Growth → Economic Growth
Private Investment → New Companies → Job Growth → New Industries
- Econometric studies have shown that a strong correlation exists between public and private investment [in science]. Specifically, public investment leverages private investment and makes it more efficient, thereby increasing the economy's growth rates of productivity and output.

  - Greg Tassey, Senior Economist, National Institute of Standards and Technology (NIST) in Technology and Economic Growth.
Science, Technology, and Regional Economic Growth

- **Spillovers:** When knowledge is produced, the benefits not only accrue to the producer, they “spill over” to the local economy.

- **State Investment:** Through targeted investment in the building blocks of knowledge infrastructure, states can draw private capital to invest in the building of regional strength in science and innovation and act as catalysts for regional and national economic growth.
Science, Technology, Regional Economic Growth and State Policymaking

“Leadership of state policymakers will be a key element in promoting an environment in which states can join with others in business, labor and education to realize the potential that technological change has for bringing substantial and lasting benefits to our economy.”

- Alan Greenspan
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Universities, Science, Technology, and Economic Growth

- American universities have since the passage of the Bayh-Dole Act:
  - Spun off more than 2,200 firms to commercialize innovations born of research.
  - Created 260,000 jobs in the process.
  - Now contribute $40 billion annually to the American economy.
Academic Success
Economic Strength


http://www.casa.ucl.ac.uk/citations/citations_maps.htm
Regional Economic Impacts of University R&D: SBA Findings

- University R&D expenditures influence local economic growth through the birth of new firms.

- Spillover effects are at work in and around universities, proportional to the amount of R&D spending at the universities.

- The effect of R&D expenditures on firm formation endures annually for at least five years after the R&D spending occurs due to:
  - growth of the newly formed entrepreneurial firms based on inventions derived from university R&D.
  - secondary effects of the employment growth resulting from the births of those firms.

Raise the Bar for Economic Engagement

- ASU must be the *economic driver* for a future metroplex of 6M people
- Focus on increased resources and increased expectations
- Interventionist leadership
- From agency to *enterprise*
Technology-based Economic Development Mechanisms

- Intellectual Assets
- ASU Technopolis

- Research & Knowledge Development
- Entrepreneurial and Innovative Activities

- Technology Commercialization & Transfer

- Regional Prosperity
- Integrated Value Chain
- Individual Opportunity

Source: Greater Phoenix Economic Council
Direct Engagement

Tempe Campus

Capitol Center Campus
Cross-sector Collaboration for S&T

- Reconceptualized Prop 301 – focused biodesign agenda


FDI Center facility in ASU Research Park

Arizona Biodesign Institute

Brickyard: Ira A. Fulton School including INCISE AZTE
Crafting a Strategy for Arizona Research Infrastructure

$200 Million total Investment

✓ 3,000 jobs
✓ $10.2 Million (state tax revenue)
✓ $2.3 Million (county tax revenue)
✓ $2.3 Million (city tax revenue)
✓ $330 million in total immediate, local economic impact
Research Infrastructure
Medium-Term Benefits

$1 of expenditures creates $5 - $7 of regional economic activity

Therefore:

- **$50 million per year** new external funding from federal, industry and private foundation sources

Will yield:

- **Minimum $250 million per year return** on the $14 million annual investment
Research Infrastructure
Long-Term Benefits

Conservatively assume a direct additional economic impact of

$25 million per year

New Technologies
New Companies
New Industries
New Jobs
Research Infrastructure Investments

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona Biodesign Institute Phase II</td>
<td>$73,000,000</td>
</tr>
<tr>
<td>Interdisciplinary Science &amp; Technology Building I</td>
<td>$74,000,000</td>
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<tr>
<td>Interdisciplinary Science &amp; Technology Building II</td>
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<td>Interdisciplinary Science &amp; Technology Building III</td>
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<tr>
<td>Arizona Biomedical Collaborative</td>
<td>$10,000,000</td>
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Build on Strengths:
Exemplar Investments (more than 30 focused investments in first year)

- AZ Biodesign Institute and School of Life Sciences
- Virginia G. Piper Center for Creative Writing
- Institute for Computer Sciences and Engineering
- WINTECH: Wireless Integrated Nanotechnologies
- Center for the Study of Law, Science & Technology
- Center for the Study of Religion and Conflict
- Arts, Media and Engineering Initiative
Establish University-Community Frameworks for Investing in S&T

1. Leveraging Place
2. Societal Transformation
3. ASU as Entrepreneur
4. Use-Inspired Research: Pasteur’s Principle
5. A Focus on the Individual
6. Intellectual Fusion
7. Social Embeddedness
8. Global Engagement