The Space Between: 
Building the 
Infrastructure for Entrepreneurship 
in Emerging Domains of Activity

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Small Business and Entrepreneurship during an 
Economic Recovery 
Nov 9-10, 2011
Infrastructure for Entrepreneurship

Technology

Innovation

Market

Infrastructure
Infrastructure for Entrepreneurship

What do we know?
Infrastructure for Entrepreneurship

Public Resource Endowments

Proprietary Functions

Institutional Arrangements
Infrastructure for Entrepreneurship

- The study:
- Nanotechnology
  - > 12,000 pages
  - > 40 interviews

Government agencies  Associations and groups
Universities        Media
Conferences         Firms – new and old

- Researchers, entrepreneurs, policy makers…
Infrastructure for Entrepreneurship

Nanotechnology

Jos. A. Bank    Yamaha    
Dockers        GM
L.L. Bean       Samsonite
Eddie Bauer    J.C. Penney
Land’s End     Babolat
Calloway       Easton
Adidas          Brooks Brothers
Bergdorf Goodman

......

Wilson

Yonex
Infrastructure for Entrepreneurship

Findings

- Infrastructure components
- Infrastructure developers
Universities, National labs, Firms

Public Resource Endowments

I

Proprietary Functions

Institutional Arrangements

Firms

Associations and Government
Infrastructure for Entrepreneurship

Findings

- Infrastructure components
- Infrastructure developers
- All for one
- One for all
- Early entrepreneurs
Infrastructure for Entrepreneurship

Implications

- Developers roles
- Interaction
- Myopia
- Upstream
Infrastructure for Entrepreneurship

THANK YOU!!!

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Infrastructure for Entrepreneurship
Universities, National labs, Firms

Public Resource Endowments

Scientific & Technological Knowledge, Competent Labor, Financing

Universities, National labs, Firms

Proprietary Functions ↔ Institutional Arrangements
Universities, National labs, Firms

Public Resource Endowments

R&D, Commercialization, Supply chain creation, Services

Firms

Proprietary Functions

Institutional Arrangements
Universities, National labs, Firms

Public Resource Endowments

Legitimate, Regulate, Standardize

Industry Associations, Professional Associations, Government Agencies

Proprietary Functions

Firms

Institutional Arrangements

Associations and Government
FIGURE 4
Infrastructure for Entrepreneurship Configuration

<table>
<thead>
<tr>
<th>Public Resource Endowments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic scientific knowledge</td>
</tr>
<tr>
<td>Technological knowledge</td>
</tr>
<tr>
<td>Competent labor</td>
</tr>
<tr>
<td>Financing mechanisms</td>
</tr>
</tbody>
</table>

- Firms conduct exploratory research
- Firms sponsor early research
- University-Industry collaborations
- University-Industry user facilities
- University technology transfer

**Infrastructure for Entrepreneurship**

- Governments create agencies to support development of foundational technology
- Governments support small-scale exploratory research
- Associations support human resource development
- Associations support basic science

<table>
<thead>
<tr>
<th>Proprietary Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D</td>
</tr>
<tr>
<td>Appropriation of common goods</td>
</tr>
<tr>
<td>Commercialization</td>
</tr>
<tr>
<td>Use of complementary assets</td>
</tr>
<tr>
<td>Supply chain creation</td>
</tr>
<tr>
<td>Support services</td>
</tr>
</tbody>
</table>

**Firms**

<table>
<thead>
<tr>
<th>Institutional Arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate</td>
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<tr>
<td>Regulate</td>
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<tr>
<td>Standardize</td>
</tr>
<tr>
<td>Scientific and professional associations</td>
</tr>
<tr>
<td>Government</td>
</tr>
<tr>
<td>Standardization boards</td>
</tr>
</tbody>
</table>

- Government support of firms using the technology
- Government support of firm R&D
- Government support industry creation
- Entrepreneurship support (e.g., VC funding)
- Government, technical, and science associations creating industry standards
Venture Capital to Nanotechnology Firms as a Percentage of All Venture Capital Funding, Annually (1994-2006)
Science & Technology (S&T) and Economic Initiatives and Nanotechnology Firms, 1991-2005 (cumulative)

Summary of Nanotechnology Entrepreneurship in States with and without Nanotechnology Economic or Science & Technology (S&T) Initiatives

Timing and STI Policy in Nascent Domains

- The earlier a country invests in STI policy, the higher their number of related patents.
- Countries with *higher* investments in *early* STI policy have *lower* related patenting activity over time.
- Countries with *higher* investments in *later* STI policy have *higher* related long-term patenting activity.
- The amounts of early and later funding interact such that high investments at both stages hurt the countries long-term patenting activity.
Infrastructure for Entrepreneurship

- Research & Technology
- Entrepreneurship & Innovation
- Jobs & Economic Growth

http://www.com