State Models for Supporting Emerging Nanotechnology

Panelists

Griff Kundahl	University of Denver/Colorado Nanotechnology Alliance
Ed Cupoli	University at Albany, College of Nanoscale Science and Eng'ng
Jim Mason	Oklahoma Nanotechnology Initiative (The ONI)
Skip Rung	Oregon Nanoscience and Microtechnologies Institute (ONAMI)
Philip Shapira	Georgia Tech School of Public Policy and CNS-ASU

State Models for Supporting Emerging Nanotechnology

- **How does your organization measure success? To whom is the organization accountable, and how is it held accountable?**

COLORADO NANOTECHNOLOGY ALLIANCE

Measures:
- Fiscal Sustainability
- Connecting our constituents
- Maintaining our brand

To Whom Accountable:
- Members
- State OED/IT; EDC
- Sponsors
- NRES participants

State Models for Supporting Emerging Nanotechnology

- **What motivates your stakeholders to collaborate, and what additional future incentives would enhance these collaborations??**

COLORADO NANOTECHNOLOGY ALLIANCE

Motivation:
•Value proposition (90%)
•Sense of obligation to community (10%)

Future incentives:
•Better value proposition
•Funding/Resources
•Communication
•Cooperation
•Accelerating Commercialization

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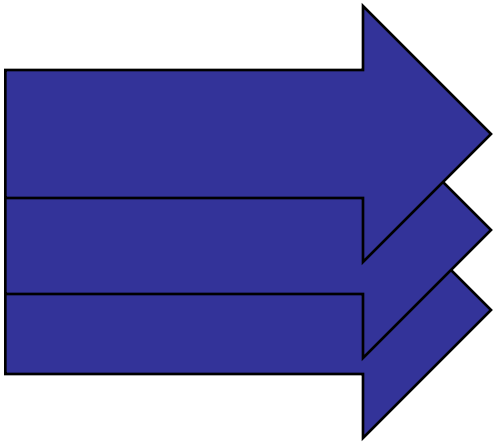
	Industry	University	Government
Needs	Maintaining competitive advantage	Funding	Attract jobs
	Financial & intellectual leverage	Relevant problem set	Promote education
	Asset development & protection (IP)	Network & access	Assist in attaining world-wide competitiveness
	Mitigate risks and costs		

Industry

University

Government



Incentives:

Encourage innovation and growth to meet the needs of all sectors.

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Initiatives in Nanotechnology

Measures of success

The CNSE measures success by following the goals of its partners.

University: Knowledge
- Publications
- R&D funding
- Graduate enrollment/funding
- Job placement
- Academic ranking
- Patents/Licensing

Industry: Profitability
- Return on investment
- Shortened R&D timeline
- Reduce risk
- Patents/Licensing
- High-quality investment ventures
- Decrease learning cycle times

Government: Social Wealth
- GDP growth
- Employment growth
- Income growth
- Investment
- Training/Education
- Successful startups

State Models for Supporting Emerging Nanotechnology

- **How does your organization measure success? To whom is the organization accountable, and how is it held accountable?**
  - **Success for the Oklahoma Nanotechnology Initiative is measured by**:
    - the accomplishment of milestones and deliverables for the Oklahoma Center for Advancement of Science and Technology (OCAST).
    - The **number of Oklahoma companies** getting involved in utilizing nanotechnology to create new or improved products.
    - OCAST tracks **ROI** in terms of $ attracted and number of employees
  - **The ONI is coordinated by The State Chamber of Oklahoma and is accountable to and funded by OCAST**, a state agency which is accountable to the legislature.
  - The legislature established four overall objectives for the ONI which are implemented annually through a negotiated **Scope of Work** with 10-11 measurable objectives each with **specific milestones** and **deliverables**. The accomplishment are documented by quarterly reports and an annual report.
  - Specific objectives and deliverables **may change**
  - **from year to year** based on the needs and direction of the program.

The ONI™
Oklahoma NanoTechnology Initiative

State Models for Supporting Emerging Nanotechnology

- **What motivates your stakeholders to collaborate, and what additional future incentives would enhance these collaborations ??**
  - **State Government**
    - Seeing Oklahoma companies create new or improved products by applying nano research developed from anywhere, retaining and creating new jobs.
  - **Researchers and Companies**
    - Required collaboration of researchers and companies to be able to apply for **Oklahoma Nanotechnology Applications Program** funds; source of matching funds; real solutions to real problems; competitive advantage.
  - **Between Universities**
    - Shared equipment and research; joint research proposals; **NanoNet**
  - **Between State Initiatives**
    - Shared speakers, promotion of each others events and conferences
  - **Federal Assistance for State Nano Initiatives**
    - Many states lack funds for Nano Initiatives
  - **Federal Funding for Regional Collaboration**
    - With funding, States could work together

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State Models for Supporting Emerging Nanotechnology

- **How does your organization measure success? To whom is the organization accountable, and how is it held accountable?**
  - **2 main success measures (in $M):**
    - New research grants/contracts across the ONAMI researcher membership
    - Private/capital, grants, NRE revenue into ONAMI gap fund companies
  - **2 less formal measures related to our facility network:**
    - Assistance in attracting/retaining nano-related employers in state
    - External service revenue at shared user facilities
  - **Accountable to Oregon InC Audit Committee, quarterly review**
    - Can cancel/reduce/delay quarterly payments if progress unsatisfactory

ONAMI
OREGON NANOSCIENCE AND MICROTECHNOLOGIES INSTITUTE

State Models for Supporting Emerging Nanotechnology

- **What motivates your stakeholders to collaborate, and what additional future incentives would enhance these collaborations??**
  - ****State government**
    - Translation of research $$ to immediate and projected job creation
  - **University/national lab leadership**
    - Revenue, reputation from research awards and commercial successes
  - **Research members**
    - Funding/infrastructure, student opportunities, attract top students
  - **Major industry**
    - Interns/permanent hires, federal co-proposals, licensing/spinouts
  - ****Entrepreneurs/investors**
    - Gap funding, networking, deal flow, facility/expertise access
  - **FUTURE: Federal matching/incentives in **'d categories**

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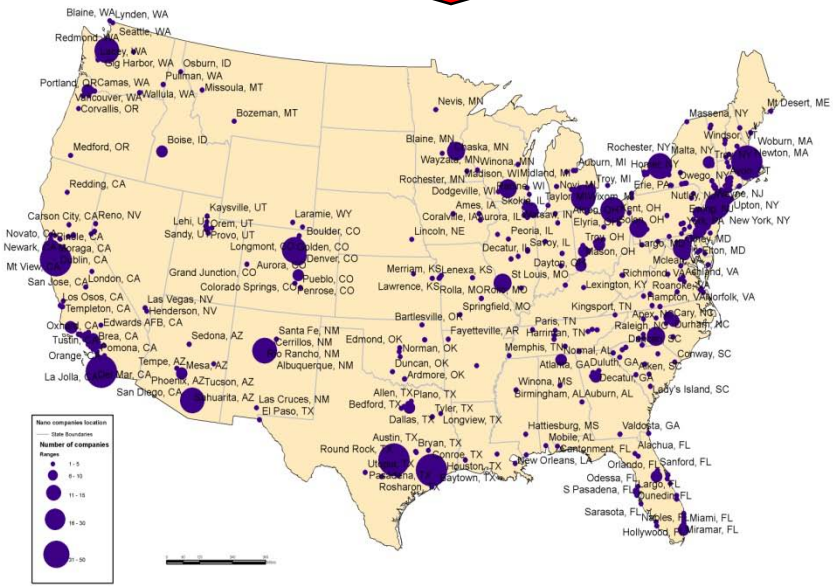
Where are US Nanodistricts emerging?

Cluster Assignments

- DIV
- GEOG
- GOV
- LENT
- ONEOFF
- TLEAD
- UNIV

Nanotechnology-active Firms (2009)

1958 mapped/3378 firms



Refs: Shapira, Youtie (2008), Emergence of nanodistricts in the United States, *Econ Dev Quart.*; Shapira, Youtie, Carley (2009), Prototypes of emerging metropolitan nanodistricts in the US & Europe, *Annales* (forthcoming); Wang, Shapira (2009) Partnering with Universities: A Good Choice for Nanotechnology Start-up Firms? (under review)

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What is (<u>or should be</u>) different about state nanotechnology initiatives?

- **Reflexivity**
  - Not just another “high-technology” / nano = general purpose technology
  - Potentially wide-ranging implications
  - High-levels of uncertainty in commercialization
- **Orientation**
  - Nano R&D & advanced production = few locations
  - Smart nano applications and deployment = many locations
- **Targets**
  - Enterprises - cross-cutting: Venture startups + large-firms + mature SMEs
  - Demand-side innovation: sectors (e.g. retail, construction) and systems (e.g. urban)
- **Anticipation and dialogue**
  - Foster anticipatory governance
  - Engagement

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