NanoBank: A National Resource Now under Construction

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Principal Investigators, NSF NIRT

A: NanoBank

- Q: What has Jane Doe published and patented in nanoscale S&T?
  - Q: Is she founder or key employee of any firm?
  - Q: With whom has she patented and published?
- What firms work on/sell <topic/product>?
  - Q: What patents do they hold?
  - Q: What is their financing?
  - Q: Who has written as or with an employee?

NanoBank: A Value-Added Information Resource

- NanoBank will provide accessible, integrated, free information in user-friendly, learning-friendly form

Lynne Zucker, UCLA
Principal Investigator for NanoBank

NanoBank Combines, Adds & Integrates Information

- Scientific articles, patents, firms, universities, national labs, nonprofit interest groups
- Detailed info on authors/inventors by name, affiliation, location(s), discipline/dept.
- New info: Firms' nanotech products in development and on market
- Link info: scientific to patenting productivity, university to company research
- Link NBIC with analogies via images, e.g. current flow in transistor (info) and carbon nanotube

NanoBank.org: Examples of Defining Data Element Links[1]

Name of Person
Patent inventor
Article author
Principal investigator (PI)
Dissertation author
Dissertation chair
Officer/founder of firm
Science advisory board chair
Science advisory board member
*Coinventor, author, etc.

Discipline of Person
Department, curent or former [2]
Department of dissertation [2]

Date or Time
Patent application & grant dates
Article publication date
Grant/contract begin & end dates
Dissertation filing date
Dissertation filing date
Directory/database dates
Firm founding date
Firm nanotech entry date
Financial reporting dates
Initial public offering (IPO) date
Merger or alliance dates
Venture capital round dates
*Interdisciplinary team start dates
*Dept., institute, center entry/change/ merger date
*New interdisc. journal areas/start date
*Existing journal new discipline/area entry date
*Fed. Instit., IGA program start date
*Date of move between disciplines [3]

Organization
Patent assignee
Affiliation on article
Grant/contract recipient
University lists--NRC, IPEDS
Firm directory listings
Public firm databases (filings)
Financial market databases
Mergers & alliances database
Venture capital firm database
Investment bank database
Federal laboratory listings
Research institute directories
Organization's parent org. (if any)
*Non-profit directories, tax filings

Industry of Organization
Firm/university/fed lab/res. Inst.
SIC or NAICS industry codes
Venture Economics industry codes
*Nonprofit tax codes [501(c)(3), etc.]

Science & Technology Area Codes
US & International patent classes
ISI journal area
PACS codes/text
Nano S&T subareas (VJNano *et al.*)
Z-D broad science/tech area codes
*NBIC product codes

Geo-location
Patent inventor's address
Patent assignee's address
Author address
Grantee address(es)
Organization address(es)

Inputs, Outputs, and Success Measures
These can be measured at person, organization or sub-organization level and aggregated (as appropriate) based on: organization; city, state, region or country; discipline, industry, science/technology area, time; or combinations (e.g., by firm, region, and year)
Patent: counts, citations, claims
Articles: counts, citations
*Employment (& membership for nonprofits)
*Interdisciplinary Collaborations: counts, classifications, citations for articles and patents
Products in development: counts, classifications
Products on the market: counts, classifications
Venture capital: round counts, round values
Offerings: IPO value, later offering values and types
Investment bank reputation rankings
Stock price history
Impact of risk assessment on stock price:
(1) Product failure, adverse event news
(2) NPO report, event news
Doctoral programs: ranking, graduates, faculty, funding
Awards: Nobels, NAS/NAE/IOM, Phi Beta Kappa, etc.
Grants/contracts: Federal, SBIR, ATP
*Interdisciplinarity
*Cross-discipline co-chair on dissertation: counts
*Cross-discipline co-authors, co-inventors: counts, citations, claims for patents
*Cross-discipline firm officers, firm science boards: counts
*Cross-discipline articles in old & new journals: counts, citations
*Cross-discipline membership: depts., instits., centers, IGAs: counts

***NBIC Interdisciplinarity Convergence**
*Analogies/images of cross-discipline concepts
*New cross-discipline analogies/tools
*Cross-discipline teaching, patenting, research

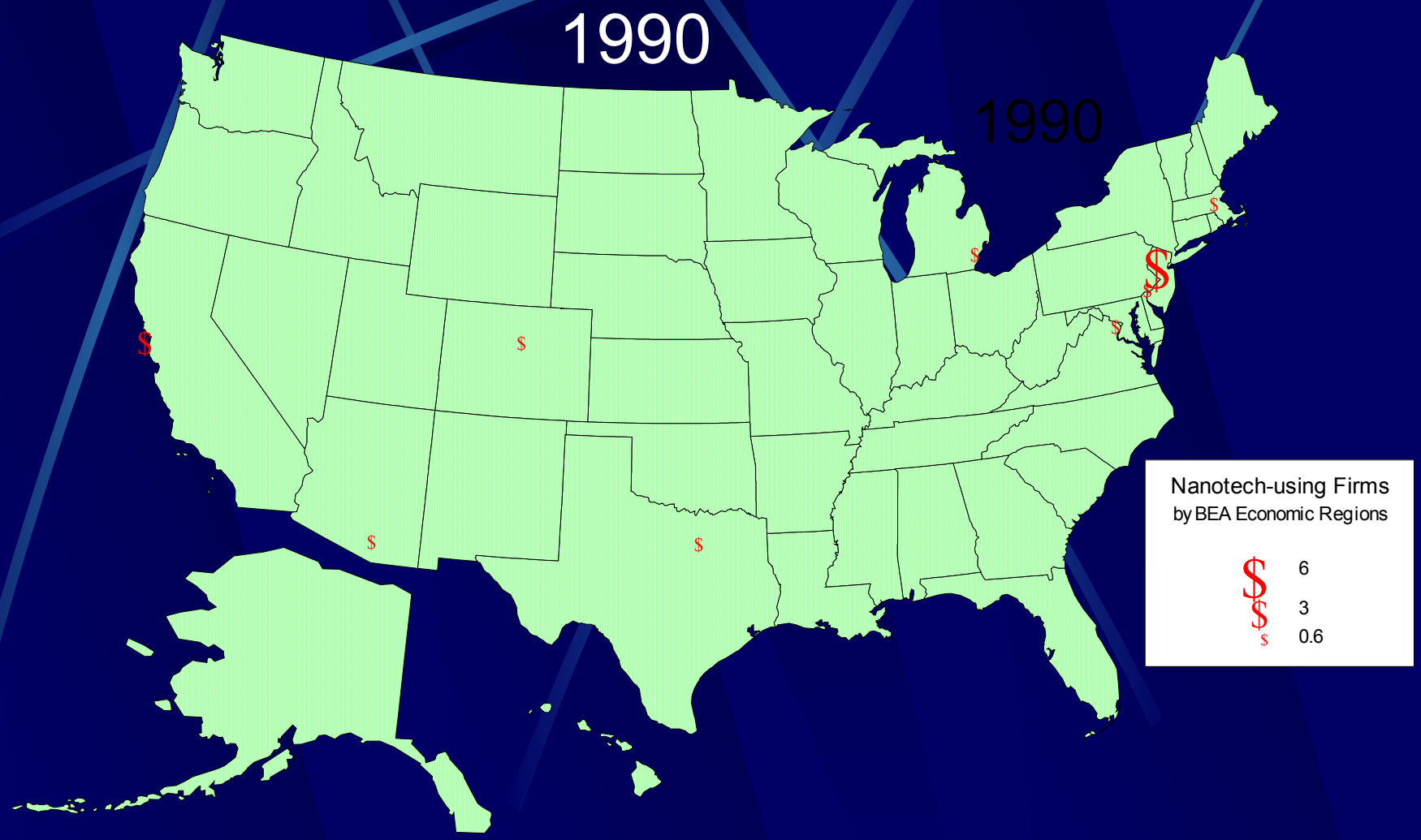
Notes: * indicates added NBIC elements
[1] Identify and search on specific terms in all NBIC areas.
[2] Non-academics: use former department or dissertation department.
[3] E.g., if dissertation discipline is different from department of first job.

Other NanoBank Features

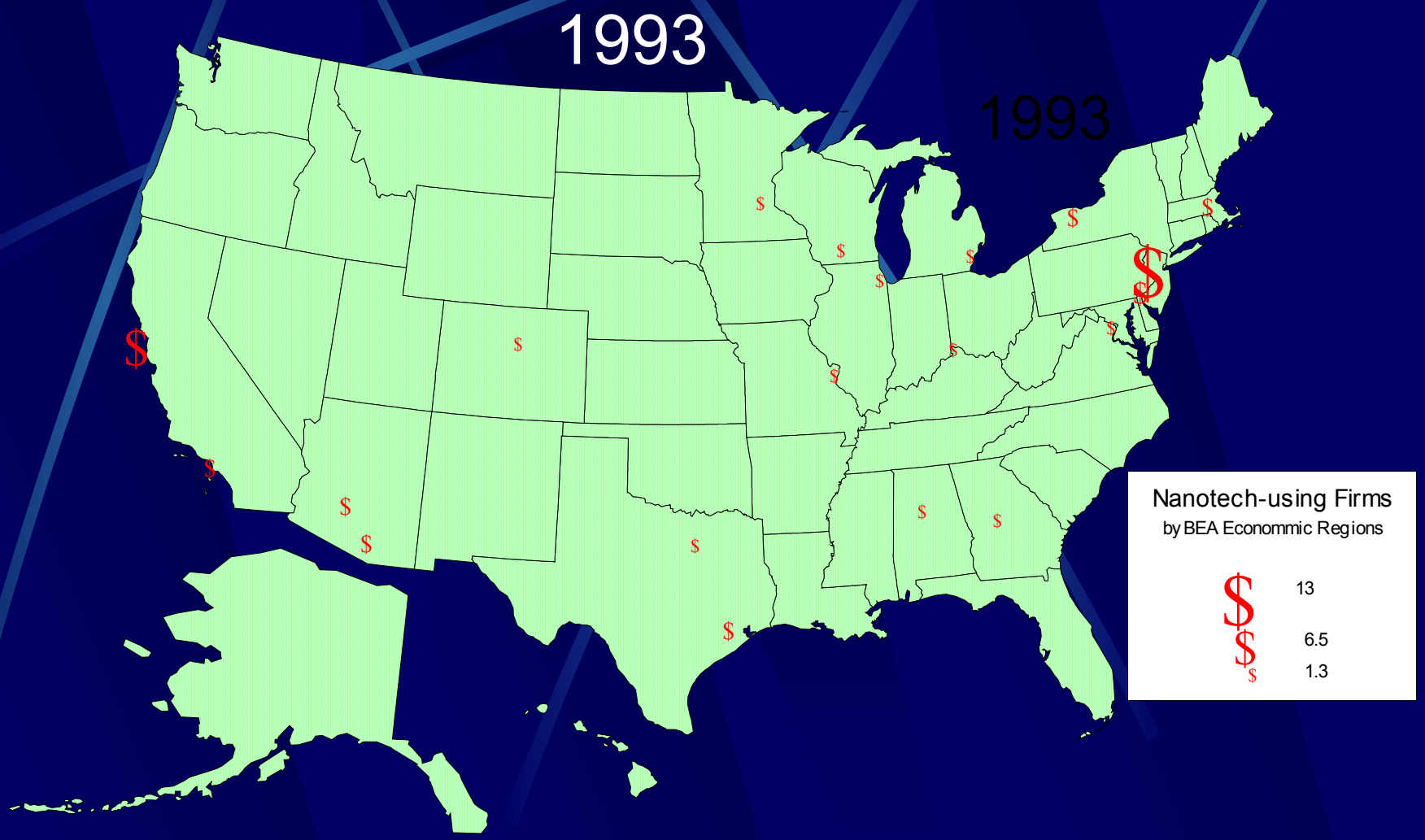
- Vetted socio-economic analyses of impacts from basic science & engineering discoveries
- Open discussion areas will help identify emerging concerns
- Graphics will draw public, press, policymakers, students

Robert Liu
NanoBank Lead Programmer

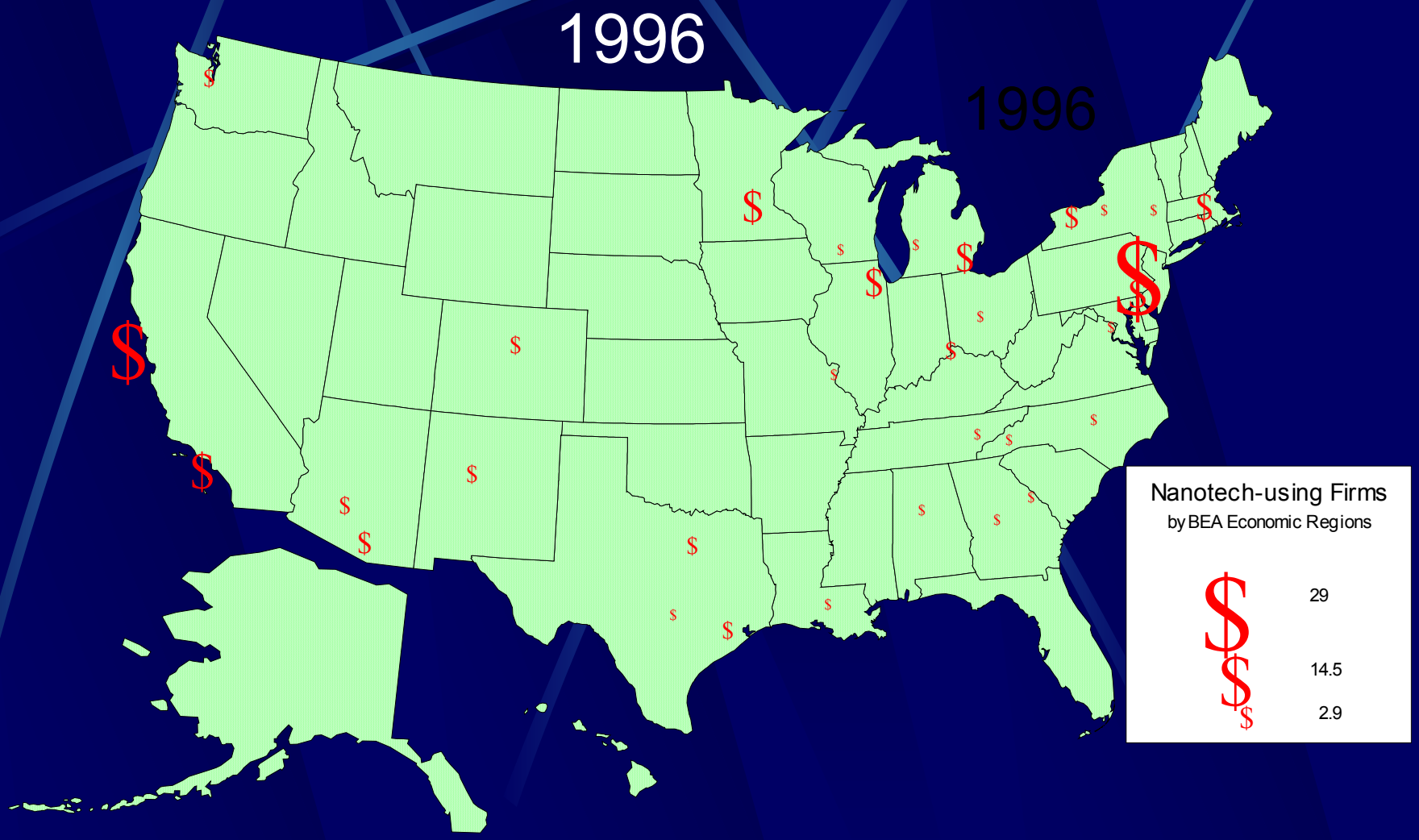
NanoBank Shows Where and When Firms Use Nanotech



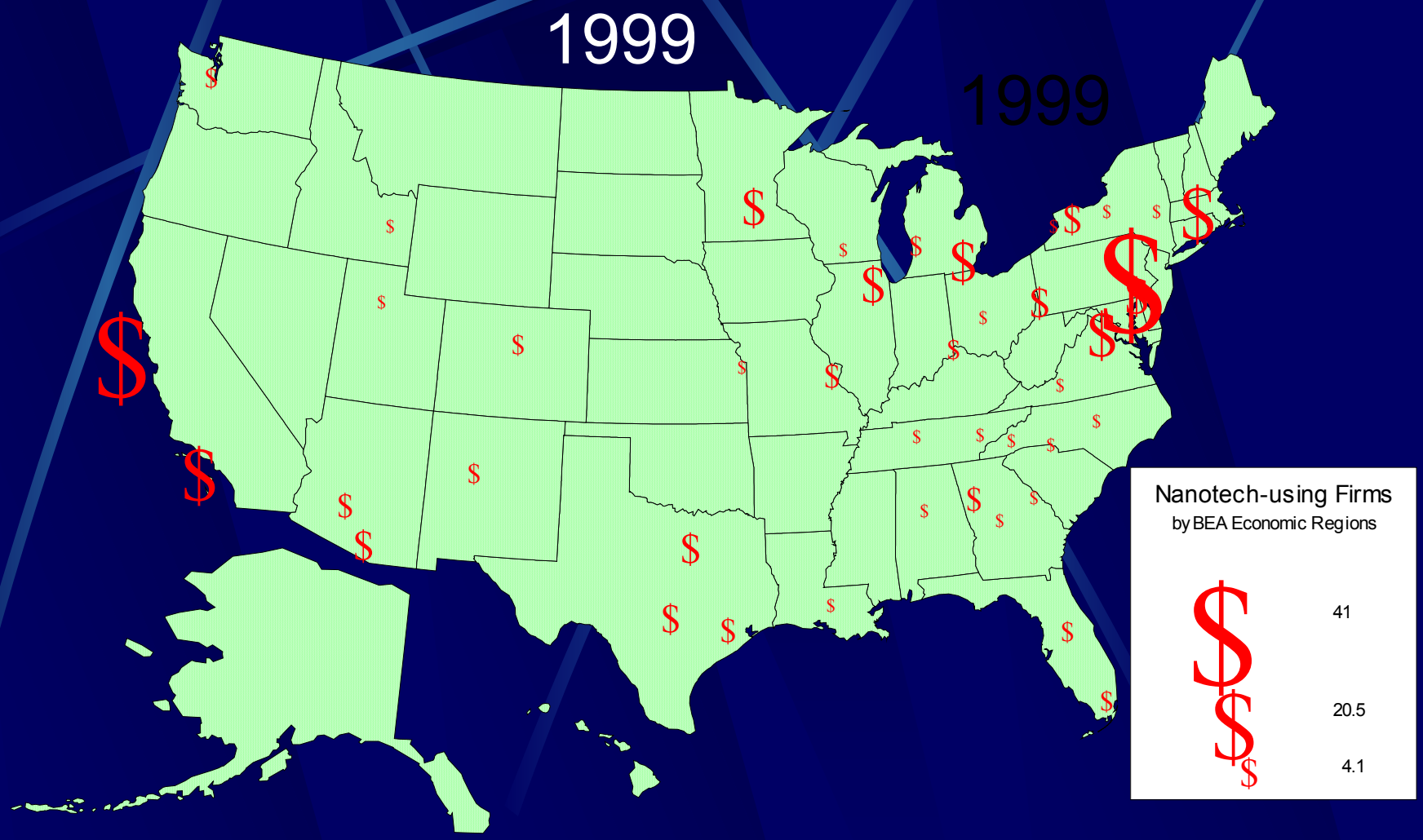
NanoBank Shows Where and When Firms Use Nanotech



NanoBank Shows Where and When Firms Use Nanotech



NanoBank Shows Where and When Firms Use Nanotech



Social Science Uses of NanoBank

- NanoBank data will enable studies of S&T policy, knowledge transfer, and industry formation

Chuling Chen – Doctoral RA
Center for International Science, Technology & Cultural Policy, UCLA

Expected Impact of NanoBank

- Information will speed commercialization by making it easier for scientists with ideas to link to firms or venture capitalists
- Scientists can more easily find relevant results across disciplines, advancing science
- More equal access to information will promote diversity among nanotech scientists, engineers, and entrepreneurs

Freer Access Promotes Diversity

Alfred E. Osborne, Jr.
Senior Associate Dean
UCLA Anderson School of Management