



# Innovation in Tech Transfer

S&T Stakeholders Conference- Washington DC

May 21, 2007



# Innovation in Tech Transfer



- Traditional*
  - University tech transfer office*
  - Incubators*
- Innovative*
  - Clusters*
  - Rapid Prototyping*
  - Tech Scouting*
  - Portals*



# Globalization of Technology



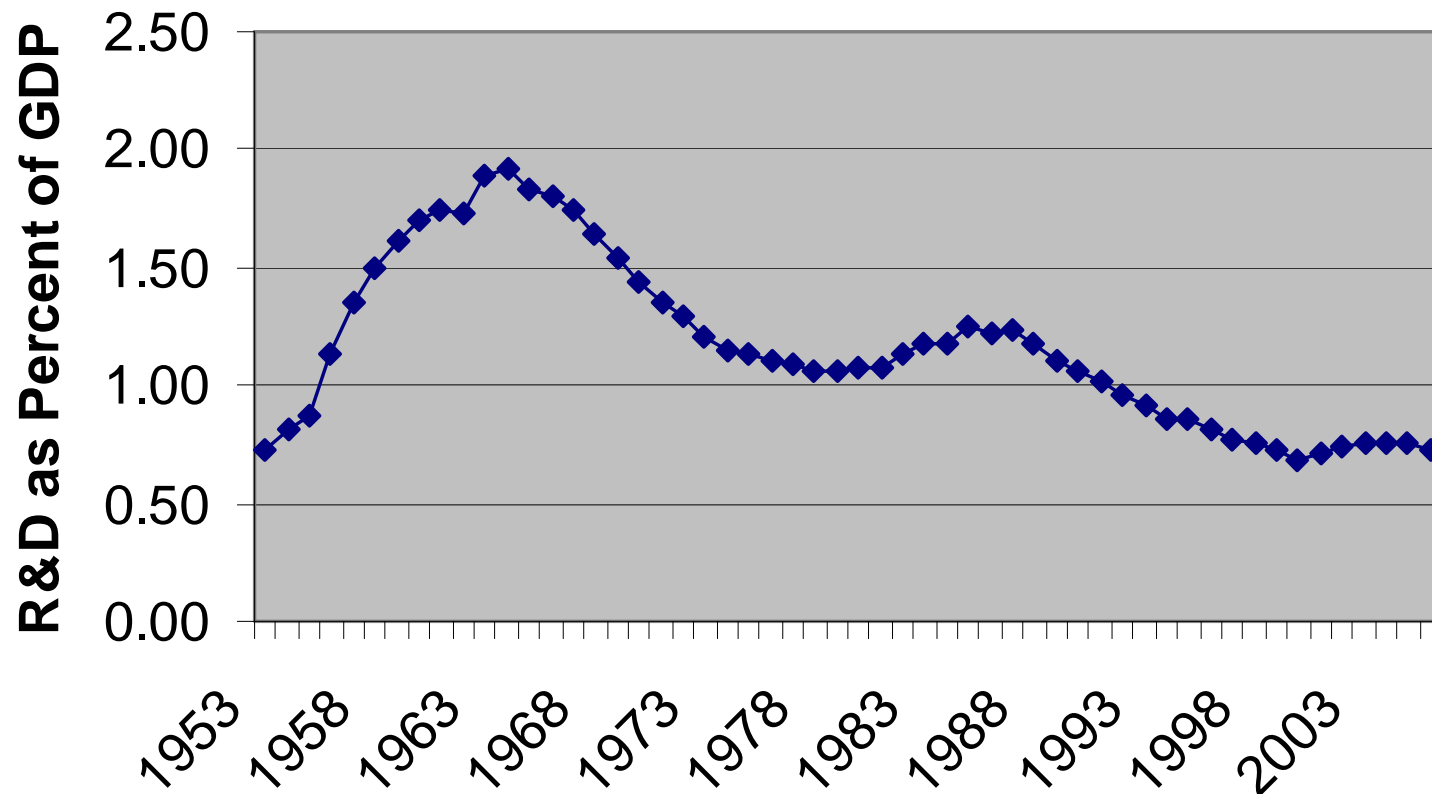
Investment in R&D is a lead indicator of a nation's intent to compete globally

R&D investment over the past decade:

- China: doubled from .06% to 1.2%
- Israel: increased from 2.7% to 4.7%
- Finland: 3.5%
- Germany: 3.0% by 2010



## How Do We Compare on the International Level ?



U.S. Federal R&D Support as Percentage of GDP (1953-2006)  
Reduced from 2% to .75%



# Globalization of Technology

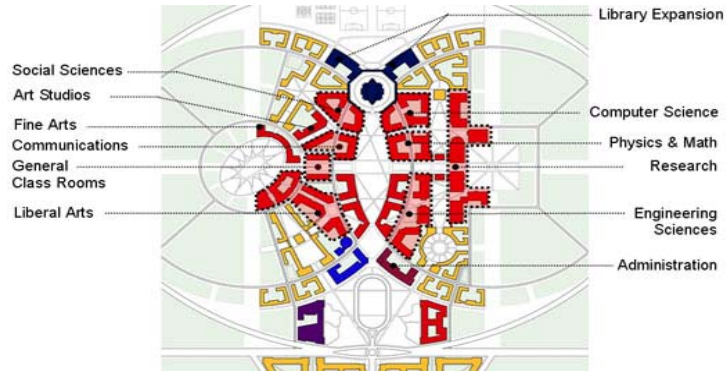


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R&D investment over the past decade:

- China: doubled from .06% to 1.2%
- Israel: increased from 2.7% to 4.7%
- Finland: 3.5%
- Germany: 3.0% by 2010
- United States: 2% to .75% (1953-2006)

# Asia's "World Class" Campuses



Vedanta – India - 52 m sf



New Songdo City – South Korea – 60 m sf



Biopolis – Singapore – 12 m sf



Guangzhou – China – 100 m sf

The World Gets Flatter

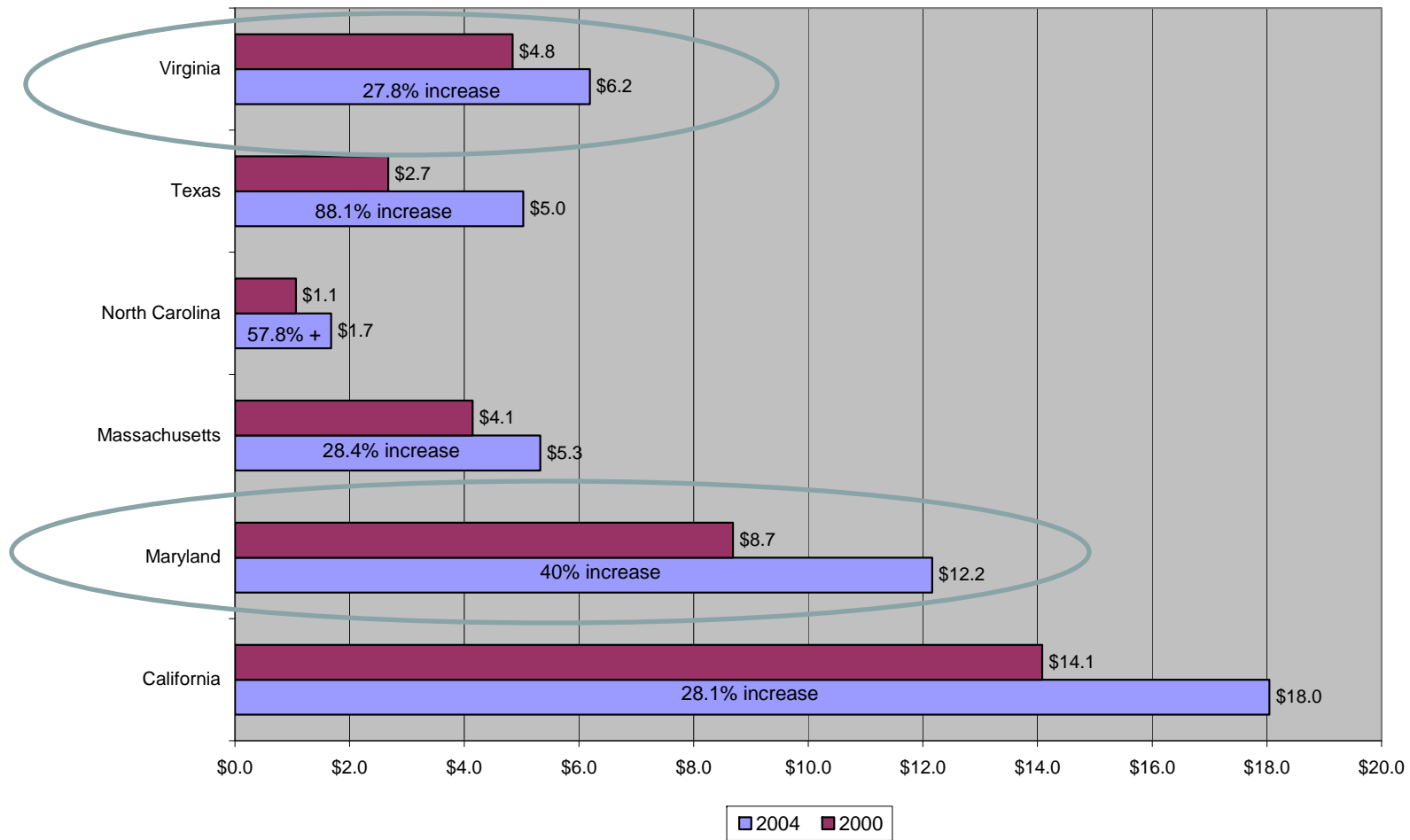
100 million square-feet for 250,000 students and 60,000 faculty and staff

# National Competition



# Research Funds by Region

(2000, 2004)



Source: National Science Foundation, Federal Funds for Research and Development, Fiscal Years 2000, 2001, and 2002 (Table C-83); Fiscal Years 2004-06, Table 90





# 2006 Research Revenue Rankings

University Only

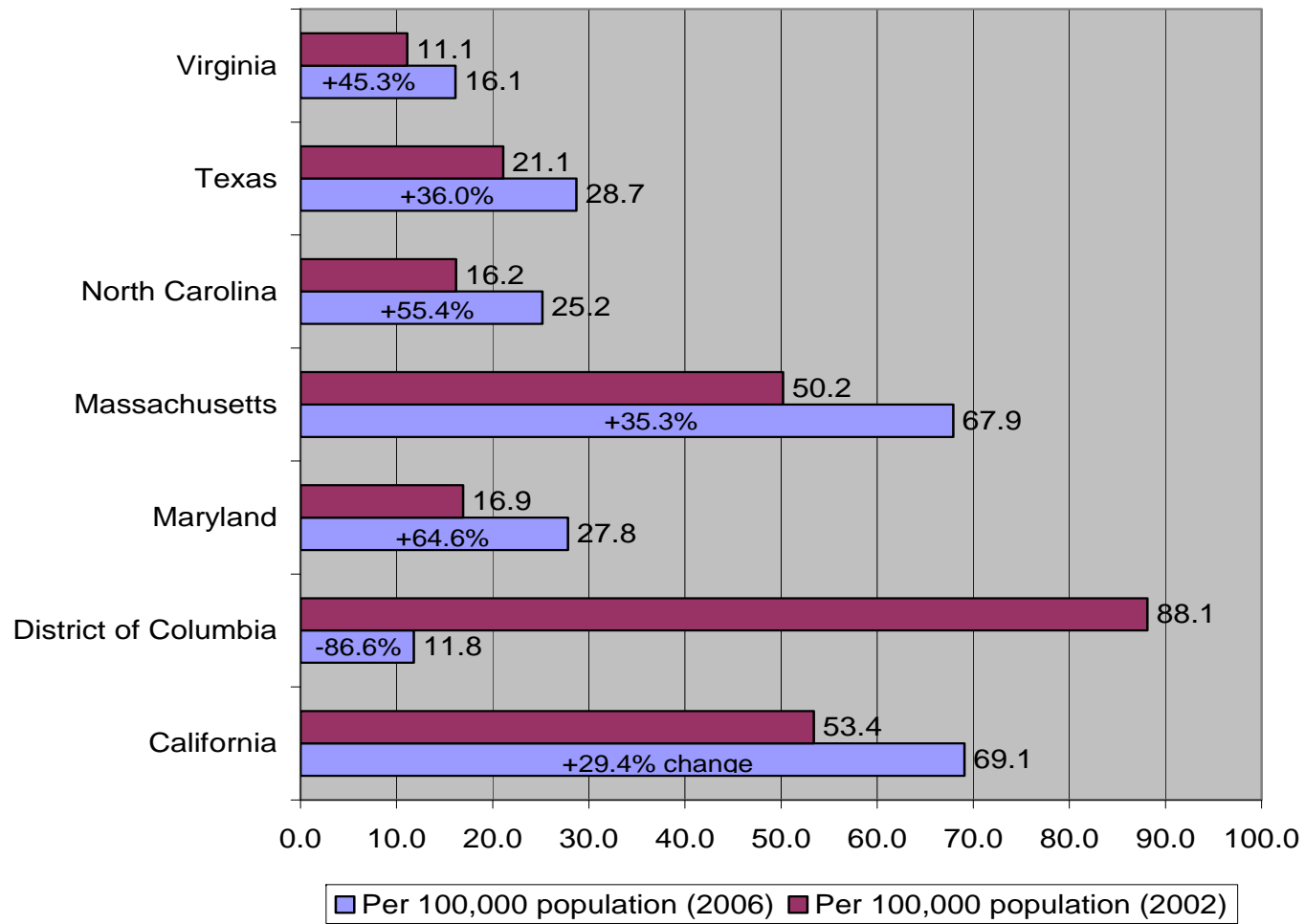


State	Revenue Ranking	Patents to Revenue Ranking	Start ups to Revenue Ranking
California	1	3	16
Massachusetts	2	10	20
Chesapeake Crescent	3	19	37
Texas	5	14	33
North Carolina	9	13	19

Source: AUTM Licensing Survey Results by State, 2006

# Patents per Capita by State

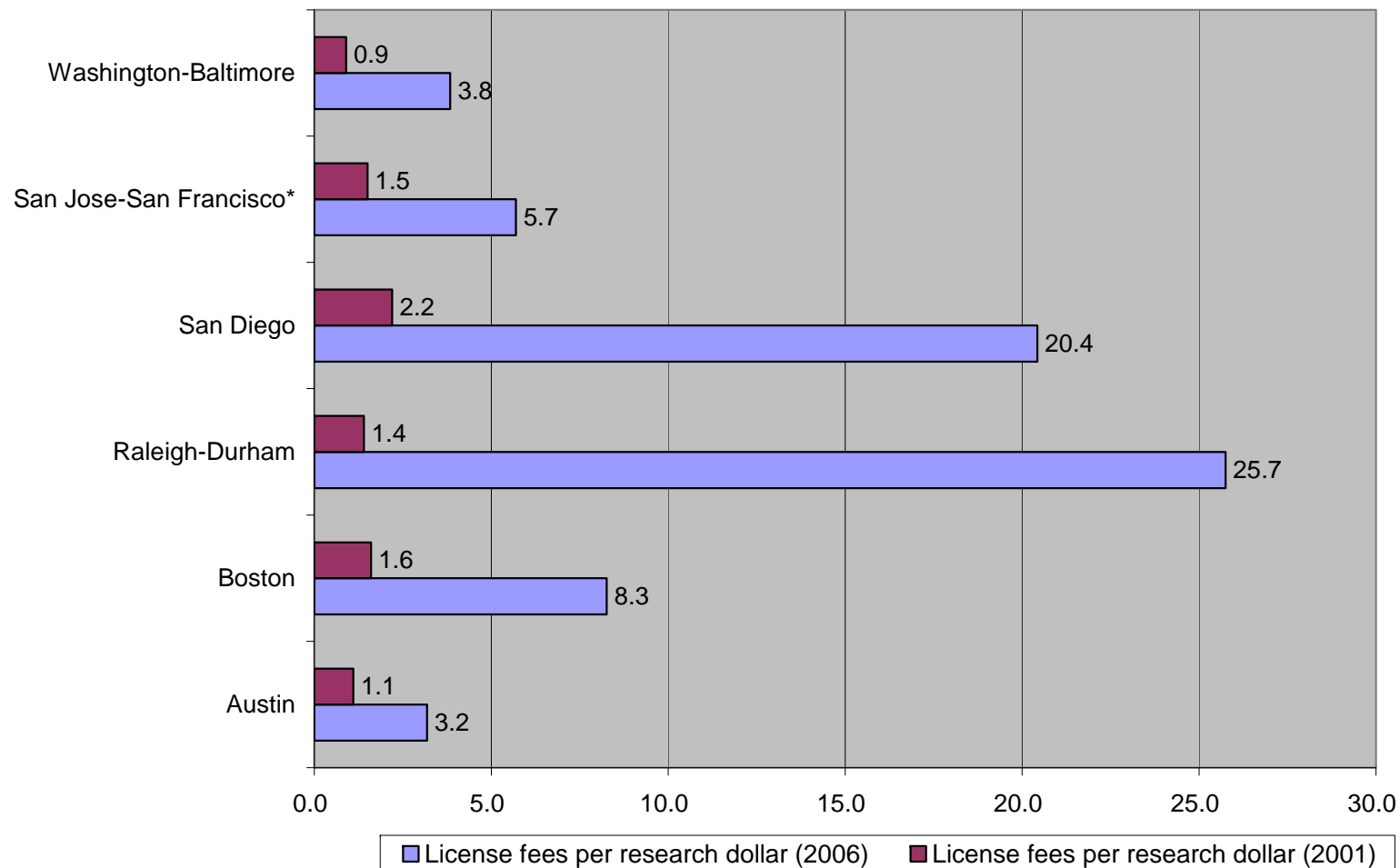
(2002, 2006)



Source: U.S. Patent and Trademark office; U.S. Census Bureau



## Technology Licenses Executed per \$10M in R&D Funding, by Region (2001, 2006)



Source: AUTM Licensing Survey FY 2001, 2006

\* University of California system reported out of San Jose-San Francisco



# US Entrepreneur Stats

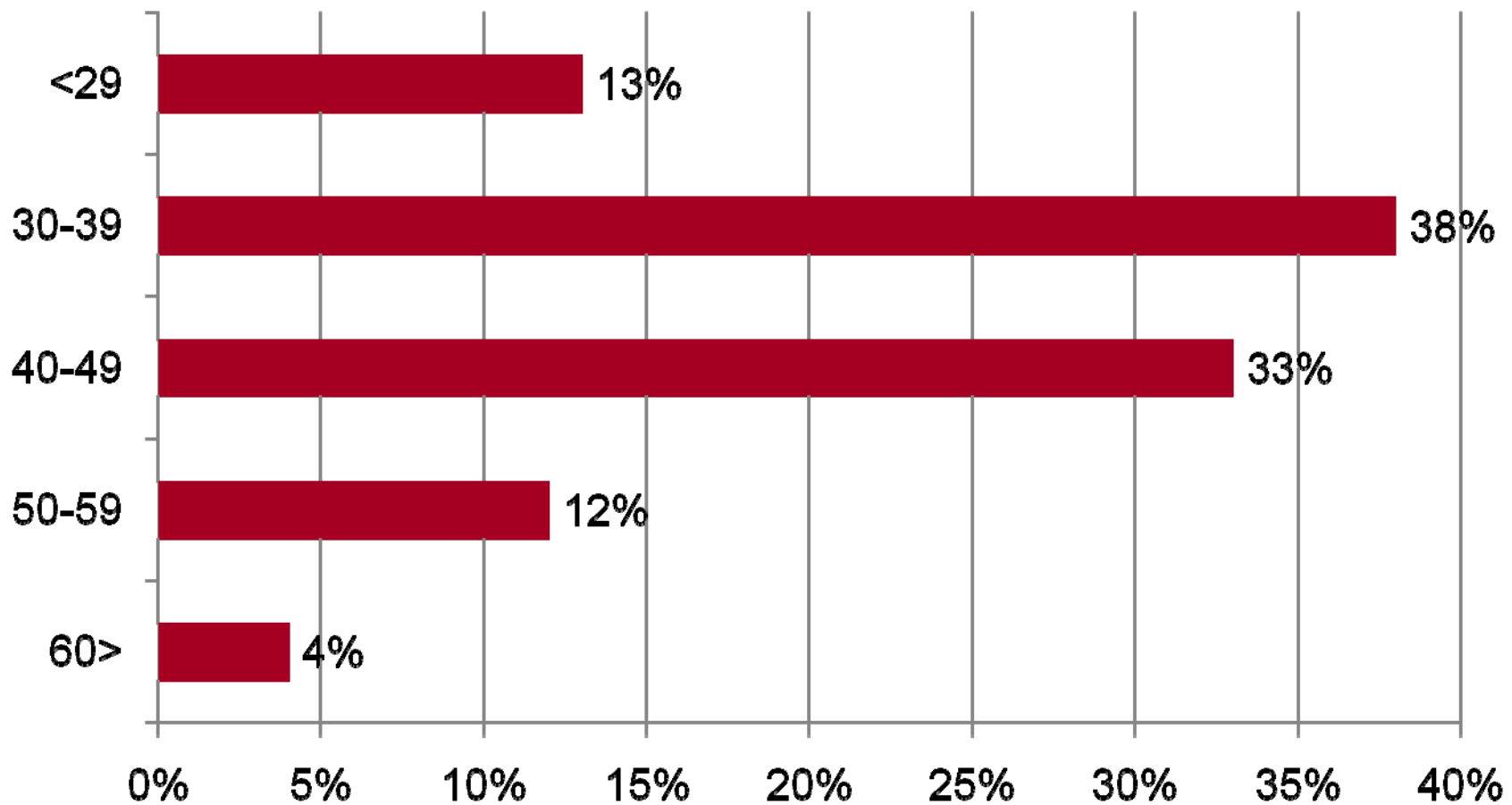


- 92% Bachelor's Degree
- 31% Master's Degree
- 10% PhDs
- Nearly half of all degrees in science, technology, engineering and mathematics (STEM)
- One-third in business, accounting and finance

*Kauffman Foundation Research: 502 companies established 1995-2005*



# Age at time of company founding



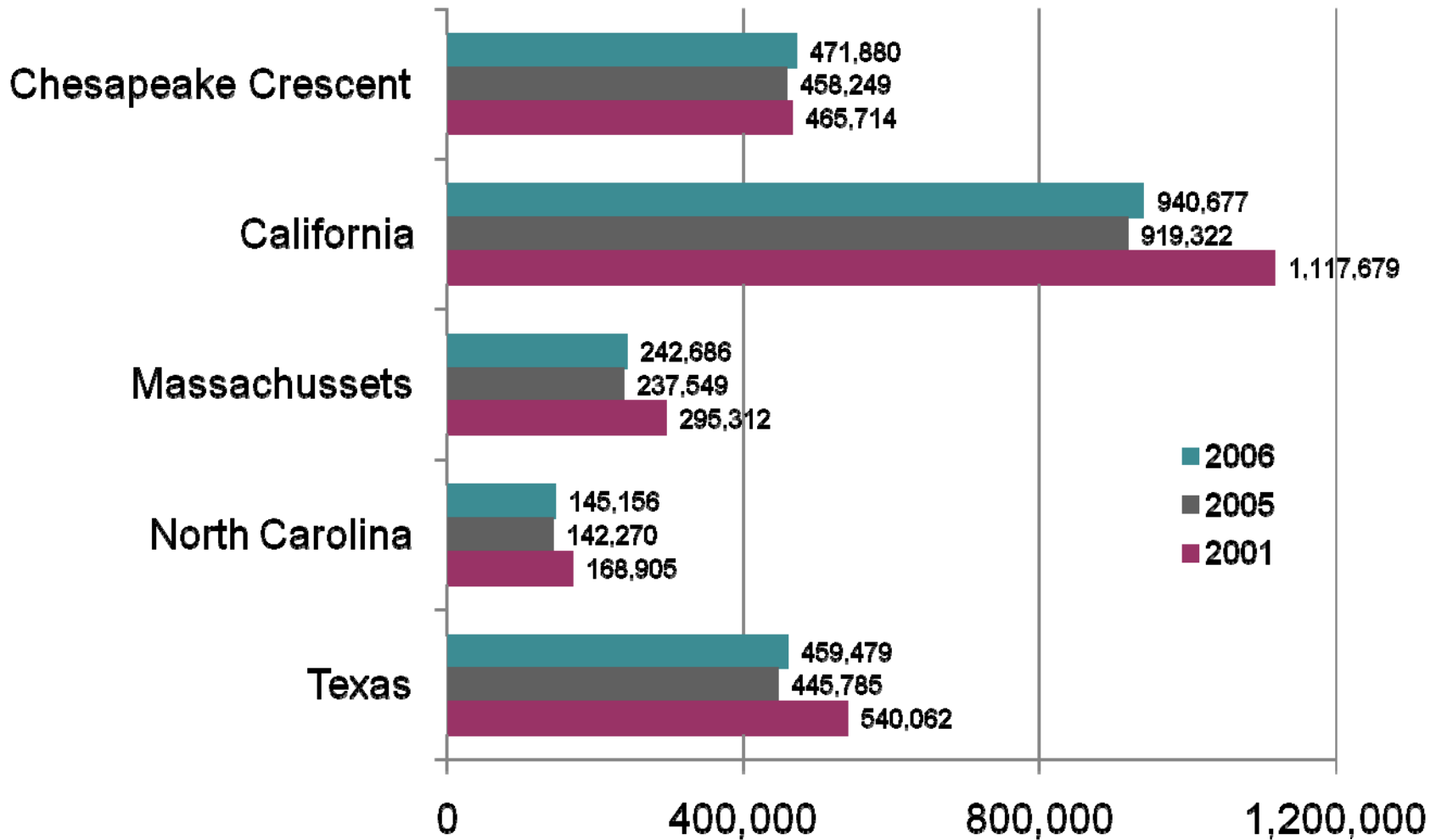


# US Entrepreneur Stats



- Founder average and median age- 39 years old
- Founders w/ MBA- 13 years to startup
- Founders w. PhD- 21 years to startup
- Location
  - 45 % in same state as degree
  - California- 69%
  - Texas- 53%
  - Massachusetts- 29%
  - Virginia- 30%
  - Maryland- 15%

# High Tech Jobs





# Venture Capital Investment in Seed/Startups

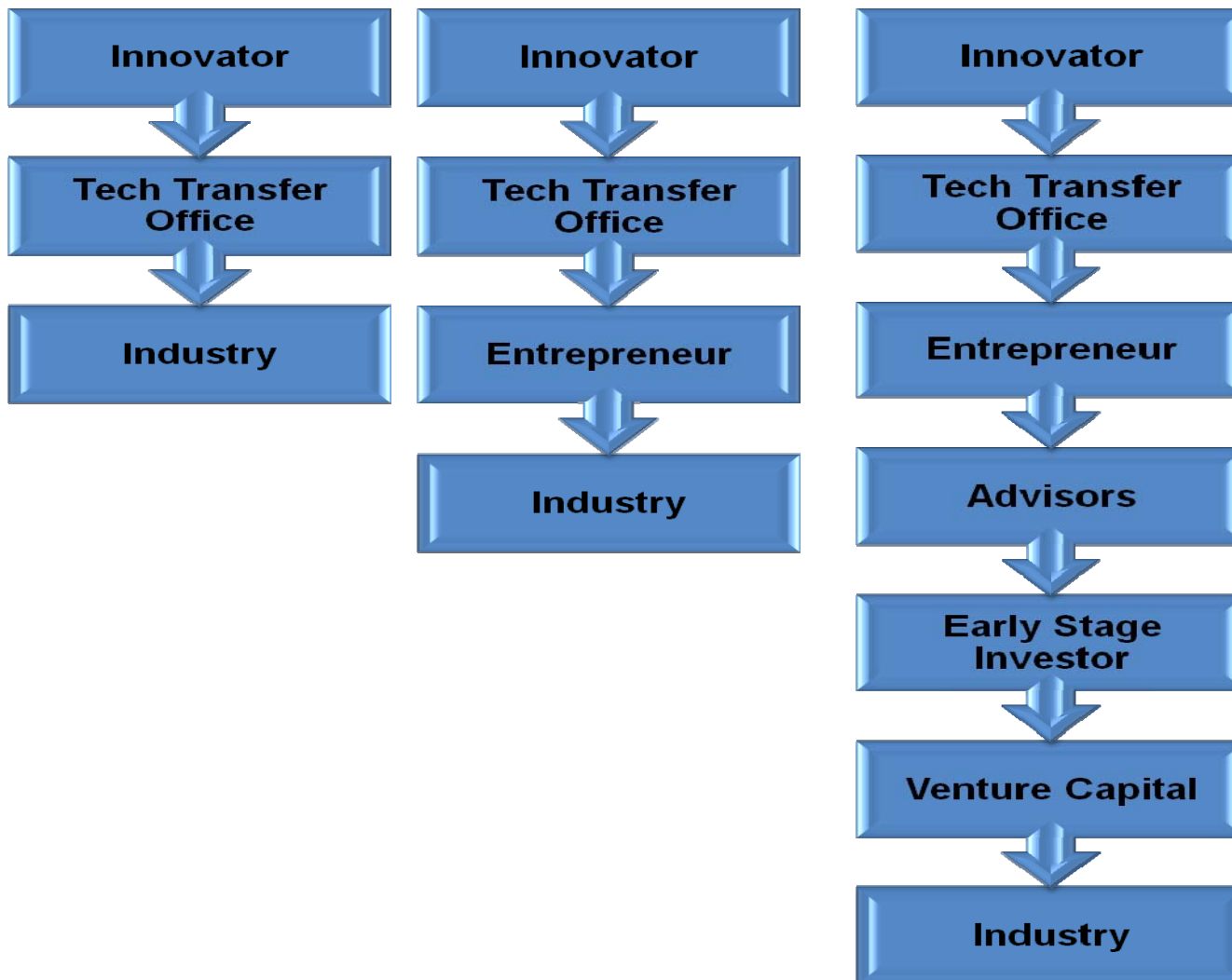


	2007 Venture Capital (millions)	2004 R&D funding (millions)	VC Seed + startup investments (millions)	% of National VC investment in seed/startups	Ratio of VC capital to R&D Funding	Ratio of VC seed + startup investment to CCR
California	\$ 12,055	\$ 18,041	\$ 535	45.4%	67%	12
Chesapeake Crescent Region	\$ 1,242	\$ 18,454	\$ 46	3.9%	7%	1
Massachusetts	\$ 3,489	\$ 5,324	\$ 115	9.8%	66%	9
North Carolina	\$ 577	\$ 1,677	\$ 48	4.1%	34%	11
Texas	\$ 1,416	\$ 5,025	\$ 31	2.6%	28%	2

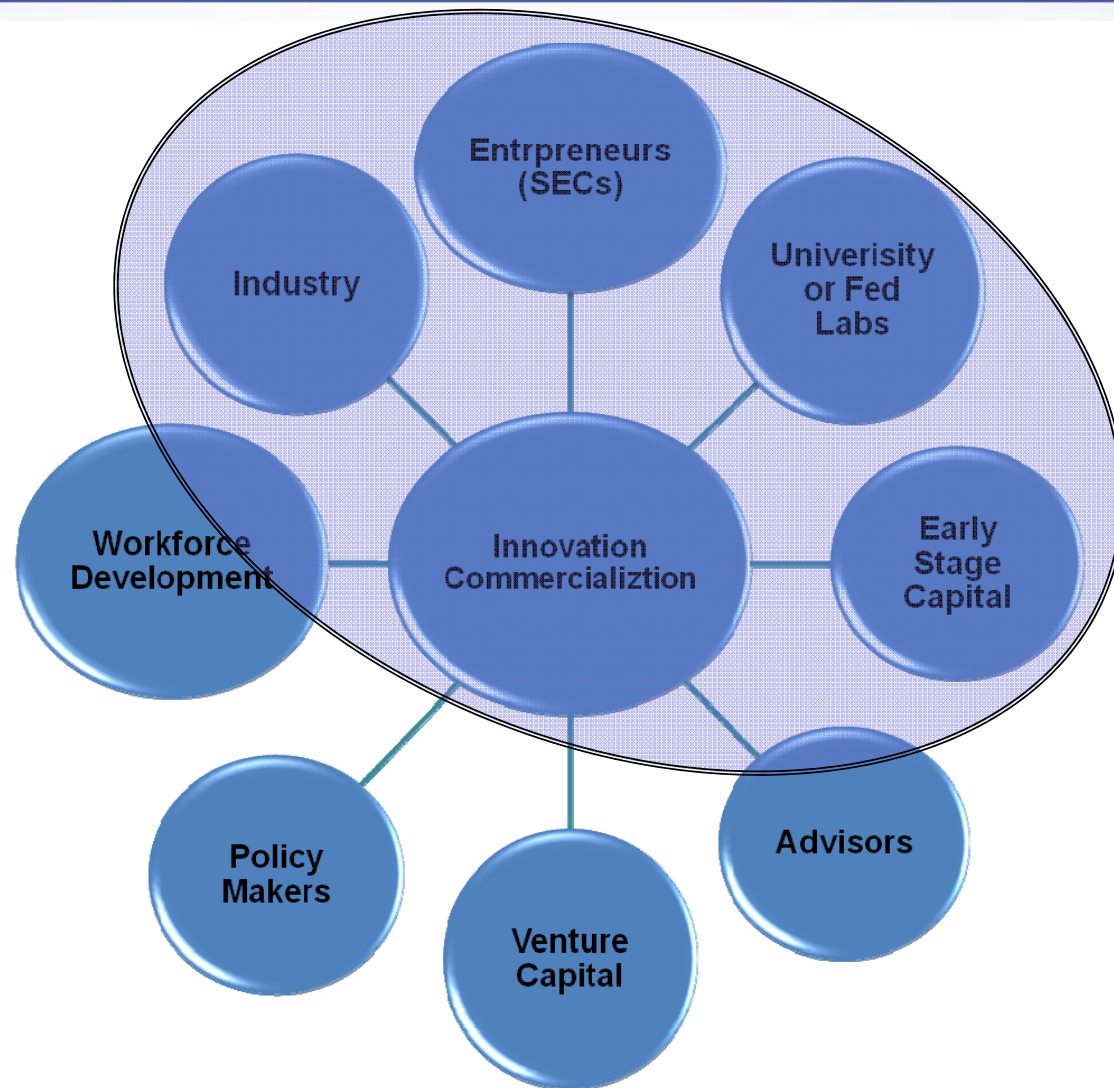
Source: MoneyTree Report by PricewaterhouseCoopers and the National Venture Capital Association



# Traditional Tech Transfer



# Clusters





# Clusters

- UMB BioPark
- Johns Hopkins S&T Park
- FDA White Oaks Village



# Rapid Prototyping



- Identify scope*
  - Identify “pain”*
  - Technology needs and requirements*
  - Test data*
  - Success metrics*
- Scout*
  - Broadcast needs*
  - Shadow scenario*
  - Use TechBridge to collect*
- Filter*
- Second phase screen with customer*
- Final four*



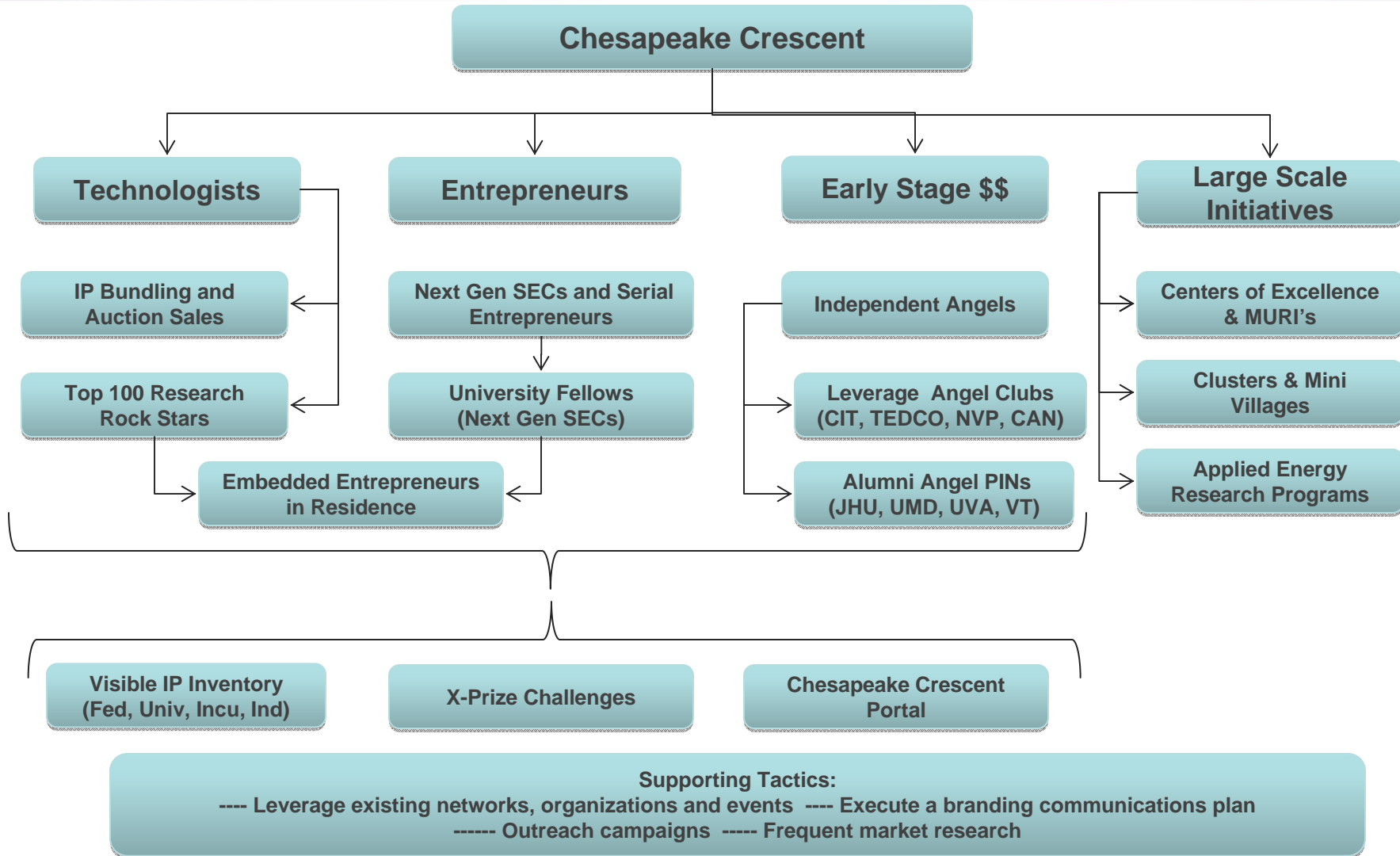
# Rapid Prototyping Examples



❑ *Data mining and visualization*

❑ *Graph database*

# Innovation Platform





# Tech Scouting



***NORTHROP GRUMMAN***

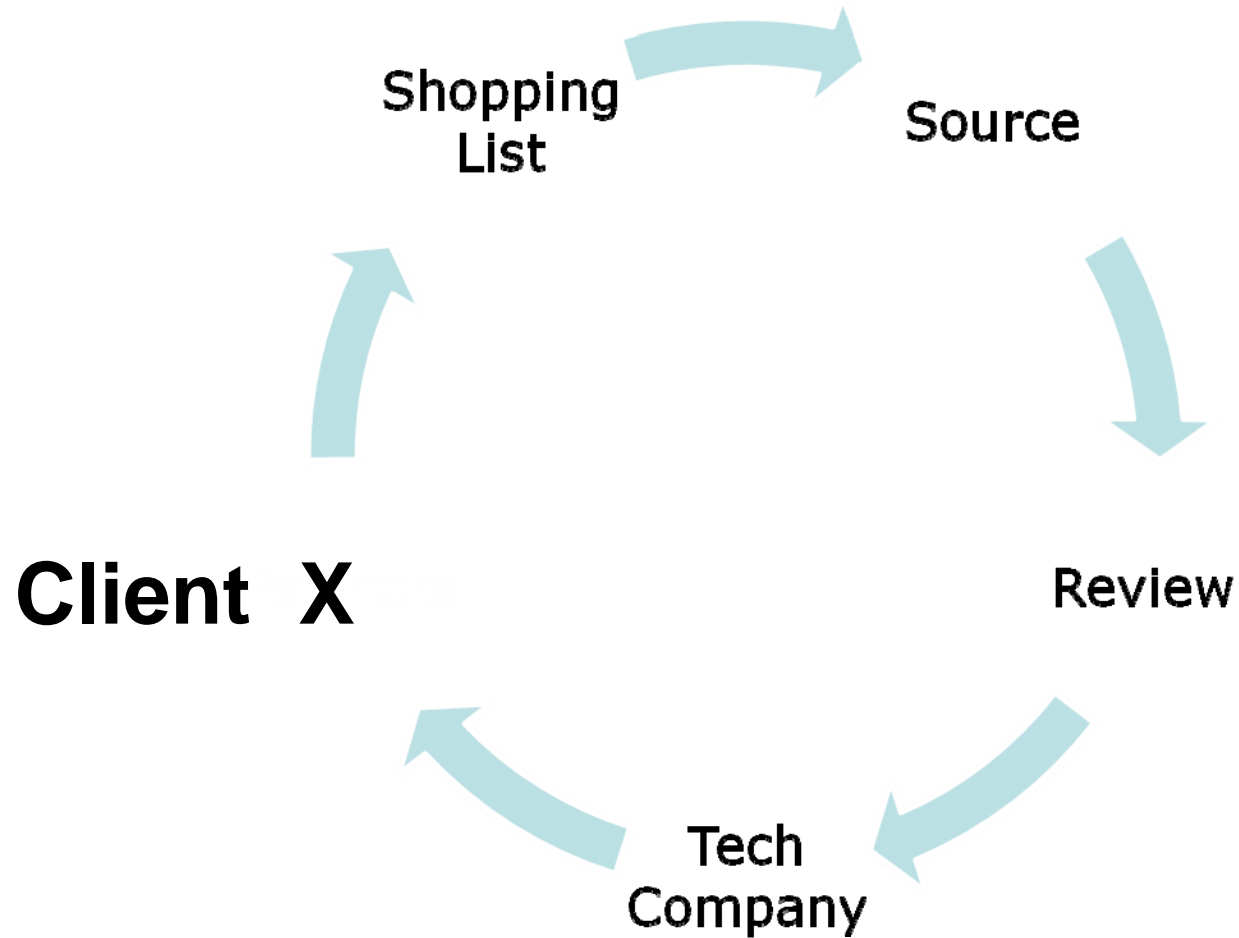


***BOEING***®

**ARINC**



# Tech Scouting







# Shopping List



## **Informatics**

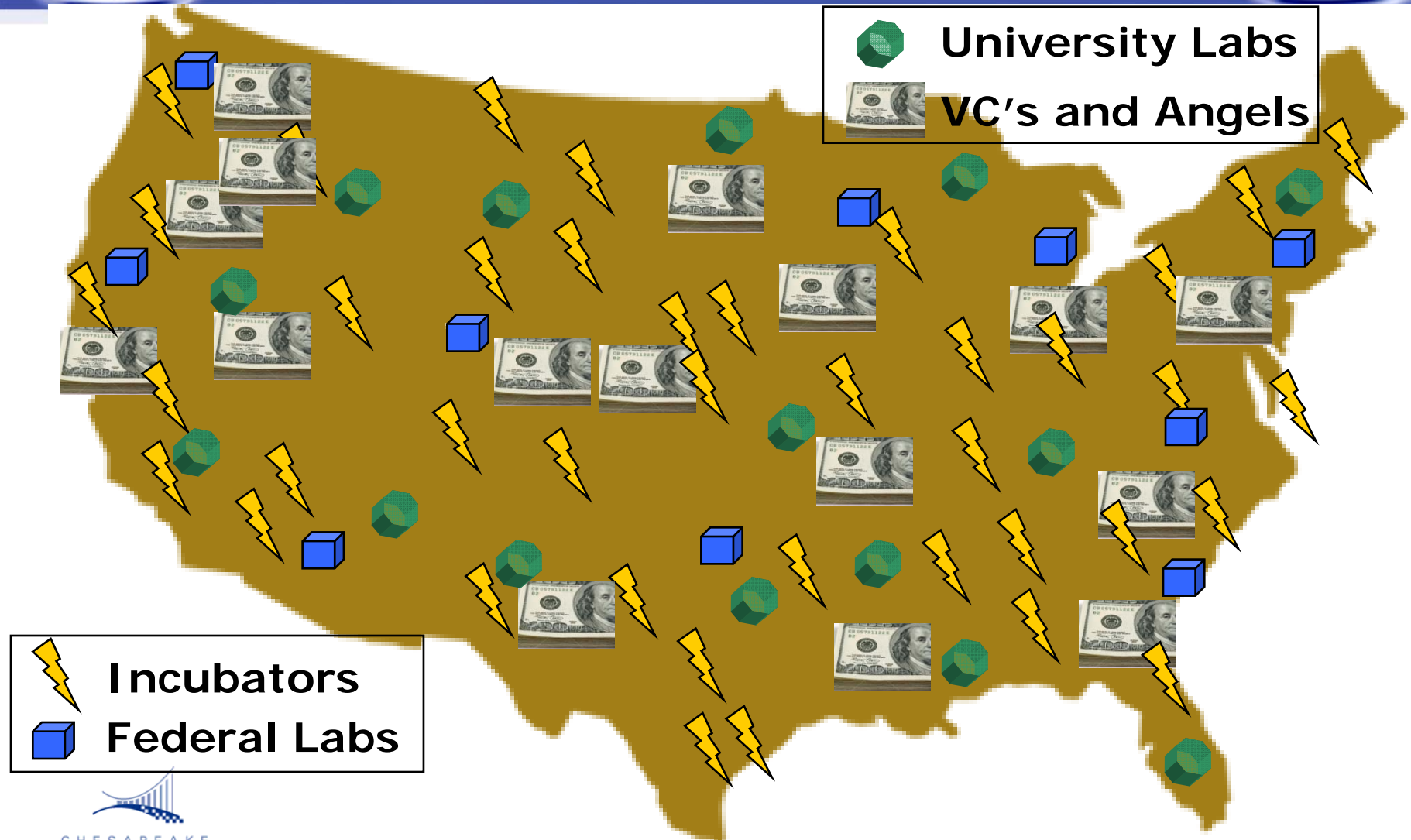
- data fusion
- data mining
- info assurance
- visualization
- authentication

## **Advanced Tech**

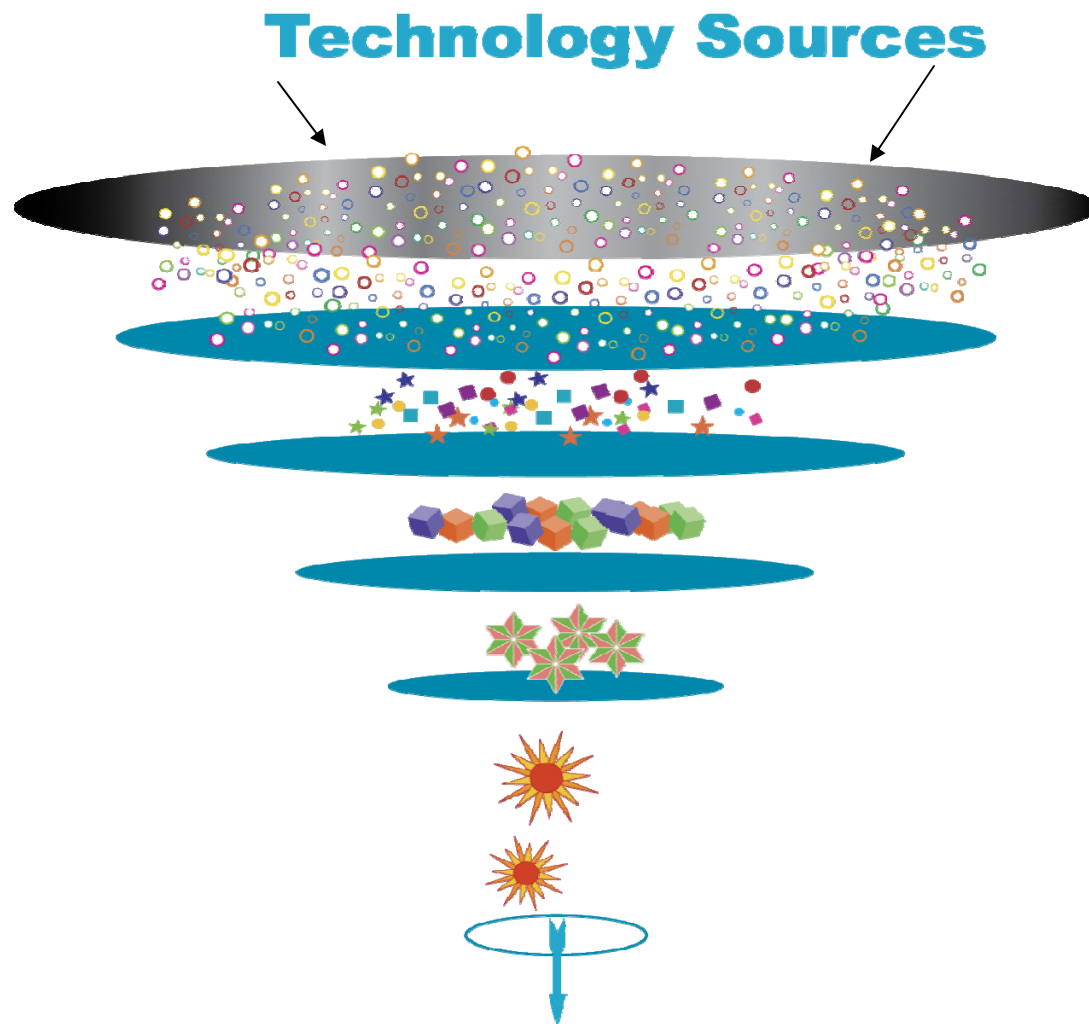
- C4ISR
- hi-speed computing
- CBRNE-WMD-IED
- energy/power systems
- self organizing networks



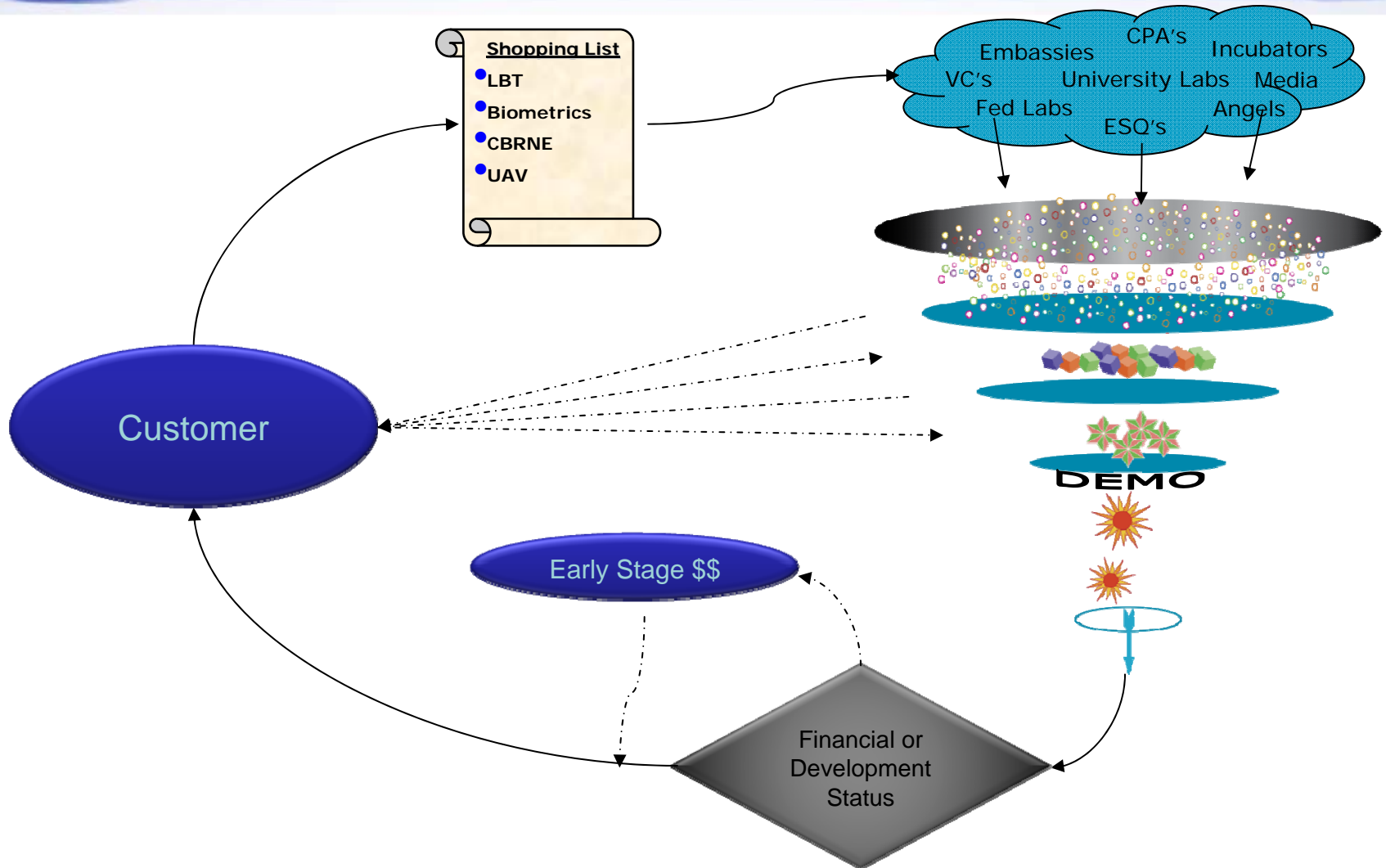
# Technology sources



# Screening



# Tech Scouting





Thank You



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