

# **The Role of Universities in *Regional Green Economies:*** *A Perspective from the University Office that is at the Nexus of Research & Business*

**Innovating the Green Economy  
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## Agenda: *5-10 Minutes*

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1. General Potential for Universities to Drive Regional Green Economies
2. Range of Alternative Approaches for Universities (& Gov)
3. Specific Examples of UCB Approaches (via Tech Commercialization Office)

# Potential of University-Driven Regional Economy

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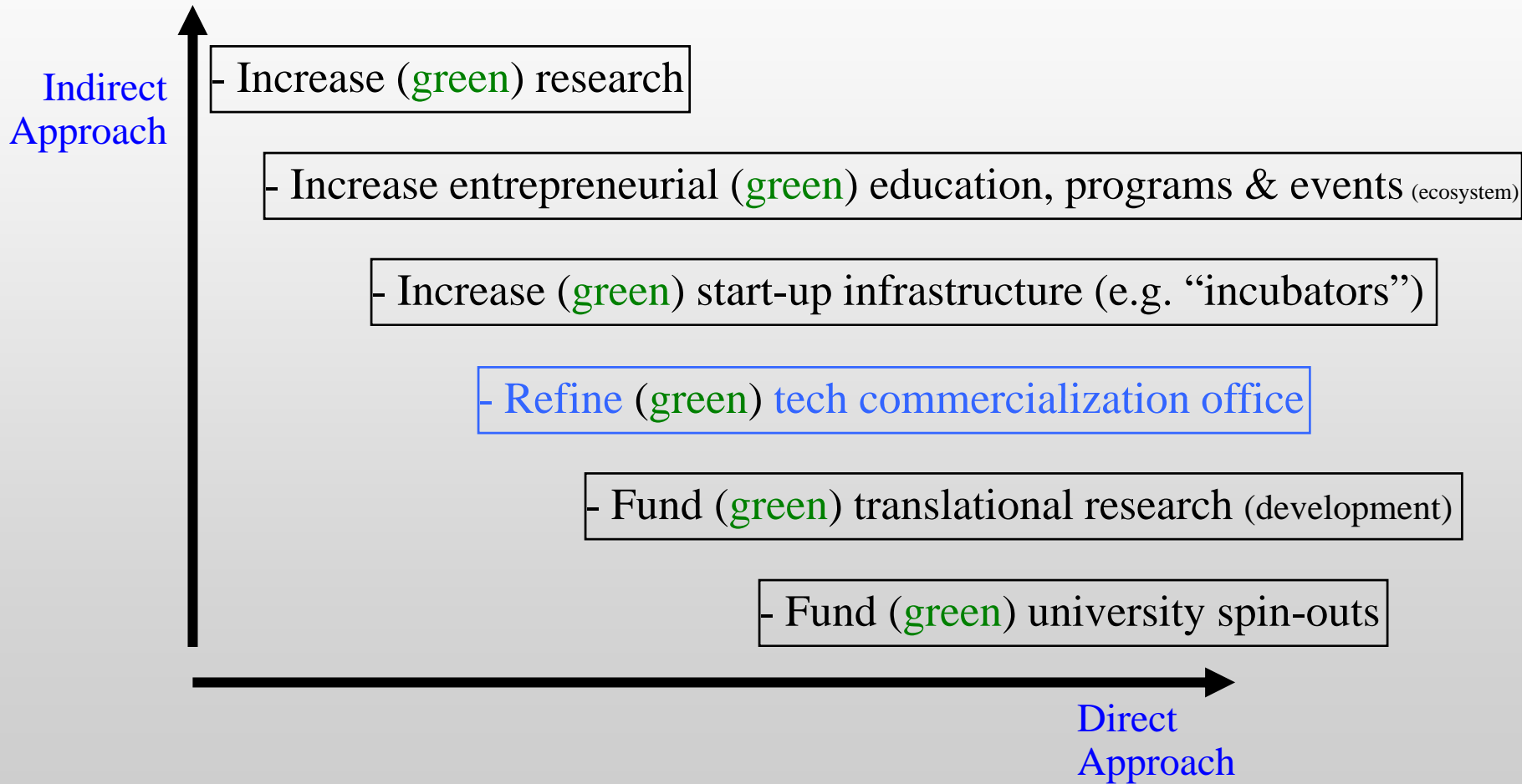
- ❑ Local corporate R&D centers based on university collaborations
  - No historical data, just anecdotal:
  - Intel Lablette, **Siemens TTB**, Starkey R&D, **BP EBI**, BWRC, etc
  - In a decade, western edge of campus will have dozens of corp R&D offices
  
- ❑ Start-ups based on university innovations\*
  - Over past 5 years, UCB has done about 30-40 IP rights agreements per year
  - About half of those agreements are with start-ups
  - **About half of those start-ups are commercializing green technologies**
  - Many regions only dream about that economic development pipeline
  - Opportunity for 2 scenarios (City of Berkeley Planning Commission, Feb 2009)...

\* These numbers are comprised of the start-ups that leveraged UC Berkeley's intellectual property (i.e. patentable inventions & copyrightable software). The numbers don't include other UC Berkeley spin-outs that didn't leverage the University's intellectual property.

# University-Driven Potential: 2 Scenarios

<b>Scenario: SQUANDERING the Opportunity (25% attract; 25% retain)</b>						
	Year 1	Year 2	Year 3	Year 4	Year 5	Assumptions
New Startups	15	15	15	15	15	15
Attract: Stay Local	4	4	4	4	4	25%
Shut-down in Yr 1	0	-1	-1	-1	-1	25%
Retain: Move-out in Yr 1	0	-3	-3	-3	-3	25%
Retain: Move-out in Yr 2	0	0	-1	-1	-1	25%
Aggregate Growing Corps	4	4	3	2	<b>2</b>	
<b>Scenario: LEVERAGING the Opportunity (75% attract; 75% retain)</b>						
	Year 1	Year 2	Year 3	Year 4	Year 5	Assumptions
New Startups	15	15	15	15	15	15
Attract: Stay Local	11	11	11	11	11	75%
Shut-down in Yr 1	0	-3	-3	-3	-3	25%
Retain: Move-out in Yr 1	0	-3	-3	-3	-3	75%
Retain: Move-out in Yr 2	0	0	-2	-2	-2	75%
Aggregate Growing Corps	11	17	20	24	<b>27</b>	

# University Approaches For Driving the Economy



# University Approaches: *Unique Situations*

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## ❑ Situations vary for each university

- UC Berkeley vs UC Merced vs UT Austin vs MIT vs NUS etc
- Variables: innovations, entrepreneurs, venture capital, ecosystem?
  - Deficiencies?
  - Maximum incremental value?

## ❑ UC Berkeley

- Increase innovative research
- Increase entrepreneurial ecosystem (education, programs, events, etc)

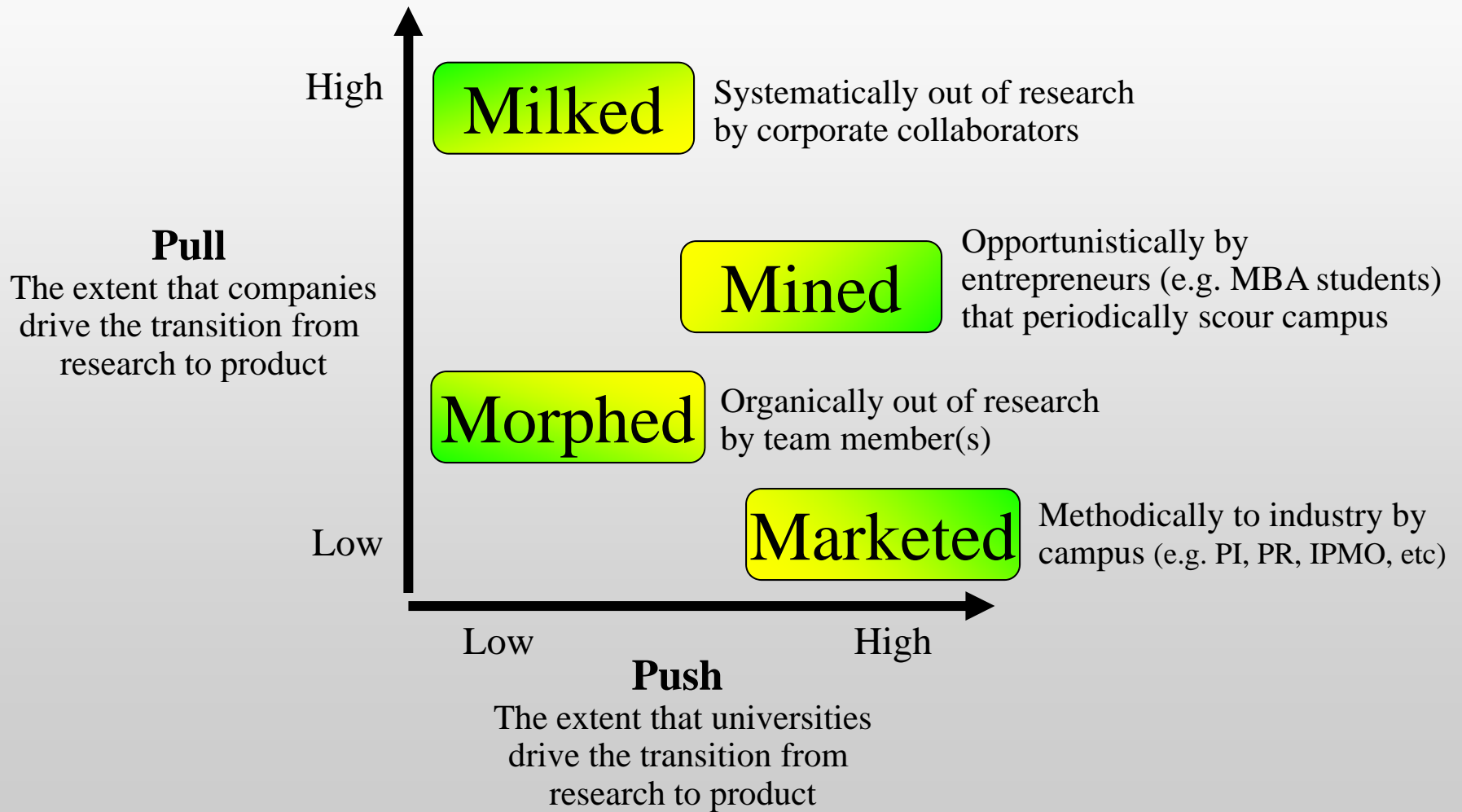
## ❑ What about *the tech commercialization office* (AKA *Tech Transfer*)?

# Research to Determine How University Get Commercialized & Drive the Regional Economy

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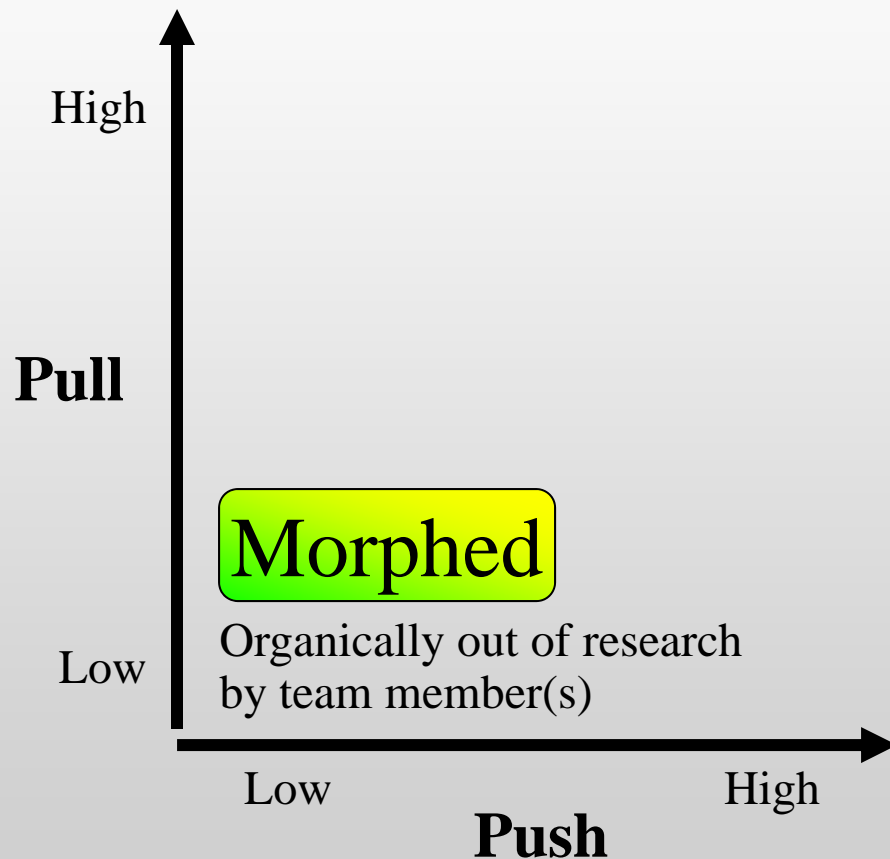
- ❑ How do university innovations get commercialized?
  - What catalyzed the commercialization?
  - How is university involved in the process?
- ❑ Researched over 50 UC Berkeley spin-outs
  - Spin-out profiles formed 4 clusters / patterns
  - Developed a useful (but simplified) framework...

# Commercializing: 4 Pathways for Univ Tech



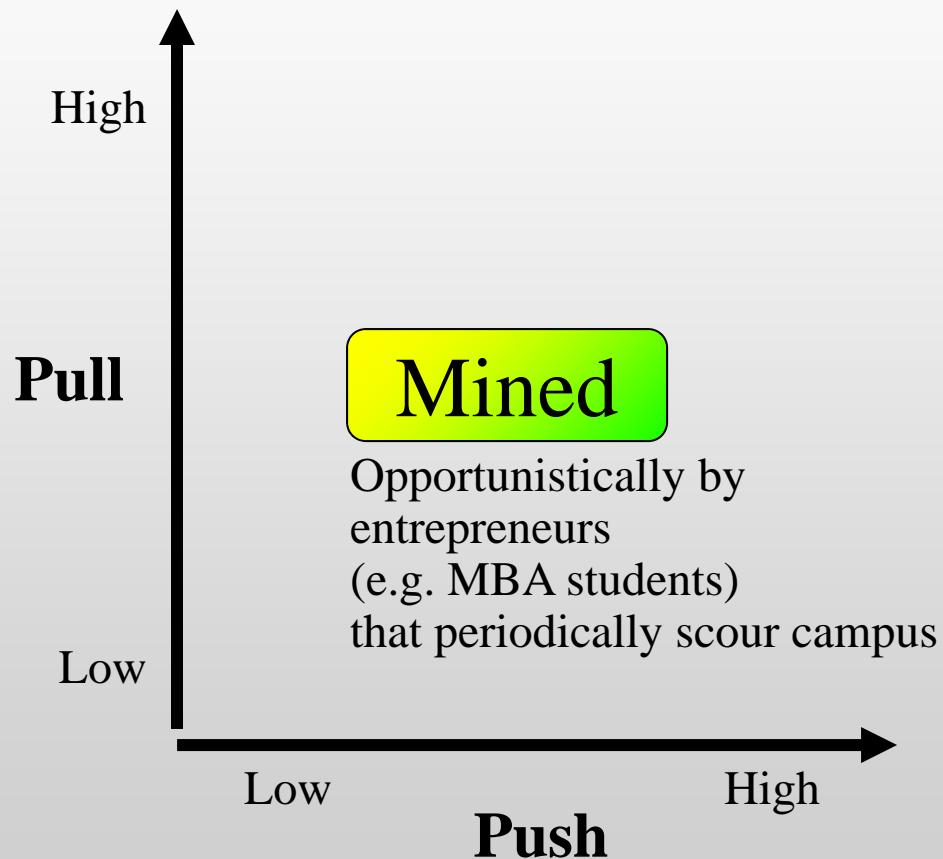


# Commercialization: *Morphed*, *Mined*, *Milked*, *Marketed*



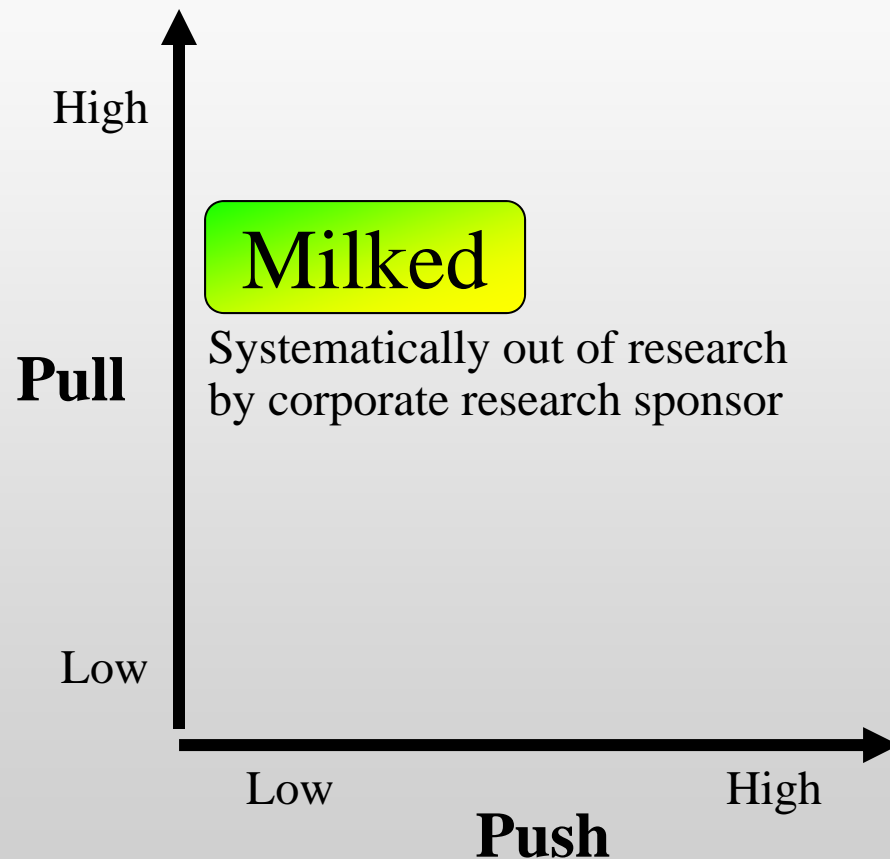
- ❑ Examples: Amyris, Calimetrics, CaliSolar, CellASIC, Chiron, Excellin, Fluxion Biosystems, GoodGuide (TaoIt), Harmonic Devices, Inktomi, Integrated Diag, IntelliOne, Kalinex, Lumiphore, Mercator Med (EndoBionics), MicroClimates (Aptility), MicroFluIDX, OnWafer, ON Diagnostics, PhotoSwitch Bioscience, Redwood Bioscience, SiClocks, TheraFuse, Urban Scan, Verimetra Med, Wireless Industrial Tech, Dust Networks, Iris AO, SiTime
- ❑ Drivers:
  - Great Research
  - Entrepreneurial culture & eco-system
- ❑ IP:
  - Some obtain exclusive license to improve biz plan & attract investors
  - Some ignore or abscond with IP

# Commercialization: *Morphed, **Mined**, Milked, Marketed*



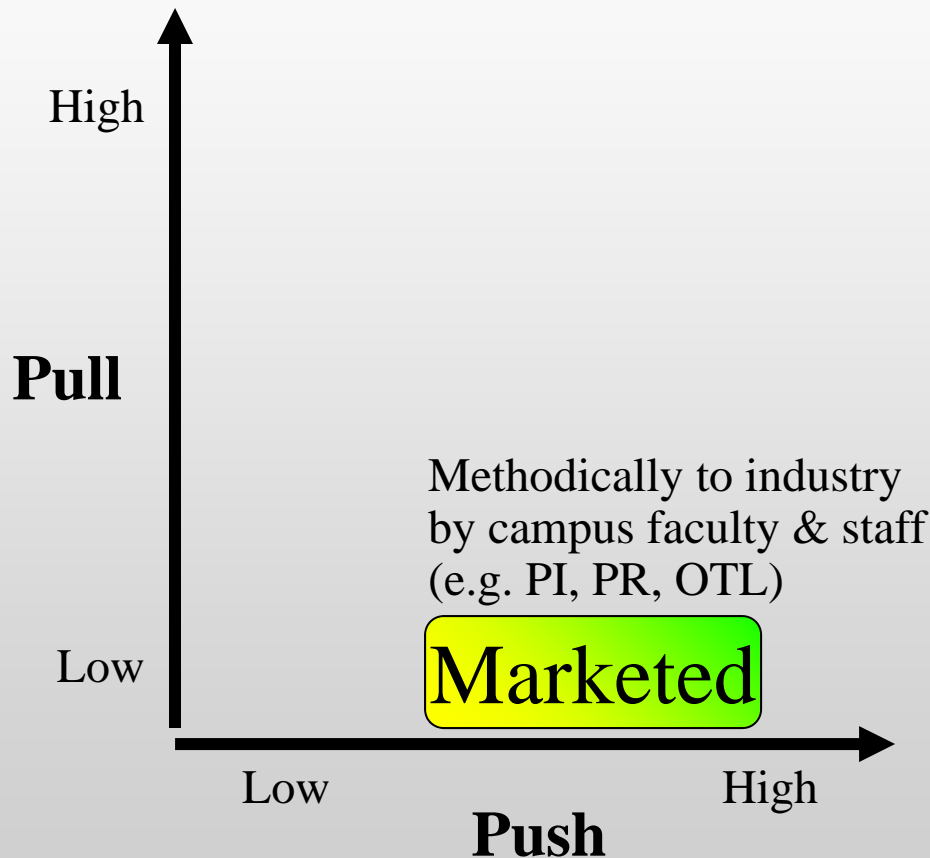
- ❑ Examples: **Adura Tech, Aurora Biofuels**, CommandCAD, Euclid Media, MediFuel, NanoRay, nanoPrint
- ❑ Drivers:
  - Great Research
  - MBAs, Biz plan comp, OTL mrktg
- ❑ IP:
  - Many obtain exclusive license to improve biz plan & attract investors
  - Some ignore or abscond with IP
- ❑ Comments:
  - Pathway with highest growth rate
  - MBAs are the campus's EIRs

# Commercialization: *Morphed, Mined, **Milked**, Marketed*



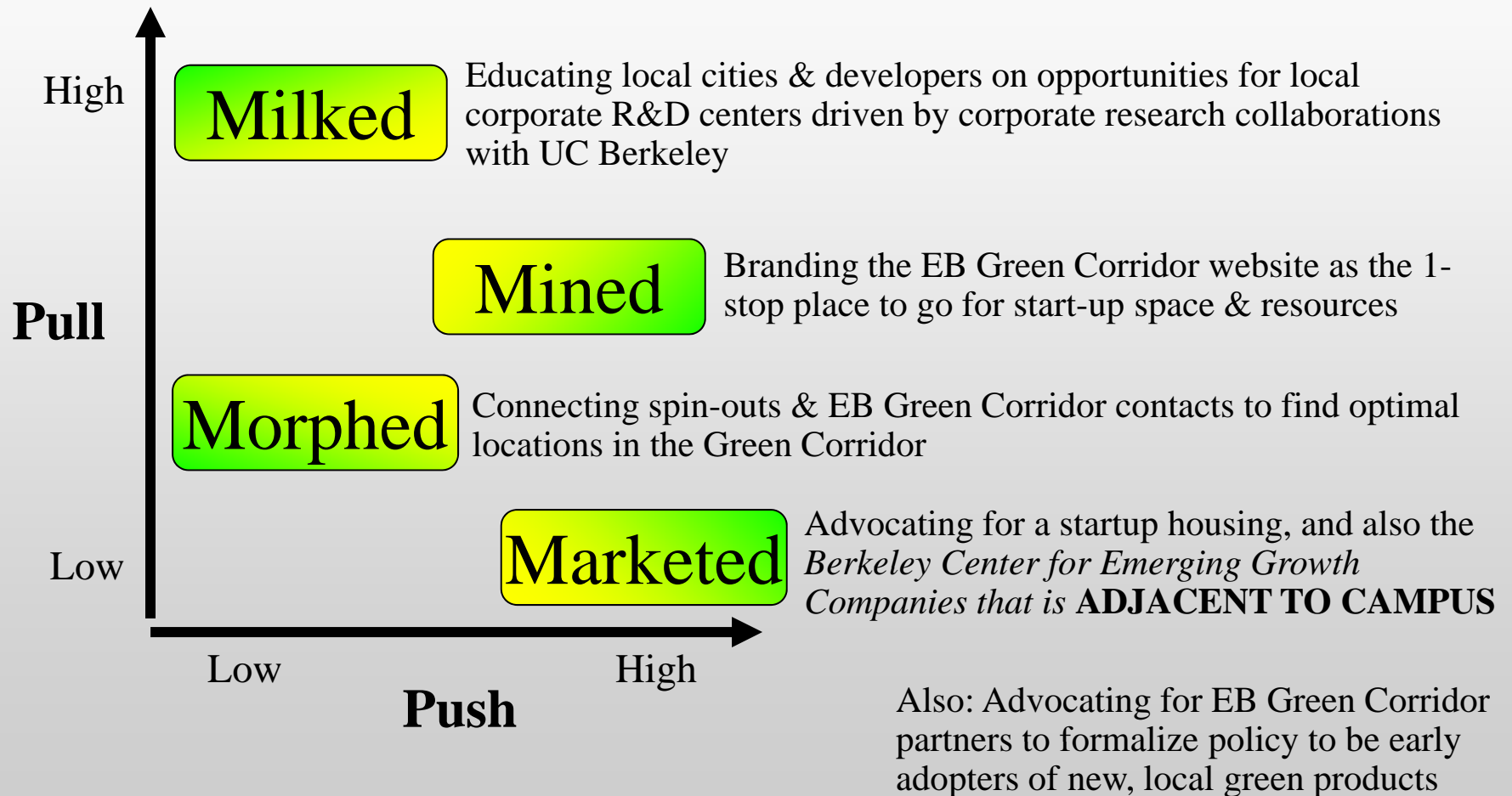
- ❑ Examples (*that licensed IP*):  
Analog Devices, **Ecoprene** (XL Tech), Google, Honeywell, Intel, Berkeley Bionics (first morphed then milked)
- ❑ Drivers:
  - Great sponsored research with optimized terms (i.e. 1st access, NERF, open source, etc)
  - Off-campus corporate labs (i.e. BWRC, Intel, Cadence, Yahoo, Starkey, etc)
- ❑ IP:
  - Some jointly own IP
  - Some obtain a license to legally use IP or thwart competitors
  - Some ignore or abscond with IP

# Commercialization: *Morphed, Mined, Milked, Marketed*



- ❑ Examples: Arkal Medical, Cisco, ClimateCooler, FuelFX, Luminus Devices, Honeywell, Microchip Biotech, Renovis, Silicon Basis, Solexel, Vitesse, 3M
- ❑ Drivers:
  - Great Research
  - Marketing (i.e. IP Licensing offices, University PR programs, Faculty pubs & ppts, Patent pubs, etc)
- ❑ IP:
  - Most obtain exclusive license to stay legal, improve BP, attract investment, or thwart competitors
  - Some ignore IP or abscond with IP
- ❑ Comments: Didn't get *morphed, milked* or *mined* because tech or market too nascent when invented

# Examples of UCB Approaches via Tech Comm Office: *Integrate EB Green Corridor into 4Ms*



# Univ Role in Driving Regional Green Economy

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## □ Key points

- Potential for univ-driven econ dev: squander vs leverage
- 4M university pathways: *morphed, mined, milked, marketed*
- EB Green Corridor is an approach to univ-driven econ dev

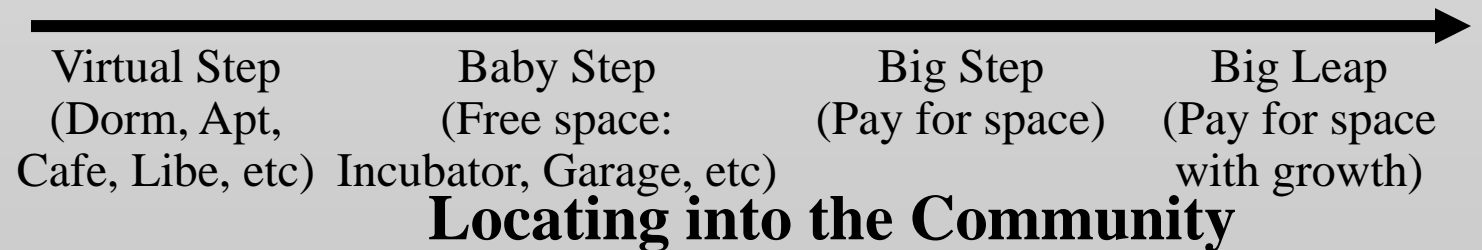
## □ Follow up

- <http://IPIRA.berkeley.edu>
- Michael Cohen; mcohen@berkeley.edu

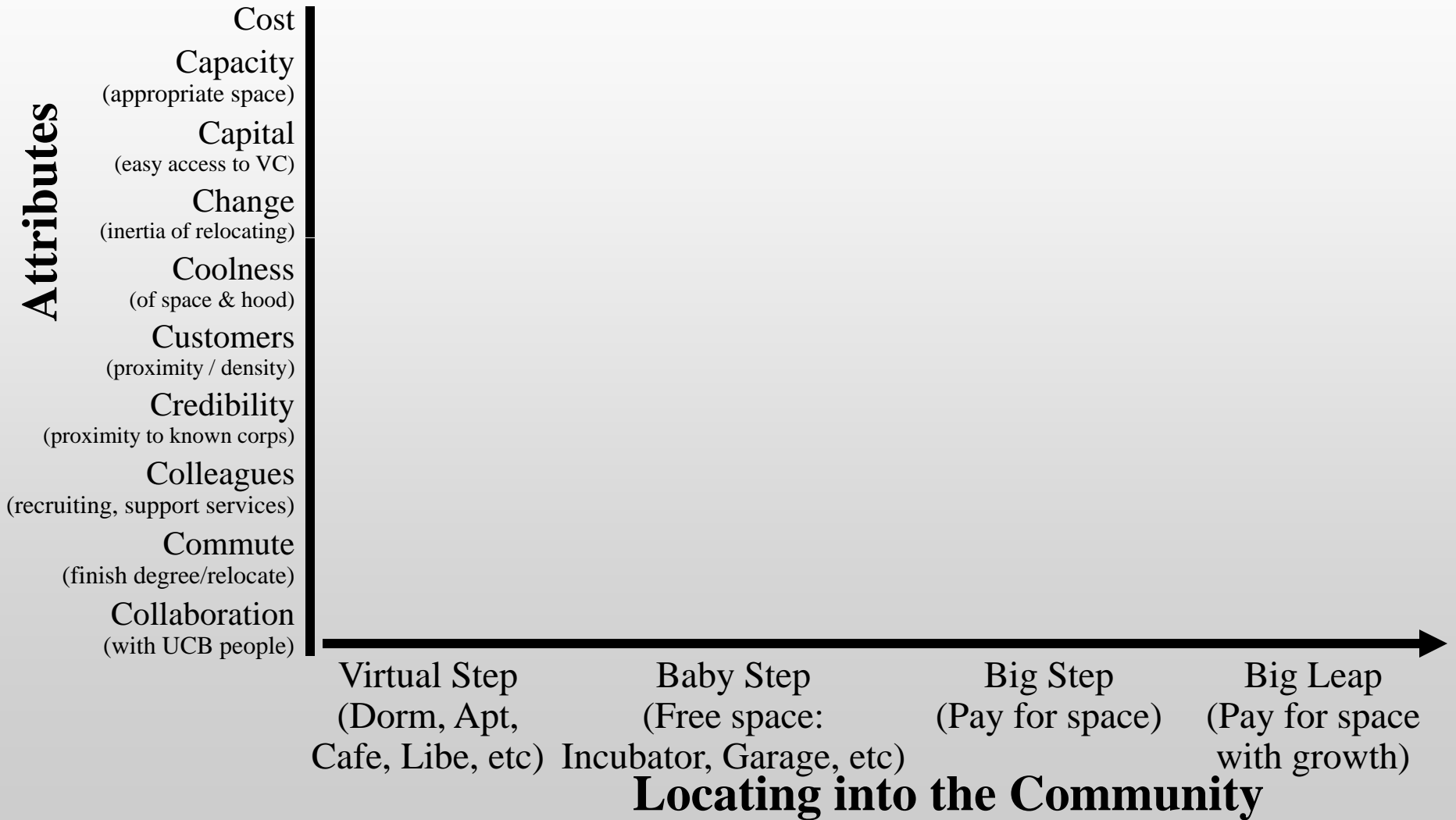
# Locating: *4 Steps\* Into Community*

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\* Simplified Model



# Locating: *Competitive Attributes*





# Locating: *Baby Steps*

**Berkeley Advantage**

Cost

Capacity

(appropriate space)

Capital

(easy access to VC)

Change

(inertia of relocating)

Coolness

(of space & hood)

Customers

(proximity / density)

Credibility

(proximity to known corps)

Colleagues

(recruiting, support services)

Commute

(finish degree/relocate)

Collaboration

(with UCB people)

Virtual Step

(Dorm, Apt,

Cafe, Libe, etc)

Baby Step

(Free space:

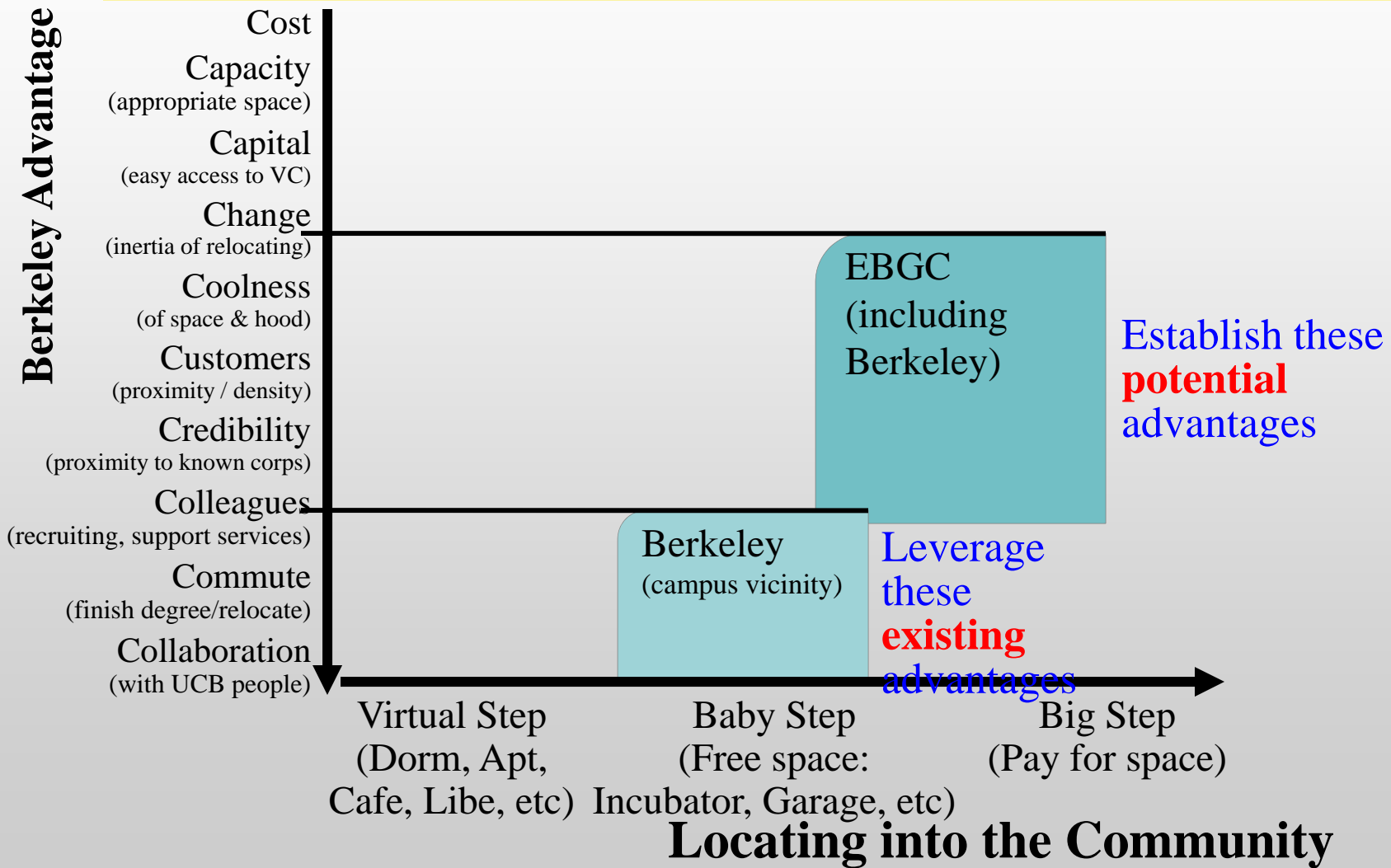
Incubator, Garage, etc)

## Locating into the Community

Berkeley  
(campus vicinity)

Leverage  
these  
**existing**  
advantages

# Locating: *Big Step*



# Locating: *Big Leap*

