Innovation, Creativity, and Capital (IC^2)

The Role of Entrepreneurship in Smart Regions

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Entrepreneurial Wealth Creation | International Innovation | Global Technology Commercialization

The University of Texas at Austin

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Outline

PART 1

The Austin Technopolis – a real smart region

PART 2

The impact of The University of Texas at Austin

PART 3

The role of entrepreneurship in Smart Regions

PART 1

The Austin Technopolis

a real smart region

Everything is BIGGER in Texas!

For sheer economic promise, no place beats Texas

Newsweek (November, 2010) ranked four Texas cities: Austin, Dallas, San Antonio and Houston, in its list of the 10 cities best situated for economic recovery, describing Texas as "the No. 1 destination for job-seeking Americans, thanks to a hearty energy sector and a strong spirit of entrepreneurism."

Newsweek described Austin as having the nation's strongest job growth, both in the last year and over the last decade. "(Austin) enjoys good private-sector growth, both from an expanding roster of homegrown firms and outside companies, including an increasing array of multinationals such as Samsung, Nokia, Siemens and Fujitsu."

"Texas is a state where a dream can be put to work."

(Gov. Rick Perry)

CHIEF EXECUTIVE MAGAZINE
CEOs PICK
BEST/WORST STATES FOR BUSINESS
2011

"Best State for Business"

CNBC

"Top State for Infrastructure & Transportation"

SITE Selection Magazine

"Texas Tops 2011 Business Climate Rankings"

dci
The leader in marketing places

"Best Business Climate"

AREA DEVELOPMENT
SITE AND FACILITY PLANNING

"Top State for Doing Business"

Forbes.com

"Best State for Jobs"

Austin: a GREAT place

"The Human Capital"

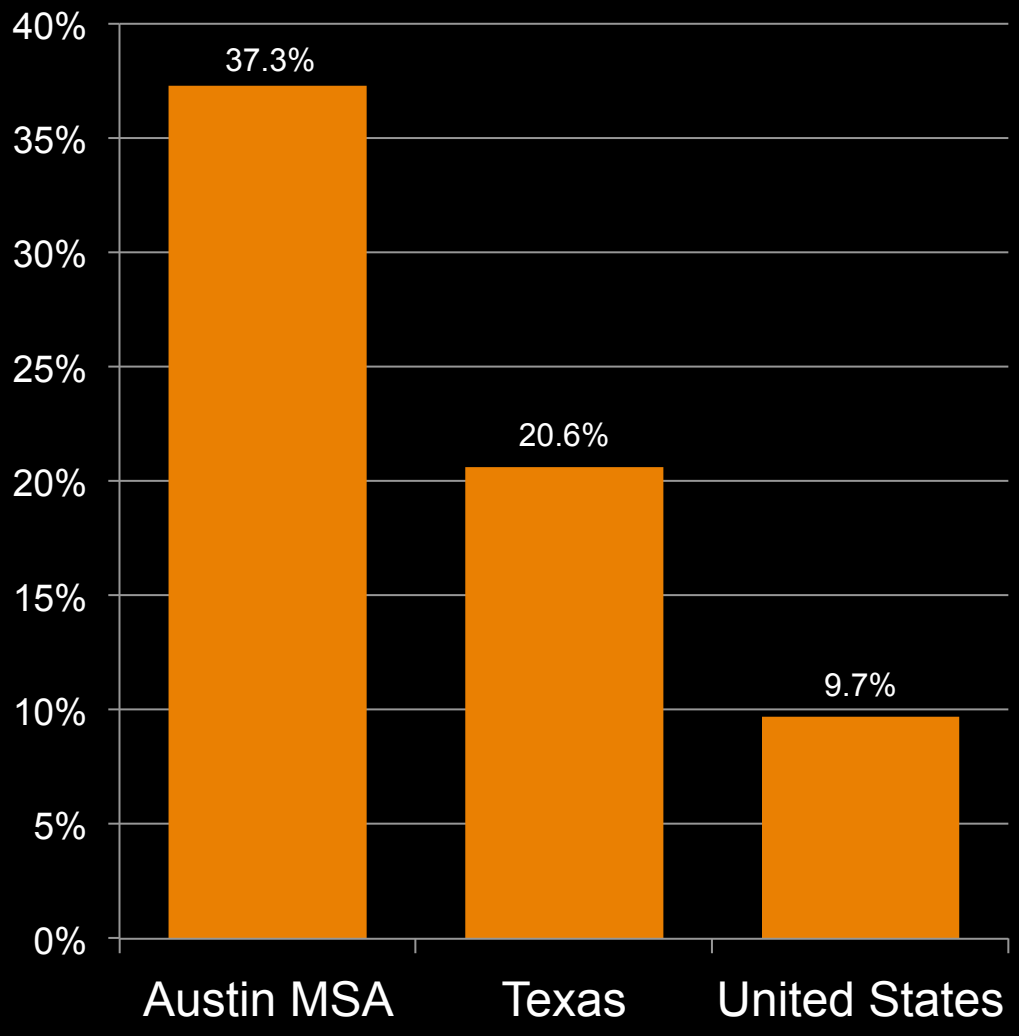
- Capital of the State of Texas
- Metro population:
  1.7 million (2 million by 2015)
- Population doubles
  every 20 years
- Metro – 4,200 square miles
- Labor force over 900,000

Austin: a GREAT place

Population Growth

2000-2010

Source: U.S. Bureau of the Census.



Austin: a GREAT place

- Unique in the U.S. and in Texas
  - As a composite, the youngest, smartest, safest and fastest growing city
- Innovative culture fed by diversity, quality of life and quality education
- Best performing economy

Downtown Austin

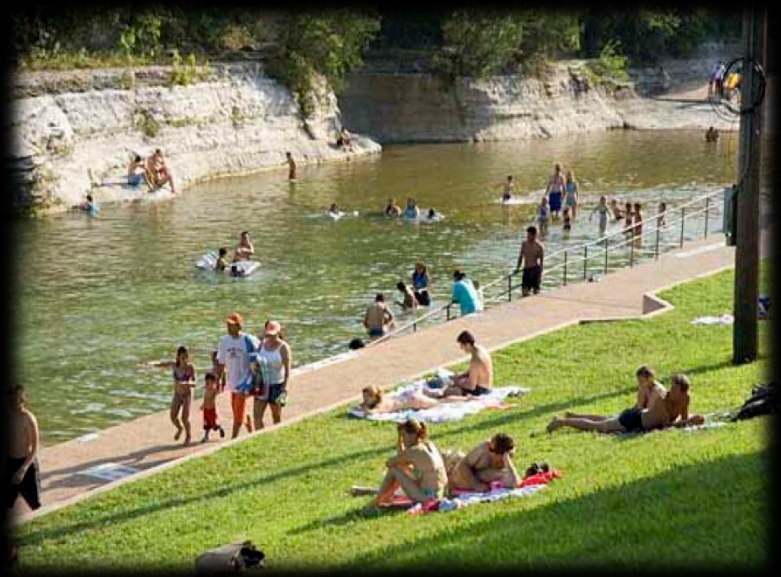
Lake Travis

Austin: a GREAT place

Austin is the 14th largest city in the U.S.

…but still maintains a small town feel

- Younger than the national average
  - Median age: 32.6 (37.2 nationally)
  - 69% of population under 45 (61% nationally)
- 39% of population over 25 has a bachelor's degree (28% nationally)
- Highest median household income ($55,744) among Texas metros



Austin: a GREAT place

Tax Burden

2009

Total per capita tax burden in Texas is 16% lower than per capita tax burden nationally.

	Texas	U.S.
Total state & local taxes per capita	$3,477	$4,144
Property	1,460	1,382
Sales	1,608	1,413
Individual income	-	882
Corporate income	-	150
Other	408	317
State & local taxes per $1,000 of personal income	95	107

Source: U.S. Bureau of the Census.

Austin: a GREAT place

Venture Capital

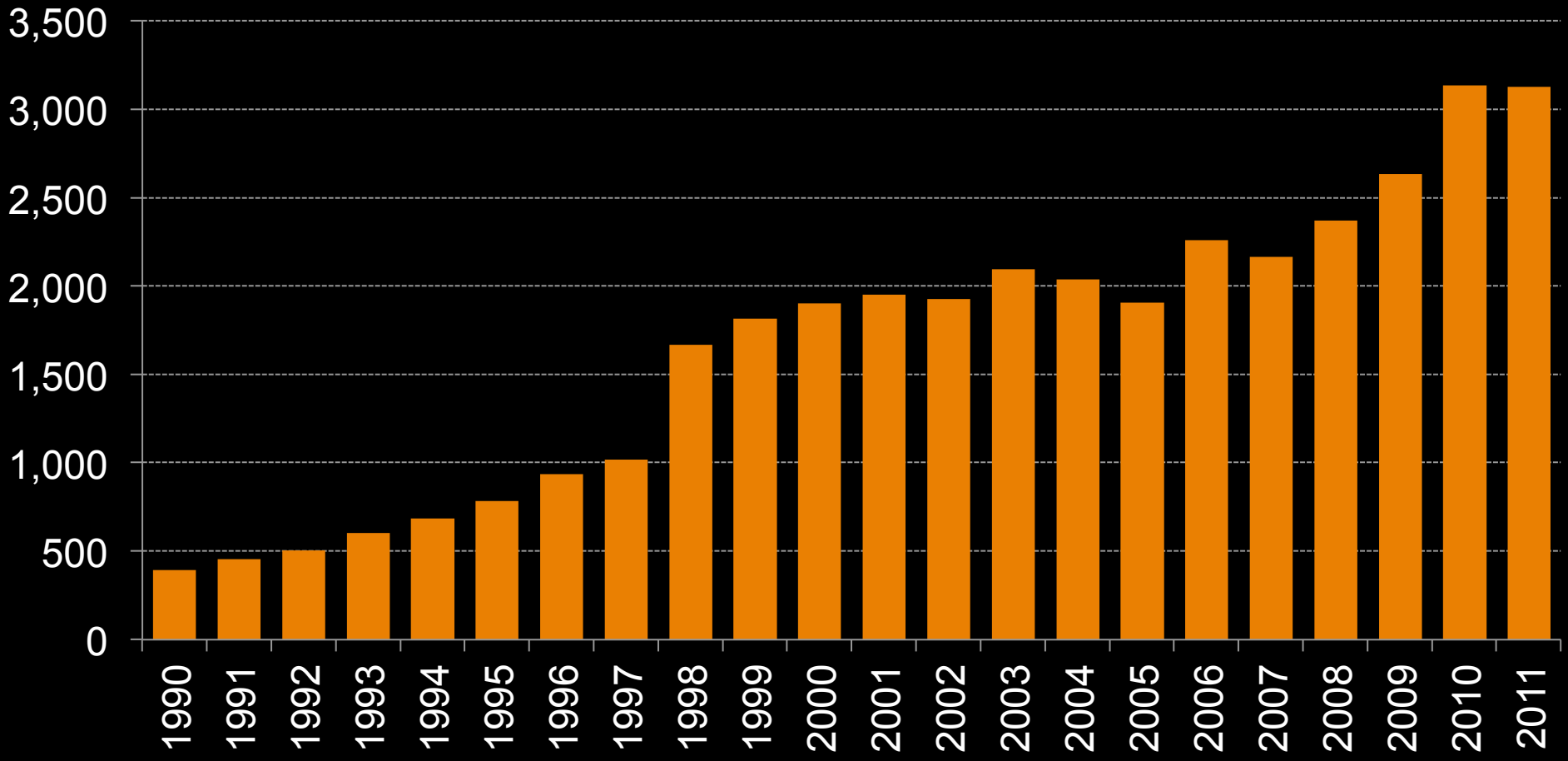
Austin is one of the top targets for VC investment in the U.S.

- 9th among U.S. metros for VC$ (Q3 2011)
- More than 70 Austin firms receive VC$ annually ('06-'10)
- 2% of total VC$ in the U.S. ('00-'10)
- 38% of all VC$ in Texas ('00-'10)

Source: PricewaterhouseCooper/Venture Economics/NVCA MoneyTree Survey.

Austin: a GREAT place

Patents issued to Austin Area Inventors



Source: U.S. Patent & Trademark Office.

The Austin Technopolis

Austin Technopolis

- Until the early 80's: small satellite factories followed the main players and Austin has achieved success as a branch plant location for major manufacturing operations:
  - 1957: Austin Area Economic Development Foundation created a "blueprint for the future" that set out to recruit new industries.
  - 1963: IBM located its Selectric typewriter facilities in Austin, followed by Texas Instruments (1967), Motorola (1974), and AMD (1979).
- After the early 80's: Austin has been able to transform itself from a branch plant location into an innovation hub:
  - 1984: Microelectronics and Computer Technology Corporation (MCC) located its headquarter and main facilities in Austin.
  - 1984: 3M relocated the first of three innovation divisions to Austin.

Austin Technopolis

- 1988: SEMATECH, a semiconductor research consortium, chose Austin for its site. This consortium served to attract Applied Materials, a leading manufacturer of semiconductor equipment, to locate a facility in Austin, which had the effect of luring numerous suppliers to Austin as well.

- 1996: Korean Samsung Electronics' building of a plant in 1996 strengthened this trend. Dell, the homegrown computer company may be viewed as the culmination of these efforts.

- High-tech economy in the 80's and 90's relied on three main industries: 1) Computers and Peripherals, 2) Semiconductors and Electronics, and 3) Software Development.

- Late 90's, high-tech employment in Austin was broken down as follows: 1) Computers and Peripherals; 2) Semiconductors and Electronics; 3) Software Development; 4) Other high-tech industries.

Austin Technopolis

Up to the mid-1980s Austin was known as a state capital and university town - The area was losing its educated, entrepreneurial & technology talent to the East and West Coasts.

During the mid-1980s key visionaries representing Austin's academic, business, and regional government sectors were opinion leaders/champions who acted on the belief that Austin could be a globally competitive high tech region. The technopolis has emerged in the 90's.

The Austin Technopolis

10 Years Later…

The Best U.S. Cities for Business –
Top Five Wealth Creators

1. **Austin**
2. Las Vegas
3. Salt Lake City
4. Phoenix
5. San Jose

Fortune, November 23, 1998

The Austin Technopolis

12 Years Later…

Top 15 U.S. Cities for Entrepreneurship

1. Austin	9. West Palm Beach
2. Atlanta	10. Colorado Springs
3. Santa Rosa	11. Fort Collins
4. Boulder	12. Oakland*
5. Boise City	12. Seattle*
6. San Diego	14. Charlotte
7. Orange County	15. Fort Worth
8. San Antonio	

** tied*

Forbes magazine, Vol 165, #13, May 29, 2000, p. 137

The Austin Technopolis

14 Years Later…

Top 10 U.S. Cities:
Creativity Index

1. San Francisco	7. Houston
2. Austin	8. Washington - Baltimore
3. San Diego *	9. Oakland
3. Boston *	10. Dallas *
5. Seattle	10. Minneapolis - St. Paul *
6. Raleigh – Durham	**tied*

Richard Florida, The Rise of the Creative Class, 2002

The Austin Technopolis

More recently…

Best Place for Business and Careers (*Forbes* 2003-2005)

#1 for Economic Vitality (*Wall Street Journal,* 2007)

#3 Most inventive city due to patent activity (*Wall Street Journal* 2007)

#2 for Most Innovative Cities in the U.S. (Forbes, 2010)

#2 for The Best Cities for Finding Employment (Forbes, 2011)

Among Top 10 U.S.' Brain Magnets (Forbes, 2011)

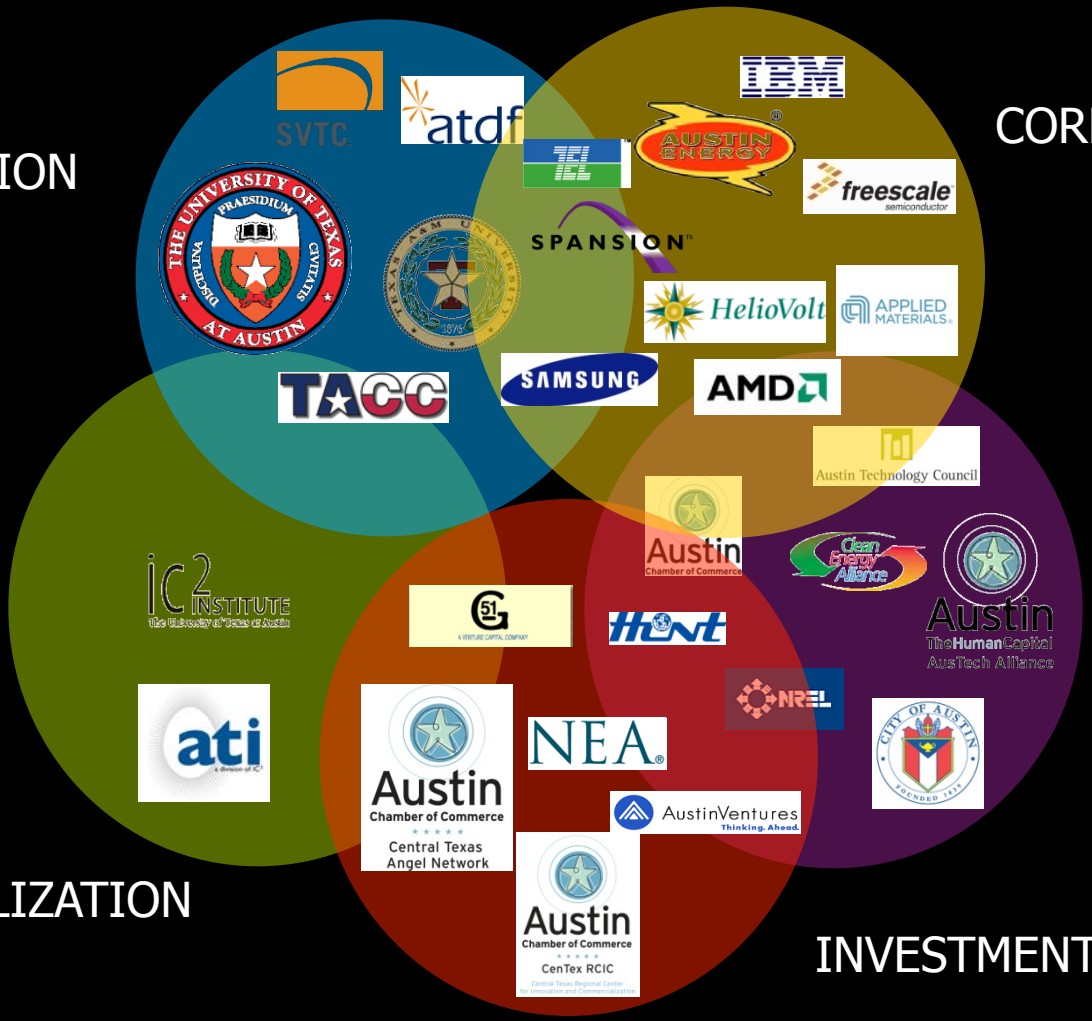
The Austin Technopolis

1985 – present day: Austin enjoyed spectacular economic growth

WHY and HOW?

The Austin Model

Community/Collaboration



Branding Austin as THE creative city

The City works closely with its creative industries development partners to let people in creative industries outside Austin know about opportunities in Austin.

This includes working on marketing efforts related to Austin as the Live Music Capital of the World and efforts such as the Greater Austin Chamber of Commerce's Human Capital marketing.

1991: Official city slogan

2000 Unofficial city slogan

1987: SXSW

South by Southwest music conference and festival spins out of the Chronicle –
the alternative weekly newspaper

SXSW

In 2010:

- 1,987 musical acts
- 36,700 registered conference attendees
- 175,000 total participants
- Estimated economic impact: $113 MM
- Estimated media value: $21.4+ MM

But its value far exceeds its measurable impact.

"Austin's distinctive brand has succeeded precisely because it is continually authenticated through events such as SXSW." – Angelou Economics

Austin: the new tech entrepreneurial center

Main elements of the Austin entrepreneurial ecosystem

- Universities with large research potential
- Talent
- Professional and social networks
- Entrepreneurs
- VC
- Large corporations and startups interplay
- Quality of life

Necessary conditions?

Sufficient conditions?

Specific conditions for Austin or also fit other entrepreneurial and innovative ecosystems?

PART 2

The impact of The University of Texas at Austin

THE UNIVERSITY of TEXAS SYSTEM

Nine Universities. Six Health Institutions. Unlimited Possibilities.

The U. T. System's Story of Diversity and Collaboration…

15 Institutions:

9 Academic Universities

6 Health Institutions

- **194,000+ Students**
- **17,500+ Faculty**
- **81,000+ Employees**
- **$11.5 billion+ FY 2009 Operating Budget**

THE UNIVERSITY of TEXAS SYSTEM
Nine Universities. Six Health Institutions. Unlimited Possibilities.

National Rankings…

- **1st in the world biotech patents** (2006 Milken Institute)
- **2nd in US "Patent Powerhouse"** (*The Scientist* 2005)
- **$2.17 billion annual research expenditures** (2008)
- **2nd in federal R&D funds** for science & engineering -- 5.5% of all fed funds (NSF 2006)
- **6 UT institutions rank in top 100 US** total R&D expenditures (NSF 2006)
- **12 UT institutions at least doubled federal research $'s**

143% increase Over 10 years

The motto

THE UNIVERSITY OF
TEXAS
AT AUSTIN

WHAT STARTS HERE CHANGES THE WORLD

Technology Commercialization Impact

	FY07	FY08	FY09	FY10	FY11
Disclosures filed	139	154	188	182	155
Patents filed (US + foreign)	243	274	302	344	270
Patents issued (US + foreign)	49	62	69	63	55
Startups created	3	10	9	13	4
IIAs	4	7	5	10	8
Licenses+options	21	47	44	44	27
Licenses	20	43	32	32	18
Options	1	4	12	12	9
Licensing revenues (millions)	$ 6.8	$ 11.6	$ 10.9	$ 14.3	$25.6

- 51,000+ students and 3,344 faculty
  - $642MM in annual research funding, including
  - $60MM in industry-sponsored research
- Chevron, ExxonMobil, Intel, Cisco, Samsung, Abbott, BASF, Boeing, Lockheed Martin, Merck, Pfizer, others
- 150+ invention disclosures/year
- 1,000+ patents filed in last five years
- Top 20 TTO performance according to AUTM
- 68 startups over last five years

Top university PCT applicants 2011

1. University of California
2. MIT
3. **University of Texas (127)**
4. Johns Hopkins
5. Korea Advanced Institute of Science and Technology
6. Seoul National University
7. University of Tokyo
8. University of Michigan
9. Cornell University
10. Harvard University
11. University of Florida
12. Columbia University
13. Leland Stanford University
14. Kyoto University
15. University of Pennsylvania
16. Isis Innovation Limited
17. Korea University
18. Cal Tech
19. Osaka University
20. Arizona State University

Source: WIPO (World Intellectual Property Organization)

The Snowball effect

Regionally-Based Spin-Outs from only one Company

1955

UT Austin

1962

Austron 164

Columbia Scientific (CSI)

Pinson Associates 25

1965

Texas Nuclear

Meister Engineering

1969

Nova Graphics 15

Sun X

Comatco

BPI 136

Zycor 48

Odessa Engineering

Radian (Unitech) 974

1971

Tracoustics 44

AMI 57

Espy Huston 562

Key Concepts Gp. 5

TRACOR 2200

Weed Instruments 98

Targa, Inc. 2

SGE Inc. 9

Guerreros Photographic Gp. 4

Texas Research Inst. 100

Spenco System 200

1984

Continuum (Texas Corporate Corp, TCC, Inc) 700

1972

1981

Texas Telesystems 120

1974

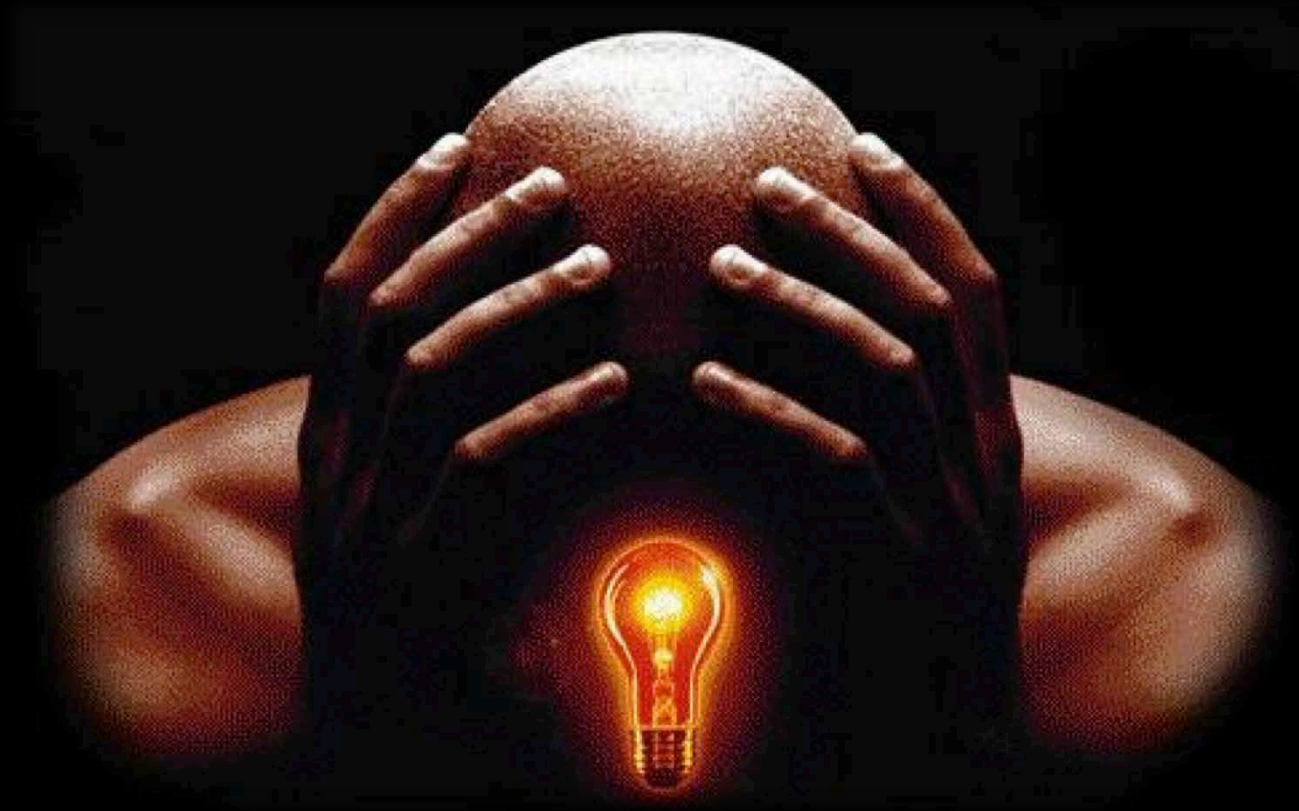
1980

1975

1976

PART 3

The role of entrepreneurship in Smart Regions



Entrepreneurship

- Entrepreneurship is not about money, is about changing the world. It is more an art than a science.

- Illogical ideas are how society achieves progress.

Invention

≠

Innovation

Innovation

=

Invention + Market

Only Great Ideas are Innovation

Pet Rock

Pet Rock

- Dahl, a former advertising executive, sold his rocks for $3.95 on a bed of hay. Each sale earned him a profit of roughly $3.

- Estimated Profit:

  $15 MM in just the first six months

Great Business =

Great Idea?


Great Idea

Growth-company founders reason for their success:

12% unusual/extraordinary idea

88% exceptional execution of an ordinary idea

Source: Amar Bhide, Columbia University

Great Business = Execution

Invention

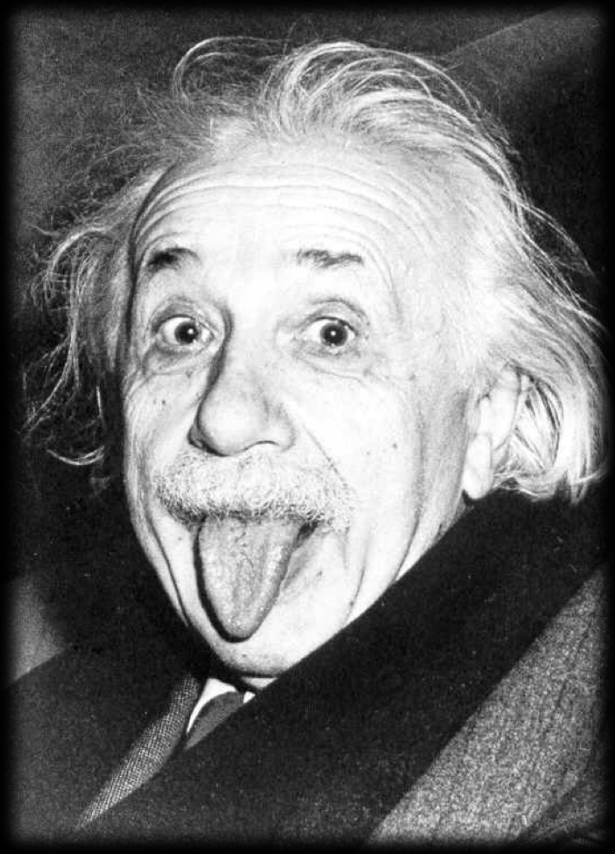
Innovation

Business

People

People

What society do we want?



Albert Einstein, during a visit to Argentina in the 40's:

"All the empires of the future are going to be empires of knowledge, and there will be only successful the towns **who deal how to generate knowledge** and how to protect it; how to look for the youngsters who have the aptitude to do it and to assure them they should remain in the country. Other countries will remain with beautiful littorals, with churches, mines, with a fantastic history; but probably remain not neither with the same flags, nor with the same borders, far from it with an economic success"

Conclusions

Million dollars question

How to create the next Sillicon Valley, Boston, or Austin Technopolis?

"Innovative ecosystems matter: and there aren't many of them…

…perhaps a few dozen places worldwide really compete at the cutting edge – raising the valleys without shearing off the peaks – will be a top challenge in the coming decades."

Richard Florida, "The World is Spiky", Atlantic Monthly, *October 2005*

U.S. Technology Centers

How did Silicon Valley started?

- When the Federal Telegraph Company has been established (1909)
- When David Packard and Bill Hewlett started their business in a garage (1939)
- When Frederick Terman created Stanford Industrial Park (1951)
- When Steve Jobs and John Wozniak invented Apple II in (1977)

Source: "Everything you know about Silicon Valley might be wrong", Daniel Isenberg, Harvard Business Review, 2011.

Conclusions

ESSENTIAL INGREDIENTS:

- Societal hardware (talented people, professional organizations, market policies and good physical infrastructure). But lots of places have that hardware…
- Human software (cultural patterns of behavior). This is the hard stuff…
  - Diversity;
  - Motivations (more than just "having a job");
  - Trust between strangers;
  - Principles of fairness, collaboration and experimentation;
  - Social feedback loops that penalize bad behavior and reward good behavior.

Conclusions

BIGGEST OBSTACLES TO REPLICATE SUCCESSFUL MODELS:

- Hardware is easy. Software is hard.
- Easy:
  - Throw more money at problems, whether that means funding R&D, investing in startup incubators or accelerators, tax incentives or building campuses.
- Far harder:
  - Create communities of people driven by values like trust, fairness, dreaming big and willingness to risk and fail.
- AUSTIN: mashup culture of hippies, cowboys and scientists in a tight community. Diverse interactions + frontier notion that your handshake was your bond = “meta-tribe” with high levels of ideas, talent and capital exchanged with minimal transaction costs.

Conclusions

IMPORTANT LESSONS TO EMULATE SUCCESSFUL MODELS:

- Silicon Valley or the Austin Technopolis are not driven by mere creative destruction, as many economists say.
- More importantly: process of creative reassembly, as diverse individuals combine together to tackle real-time problems, then recirculate in the system and recombine in other ways to tackle other problems in the future.
- Assembling a company is much harder than destroying it. As the result of a lucky historical accident, these regions developed social patterns that made the assembly process a lot easier, faster and cheaper than perhaps anywhere else in the world.


Get the social components right, then the flourishing will happen.
If you innovate,
they will come.
Build it and they will come mentality

Conclusions

- Key visionaries, influencers, champions are crucial: Business/academic/ government.
- It is happening faster and virtual…and it's global.
- Regional out-migration can become in-migration.
- It is a bottom-up and a top-down process.
- Build on your strengths & not what others did.
- Context is all important - Austin a tolerant city and Texas friendly.
- Small wins are important: Role models.
- "Spectacular Success" is nice and drive others (Dell, National Instruments, Whole Foods).
- Community buy-in and leverage is important: ATI
- The right branding sure helps
- It's becoming more virtual and global

Conclusions

SUCCESSFUL REGIONS OF THE FUTURE

Places with high levels of trust-based, personal interactions between extremely diverse, talented people.

Conclusions

ACTIONS → OUTCOMES

This is where we tend to focus

Conclusions

ATTITUDES → BEHAVIOR→ACTIONS → OUTCOMES

This is where we need to focus!


THE UNIVERSITY OF TEXAS AT AUSTIN
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IC² INSTITUTE BUILDING

MANY THANKS!

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