

# TE 250: Week 2 Spring 2022

## Vision, Creativity & Innovation

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# Topics

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Paul Couston slide deck

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Top 10 Idea Pitches & Next Steps

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What is Creativity?

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More Innovation

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UIUC Inventors & Innovators

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TEC & the UIUC Innovation Ecosystem

# Top 10 Idea Pitches (Any last-minute appeals?)



**2 minutes - No slides**



**Idea/Company - Be sure to answer:**

What problem are you solving?  
How are you solving it?  
What do you need?



**Team/Culture – Be sure to answer:**

What do you need – people, skills, other resources?  
How do you like to work?  
What team culture do you want to cultivate?  
What values do you find non-negotiable?

# Top 10 ideas

- Learning as easy as a video game – Joao
- Urban snow to drinking water – Spencer
- Protecting seniors from falls – Jae
- Immediate foreign language translation - Markus
- College student financial planning - Vijwal
- Better way to store and reuse rainwater – Dhruv
- Mentoring and networking tool – Mahir
- Better way of dealing with rain than umbrellas – Dhruv
- Helping students create a workable daily schedule – Wyatt
- Vending machine for fresh cooked hot/cold foods - Mayan

# Exercise

- Break up into small groups.
- Discuss the following question:
  - Are you concerned someone will steal your idea/problem if you share it?
  - Why or why not?

# What is Creativity?

## And what role does it play?



Imagination is the result of wanting more.

Vision is the ability to see the world the way you want it to be.

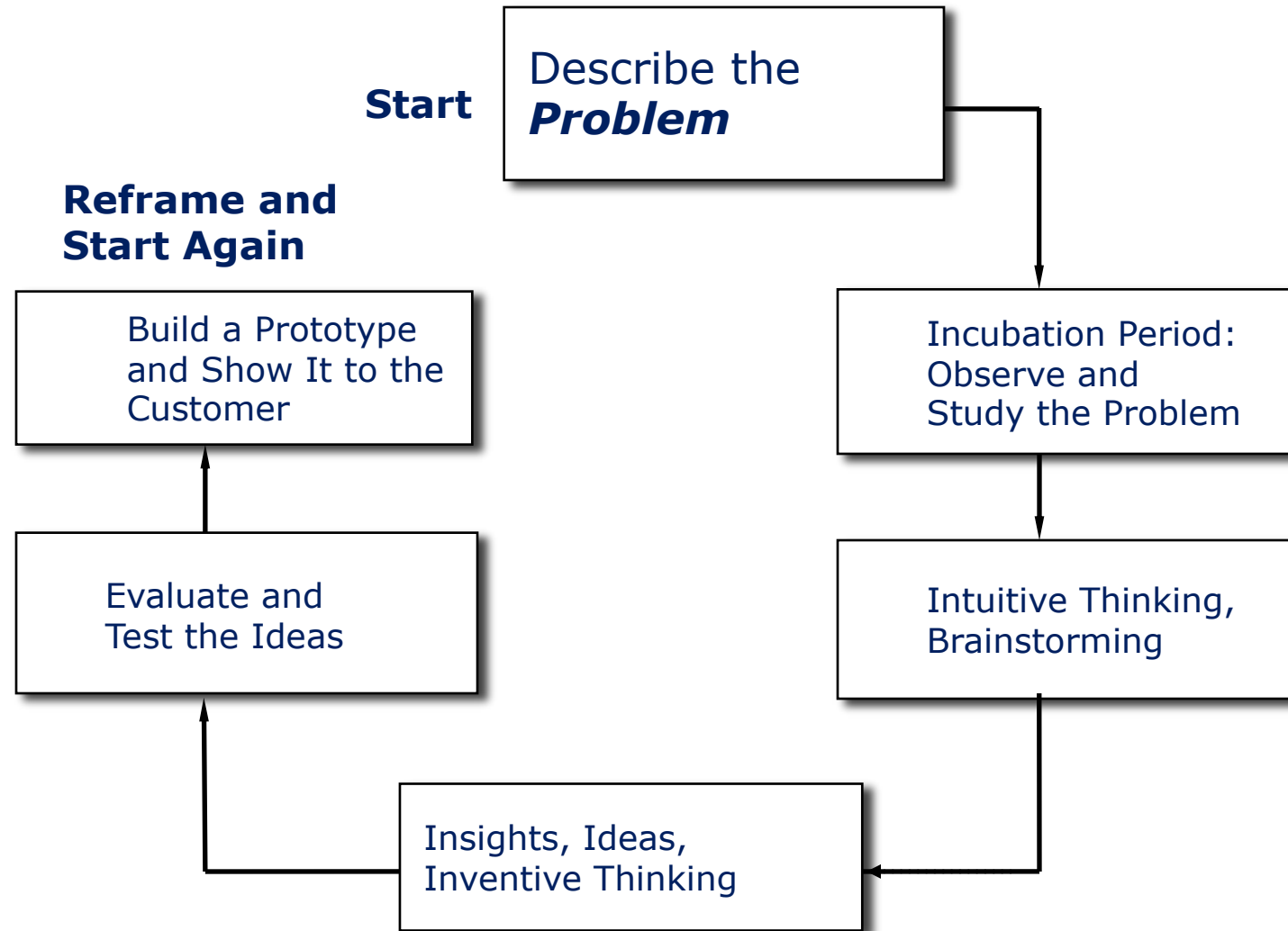
Creativity is the ability to use the imagination to develop new ideas, new things, or new solutions.

**Imagination → Vision → Creativity → Invention → Innovation**

# Resources for a Creative Enterprise

- Knowledge in the Required Domain and Fields — knowing what is new
- Intellectual Abilities to recognize connections, redefine problems and envision and analyze possible practical ideas and solutions
- Inventive Thinking about the problem
- Motivation towards Action
- Opportunity Oriented Personality and Openness to Change
- Contextual Understanding that supports creativity and mitigates risks

# Creativity Process





# Systematic Creativity

Of 200 top-rated ads, 89% fit 1 of 6 templates

Of losing ads, only 2% fit a template

➤ highly creative ads are *more* predictable than uncreative ones

# So can Creativity be taught?

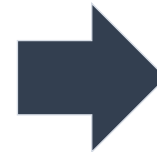
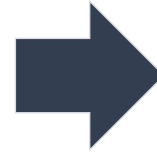
3 groups of study participants,  
each wrote an advertisement:

- No training = annoying
- Free association = less annoying,  
no more creative
- Taught 6 templates = 50% more  
creative

# Group Creativity Exercise

- Brainstorming Diamond
- Reverse Planning
- **Disney Creative: Dreamer/Realist/Critic**
- Walking Meeting
- Psychological Distancing / Superhero
- SCAMPER

# Invention vs. Innovation



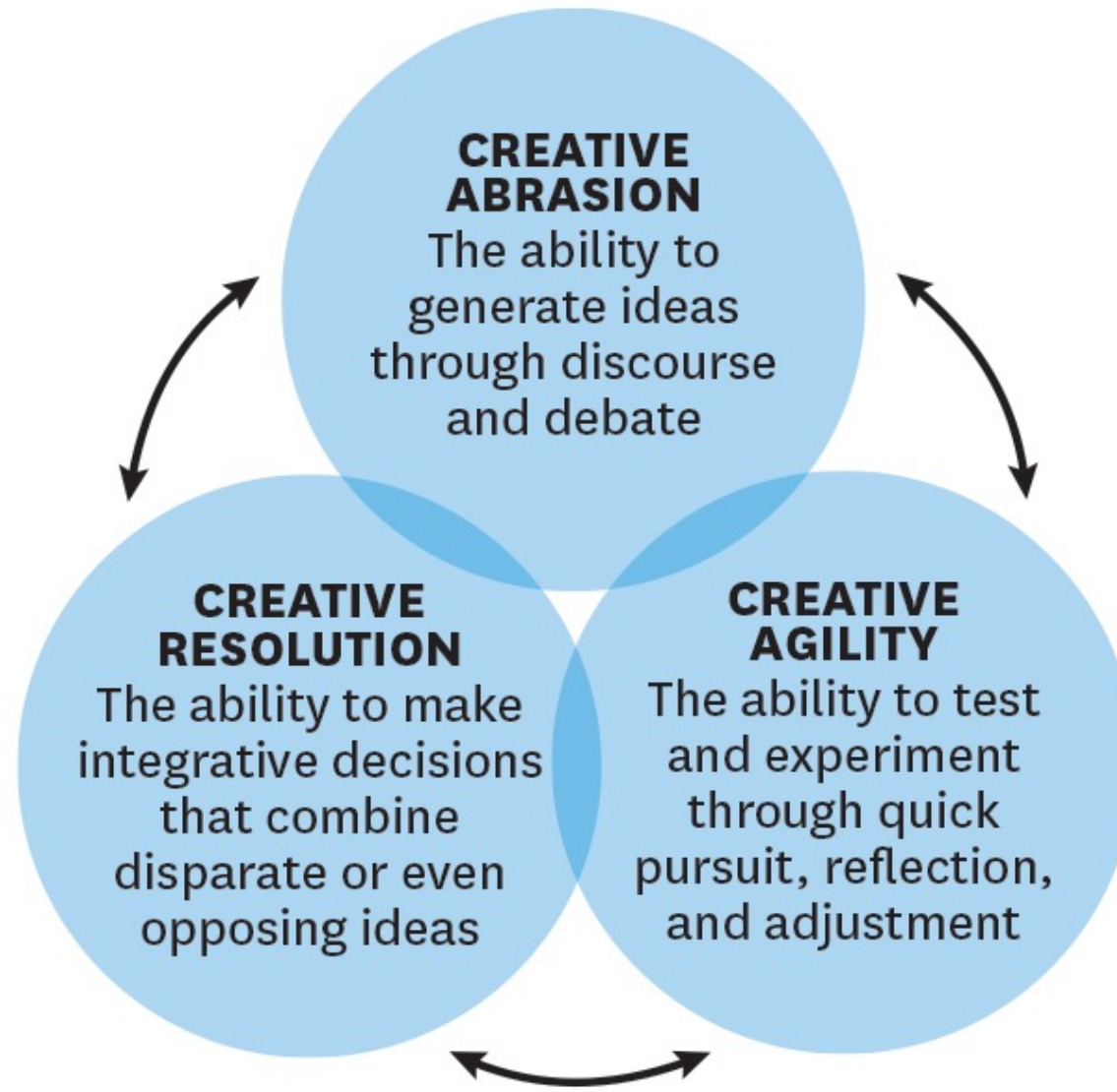
# Invention is...

- The creation of something new

# Innovation is...

- Utility or exploitation of an existing idea
- Improvement of an existing idea
- Application of an existing idea in new way
- Combination of existing ideas
- Addition of economic value:
  - Product
  - Process
  - Service
  - Ways of Doing Business

## THREE CAPABILITIES OF INNOVATION



**SOURCE** LINDA HILL, GREG BRANDEAU, EMILY TRUELOVE, AND KENT LINEBACK

HBR.ORG

# Types of Innovation

|                          |           | Basic design concepts                                 |   |
|--------------------------|-----------|---|---|
|                          |           | Reinforced  | Overturned  |
| Linkages between modules | Unchanged | Incremental innovation<br>("faster, better, cheaper") | Component or modular innovation                         |
|                          | Changed   | Architectural innovation                              | Radical or disruptive innovation<br>("brave new world") |



# Examples of Innovation Types:

## Established product: room fan

Incremental:  
Insulate to dampen  
noise, blade design

Modular:  
Dyson bladeless fan

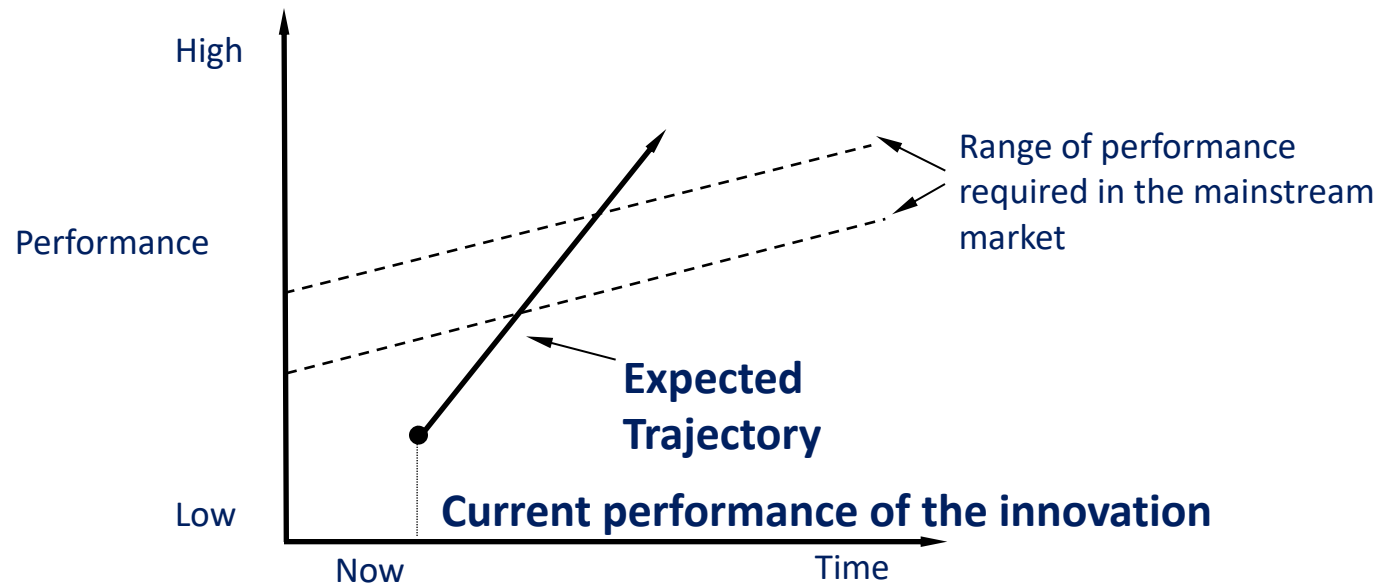
Architectural:  
Portable fans - same  
components, different  
construction

Radical Innovation:  
Central A/C

# Disruptive Innovation

Disruptive (radical) innovations introduce a set of attributes to a marketplace different than the ones that mainstream customers historically have valued, and the products often initially perform unfavorably along one or two dimensions of performance that are particularly important to those customers.

## The Expected Trajectory of a Disruptive Innovation



# Industry Types – Examples?

| CHARACTERISTICS | TYPE OF INDUSTRY |          |                  |
|-----------------|------------------|----------|------------------|
|                 | Mature           | Growing  | Emergent         |
| Revenue Growth  | Slow             | Moderate | Potentially Fast |
| Stability       | High             | Moderate | Low              |
| Uncertainty     | Low              | Moderate | High             |
| Industry Rules  | Fixed            | Fluid    | Unestablished    |
| Competitiveness | High             | Moderate | Low or None      |

# Emergent Industries



Newly created or newly recreated industries formed by product, customer, or context changes [Barney 2002].

# First Mover (Dis)Advantages

| Possible Advantages   | Possible Disadvantages   |
|---|--|
| <ul style="list-style-type: none"><li>• Create the Standard and the Rules</li><li>• Low Cost Position</li><li>• Create and Protect Intellectual Property</li><li>• Tie Up Strategic Resources</li><li>• Increase Switching Costs for the Producer</li><li>• Increase Switching Costs for the Customer</li></ul> | <ul style="list-style-type: none"><li>• Short-Lived Advantages Are Competed Away</li><li>• Higher Development Costs</li><li>• Established Firms Circumvent or violate patents and intellectual property</li><li>• Cost of Attaining the Resources</li><li>• High Uncertainty of Designing the Right Product. If vision is wrong, then large costs to switch</li><li>• Customer is reluctant to buy when a large cost to switch may be incurred</li></ul> |

# Exercise

- Break up into small groups.
- Discuss the following question:
  - What is the value of intellectual property to a startup (patents, trademarks, trade secrets, copyrights, etc.)? Should it be a primary focus?
  - Why or why not?

# Innovation at Illinois: Inventor or Innovator?

JOHN  
BARDEEN



Honorary  
Degree, 1974

Co-inventor of the transistor which revolutionized the electronics industry. Co-creator of the fundamental theory of superconductivity, known as the BCS theory.

# Innovation at Illinois: Inventor or Innovator?

NICK  
HOLONYAK JR.



BS, Electrical  
Engineering,  
1950

MS, Electrical Engineering,  
1951

PHD, Electrical Engineering,  
1954

Inventor of the light-emitting diode (LED) and a contributor to the first practical quantum well laser, which enabled modern fiber optics communication.



# Innovation at Illinois: Inventor or Innovator?

DONALD L.  
BITZER



BS, Electrical  
Engineering,  
1955

MS, Electrical Engineering,  
1956

PHD, Electrical Engineering,  
1960

Inventor of the plasma display monitor, forerunner of the modern flat panel television screen, and co-developer of PLATO, the first computer-based interactive educational network and home of the first online community.

# Innovation at Illinois: Inventor or Innovator?

THOMAS M.  
SIEBEL



AB, History, 1975

MBA, 1983

MS, Computer Science, 1985

Honorary Degree, 2006

Technology entrepreneur, founder, chairman, and Chief Executive Officer of Siebel Systems, a global leader in application software and recognized as one of the world's preeminent software companies.

# Innovation at Illinois: Inventor or Innovator?

MARC L.  
ANDREESSEN

BS, Computer  
Science, 1994



Co-author of Mosaic, the first widely used web browser that transformed the exchange of information. Co-founder of Netscape Communications Corporation, which produced the Netscape Navigator web browser.

# Innovation at Illinois: Inventor or Innovator?

MAX LEVCHIN

1997 BS  
Computer  
Science ILLINOIS



Technology

Entrepreneur, angel investor,  
and cryptographer;  
Cofounder of PayPal, creator  
of online security and fraud-  
prevention systems; Founder  
and CEO of Slide; Founder  
and CEO of Hard Valuable  
Fun (HVF) incubator lab.

# Exercise

- Break up into small groups.
- Discuss the following question:
  - What do you think are the most attractive attributes of being a successful entrepreneur? What are the attributes you find most attractive personally?
  - Why or why not?



# Technology Entrepreneur Center



## Register by Jan. 31

Compete for over \$200,000 in funding and prizes with the Cozad New Venture Challenge, the campus-wide program that helps you launch your startup idea.

DEADLINE | JANUARY 31  
[go.illinois.edu/cozad](http://go.illinois.edu/cozad)



## Get nominated by Feb. 1

Are you working on either cutting-edge innovation and translational research or have you addressed cultural, societal, or global challenges with innovative solutions? See if you qualify and ask a mentor to nominate you.

DEADLINE | FEBRUARY 1  
[go.illinois.edu/iia](http://go.illinois.edu/iia)



## IP Clinic

Take advantage of this opportunity to get FREE patent and trademark assistance!

FRIDAY, FEBRUARY 11 | 12:30-2:30pm  
RSVP | [go.illinois.edu/ipclinic](http://go.illinois.edu/ipclinic)



## Complete your Spring Schedule

Need another course to round out your schedule? Check out the full list of TE course offerings.

[go.illinois.edu/courses](http://go.illinois.edu/courses)



## Join by Jan. 24

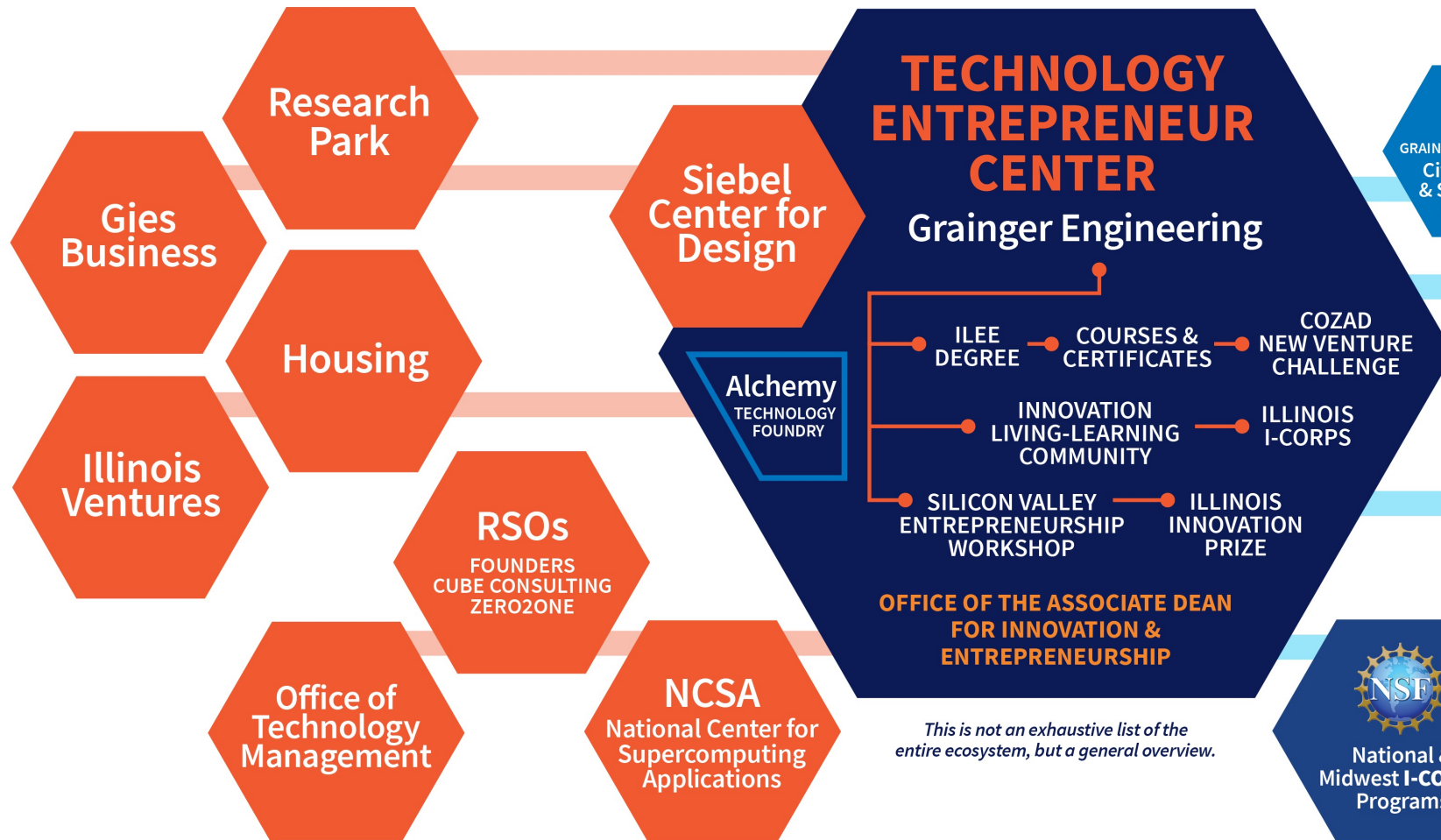
Join the TEC Student Advisory Board and help shape the campus entrepreneurship ecosystem. The SAB provides insights directly to TEC staff & receives access to exclusive benefits like raffles, swag, & partner events.

DEADLINE | JANUARY 24  
[go.illinois.edu/tecSAB](http://go.illinois.edu/tecSAB)

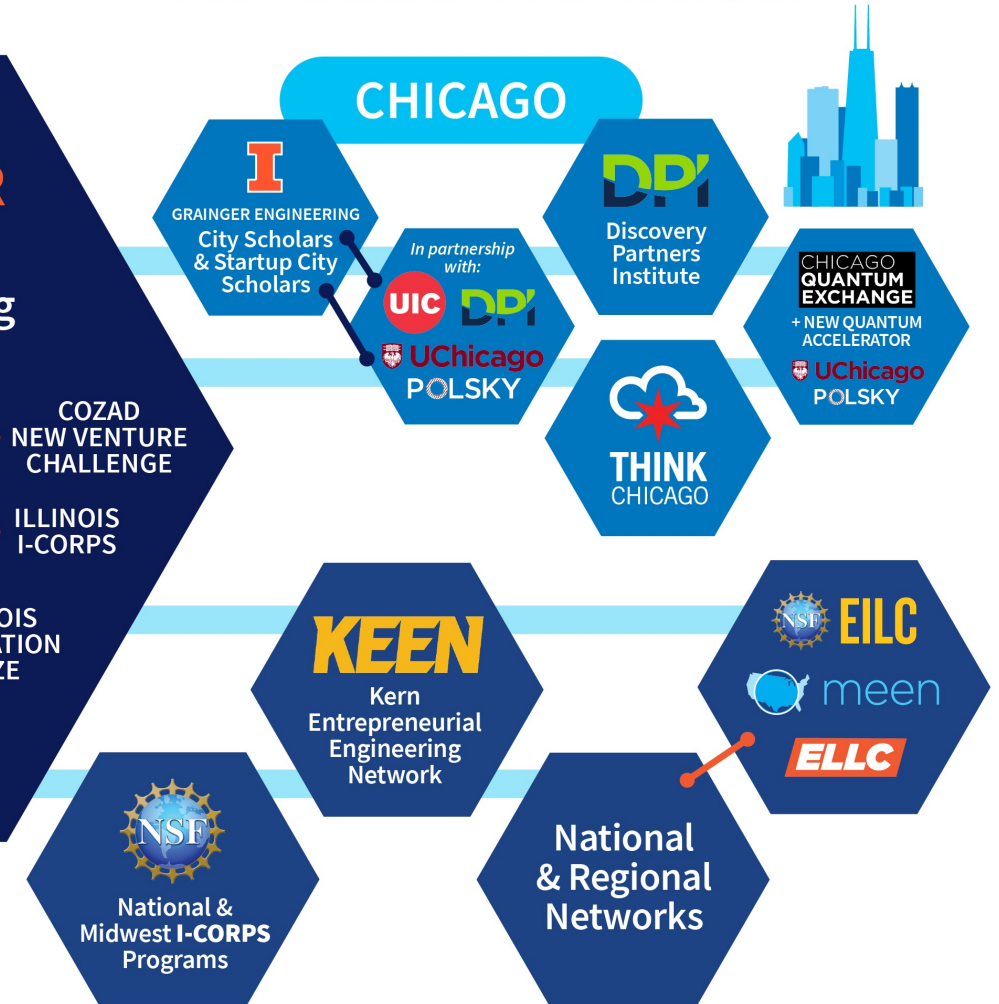
# Grainger Engineering | Innovation & Entrepreneurship Ecosystem



## INTERNAL PARTNERS



## EXTERNAL PARTNERS



*This is not an exhaustive list of the entire ecosystem, but a general overview.*



# Grainger Engineering | Entrepreneurship Education Pathway for Students



## EXPLORE & IDEATE

*A great place to start! Take a peek under the hood of innovation & learn what an entrepreneurship mindset might mean for you.*

### COURSES

- TE 100** | Introduction to Innovation, Leadership, & Engineering Entrepreneurship
- TE 200** | Introduction to Innovation
- TE 230** | Design Thinking/Need Finding
- TE 333/TE 598** | Creativity, Innovation, Vision
- SE 361** | Emotional Intelligence Skills
- TE 398** | Innovation & Engineering Design
- TE 401** | Introduction to Design Thinking **SCD**

### UNDERGRAD CERTIFICATES

- Innovation
- Technology Commercialization

### BS DUAL DEGREE

- Innovation, Leadership, & Engineering Entrepreneurship (ILEE)

### PROGRAMS & EVENTS

- Chicago Entrepreneurship Workshop
- Entrepreneurship Advising
- Grainger Engineering City Scholars
- Grainger Engineering Startup City Scholars
- Innovation Living-Learning Community (LLC)
- TEC Student Advisory Board
- ThinkChicago
- Silicon Valley Entrepreneurship Workshop
- SocialFuse



## DESIGN & EVALUATE

*Ideas are developed here! Determine needs in the market & develop solutions that address real-world problems.*

### COURSES

- TE 230** | Design Thinking/Need Finding
- TE 250** | High Tech Ventures: From Idea to Enterprise
- TE 333/TE 598** | Creativity, Innovation, Vision
- TE 360/460** | Lectures in Engineering Entrepreneurship
- TE 398** | Innovation & Engineering Design
- TE 398** | Urban Entrepreneurship
- TE 401** | Augmented Listening Technology
- TE 401** | Design Thinking for Social Impact **SCD**
- TE 401** | Design Thinking for Women's Health **SCD**
- TE 498** | UX Fundamentals **SCD**

### UNDERGRAD CERTIFICATES

- Innovation
- Technology Commercialization

### BS DUAL DEGREE

- Innovation, Leadership, & Engineering Entrepreneurship (ILEE)

### PROGRAMS & EVENTS

- Entrepreneurship Advising
- International Student Workshop
- Silicon Valley Entrepreneurship Workshop
- SocialFuse
- HackIllinois **UIUC STUDENT-RUN EVENT**



## BUILD & LAUNCH

*Startups take shape here! Dig deeper into the commercialization stage and make sure your startup is best prepared to hit the market.*

### COURSES

- TE 250** | High Tech Ventures: From Idea to Enterprise
- TE 298** | Communication for Tech Innovators
- TE 360/460** | Lectures in Engineering Entrepreneurship
- TE 398** | Successful Storytelling: Designing the Ultimate Pitch **SCD**
- TE 401** | Developing Breakthrough Projects (Independent Study)
- TE 450** | Startups: Incorporation, Funding, Contracts, & Intellectual Property
- TE 461** | Technology Entrepreneurship
- TE 466** | High Tech Venture Marketing
- TE 498** | Alchemy Technology Foundry **ECE**
- TE 498** | Hacking for Defense
- TE 565** | Technology, Innovation, & Strategy

### UNDERGRAD CERTIFICATES

- Innovation
- Technology Commercialization

### BS DUAL DEGREE

- Innovation, Leadership, & Engineering Entrepreneurship (ILEE)

### PROGRAMS & EVENTS

- Cozad New Venture Challenge
- Intellectual Property Clinic
- Mottier Innovation Challenge **ISE**
- 54 Startup Weekend **FOUNDERS RSO**



## GROW & SCALE

*Ventures level up here! Become the hero of your market as you position your venture to quickly reach more customers successfully.*

### COURSES

- SE 361** | Emotional Intelligence Skills
- TE 398** | Bootstraps to Venture Capital: Funding Your Startup
- TE 450** | Startups: Incorporation, Funding, Contracts, & Intellectual Property
- TE 466** | High Tech Venture Marketing
- TE 498** | Leading Sustainable Change
- TE 498** | Alchemy Technology Foundry
- TE 566** | Finance for Engineering Management
- TE 567** | Venture Funded Startups
- TE 565** | Technology, Innovation, & Strategy

### GRAD CERTIFICATES

- Business Management for Engineers
- Strategic Technology Management

### PROGRAMS & EVENTS

- Illinois I-Corps
- Illinois Innovation Prize



Technology Entrepreneur Center Degree, Courses, Certificates, & Programs *(unless otherwise noted)*



## Gies College of Business

- Disruption Lab
- Origin Ventures Academy for Entrepreneurial Leadership
  - *iVenture Accelerator*
  - *Illinois Social Innovation*
  - *EntreCORPS*
  - *Entrepreneurs Without Borders*
- Hoeft Technology & Management Program
- Illinois Maker Lab

## Research Park

- EnterpriseWorks
- Entrepreneur-in-Residence Program
- AgTech Innovation Summit
- Big Data Summit
- CEO Roundtable
- SBIR & STTR Technical Assistance Program
- I-Start Accelerator Program

## Illinois Ventures

- Consulting Services & Funding
- Proof of Concept Grants

## Siebel Center for Design

- New Courses based in Design Thinking (DT) & Human Centered Design (HCD)
- Integrating DT & HCD into Existing Courses
- Fostering Multidisciplinary Collaborations
- Innovative Building Space Opening Soon
- DT & HCD Training
- Illinois RapidVent Partner

## Office of Technology Management

- Disclosure & Licensing Info
- Illinois Ignite & Share the Vision Events
- Illinois Proof of Concept (I-POC) Program

## RSOs

- Founders: Illinois Entrepreneurs
- Zero2One
- CUBE Consulting
- OTCR Consulting