

EPICENTER  
**research summit**

AUGUST 4-5, 2014 • STANFORD UNIVERSITY

# Session C: Student-Centric Entrepreneurial Mindset

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*Kern Family Foundation*

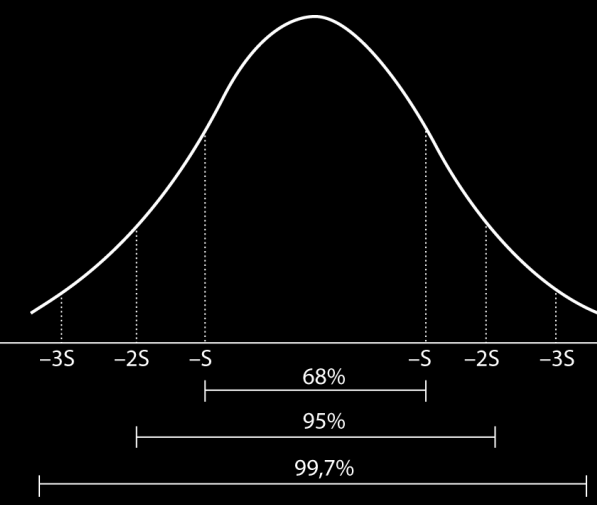
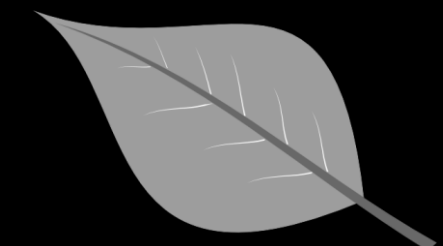


**Stanford**  
University

NCIIA

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TO CREATE TRANSFORMATIVE  
EDUCATIONAL EXPERIENCES,  
CONNECT TO PASSIONS





2009



2004

2011

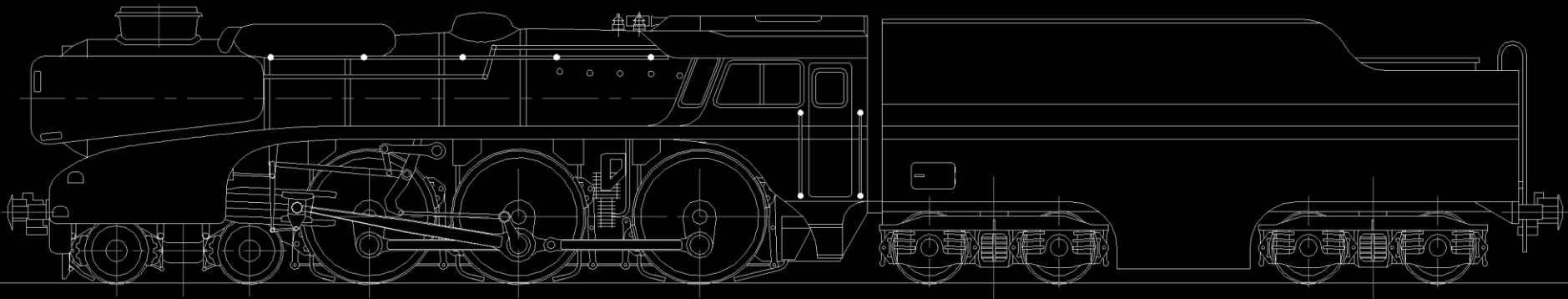


Nov 2010



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# ENTREPRENEURIAL MINDSET IS THE ENGINE OF VALUE CREATION





# KEEN Framework For Engineering Education

## Mindset

## Skills

### Fostering an Entrepreneurial Mindset



KEEN Student Outcomes		A graduate of a KEEN program should be able to:
<b>Entrepreneurial Mindset</b>	<b>Enterprising Attitude</b>	<ul style="list-style-type: none"> <li><b>Exercise</b> curiosity about the surrounding world.</li> <li><b>Define</b> problems, opportunities, and solutions in terms of value creation.</li> <li><b>Assess</b> risk.</li> <li><b>Persist</b> through and learn from failure.</li> <li><b>Demonstrate</b> resourcefulness.</li> <li><b>Anticipate</b> technical developments by interpreting surrounding societal and economic trends.</li> <li><b>Identify</b> new business opportunities.</li> </ul>
coupled with	<b>Multidimensional Problem Solving</b>	<ul style="list-style-type: none"> <li><b>Apply</b> creative thinking to ambiguous problems.</li> <li><b>Apply</b> systems thinking to complex problems.</li> <li><b>Examine</b> technical feasibility, economic drivers, and societal and individual needs.</li> <li><b>Act</b> upon analysis.</li> </ul>
expressed through	<b>Productive Collaboration</b>	<ul style="list-style-type: none"> <li><b>Collaborate</b> in a team setting.</li> <li><b>Understand</b> the motivations and perspectives of stakeholders.</li> </ul>
<b>Professional Skills</b>	<b>Illuminating Communication</b>	<ul style="list-style-type: none"> <li><b>Communicate</b> engineering solutions in economic terms.</li> <li><b>Substantiate</b> claims with data and facts.</li> </ul>
and founded on	<b>Resolute Integrity</b>	<ul style="list-style-type: none"> <li><b>Pursue</b> personal fulfillment as a member of a profession that creates value.</li> <li><b>Identify</b> personal passions and a plan for professional development.</li> <li><b>Fulfill</b> commitments in a timely manner.</li> <li><b>Discern and pursue</b> ethical practices.</li> <li><b>Contribute</b> to society as an active citizen.</li> </ul>

keenframework.org

### ENTREPRENEURSHIP



### Engineering Skills from Opportunity to Business

The KEEN program has developed a system of learning outcomes that align the student learning objectives for various components of business development programs. Further, the table to your right lists the outcomes that promote and develop selected skills (1, 1) in undergraduate engineering degree programs.



Customized To  
Engineering

Engineering and  
Business skills





# Entrepreneurial Mindset

## Curiosity

Constant curiosity about our changing world

## Connections

Habitually integrating information from many sources to gain insights

## Creating Value

Identifying unexpected opportunities to create value — and learning through actions and experiences

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AN ENTREPRENEURIAL MINDSET  
CAN BE APPLIED  
TO ANY SITUATION

KEEN is not aimed at:

- new ventures,
- commercialization, or
- invention.

Most graduates  
will become  
**intrapreneurs**, creating  
value through existing  
organizations.



## DESIGN AND SYSTEM ENGINEERING

Determine Design Requirements

Perform Technical Design

Analyze Solutions

Develop New Technology (Optional)

Create a Model or Prototype

Validate Function

## PROBLEM DEFINITION

Identify a Problem

Formulate Solutions

**Evaluate:**  
Technical Feasibility  
Customer Value  
Societal Benefits  
Economic Viability

Select and Quickly Test via  
Customer Engagement

Protect  
Intellectual Property

Evaluate Regulatory Issues

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Investigate the Market

Create a Preliminary Model

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Communicate an Engineering Solution in Terms of Societal Benefits

Validate Market Interest



# Redefining Engineering as Creating Value

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## SCALING

Determine Methods for Scaling to Market:  
Design for Cost Reduction  
Design for Robustness

Develop Collaborative Methods to Accomplish Goals  
Develop Partnerships  
Build a Team

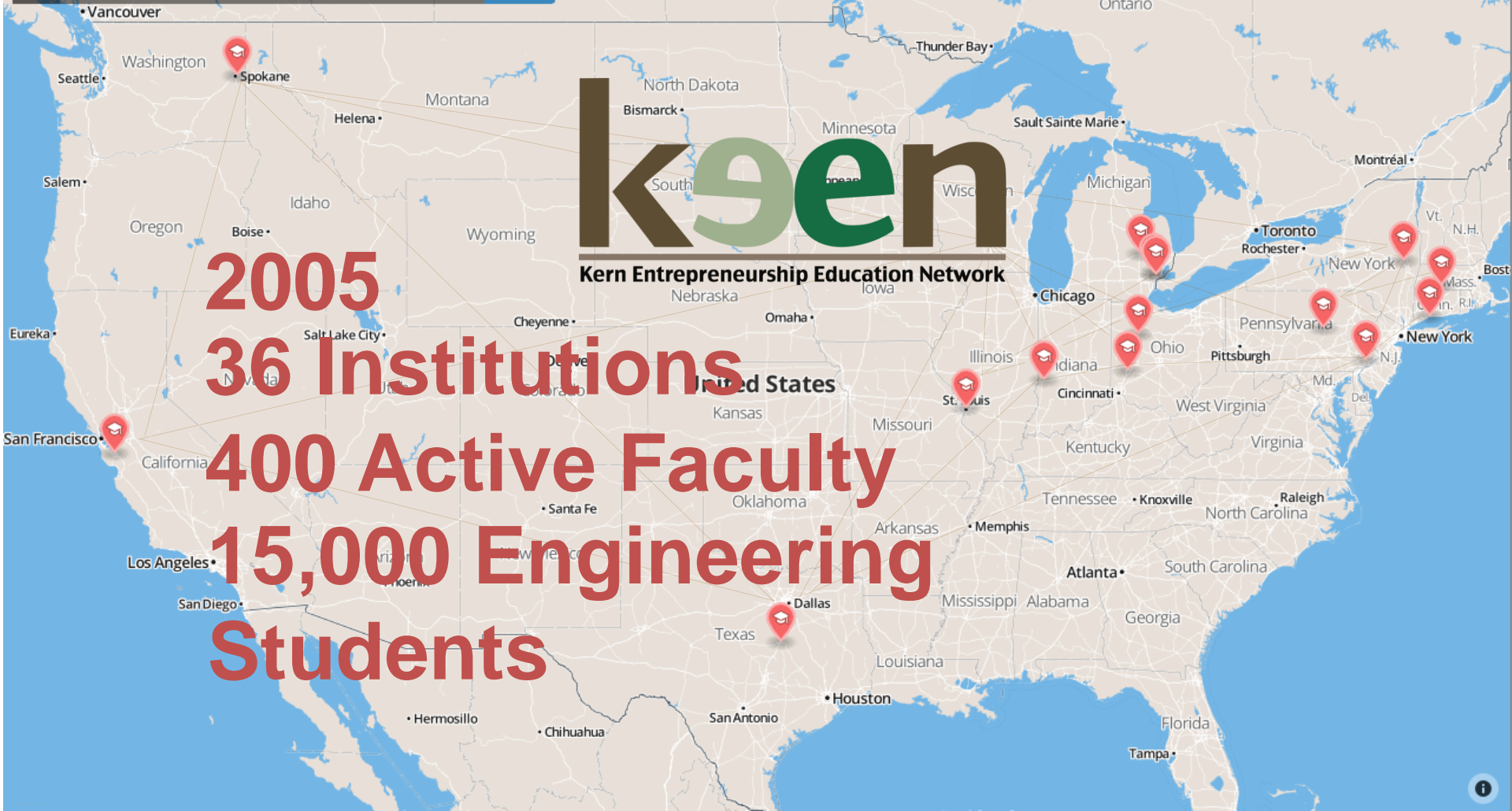
Identify Scaling Strategies  
Supply Chain  
Distribution Method

## BUSINESS

Create a Marketing Plan

Assess Funding Requirements

Define Measures of Success



# kern

Kern Entrepreneurship Education Network

**2005**  
**36 Institutions**  
**400 Active Faculty**  
**15,000 Engineering Students**





4

AUDIENCE-AWARE ASSESSMENTS

REDUCE

PAIN AND INFLAMMATION

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# Thank you!



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