Entrepreneurship: tomorrow’s de facto career?

Dean Chang
Associate Vice President for Innovation & Entrepreneurship, UMD
Lead PI & Instructor, NSF I-Corps DC Node
Lean with Dean

Academy for Innovation & Entrepreneurship

Dean Chang - Assoc VP for Innovation & Entrepreneurship
Dean Chang
Appointed “Dean” at birth
Assoc VP for I&E
Lived 1/3 life in Maryland, 1/3 life in California, and 1/3 life in 5 other states
Favorite movies: Shawshank Redemption & Shrek
Wants every student to discover and unleash the innovator inside!

LinkedIn: ter.ps/deanc
Twitter: @UMDdeanc
Email: deanc@umd.edu
Phone: (301) 314-8121
Office: 3300A Symons Hall

Loves to play, coach, and watch basketball
Favorite family traditions: Beach week @ the Outer Banks, RV road trips
Entrepreneurship: tomorrow’s de facto yesterday’s alternative career

Dean Chang
PhD Candidate
Unsure of Career

1989
My *alternative career* started here ...
Immersion – Stanford Spinout
A Year and a Lot of $$$ = A $200K Product No One Bought
Another Year, More $$$ = A $5K Product No One Bought
## CREDITS

**SPECIAL EDITION VERSION**

**EA SEATTLE**

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Programmer</td>
<td>Doug Deardorff</td>
</tr>
<tr>
<td>Programmers</td>
<td>Michael Lankerovich, Chuck Walters</td>
</tr>
<tr>
<td>Additional Programming</td>
<td>Gordon Ludlow</td>
</tr>
<tr>
<td>Lead Artist</td>
<td>Andy Fuller</td>
</tr>
<tr>
<td>Artists</td>
<td>Mike Cressy, Shelley Armstrong, Victor von Beck</td>
</tr>
<tr>
<td>Audio Engineer</td>
<td>Robert Ridhalgh</td>
</tr>
<tr>
<td>Development Director</td>
<td>Bronwyn Richardson</td>
</tr>
<tr>
<td>Tester</td>
<td>Gayle Johnson</td>
</tr>
</tbody>
</table>

**EA CANADA**

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Director</td>
<td>Brad Gour</td>
</tr>
<tr>
<td>Additional Programming</td>
<td>Andrew Brownsworld, Daniel The</td>
</tr>
<tr>
<td>Art Director</td>
<td>Scott Jackson</td>
</tr>
<tr>
<td>3D Modelling</td>
<td>Kent Maclagan</td>
</tr>
<tr>
<td>Artists</td>
<td>Peter King, Robert Sculnick, Giovanni Sasso, Eduardo Agostini</td>
</tr>
<tr>
<td>Audio Director</td>
<td>Alistair Hirst</td>
</tr>
<tr>
<td>Music</td>
<td>Jeff Dyck, Saki Kaskas</td>
</tr>
<tr>
<td>Game Design</td>
<td>Hanno Lemke, Richard Mul</td>
</tr>
<tr>
<td>Executive Producer</td>
<td>Sam Nelson</td>
</tr>
<tr>
<td>Producer</td>
<td>Hanno Lemke</td>
</tr>
<tr>
<td>Associate Producer</td>
<td>Gregg Giles, Richard Mul</td>
</tr>
</tbody>
</table>
WELCOME TO E3 EXPO!

A-HA Moment!
<table>
<thead>
<tr>
<th>Customer Segment</th>
<th>Value Proposition</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everybody with Hands (Way Too Vague)</td>
<td>Cool &amp; Immersive (Not Tangible)</td>
<td>2 months from bankruptcy!</td>
</tr>
<tr>
<td><strong>Driving Game Fanatics</strong></td>
<td><strong>Faster Lap Times/WINNING!</strong></td>
<td><strong>$10M revenue</strong></td>
</tr>
</tbody>
</table>

Gamers *might* pay $ for Cool & Fun, but will pay $ for Cool, Fun, & WINNING!
Finally Startup Success!

Gamer/Consumer

OEM Wheel Manufacturer

Video Game Manufacturer

Immersion Technology

Product/Service/License
Payment
Influence/Collaboration

Logitech

Need For Speed
Hot Pursuit 2

Force Technology

Video Game Manufacturer

Payment

Immersion

Technology

Gamer/Consumer

$200

$10 (5%)
Haptics in Medical Simulation

Intravenous Catheters
Haptics in Medical Simulation

- Endoscopy & Colonscopy
Haptics in Smartphones

- 3 billion phones!
- $25M annual revenue for Immersion (compared to gaming: $10M annual revenue)
Haptics Careers circa 1989

STANFORD UNIVERSITY

CAE

MIT Massachusetts Institute of Technology

DEPARTMENT OF THE NAVY UNITED STATES OF AMERICA

A Few Schools Defense
Force Touch trackpad.
The trackpad, pushed even further.

13-inch model only
<table>
<thead>
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<th>Customer Segment</th>
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<tr>
<td>Driving Game Fanatics (&amp; Ecosystem)</td>
<td>Faster Lap Times/WINNING!</td>
<td>$10M revenue</td>
</tr>
<tr>
<td>TouchScreen Smart Phones</td>
<td>Confirmation of button presses, custom vibes</td>
<td>$25M revenue, 3 billion devices</td>
</tr>
</tbody>
</table>

- Successful startups agilely iterate to offer a very specific VP for a very specific CS
- Startups discover the right CS/VP by talking to enough people (e.g., Chuck Walters)
Entrepreneurship: tomorrow’s de facto yesterday’s alternative career

1989

Dean Chang
PhD Candidate
Unsure of Career
“Latent” Entrepreneur
That’s a cool story ... 

but I’m not sure if I want to be an entrepreneur ...
And even if I did ... how do I learn how to be an innovator or entrepreneur?
Innovation & Entrepreneurship: tomorrow’s de facto career

Dean Chang
Associate Vice President for Innovation & Entrepreneurship, UMD
Finding a job is so 20th century. That is why young people today need to be more “innovation ready” than “college ready.” There are a growing number of reinvented colleges ... where students learn to innovate.

-Thomas Friedman  The New York Times
This is a generation of students who are incredibly highly structured students, but they’re going to be entering an increasingly ambiguous world.

It’s the most complex, ambiguous world we’ve ever known. This is the world of ISIS, ebola, climate change and data security breaches, but it’s also this world of tremendous opportunity to make really transformative change...

We need to be training our students not just to expect that they will be society’s leaders, but also to be our most creative, daring, and resilient problem solvers.

-Sarah Stein Greenberg
Entrepreneurship isn’t explicitly about starting a company …

It’s really about how to maximize the number of people you help and impact
Innovation
how to creatively solve really difficult real-world challenges

Entrepreneurship
how to maximize the number of people you help and impact

You can teach people both!
Two Proven Methods for Teaching I & E

#1 Design Thinking

#2 Lean Startup

STANFORD

Why the Lean Start-Up Changes Everything

by Steve Blank

Harvard Business Review

TURN A GREAT IDEA INTO A GREAT BUSINESS

"Lean" is changing everything you know about starting a new venture.
The Academy

Our mission is to engage all 38,000 UMD students in innovation & entrepreneurship (I&E) experiences to prepare them to tackle the world’s toughest problems.

We do this by...

- Embedding I&E methods and tools into the core curriculum
- Challenging students to creatively solve real-world problems in their courses
- Providing students opportunities to work across disciplines on problems they’re passionate about

Our students learn how to...

- Develop deep empathy by designing for & with others
- Reframe problems in unexpected ways
- Brainstorm to generate radical ideas
- Prototype and iterate based on feedback
- Communicate ideas in compelling ways
- Create value by solving problems & scaling impact
- Embrace failure to learn & grow from it
Design Thinking Process

- Empathize
- Define
- Ideate
- Prototype
- Test
Flow
Might
We
Convince
Stewie,
the 4th Q is better
than kittens

TURN UP
when we win

Don't be down by
30 points after 3
quarters

Global is
better! Everybody
loves football!

FREE CHOCOLATE
hearing student
performers!

Turn up
Kitten soul
Karma

AMAZING
puppies

Half-time
Field goal
Kick with
real listener
Major: Journalism (Broadcast)

Education is an experience to pursue passions and engage in society.

Wants professors to “light a fire not just fill a bucket”

Called for 1) a creative space to think and speak freely 2) the ability to be connected to other students to form an effective team to work on an idea.

Wants to create a group of mascots to go around campus and entertain students and faculty.
Ideate: generate alternatives to test.

5 Sketch at least 5 radical ways to meet your user’s needs. 5min

Example:

- Simple, strong functionality and easy access

6 Share your solutions & capture feedback. 8min (2 sessions x 4 minutes each)

Notes
Welcome to our Design Tent!

Social Design Lab is:

A design community focused on supporting student-led projects and organizations where students can come and work on projects they’re passionate about. We create a venue for creative collaboration to share ideas and promote project implementation.

Join if:
1. You want to address real-world issues and need a place to get started.
2. You have a project idea and need to recruit a team.

Perks:
1. We provide resources.

HMW: encourage people to treat local
Innovation (Design Thinking) how to creatively solve really difficult real-world challenges

Entrepreneurship (Lean Startup) how to maximize the number of people you help and impact

You can teach people both!
No Business Plan Survives

First Contact with Customers
TOP 10 STARTUP MISTAKES

#1
Building something nobody wants
Score: 300
36% of Tot.

#2
Hiring Poorly
Score: 153
18% of Tot.

#3
Lack of Focus
Score: 112
13% of Tot.

#4
Fail to execute Sales & Marketing
Score: 98
12% of Tot.

#5
#8
#7
#6
#10
#9

8. Spending Too Much Money
18 (2.1%)
9. Failing To Ask For Help
12 (1.4%)
10. Ignoring Social Media
6 (0.7%)

5. Not Having The Right Co-Founders
66 (7.9%)
6. Chasing Investors, Not Customers
45 (5.4%)
7. Not Making Sure You Have Enough Money
28 (3.3%)
So Stop Building Your Innovation

Instead GOTB And Ask Customers What They Need & Will “Pay” For
Lean Startup isn’t explicitly about starting a company …

It’s really about how to maximize the number of people you help and impact (i.e., the business model)
That’s why we start with **these**

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activities</th>
<th>Value Propositions</th>
<th>Customer Relationships</th>
<th>Customer Segments</th>
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<tbody>
<tr>
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<td>Key Resources</td>
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<table>
<thead>
<tr>
<th>Cost Structure</th>
<th>Revenue Streams</th>
</tr>
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<tbody>
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</tbody>
</table>
Customer Segments
(Does Anyone Care?)

Key Partners

Key Activities

Value Propositions

Customer Relationships

Key Resources

Channels

Cost Structure

Revenue Streams

Customer Segments
### Value Propositions

*Why Do They Care*

<table>
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</table>
Value **Propositions**
(Why Do They Care)

Key Partners | Key Activities | Value Propositions | Customer Relationships | Customer Segments
---|---|---|---|---
Key Resources

Cost Structure | Revenue Streams
Idea, Technology, ‘Sustainable’, ‘Interactive’

= Features,

Not Value Propositions
Faster, Cheaper, Better
(Mom & Apple Pie)

= Weak Value Propositions
Quantifiably Faster, Cheaper, Better

= Better Value Propositions
Quantifiable, Relevant, Significant, & Testable Product Benefits

= 

Much Stronger Value Propositions
Customer Segments
(Does Anyone Care?)

Key Partners

Key Activities

Value Propositions

Customer Relationships

Customer Segments

Key Resources

Channels

Cost Structure

Revenue Streams
Households, Colleges, Gyms, Museums, Military

= Buildings/Organizations,
Not Customer Segments
Families, Athletes, Soldiers, Gamers, Employers (Mom & Apple Pie) = Vague Customer Segments
Very Specific Job Titles, Very Specific Archetypes/Personas

= 

Much Better Customer Segments
The Ultimate VP Test

You should feel 100% confident that your stated CS would drop everything and immediately buy/approve/switch to your stated VP without having to ask you any questions.
Group Exercise: Dissecting Google’s VP/CS
When Google started, what were their **Value Propositions** & who were the **Customer Segments** in Google’s search business model?
Value Proposition Customer Segment Mad Lib

**CS**

Customer Segment: Which people? Be specific!

**VP**

would “pay” to ______________________

in a way that

 Verb (reduces, increases, etc.) a specific Customer Pain or Gain

(uni$like ______________________)

Extra Credit: How is it different than the competition?
CS Roles & Unique VPs: Google

-CS: PC user looking for info that was harder to find elsewhere
  • health symptoms/treatments, sports scores, stock prices, retail/shopping

-VP: Find exactly what you want in first few listings on page 1!
CS Roles & Unique VPs: Google

- **CS**: Smart Online Advertisers w/o Big Budgets
- **VP**: Way More People Clicking on Links to Their Website
Big Idea:
**Roles w/in Customer Segments**

– The *Payer/Decision Maker* may be different than the *End User/Beneficiary*

– Each *Role in a CS* has its own specific *VP*
The Ultimate VP Test

You should feel 100% confident that your stated CS would drop everything and immediately buy/approve/switch to your stated VP without having to ask you any questions

Did Google Offer A 100% Solution?

End User, Decision Maker, Payer: QRST?
Innovation (Design Thinking) how to creatively solve really difficult real-world challenges

Entrepreneurship (Lean Startup) how to maximize the number of people you help and impact

You can teach people both!
General Electric

DOUG DIETZ

PRINCIPAL DESIGNER, GE HEALTHCARE
**Procedural Theater** UPMC ‘Jungle Adventure’ Pilot Install

**Interactive Jungle theme**
- Log ride (table)
- Waterfall- Koi fish pond floor
- 3D Jungle walls
- LED light effects, Aroma diffuser, sounds
Who are the CS Roles?

MRI Adventure

– Beneficiary? (Kids/Parents)
– End User?
– Decision Maker?
– Payer?
– Influencer, Recommender, Skeptic?
CS Roles & Unique VPs: MRI Adventure

- Beneficiary (Kids/Parents: 😊>> Serif)
- End User (? – ?)
- Decision Maker (? – ?)
- Payer (? – ?)
- Influencer, Recommender, Skeptic?
CS Roles & Unique VPs: MRI Adventure

– Beneficiary – Kids/Parents, 😊😊😊
– End User – Nurse, happy patients
– Decision Maker – Hospital CEO/Capital Committee, decrease 2-week Wait Time
– Payer – Hospital CFO/Committee, decrease MRI payback time & increase profits
– Any Influencers, Recommenders, Skeptics – Technician, likes idle time between patients
<table>
<thead>
<tr>
<th>Customer Segment</th>
<th>Value Proposition</th>
<th>100% Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kids/Parents (Beneficiary)</td>
<td>Better Imaging</td>
<td>No</td>
</tr>
<tr>
<td>Kids/Parents (Beneficiary)</td>
<td>Imaging w/ No Tears</td>
<td>Yes</td>
</tr>
<tr>
<td>Hospital CEO/Cap Comm (Decision Maker/Payer)</td>
<td>Imaging w/ No Tears</td>
<td>No</td>
</tr>
<tr>
<td>Hospital CEO/Cap Comm (Decision Maker/Payer)</td>
<td>Decrease MRI payback time &amp; increase profits</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Google circa 2000...

**WHY do they care?**

Find exactly what you want in first few search listings on page 1!

Way more people clicking on links to their websites

**WHO cares?**

PC users looking for hard to find info

Smart online advertisers w/o big budgets
Google today ...

**WHY do they care?**

- Find exactly what you want!
- Lots of people clicking on ads
- Android mobile OS
- Self-driving cars
- Pokemon Go

**WHO cares?**

- PC users looking for hard to find info
- Online advertisers
- Samsung, phone mfrs
Did Page & Brin have this vision from the beginning?
2000

Google!

Search the web using Google!

10 results... 1 Google Search I'm feeling lucky

Index contains ~25 million pages (soon to be much bigger)

About Google!

Stanford Search Linux Search

Get Google! updates monthly!

your e-mail Subscribe Archive

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WHO CARES

WHY THEY CARE

2016
Innovation (Design Thinking) how to creatively solve really difficult real-world challenges

Entrepreneurship (Lean Startup) how to maximize the number of people you help and impact

You can teach people both!
Who’s hiring people with Design Thinking and Lean Startup skills and experience?
General Electric

DOUG DIETZ

PRINCIPAL DESIGNER, GE HEALTHCARE
P&G Changes Its Game

How Procter & Gamble is using design thinking to crack difficult business problems

by Jeneanne Rae

July 28, 2008 – 7:42 PM EDT

"Design thinking" may seem like just another new buzzword in the lexicon of innovation, but Procter & Gamble (PG) is using the approach to change its culture.
CAPITAL ONE INNOVATION LAB
FINANCE FollowS CREATIVE FREEDOM
CAPITAL ONE LABS
IS A PASSIONATE TEAM OF ENTREPRENEURS
WHO ARE REIMAGINING THE WAY
MORE THAN 60 MILLION PEOPLE INTERACT
WITH THEIR MONEY.
A solid foundation

How do we better understand our users? How do we deliver breakthrough solutions that fulfill our users’ needs? How do we do this at enterprise speed and scale? Odds are that these are familiar questions, but somehow, the answers seem to be just out of reach.

IBM Design Thinking begins with a set of principles that get to the heart of these
Innovation
Doblin, the innovation unit of Monitor Deloitte

Innovation is one of the last remaining sources of trend-breaking growth, yet too often companies fail at it because they approach innovation as if it is an art, assuming brainstorming and random moments of genius will help them win. They won’t. Doblin helps companies achieve long-term success in today’s competitive markets by adding discipline and order to systematically discover new sources of growth.
Welcome to Booz Allen’s Innovation Center
At the Corner of 15th & Ideas
Remember where my alternative career started ...
All now have *Lean Startup* programs!
All now have *Design Thinking* programs!
<table>
<thead>
<tr>
<th>TANF</th>
<th>CUSTOMER SEGMENT</th>
<th>VALUE PROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beneficiary</td>
<td>Low income families</td>
<td>Easy access to information, increased knowledge, policy changes for recipients</td>
</tr>
<tr>
<td>End Users</td>
<td>Low income families</td>
<td>Easy access to information, increased knowledge, policy changes for recipients</td>
</tr>
<tr>
<td>Decision Makers</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Payers</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Influencer</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Recommender</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Skeptics</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Facebook
Does the victim have a copy of the Facebook pages/posts?
Yes  No

Texts
Does the recipient still have the texts on his/her phone?
Yes  No

Chat Room/Forum
Does the victim have a copy of it posts?
Yes  No  No

Do you know of anyone who might know who the author is?
No

Does the apparent author admit authorship?
No
Who’s hiring people with Design Thinking and Lean Startup skills and experience?

EVERYONE!
Innovation & Entrepreneurship: The 21st century’s de facto career
At a growing number of innovative schools, you can learn how to be an innovator or entrepreneur!
advancing maternal and child health by providing innovative solutions to the world's most vulnerable populations.

Keep in Touch
Sign up for our newsletter

Watch video
Learn more about our cause

Donate to Embrace

Embrace
At a growing number of innovative schools, you can learn how to be an innovator or entrepreneur!