

I-Corps™ for Learning



CORPS
NSF Innovation Corps



ASEE AMERICAN SOCIETY FOR
ENGINEERING EDUCATION

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What is I-Corps™ for Learning?

I-Corps™ for Learning (I-Corps™ L) is a subsidiary to the original I-Corps™ program, a National Science Foundation (NSF) accelerated version of Stanford University's Lean LaunchPad™ course. I-Corps™ L is designed for STEM educators with innovative teaching strategies, technologies, or set of curricular materials. The principal goal of the program is to foster an entrepreneurial mindset within the education community and to improve the way innovations are designed and implemented. It provides real world, hands-on training and a model approach to assess the potential for sustainable scalability of education innovations.

The I-Corps™ L program uses established strategies for start-ups to scale up and move teaching and learning innovations into broad practice. Participating teams go through a hypothesis-testing, scientific method of discovery to gather important insights and identify issues associated with their projects. Teams are forced “out of the classroom” to conduct interviews, study customer needs, collect feedback, and find partnership opportunities. Participating teams leave the program with an expanded skill set and tools to evaluate and translate their research into applicable methods for educational transformation.

The seven-week I-Corps™ L program consists of a three-day kickoff workshop, five weekly online classes, and a two-day closing workshop. Twenty four teams participate per cohort, with three members per team: Principal Investigator (PI), Entrepreneurial Lead (EL), and Mentor (M). I-Corps™ L Teams receive support in the form of mentoring and funding to accelerate innovation in learning that can be successfully scaled up in a sustainable manner.



I-Corps™ L Pilot Cohort Closing Workshop (February 28, 2014)



I-Corps™ for Learning

Sustaining and Scaling STEM Education Innovations for Impact

ASEE/IEEE Frontiers in Education Conference – October 13, 2016 – T2B – 1:30 pm – 3:00 pm

Facilitated By



Rocio Chavela Guerra
American Society for
Engineering Education



Karl A. Smith
Purdue University and
University of Minnesota

Agenda

Introduction of Session and Facilitators	5 min
Brief introduction to the I-Corps™ for Learning Program	10 min
<ul style="list-style-type: none">• History• Goals• Current Initiatives	
Lean Start-Up Approach	25 min
<ul style="list-style-type: none">• Business Model Canvas• Customer Discovery Process• Agile Engineering – Iterate & Increment	
Customer Segments (CS) and Value Proposition (VP) Exercise	30 min
<ul style="list-style-type: none">• Identify an education innovation that you would like to see sustained and scaled• Within that innovation identify one Value Proposition (VP) that you think is aligned with one Customer Segment (CS)	
Summary and Feedback	10 min

7-week Program

Educational Innovation



Customer Discovery

Kick-off Workshop

5 Online Sessions

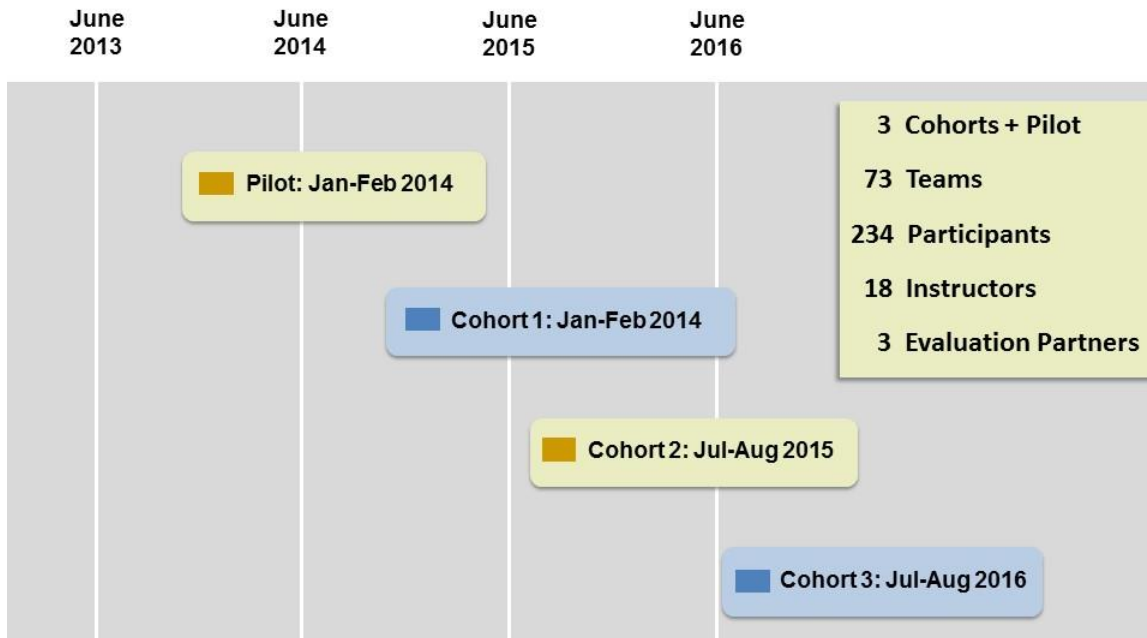
Lessons Learned Workshop

100 Interviews

Readiness for Sustaining & Scaling?



I-Corps™ for Learning History



Key Features of I-Corps™ for Learning

▣ Curriculum

- Business Model Canvas
- Customer Discovery
- Agile Engineering

▣ Course Specific Outcomes

▣ Assessment Instruments

▣ Syllabus Iterations

▣ Balanced Teaching Team

▣ Diverse Participant Segments

▣ Teams Composition

Team Name _____ Team # _____	TEAM DECISION			
	TTREC	Go	No Go, But Continue	No Go, But No Continue
Evidence of Criteria in Team's BMC				
Teaching Team criteria for a 'Go' decision:	None (1)	Poor (2)	Adequate (3)	Outstanding (4)
1. Value propositions align with customer segments				
2. Evidence of champion (decision-maker) from at least one customer segment				
3. Specific and concrete definition of scale				
4. Credible path towards scaling and sustaining identified				



Participant/Alumni Segments

**Current
Profession
Leaning
(36%)**



**PURDUE
UNIVERSITY**

**Entrepreneur
Leaning
(20%)**



VITAL

**Both
(44%)**



 **SAINT LOUIS
UNIVERSITY**

VITAL

VITAL

Bringing inclusion and accessibility to the digital classroom through touch



Jenna Gorlewicz, PI
Assistant Professor
Saint Louis University



Corrine Mueller, EL
Graduate Assistant
Southern Illinois University
Edwardsville



Dan Harres, M
CEO
Bitstream Technology

The Team



Jenna Gorlewicz
Founder and President

in



Corrine Mueller
Vice President of Business Development

in



Jeff Crowl
Vice President of Software Development

in



Justin Vasherman
Software Developer

in



Jon Tomlinson
Research Assistant

Our Technology

Leveraging commercially available tablets

Create



Automatically transform existing lessons into accessible content. Easily create and customize new teaching materials.

Engage



Real-time display in class promotes inclusion and peer-to-peer interactions with diverse learning styles.

Learn



Personalized content enables learning through **sight**: contrast and zoom, **sound**: dictation, and **touch**: tactile graphics.

Collaborate



Integrate, share and sync with digital classroom tools (Google apps, LMS, and Apple for Education).



CENTER FOR TRANSLATION OF REHABILITATION ENGINEERING ADVANCES AND TECHNOLOGY

TAKING YOU FROM AN IDEA TO A BUSINESS (SUSTAINABLE SCALABILITY)

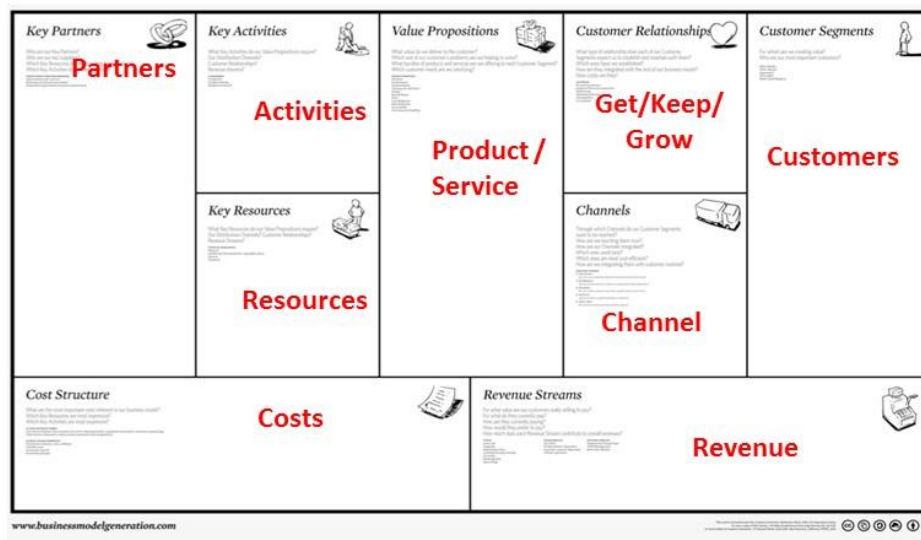
The Lean Startup In Three Steps

1. Frame Hypotheses

□ Frame Hypotheses →

1. Frame Hypotheses

□ Frame Hypotheses → **Business Model Canvas**

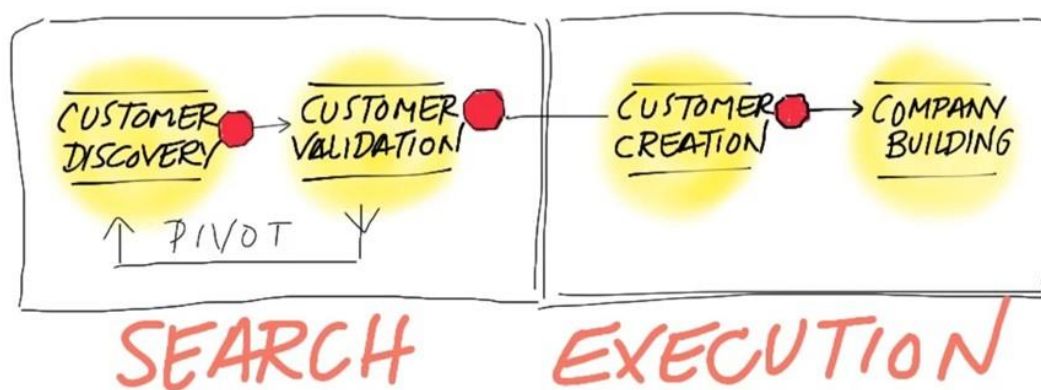


2. Test Hypotheses

- Frame Hypotheses → Business Model Canvas
- Test Hypotheses →

2. Test Hypotheses

- Frame Hypotheses → Business Model Canvas
- Test Hypotheses → **Customer Discovery**



3. Build Incrementally & Iteratively

- Frame Hypotheses → Business Model
- Test Hypotheses → Customer Development
- Build the product incrementally & iteratively → **Agile Engineering**

Activity: Choosing an Educational Innovation

- ▣ Individually,
 - ▣ Identify an educational innovation you would like to see scaled
 - ▣ Write 1-2 sentence(s) describing the innovation
- ▣ In small groups (2-3 people),
 - ▣ Share the innovations you identified and select one for the group
 - ▣ If needed, re-write 1-2 sentence(s) describing the innovation

Examples



Product Realization 2.0



Nathaniel Stern
Entrepreneurial Lead



Ilya Avdeev
Academic Lead

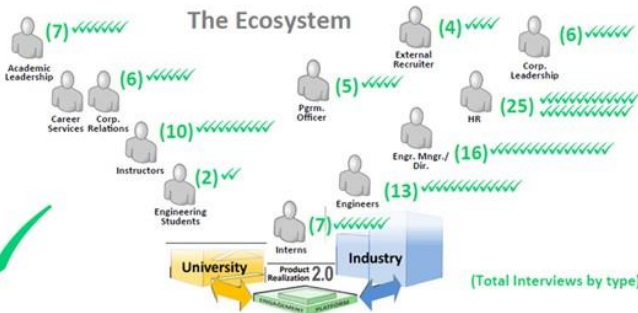


Brian Thompson
Mentor

INTERVIEWS

	New	Total
	7	78
	-	10
	1	13
	8	101

We help engineering companies identify talent, and students get their first internship, through a sponsored experiential interview that demonstrates targeted skills



Team 61

JUR Press

JUR is a journal for undergraduates, by undergraduates that engages students throughout the publication process, providing a place to publish their work as well as a single source for finding internships and research opportunities



Jessica Egner
Entrepreneurial Lead



Mark Brown
Principal Investigator



Mark Combes
Mentor



Melissa Edwards
Mentor

Interview Count			
101	99	1	1

The Lean Startup

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)

Scaling and Value

Scaling

100 students ➡ 100,000 students ➡ 1,000,000+ students

Who will pay for you to provide value to those 100,000 or 1,000,000+ students?

Examples



2012 Overall Expenses: \$7.3M

- **\$5.1M just in salary expense**

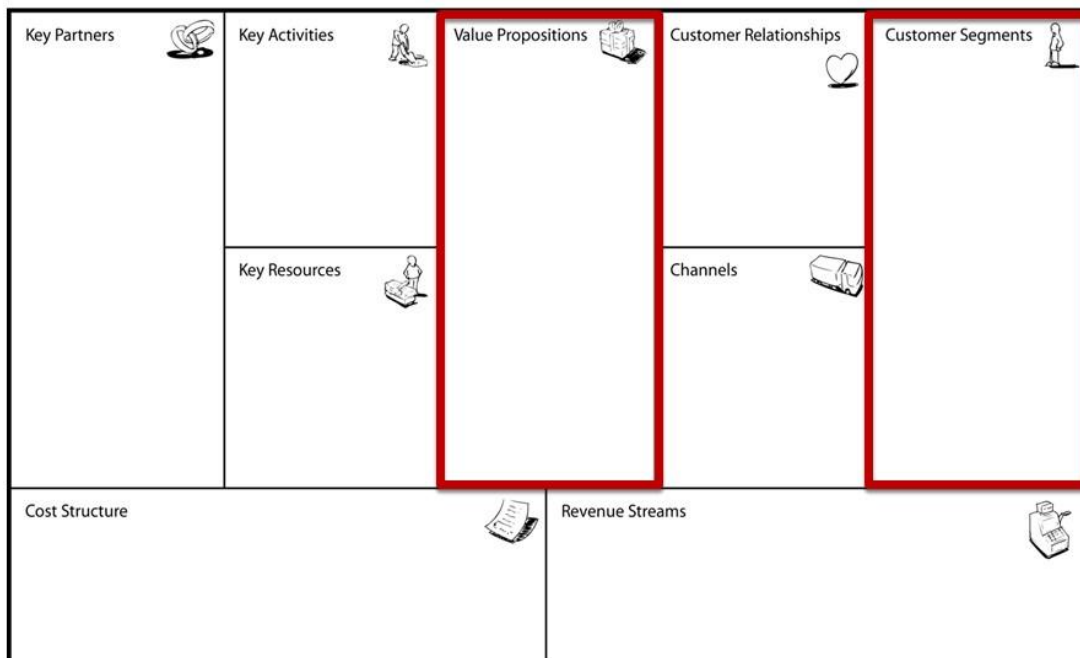
2012 Total Revenue: \$15M

- Almost all from donations
- \$500,000 fees for services

**BILL & MELINDA
GATES foundation**

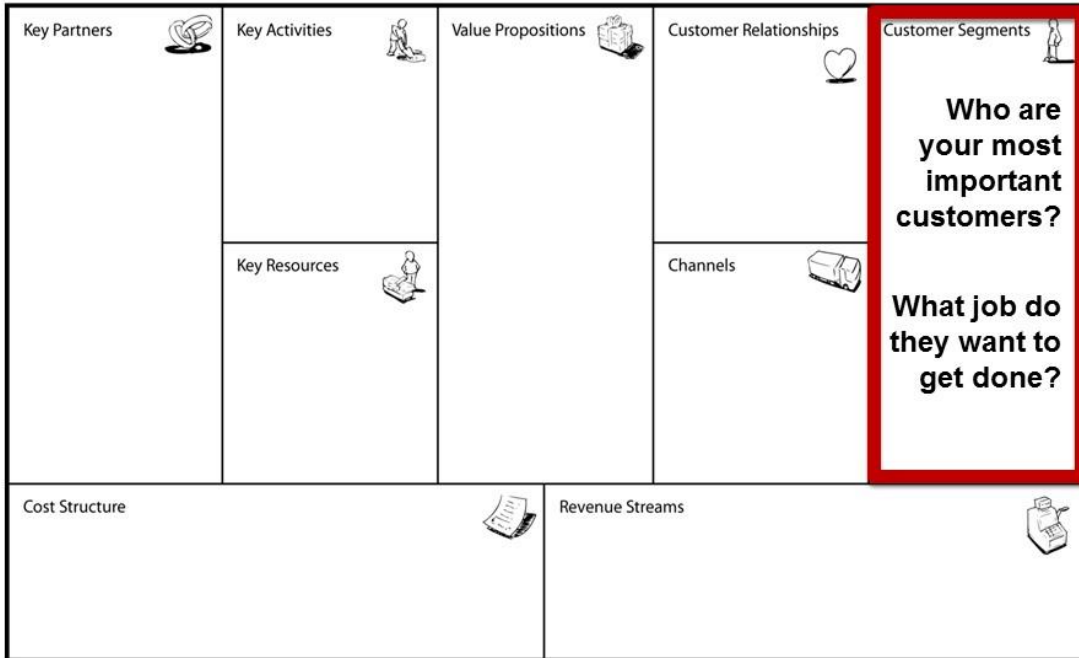
- **Non-profit doesn't mean you shouldn't charge for the value you deliver!**
- In fact, it's imperative that you do figure out **what you can charge for** and **who will pay** (other than students & teachers).

That's why we start with *these*



Customer Segments

(Does Anyone Care?)



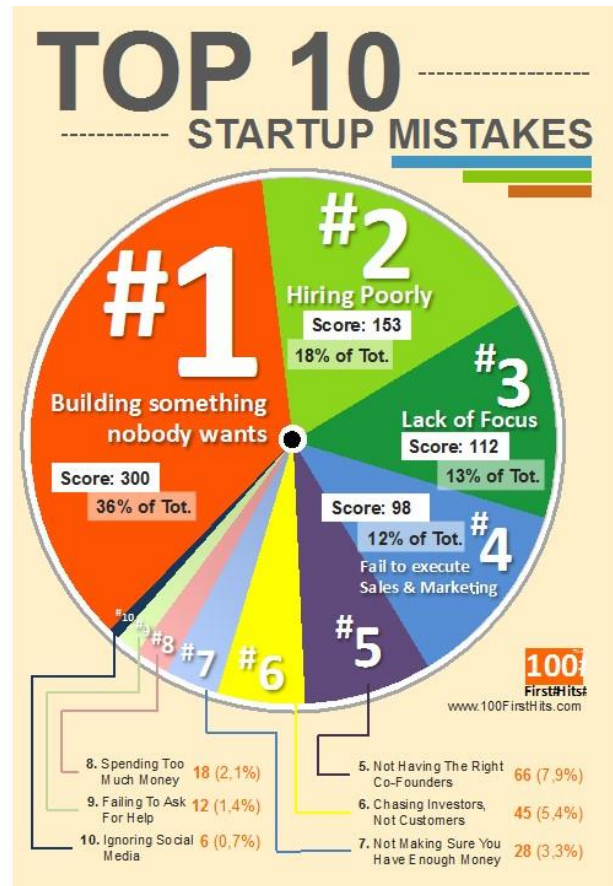
Value Propositions

(Why Do They Care?)

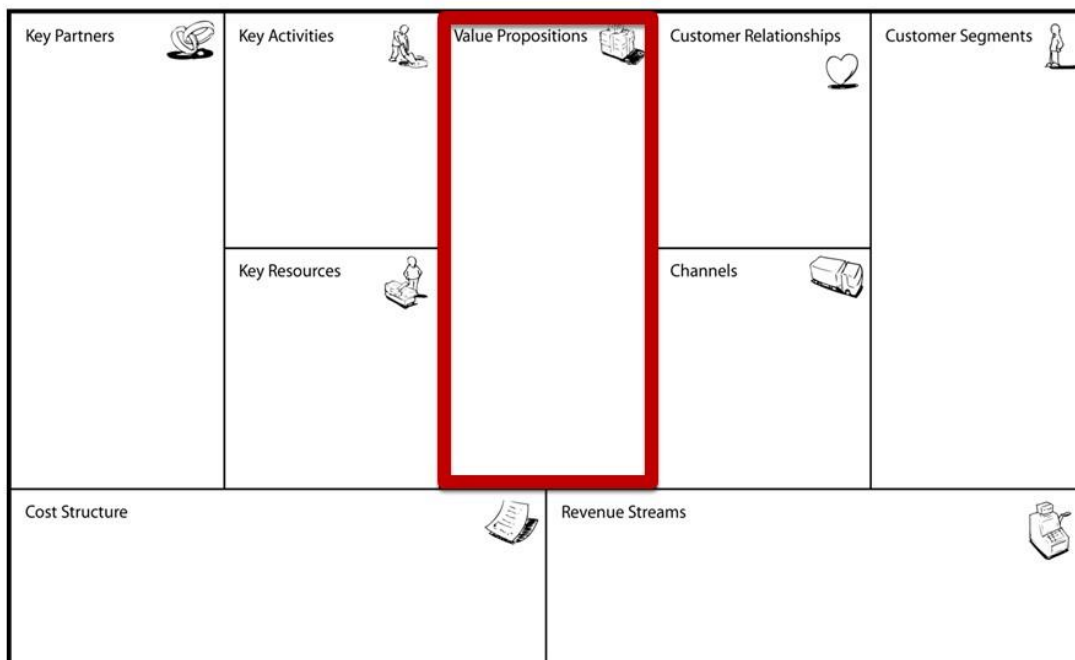


Mistake #1

**Building
Something
Nobody
Wants!**



Value Propositions (Why Do They Care?)



The Value Proposition

A **value proposition** is a promise of value to be delivered. It is a clear statement that:

- explains how your innovation solves customers' problems or improves their situation (**relevant**),
- delivers specific benefits (**descriptive, measurable**),
- tells the user or buyer why they should use it or buy from you and not from the competition (**unique**).

<http://conversionxl.com/value-proposition-examples-how-to-create/#>.

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Features vs. Value Propositions

Features	Weak Value Propositions	Strong Value Propositions
Fun & Engaging	Faster, Cheaper, Better	Relevant, Significant & Testable Product Benefits
Field-specific skill building	Getting students involved with an undergraduate publication	Increase number of good applicants for graduate schools

Customer Segments

(Does Anyone Care?)



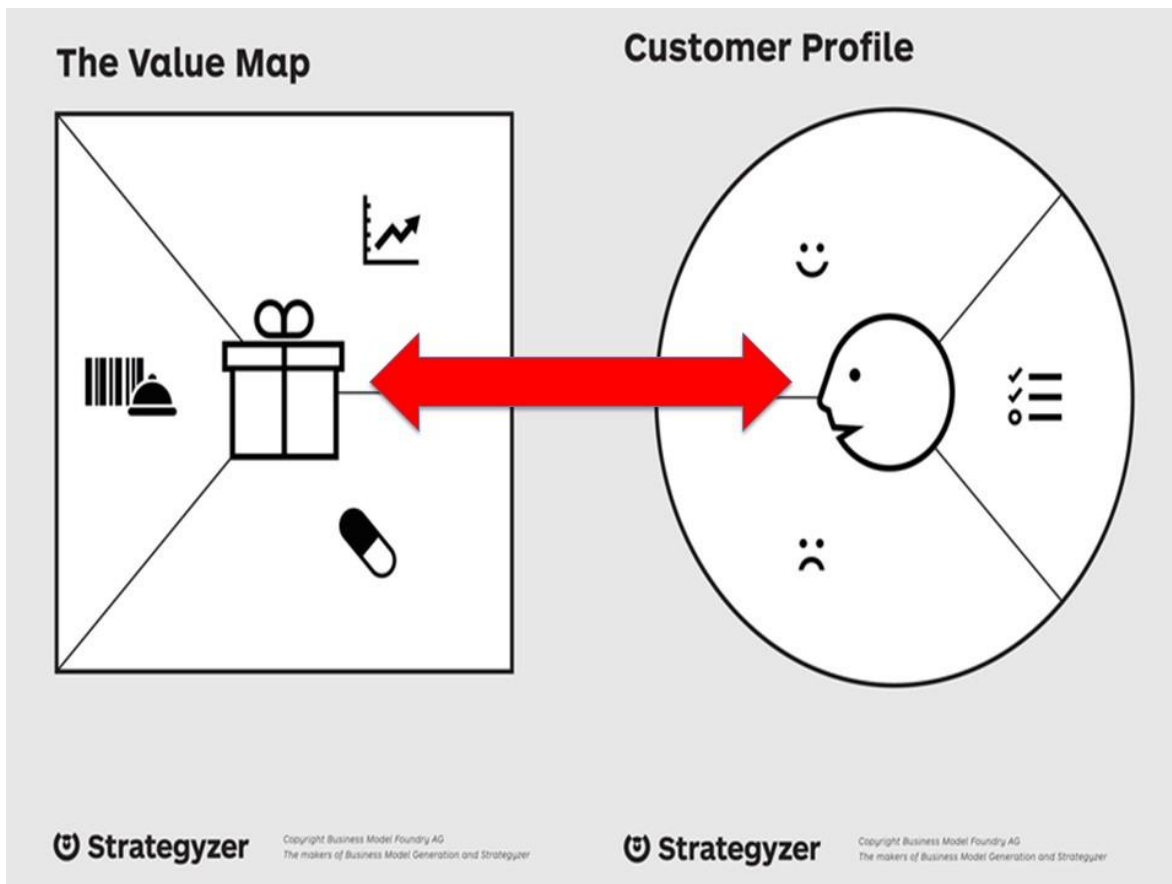
Customer Segments

<p>Not Customer Segments</p>	<p>Vague Customer Segments</p>	<p>Clear Customer Segments</p>
<p>Buildings, Organizations</p>	<p>Broad Groups of People</p>	<p>Very Specific Job Titles, Very Specific Archetypes/Personas</p>
<p>Colleges</p>	<p>Faculty</p>	<p>Newly Hired, Tenure-track Engineering Faculty</p>

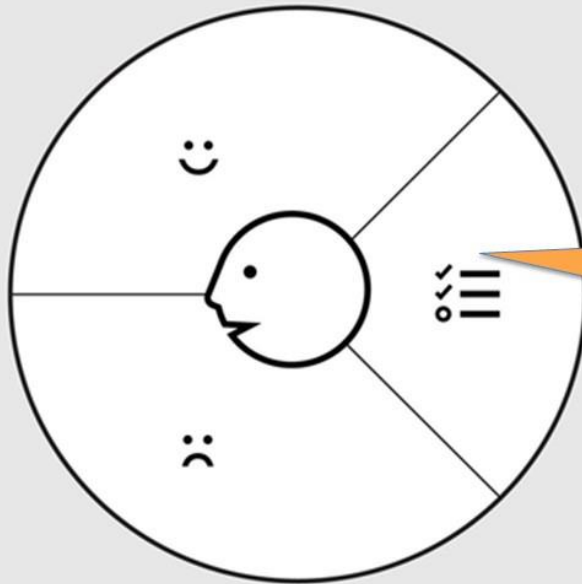
Customer Segments (CS) and Value Propositions (VP) Alignment

What makes for a compelling value proposition?

- What problem are you solving/need are you serving?
- How?
- For whom?



Customer Profile



Customer Jobs:
What do they have to do and how do they do it now?

Jobs

- Functional
- Social
- Emotional
- Supporting

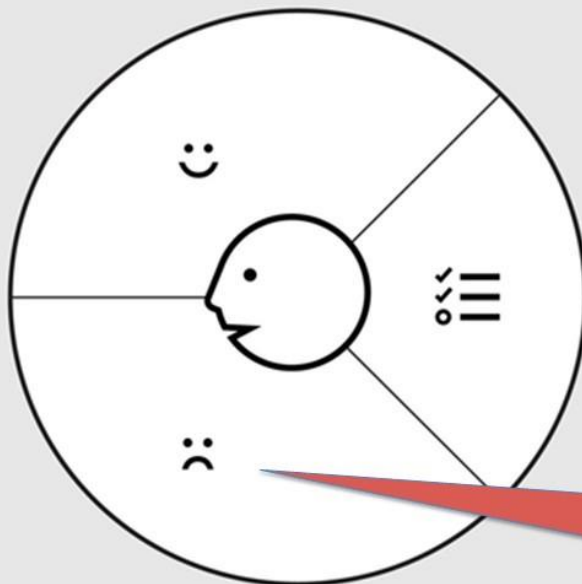
Job's contexts

Job's importance

Strategyzer

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Customer Profile



Pains

- Undesired outcomes
- Obstacles
- Risks
- Difficulties

Severity

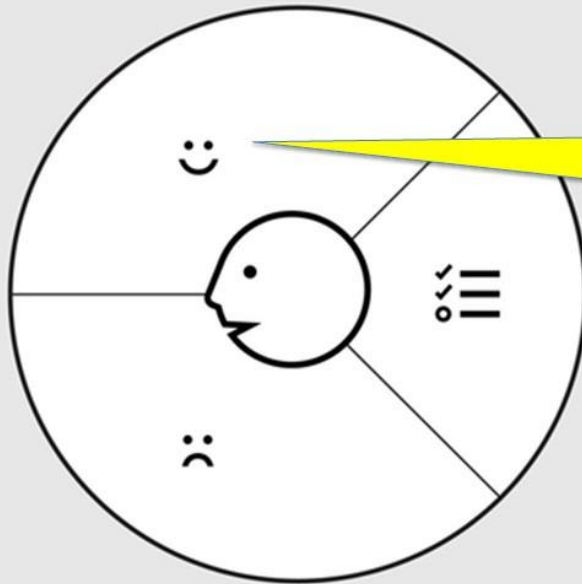
Customer Pains:
What annoys your customers?

Strategyzer

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Customer Profile



**Customer Gains:
What do they
want?**

Gains

- Functional
- Social
- Emotional
- Resourceful

Relevance

- Required
- Desired
- Expected
- Unexpected

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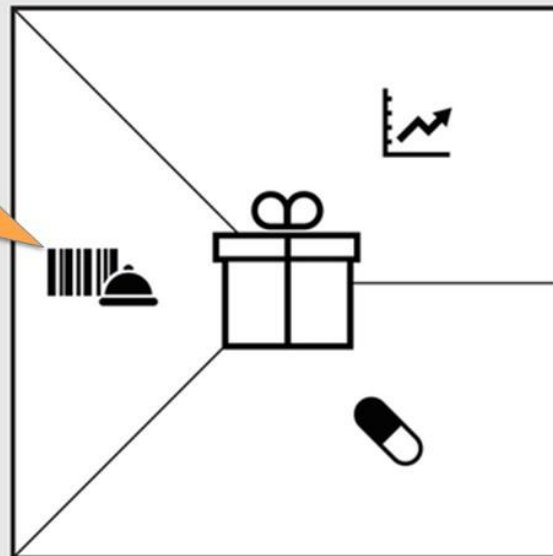
**Products & Services:
What are you
offering?**

Products & Services

- Physical, tangible
- Intangible

Relevance

The Value Map



Strategyzer

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Gain Creators:
How do you provide positive results and benefits?

Gains Creators

- Expectations
- Desires
- Utility
- Unexpected

Relevance

The Value Map



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Pain Relievers

- Undesired outcomes
- Obstacles
- Risks
- Difficulties

Relevance

Pain Relievers:
How do you alleviate customer pains?

The Value Map



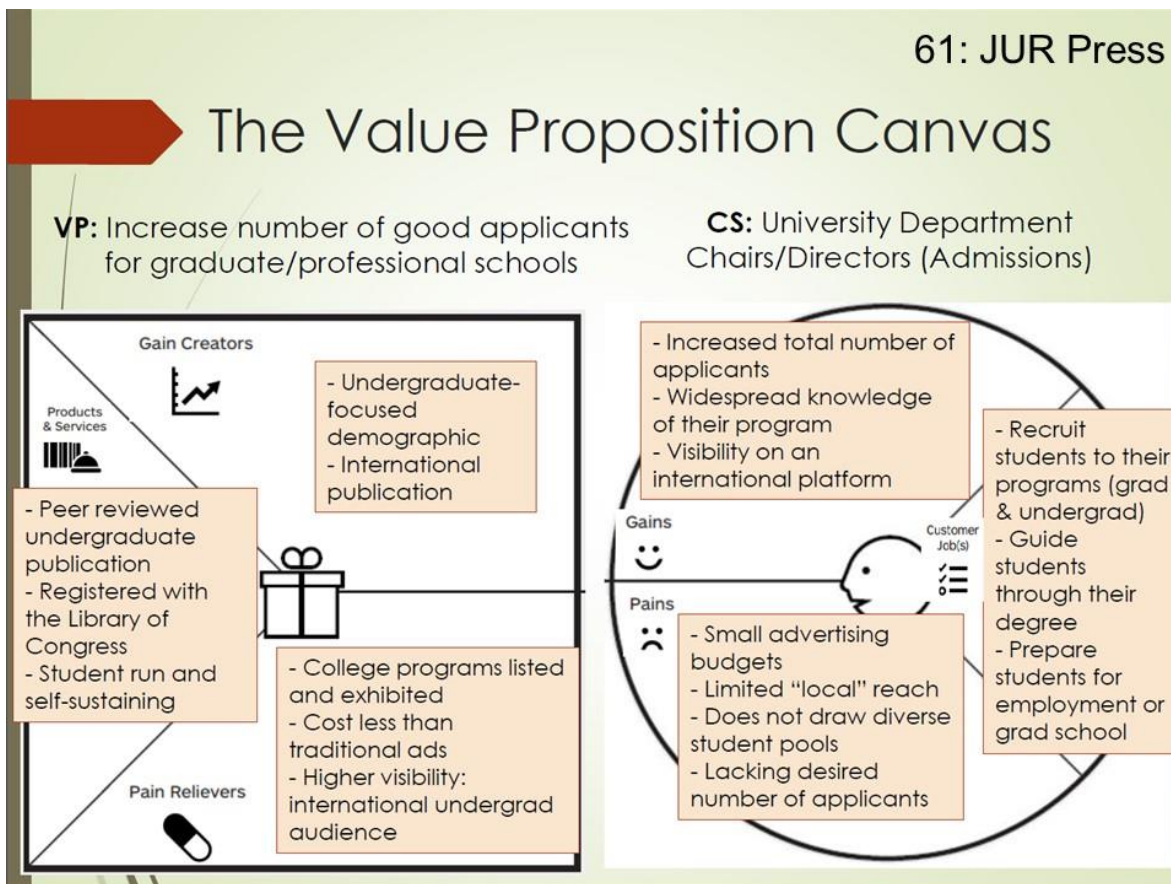
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Value Proposition Customer Segment Ad Lib

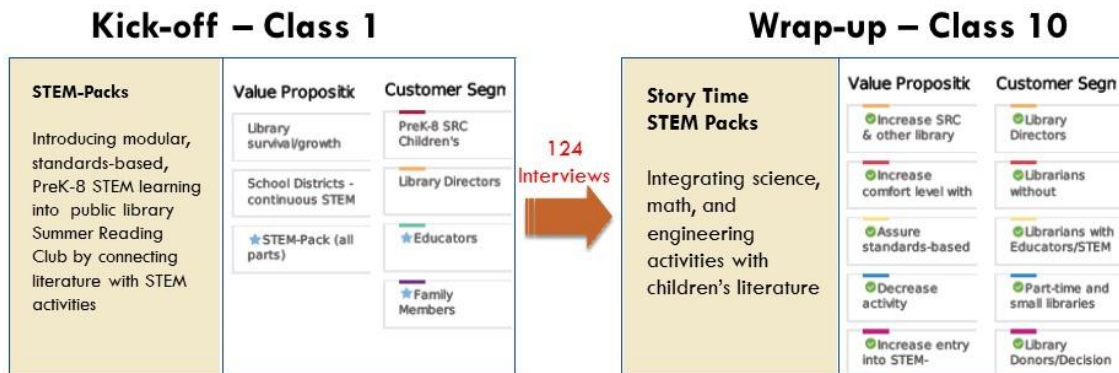
CS { _____
Customer Segment: Which people? Be specific!

VP { **would “pay”** to _____
Value Proposition: Solve this problem

in a way that _____
Verb (reduces, increases, etc.) _____
a specific Customer Pain or Gain _____
(unlike _____)
Extra Credit: How is it different than the competition?



Customer Segment and Value Proposition Alignment



Value Propositions

Decrease activity preparation time to 20 minutes or less

Customer Segments

Part-time and small library staff

Customer Segments (CS) and Value Propositions (VP) Exercise (~30 min)

- **Participants work individually on:**
 - Describing their innovation in 1-2 sentences (from previous example)
 - Identifying one VP that is aligned with one CS using the Value Proposition Canvas
- **Participants work in pairs to provide feedback and revise their work**
- **Pairs share their work with the group**

The Growing Network of I-Corps™ L



New Courses

Awareness Sessions	Introduction to I-Corps™ L	National Cohort
1-3 hours	2 weeks	7 weeks
Face-to-Face Online	Online Hybrid	Hybrid
<ul style="list-style-type: none"> • Introduction to core features of the Lean Startup Process • Focus on the importance of sustainable scalability at the early stages of concept development 	<ul style="list-style-type: none"> • Opportunity to develop 'proof-of-concept' evidence towards sustaining and scaling • Focus on Value Proposition + Customer Segment 'fit' 	<ul style="list-style-type: none"> • Opportunity to determine innovation readiness for sustainable scalability • Immersion in the Lean Startup Process
Frontiers in Education (FIE) October 12-15, Erie, PA	*ASEE Annual Conference June 25-28, Columbus, OH	? (traditionally Jul-Aug)

Acknowledgments

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We acknowledge the **American Society for Engineering Education (ASEE)** and **IEEE Frontiers in Education Conference** for hosting.



Thank you!

An e-copy of this presentation will be posted to:
www.asee.org/i-corps-l

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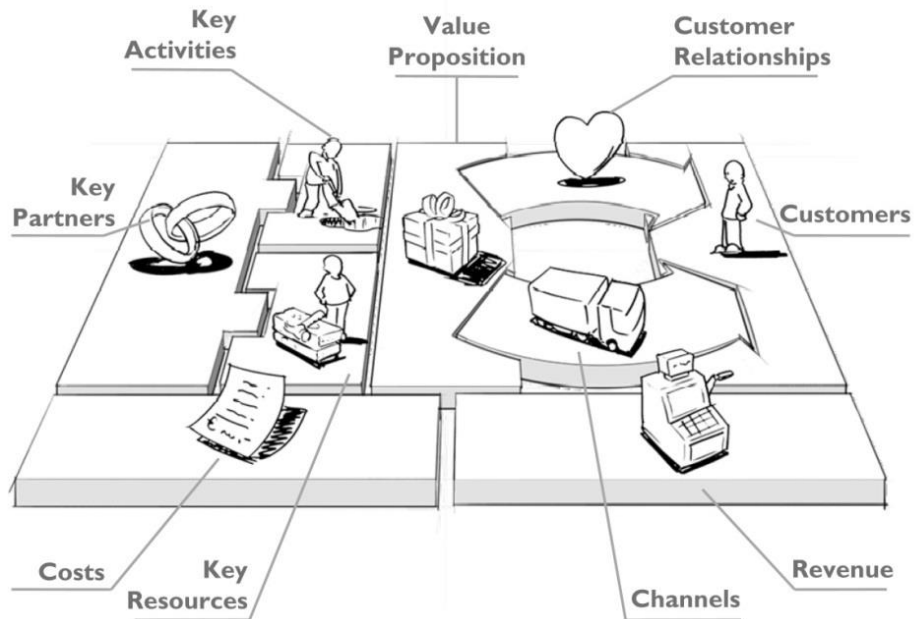
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Purdue University and
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Business Model Canvas



The Business Model Canvas (BMC) is a strategic management and entrepreneurial tool that allows to describe, design, challenge, invent, and pivot a business model. The BMC is composed of nine building blocks outlined below:

- **Customer Segments** – This building block defines the different groups of people an enterprise aims to reach and serve.
- **Value Propositions** – This block describes the bundle of products and services that create value for a specific customer segment. Value propositions are delivered to customers through communication, distribution and sales channels.
- **Channels** – This block describes how a company communicates with and reaches its customer segments to deliver value propositions.
- **Customer Relationships** – Customer relationships are established and maintained with each customer segment. This block describes the types of relationships a company establishes with specific customer segments.
- **Revenue Streams** – Revenue streams result from value propositions successfully offered to customers. This block represents the cash a company generates from each customer segment – costs must be subtracted from revenues to create earnings.
- **Key Resources** – Key resources are the assets required to make a business model work.
- **Key Activities** – These work by performing a number of key activities. This block describes the most important things a company must do to make its business model work.
- **Key Partnerships** – Some activities are outsourced and some resources are acquired outside the enterprise. This block describes the network of suppliers and partners that make the business model work.
- **Cost Structure** – The business model elements result in the cost structure.

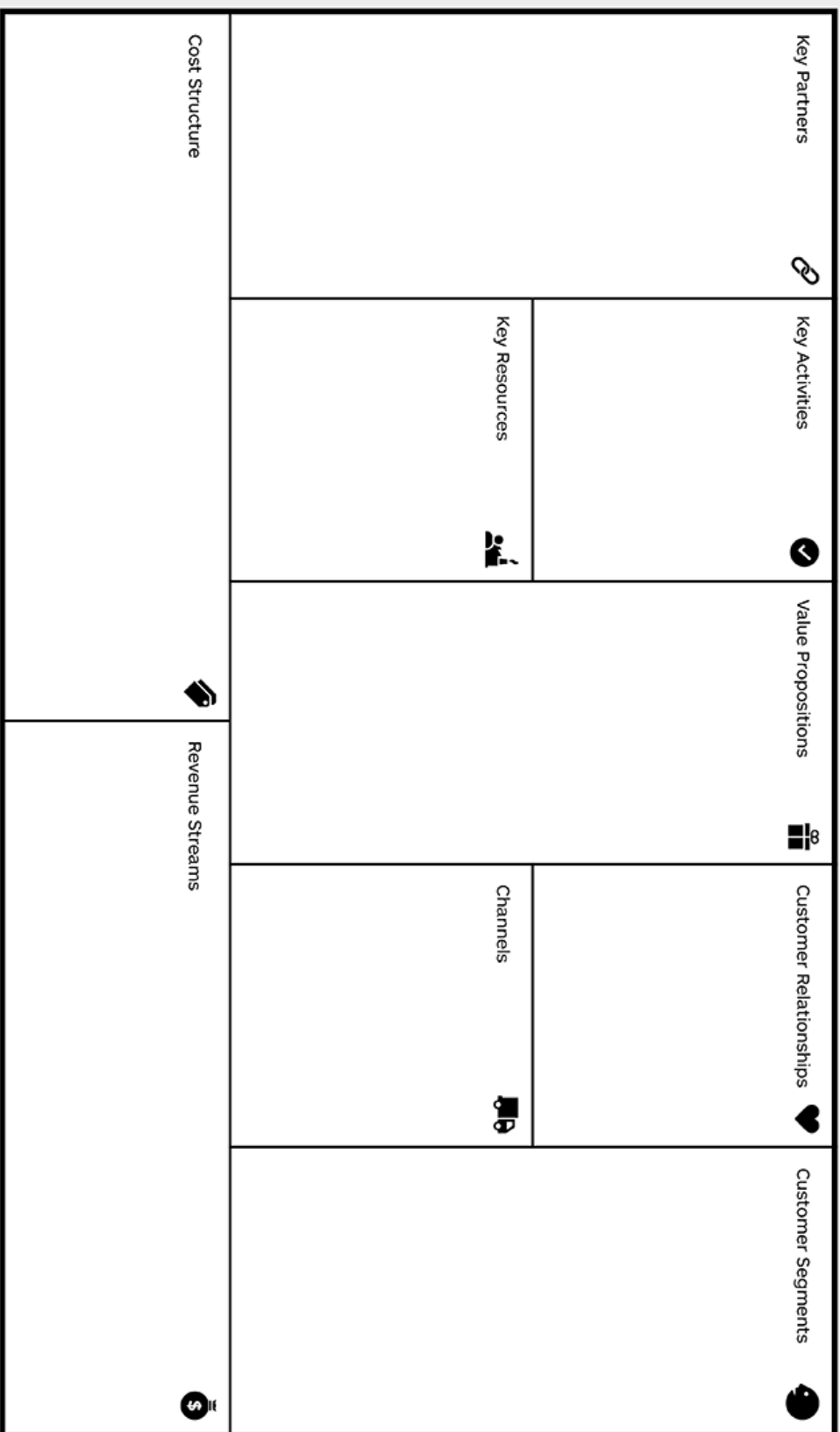
The Business Model Canvas

Designed for:

Designed by:

Date:

Version:

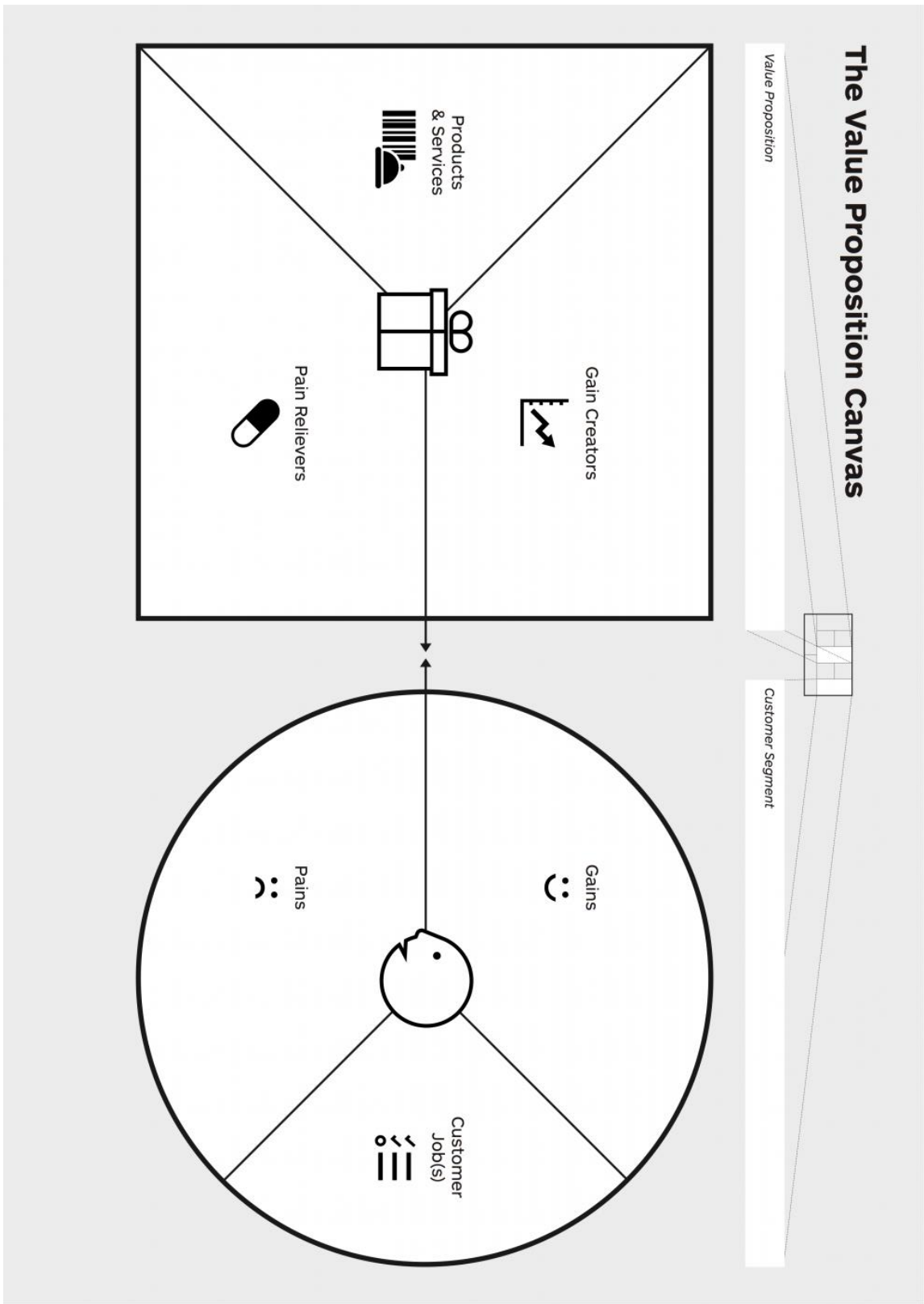



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Strategyzer
strategyzer.com

Value Proposition Canvas



CS



 Customer Segment: Which people? Be specific!

VP

would “pay” to _____
 Value Proposition: Solve this problem

in a way that

 Verb (reduces, increases, etc.)

 a specific Customer Pain or Gain

(unlike _____)

Extra Credit: How is it different than the competition?

CS & VP Exercise

Educational Innovation

Value Proposition	Customer Segment

Educational Innovation

Value Proposition	Customer Segment

Educational Innovation

Value Proposition	Customer Segment



The **American Society for Engineering Education** is a global society of individual, institutional, and corporate members founded in 1893. We are committed to furthering education in engineering and engineering technology by promoting excellence in instruction, research, public service, professional practice, and societal awareness.

ASEE seeks to more fully engage with high school students, parents, teachers, engineering faculty and business leaders to enhance the engineering workforce of the nation.

ASEE is the only professional society addressing opportunities and challenges spanning all engineering disciplines, working across the breath of academic education, research, and public service.

- We support engineering education at the institutional level by linking engineering faculty and staff to their peers in other disciplines to create enhanced student learning and discovery.
- We support engineering education across institutions, by identifying opportunities to share proven and promising practices.
- We support engineering education locally, regionally, and nationally, by forging and reinforcing connection between academic engineering and business, industry, and government.

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