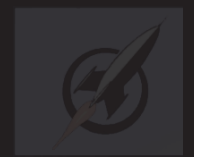
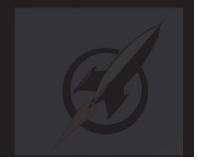
Lean Startup

steven weinstein

sweinstein@bmntpartners.com

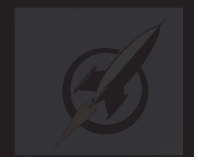


More startups fail from a lack of customers than from a failure of product development



But First a bit of history

It Started 100 Years Ago



U.S. 1870's – 1920's Rapid Industrialization

© 2016 H4Di.org

Railroads
Steel
Electricity
Automobiles
Consumer Goods

© 2016 H4Di.org

Ownership is separated from management

Ownership is separated from management

Business needs *professional business administrators*

The Master of Business Administration

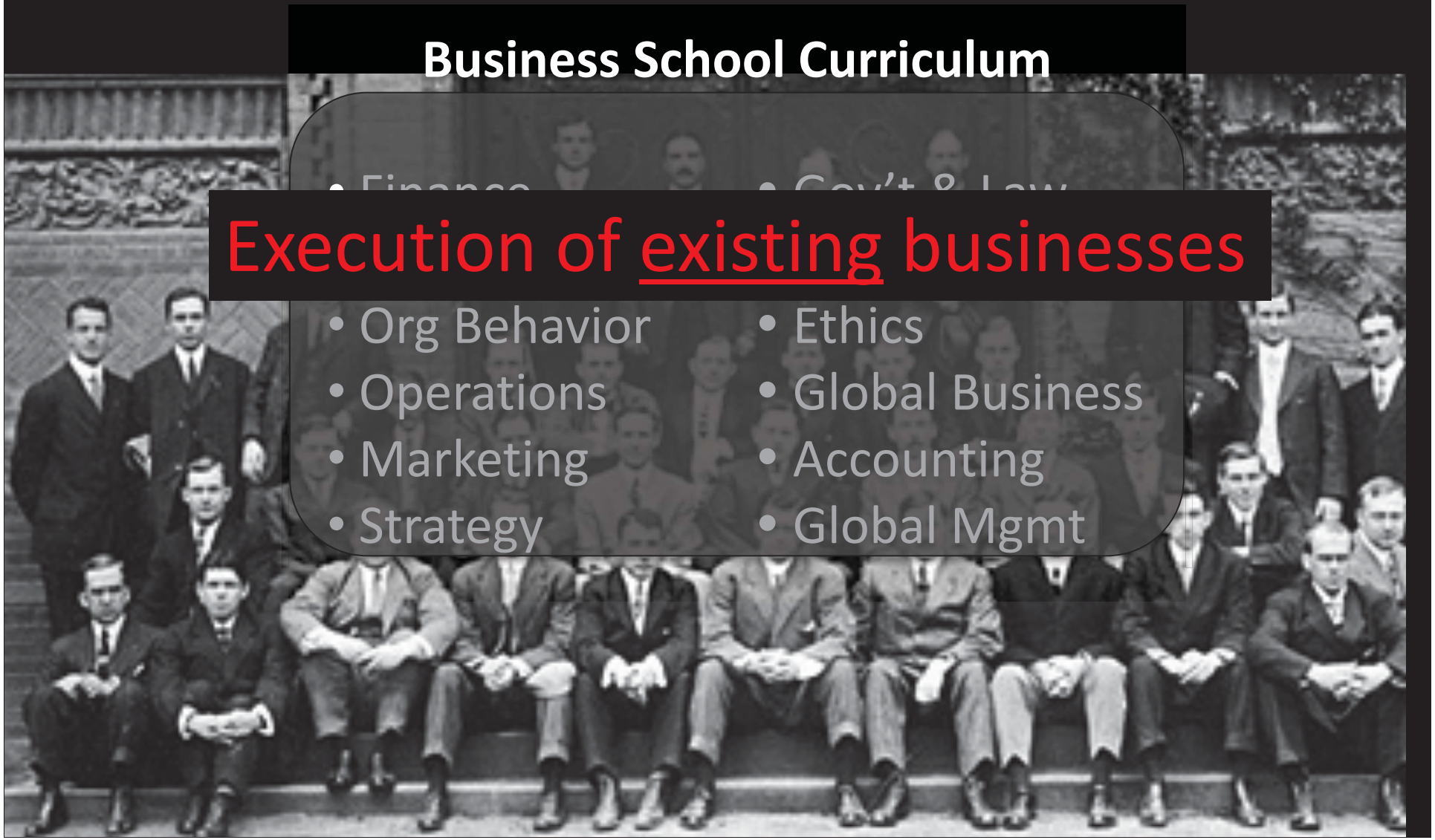
The Master of Business Administration
1908

The Master of Business Administration (MBA)

Business School Curriculum

- Finance
- Leadership
- Org Behavior
- Operations
- Marketing
- Strategy
- Gov't & Law
- Supply Chain
- Ethics
- Global Business
- Accounting
- Global Mgmt

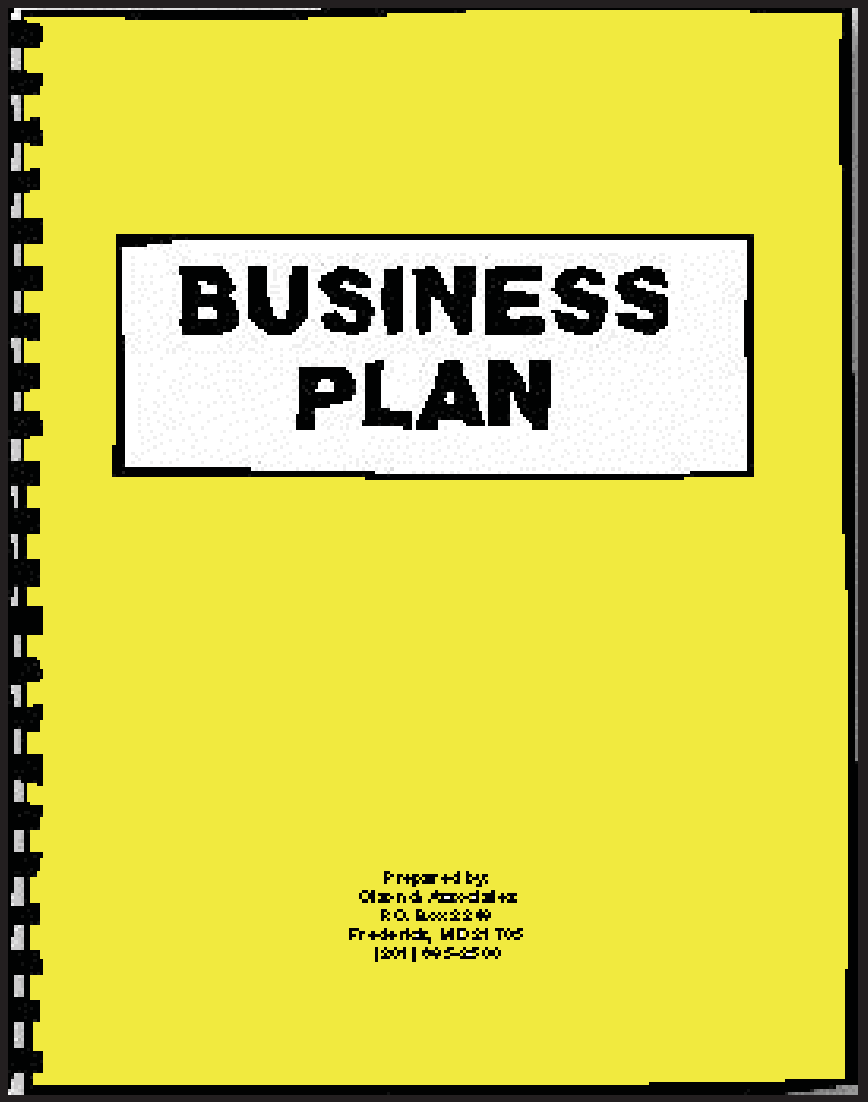
The Master of Business Administration (MBA)



Business School Curriculum

Execution of existing businesses

- Org Behavior
- Operations
- Marketing
- Strategy
- Ethics
- Global Business
- Accounting
- Global Mgmt



© 2016 H4Di.org

All I Need is the 5-Year Forecast

	A	B	C	D	E	G	H	I	J	K	L	M	N
32	**Balance Sheet**										Year		
33									1999	2000	2001	2002	2003
34	Assets												
35		Cash and cash equivalents*							$4.27	$6.38	$7.62	$8.83	$7.00
36		Accounts receivable*							$20.58	$24.39	$28.77	$34.11	$32.00
37		Inventories*							$26.73	$30.45	$36.75	$43.27	$38.00
38		Deferred income taxes*							$0.00	$0.00	$0.00	$0.00	$0.00
39		Total current assets							$51.58	$61.22	$73.14	$86.21	$77.00
40		Fixed assets											
41			Cost*						$331.64	$423.92	$503.87	$613.28	$650.00
42			Accumulated Depreciation*						$98.72	$105.09	$112.40	$122.26	$115.00
43			Net fixed assets						$232.92	$318.83	$391.47	$491.02	$535.00
44		Goodwill*							$0.00	$0.00	$0.00	$0.00	$0.00
45		Intangible assets*							$0.00	$0.00	$0.00	$0.00	$0.00
46		Other assets*							$0.00	$0.00	$0.00	$0.00	$0.00
47		**Total assets**							**$284.50**	**$380.05**	**$464.61**	**$577.23**	**$612.00**
48	Liabilities												
49		Accounts payable*							$31.83	$63.43	$83.84	$94.41	$80.00
50		Current debt*							$30.86	$43.03	$64.85	$79.49	$0.00
51		Total current liabilities							$62.69	$106.46	$148.69	$173.90	$80.00
52		Long-term debt*							$40.00	$46.92	$53.41	$73.57	$214.54
53		Other long-term liabilities*							$0.00	$0.00	$0.00	$0.00	$0.00
54		Total liabilities							$102.69	$153.38	$202.10	$247.47	$294.54
55	Shareholders' equity												
56		Common Stock and Additional Paid in Capital*							$90.00	$130.00	$160.00	$220.00	$200.00
57		Retained Earnings*							$91.81	$96.67	$102.51	$109.76	$117.46
58		Total Shareholders' Equity							$181.81	$226.67	$262.51	$329.76	$317.46
59		**Total liabilites and shareholders' Equity**							**$284.50**	**$380.05**	**$464.61**	**$577.23**	**$612.00**

©

Everyone has a plan
until they get punched in the face

Mike Tyson

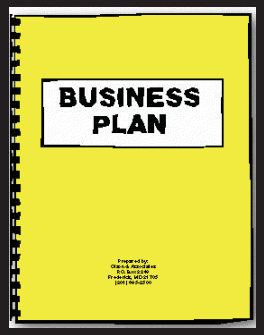
© 2016 H4Di.org

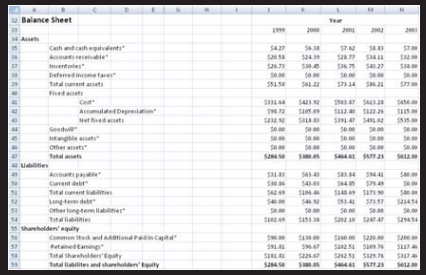
No plan survives first contact with the enemy

Field Marshall Helmuth von Moltke

© 2016 H4Di.org

Is this all there is?





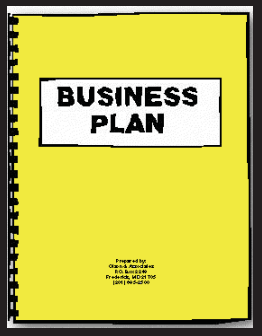
			Year				
			1999	2000	2001	2002	2003
Assets							
	Cash and cash equivalents*		$4.27	$6.38	$7.62	$8.83	$7.00
	Accounts receivable*		$20.58	$24.39	$28.77	$34.11	$32.00
	Inventories*		$26.73	$30.45	$36.75	$40.27	$38.00
	Deferred income taxes*		$0.00	$0.00	$0.00	$0.00	$0.00
	Total current assets		$51.54	$61.22	$73.14	$86.21	$77.00
	Fixed assets						
		Cost*	$331.44	$423.92	$503.87	$613.28	$650.00
		Accumulated Depreciation*	($98.72)	($105.09)	($112.46)	($122.26)	($115.00)
		Net fixed assets	$232.92	$318.83	$391.47	$491.02	$535.00
	Goodwill*		$0.00	$0.00	$0.00	$0.00	$0.00
	Intangible assets*		$0.00	$0.00	$0.00	$0.00	$0.00
	Other assets*		$0.00	$0.00	$0.00	$0.00	$0.00
	Total assets		$284.50	$380.05	$464.61	$577.23	$612.00
Liabilities							
	Accounts payable*		$31.83	$63.43	$83.84	$94.41	$80.00
	Current debt*		$30.86	$43.03	$64.85	$79.49	$0.00
	Total current liabilities		$62.69	$106.46	$148.69	$173.90	$80.00
	Long-term debt*		$40.00	$46.92	$53.41	$73.57	$214.54
	Other long-term liabilities*		$0.00	$0.00	$0.00	$0.00	$0.00
	Total liabilities		$102.69	$153.38	$202.10	$247.47	$294.54
Shareholders' equity							
	Common Stock and Additional Paid in Capital*		$90.00	$130.00	$160.00	$220.00	$200.00
	Retained Earnings*		$91.81	$96.67	$102.51	$109.76	$117.46
	Total Shareholders' Equity		$181.81	$226.67	$262.51	$329.76	$317.46
	Total liabilities and shareholders' Equity		$284.50	$380.05	$464.61	$577.23	$612.00

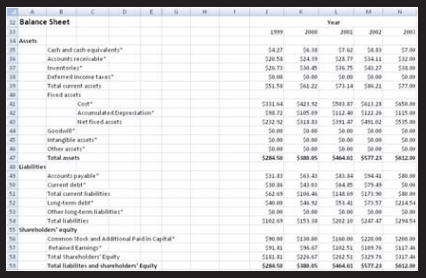
© 2016 H4Di.org

SEARCH

EXECUTION

?

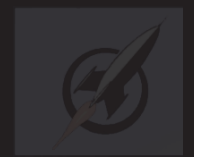




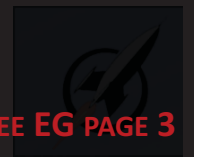
Balance Sheet						
		Year				
		1999	2000	2001	2002	2003
Assets						
	Cash and cash equivalents*	$4.27	$6.38	$7.62	$8.83	$7.00
	Accounts receivable*	$20.58	$24.39	$28.77	$34.11	$32.00
	Inventories*	$26.73	$30.45	$36.75	$40.27	$38.00
	Deferred income taxes*	$0.00	$0.00	$0.00	$0.00	$0.00
	Total current assets	$51.59	$61.22	$73.14	$86.21	$77.00
	Fixed assets					
	Cost*	$331.44	$423.92	$503.87	$615.28	$650.00
	Accumulated Depreciation*	$98.72	$105.09	$112.40	$122.26	$115.00
	Net fixed assets	$232.92	$318.83	$391.47	$491.02	$535.00
	Goodwill*	$0.00	$0.00	$0.00	$0.00	$0.00
	Intangible assets*	$0.00	$0.00	$0.00	$0.00	$0.00
	Other assets*	$0.00	$0.00	$0.00	$0.00	$0.00
	Total assets	**$284.50**	**$380.05**	**$464.61**	**$577.23**	**$612.00**
Liabilities						
	Accounts payable*	$31.83	$63.43	$83.84	$94.41	$80.00
	Current debt*	$30.86	$43.03	$64.85	$79.49	$6.00
	Total current liabilities	$62.69	$106.46	$148.69	$173.90	$86.00
	Long-term debt*	$40.00	$46.92	$53.41	$73.57	$214.54
	Other long-term liabilities*	$0.00	$0.00	$0.00	$0.00	$0.00
	Total liabilities	$102.69	$153.38	$202.10	$247.47	$294.54
Shareholders' equity						
	Common Stock and Additional Paid-in Capital*	$90.00	$130.00	$160.00	$220.00	$200.00
	Retained Earnings*	$91.81	$96.67	$102.51	$109.76	$117.46
	Total Shareholders' Equity	$181.81	$226.67	$262.51	$329.76	$317.46
	Total liabilities and shareholders' Equity	$284.50	$380.05	$464.61	$577.23	$612.00

© 2016 H4Di.org

It Resulted in Five Observations



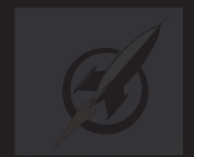
Startups Are Not Smaller Versions of Large Companies



TEACHING POINT: SEE EG PAGE 3

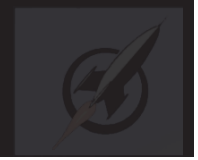
Startups Are Not Smaller Versions of Large Companies

Large Companies Execute Known Business Models

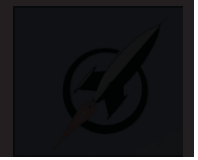


Startups Are Not Smaller Versions of Large Companies

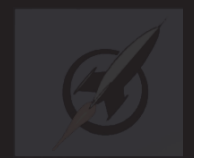
Startups Search for Unknown Business Models



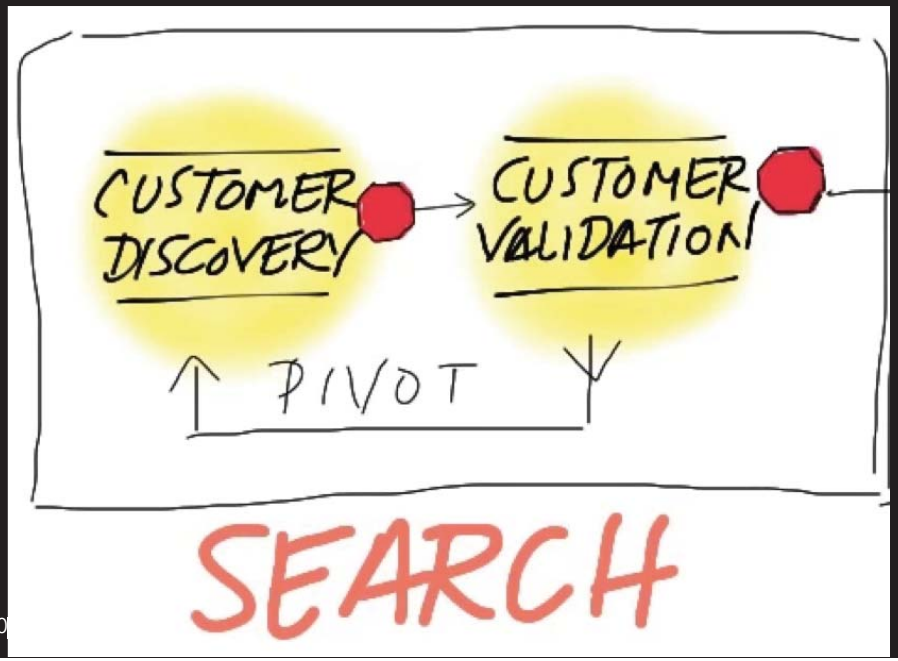
Startups Fail Because They Confuse *Search* with *Execute*



Startups need their own tools,
different from those used
in existing companies

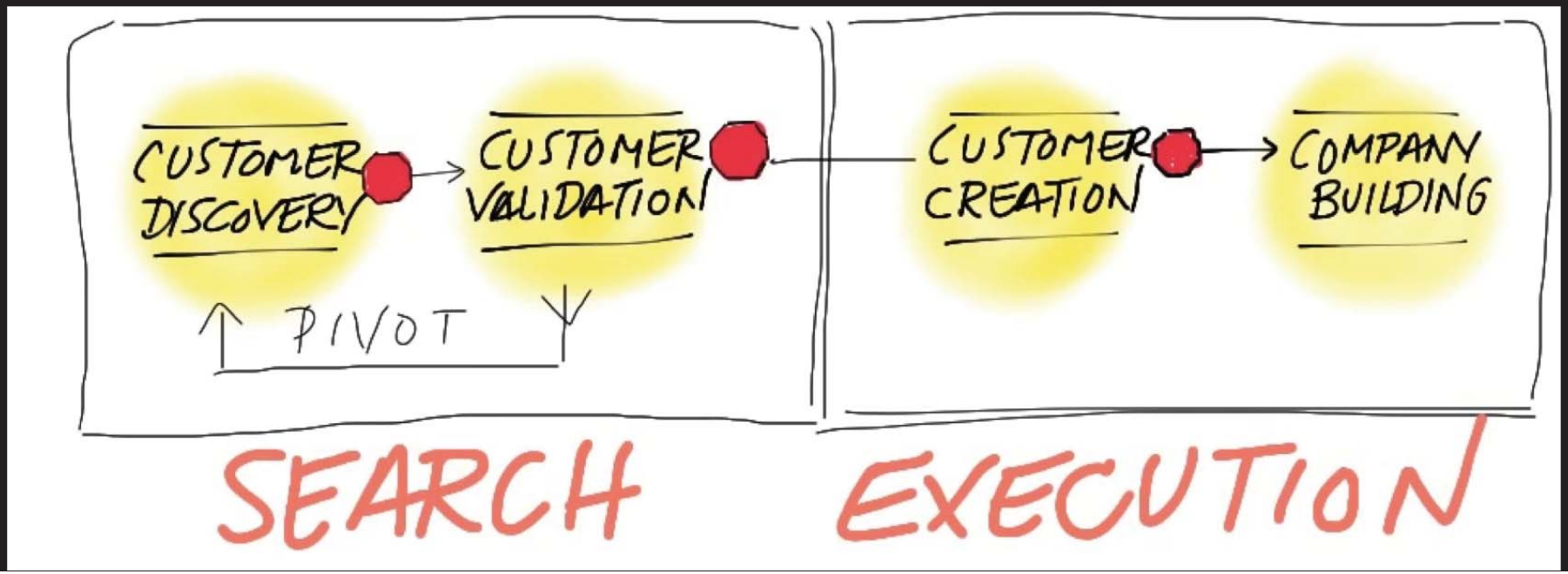


Customer Development

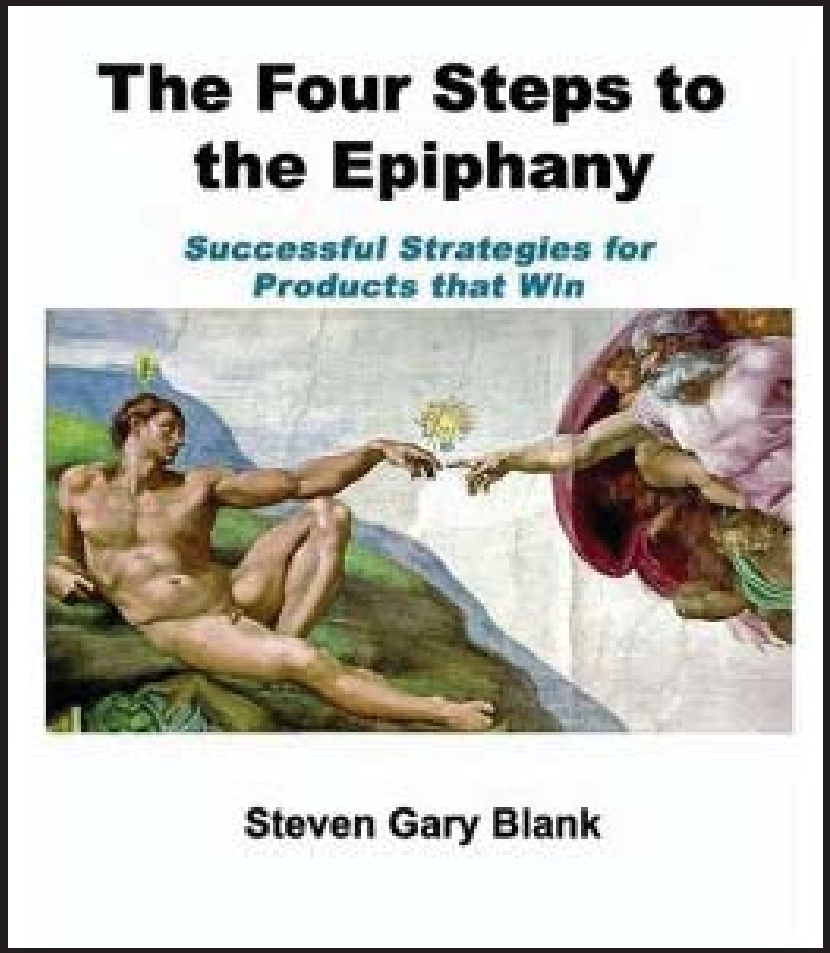


© 20

Customer Development



Steve Blank wrote a “Book”

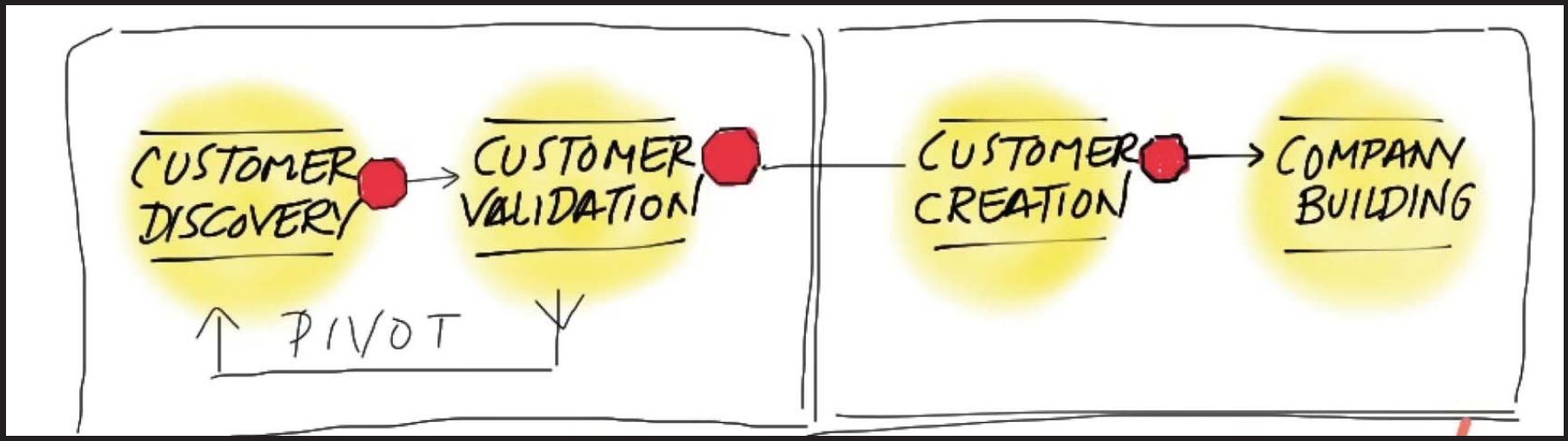


© 2016 H4Di.org

Eric Ries Extends the Model

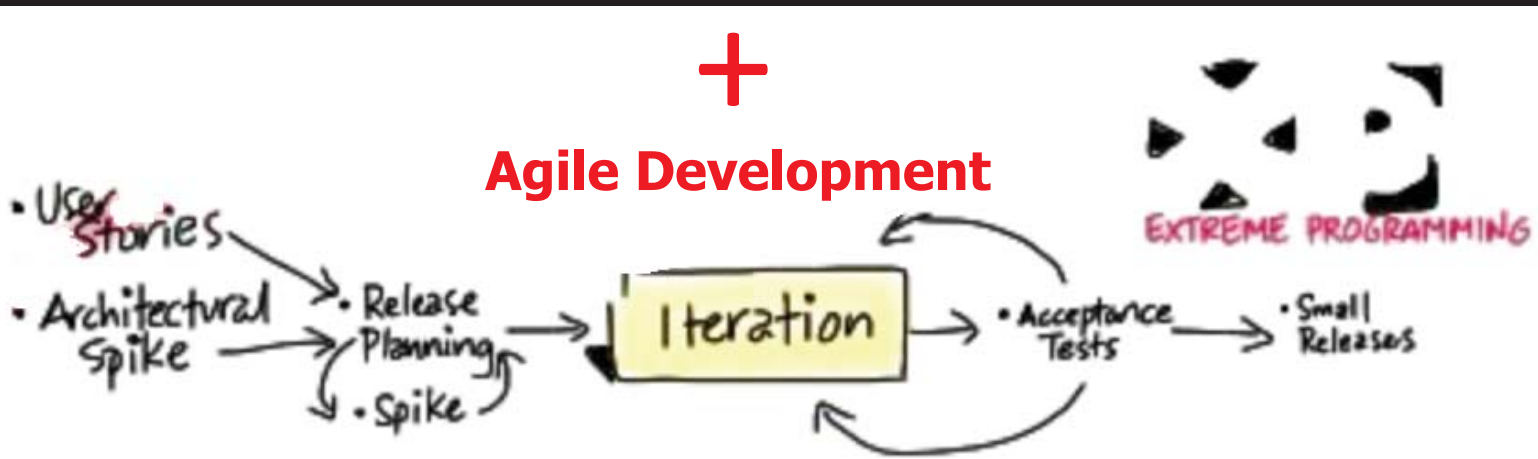
- Took my class at U.C. Berkeley
- Co-founded IMVU, I sat on his board
  - 1st implementation of Customer Development
  - Paired it with an Agile Development Model
- Called it the Lean Startup

Which Turned Into A Better Model



+

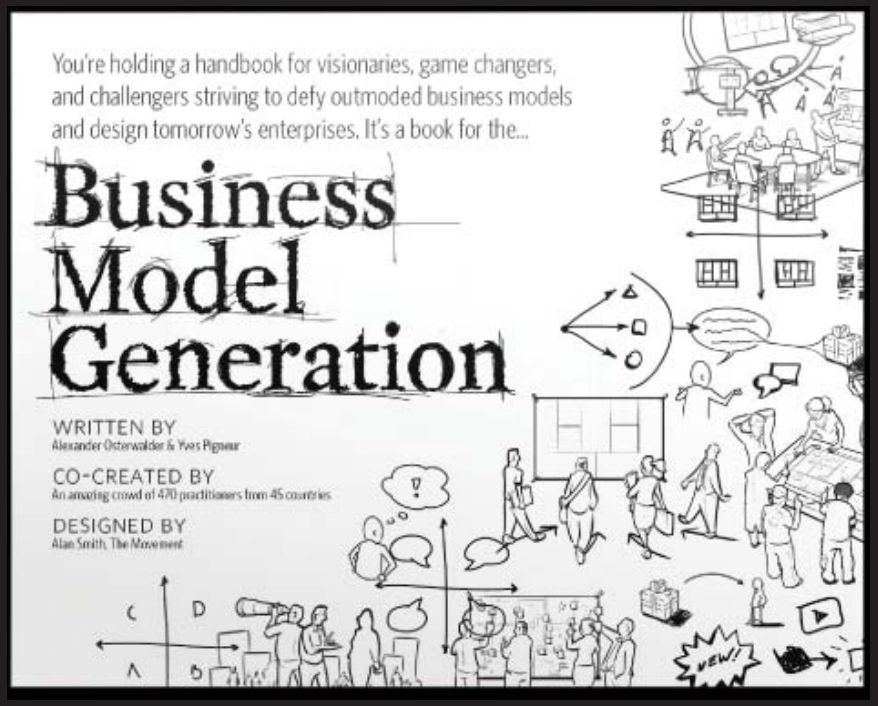
Agile Development



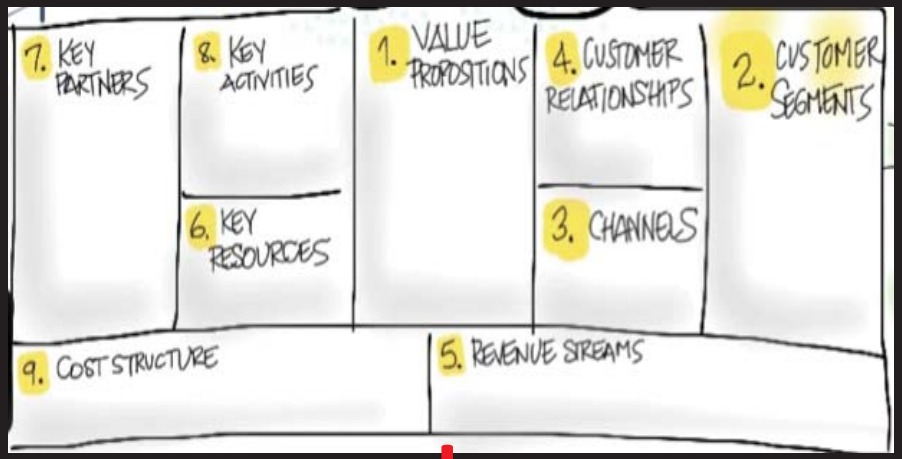
© 2016 H4Di.org

Alex Osterwalder - Business Model

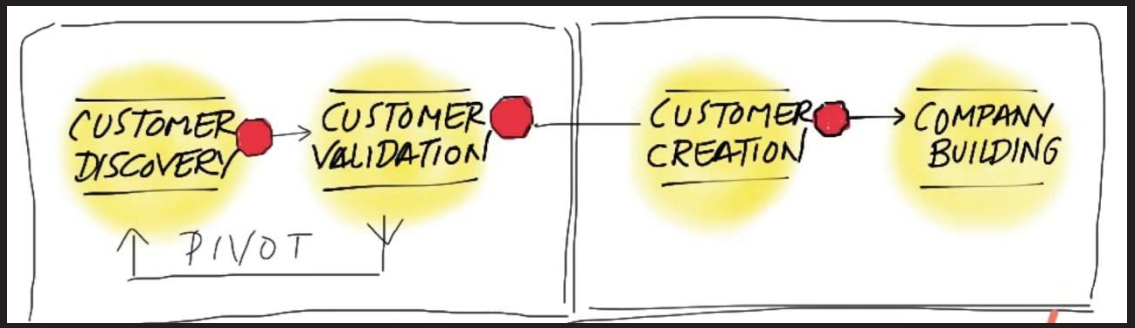
- Business Model Generation
- Defines what the “search” is about



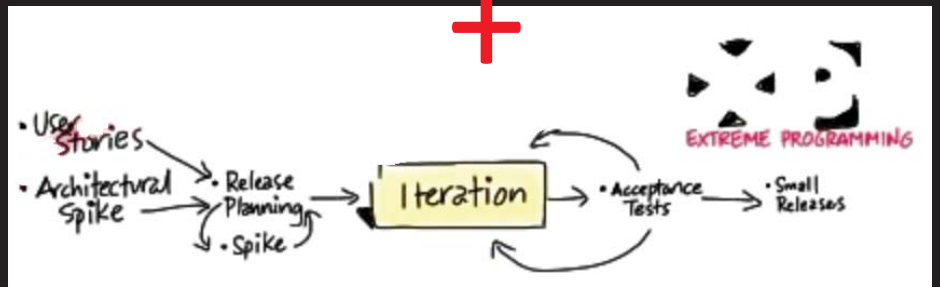
Which Turned Into an Even Better Model



+



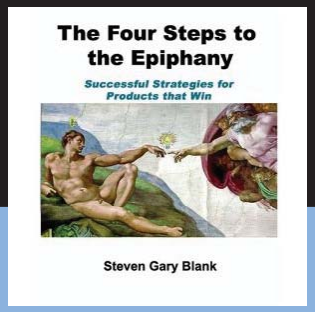
+

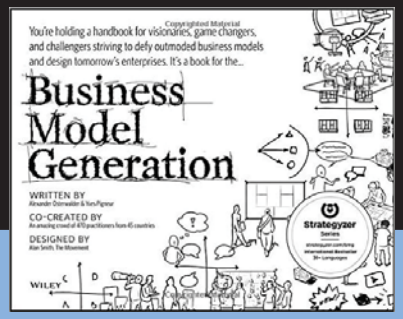


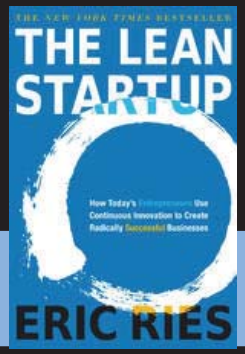
© 2016 H4Di.org

TEACHING POINT: SEE EG PAGE 4

Lean Gets Theory







Customer Development
2003
Blank

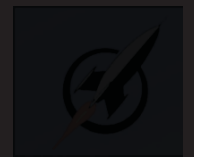
Business Model Canvas
2010
Osterwalder

Agile Engineering
2011
Ries

HBR Cover
2013
Blank

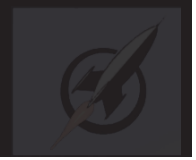
© 2016 H4Di.org

Entrepreneurship is Experiential

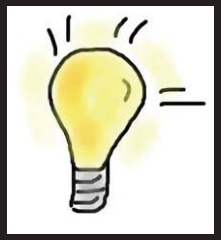


Let’s Do it That Way

Let’s Teach it That Way

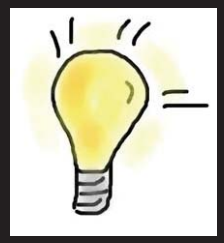


What's A Startup?



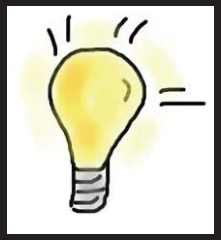
A temporary organization
designed to search
for a repeatable and
scalable
business model

A temporary organization
designed to search
for a repeatable and
scalable
business model

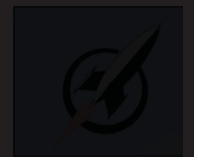


A temporary organization
designed to search
for a repeatable and
scalable
business model

A temporary organization
designed to search
for a repeatable and
scalable
business model

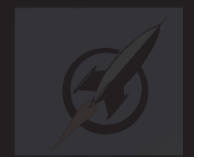


Startups Fail Because They Confuse *Search* with *Execution*



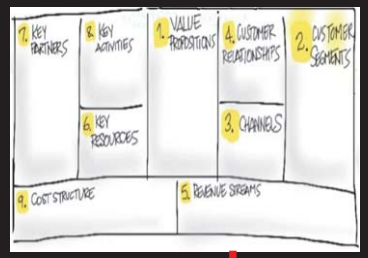
Product risk is not the biggest risk startups face; it's market risk. The risk that not enough people will buy and/or adopt.

Taking you from an Idea to a Business



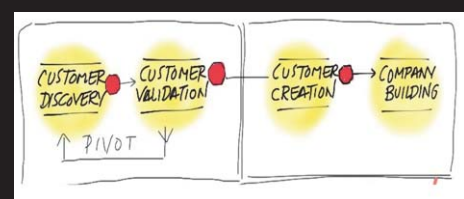
Three Parts of Lean Startup

Part 1



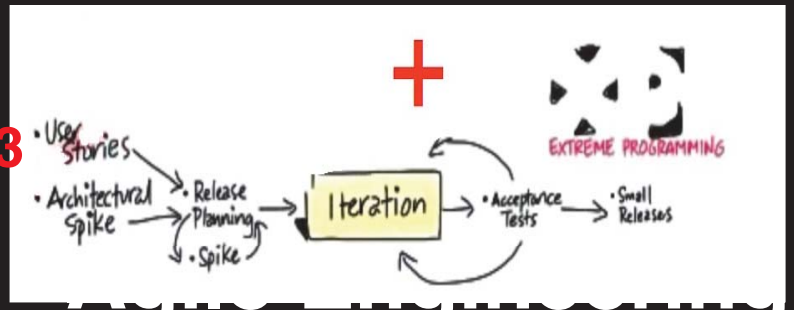
+

Part 2



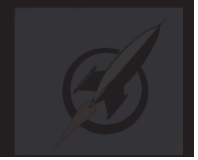
+

Part 3



1. Frame Hypotheses

- Frame Hypotheses



1. Frame Hypotheses

- Frame Hypotheses

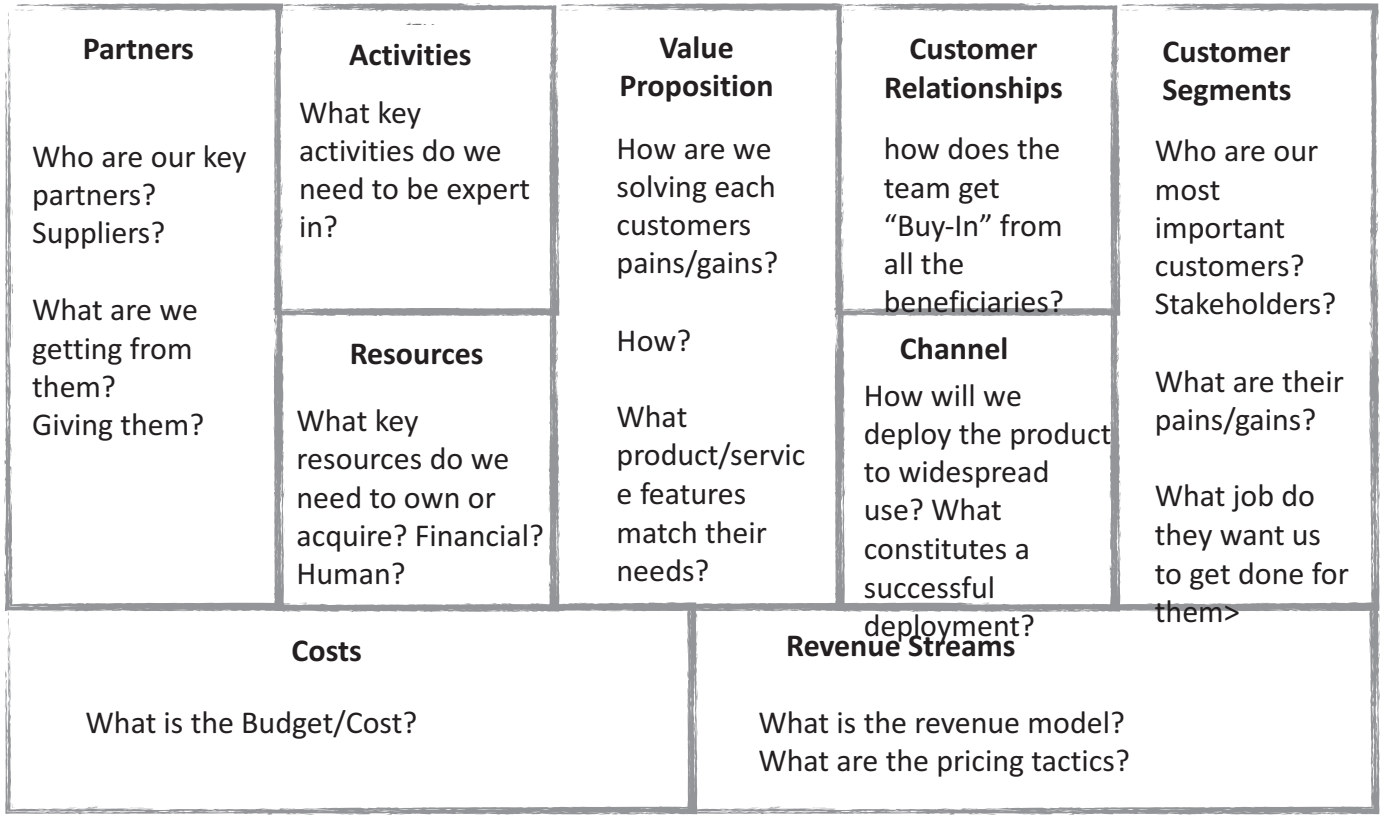
Business Model Canvas

Company/Project View : Business Model Canvas

ADAPTABILITY

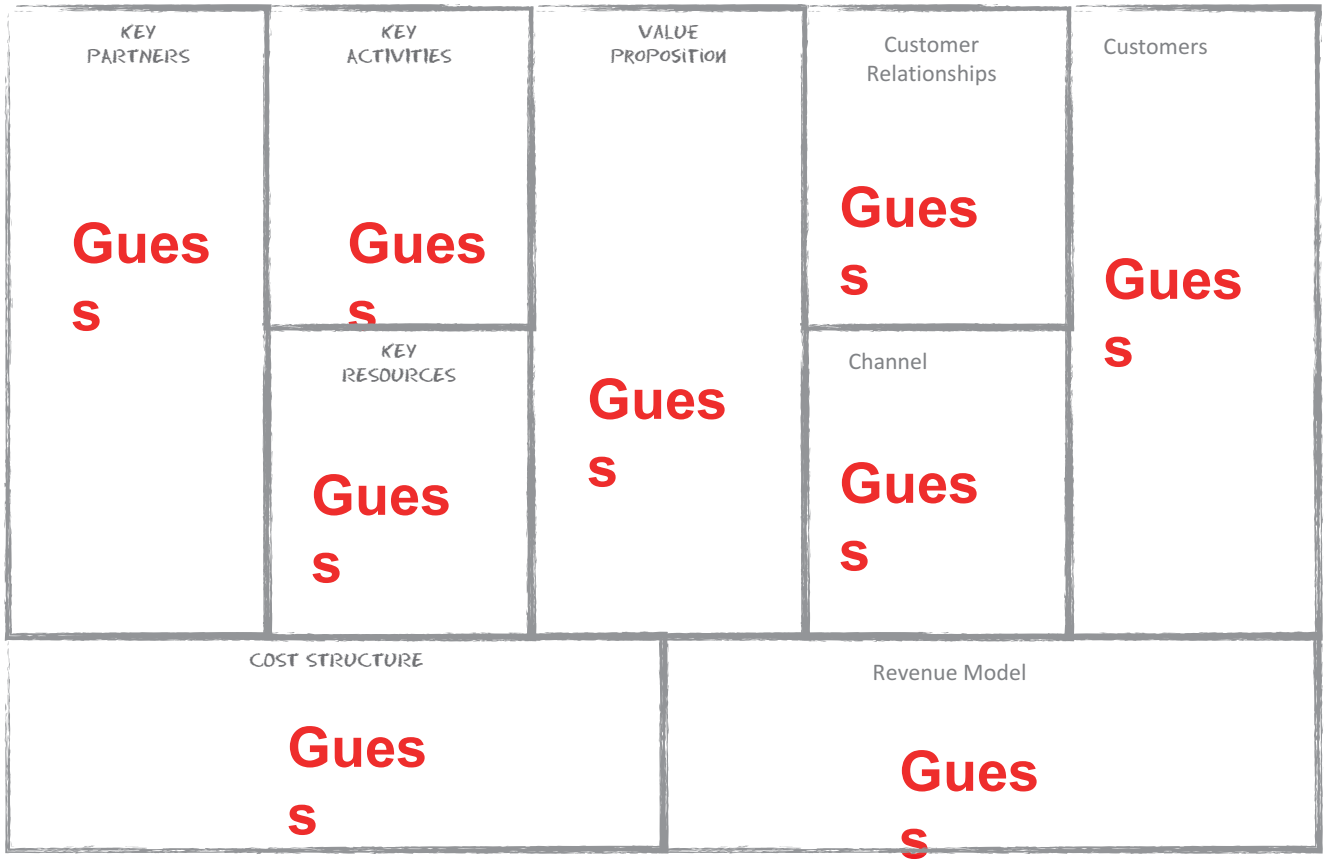
External threats

Business Model Canvas



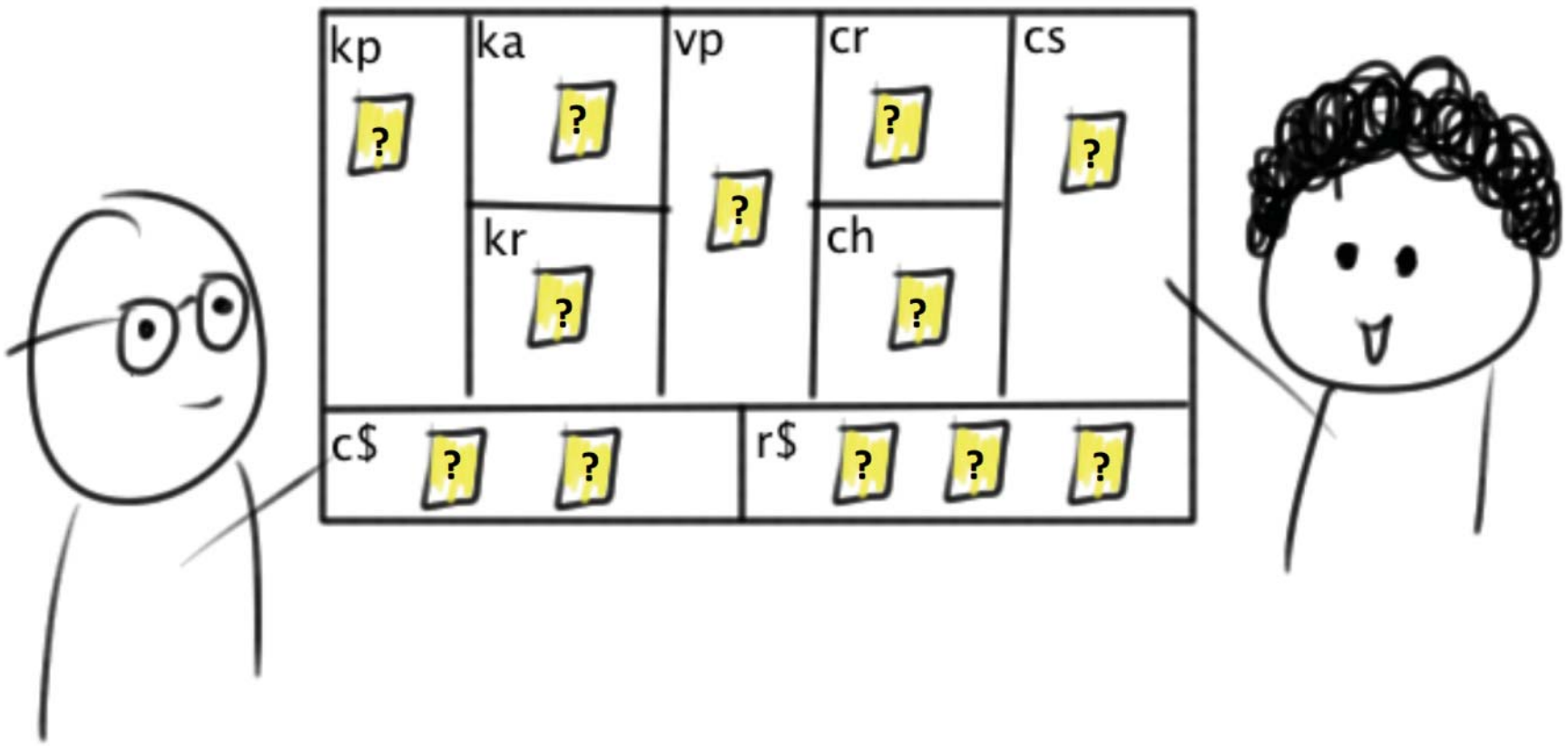
Source: Alexander Osterwalder- Business Model Generation

9 Guesses



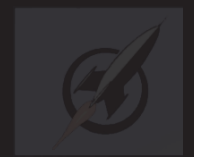
Source: Alexander Osterwalder- Business Model Generation

"I wonder how much of this is reality..."



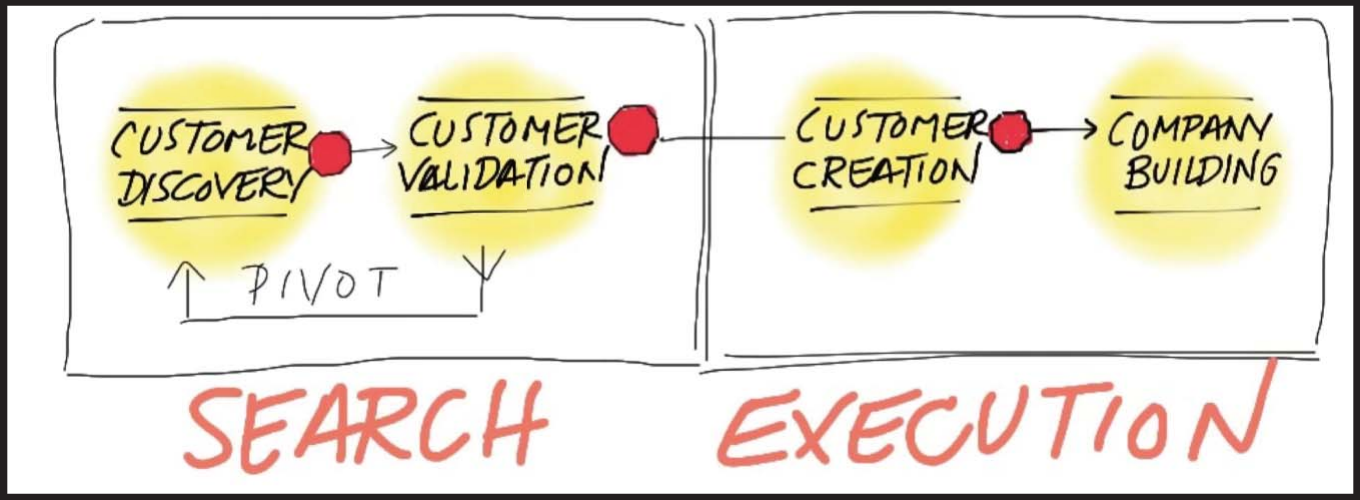
2. Test Hypotheses

- Frame Hypotheses → Business Model Canvas
- Test Hypotheses

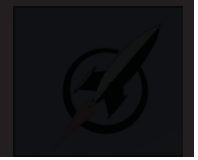


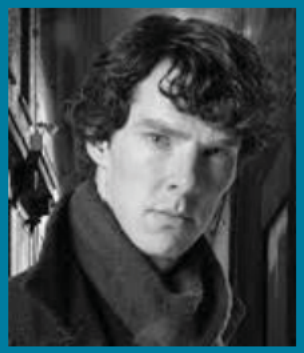
2. Test Hypotheses

- Frame Hypotheses → Business Model Customer Development



There Are No Facts Inside The Building, So Get the Heck Outside





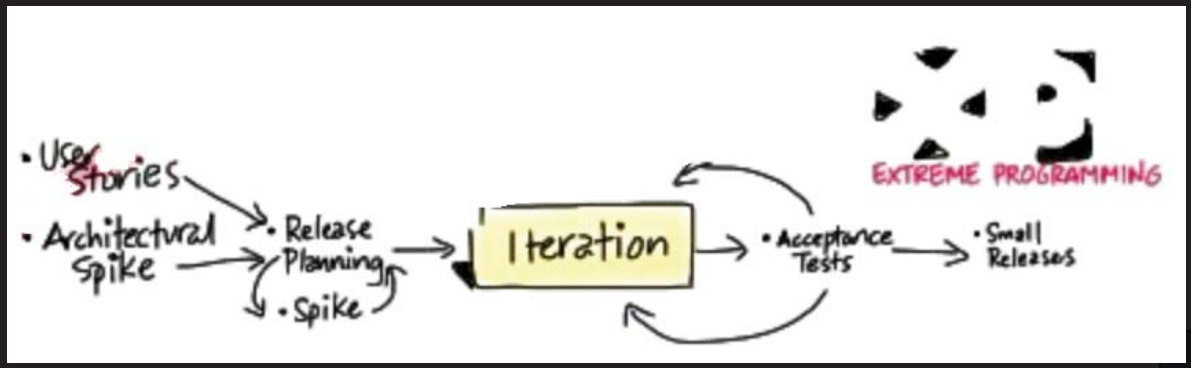
"It's a big mistake to theorize before one has data because one begins to twist facts to suit theories instead of theories to suit facts."

--Sherlock Holmes

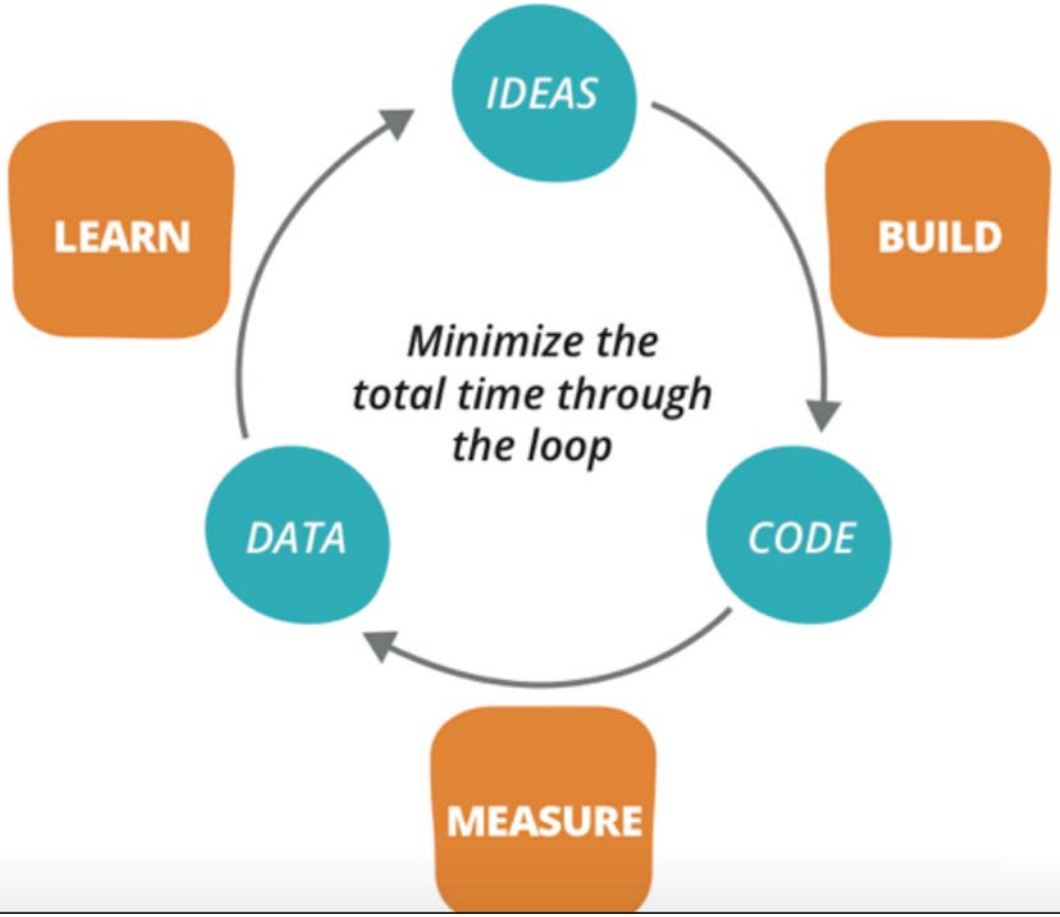
3. Build Incrementally & Iteratively

- Frame Hypotheses
- Test Hypotheses
- Build the product incrementally & Iteratively

→ Business Model
→ Customer Development
Rapid Prototype/MVP
(Agile Engineering)



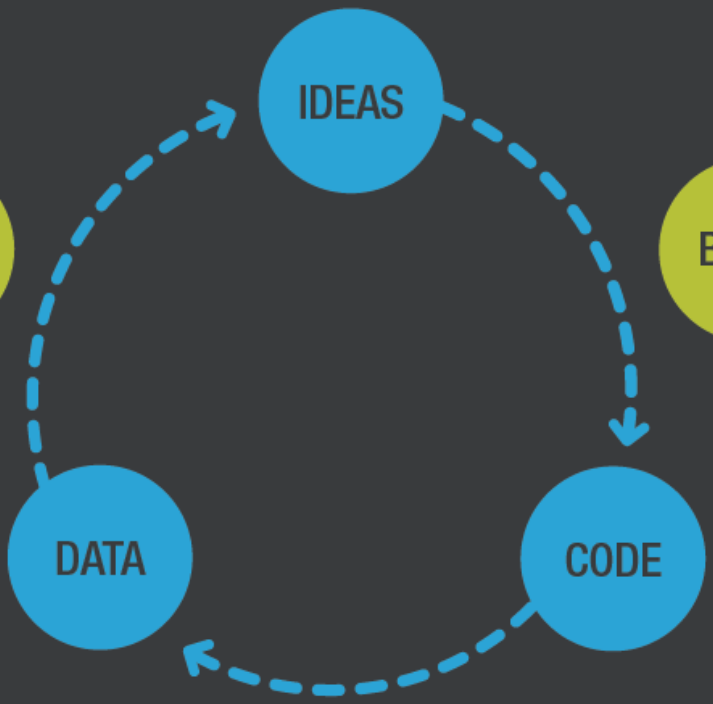
build-measure-learn



THE LEAN STARTUP

Created by Eric Ries - startuplessonslearned.blogspot.com

Designed by KISSmetrics



Learn Faster

- Split Tests
- Customer Interviews
- Customer Development
- Five Whys Root Cause Analysis
- Customer Advisory Board
- Falsifiable Hypotheses
- Product Owner Accountability
- Custom Archetypes
- Cross-functional Teams
- Smoke Tests

Code Faster

- Unit Tests
- Usability Tests
- Continuous Integration
- Incremental Deployment
- Free & Open-Source Components
- Cloud Computing
- Cluster Immune System
- Just-in-time Scalability
- Refactoring
- Developer Sandbox

Measure Faster

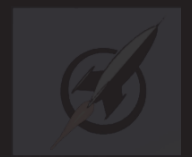
MEASURE

- Split Tests
- Clear Product Owner
- Continuous Deployment
- Usability Tests
- Real-time Monitoring
- Custom Liaison

- Funnel Analysis
- Cohort Analysis
- Net Promoter Score
- Search Engine Marketing
- Real-Time Alerting
- Predictive Monitoring

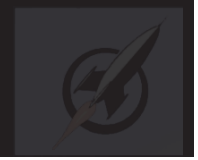
Lean Framework

- Business Model Canvas
  - Articulate initial Hypotheses
  - Weekly Progress Scorecard
- Customer Development
  - Test hypotheses in front of customers
  - Hypothesis > Experiment > Data > Insight
- Rapid Prototyping – Agile Engineering
  - Building a Series of Minimum Viable Products



Experiential

- Getting out of the building
- Formal methodology for customer interaction
- Focus on Minimal Viable Products and Pivots
  - Getting out of the building is a big idea
  - It accelerates speed of translation



Courses

Lean LaunchPad, H4D, I-Corps,

Turning Researchers, Hackers, Hustlers and Designers into Entrepreneurs

Common Elements

Team-based

Experiential

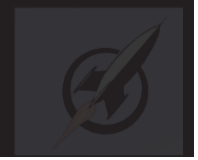
Immersive

Lean Methodology

Evidence-based

Flipped Classroom

Team Teaching



Differences

Teams work on *their own* projects

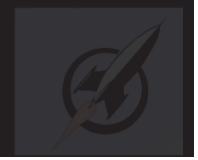
Lean LaunchPad

Teams work on their own research

I-Corps

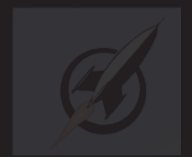
Teams work on *sponsors* projects

Hacking for Defense (H4D)



Number of Variants

- Lean Launchpad
- I-Corps
- Hacking 4 Defense (H4D)
- Hacking 4 Diplomacy
- Hacking 4 Social Impact



~250,000 on-line students

Udacity.com

STANFORD UNIVERSITY

NSF

CORPS
NSF Innovation Corps

2011

1500+ teams

2012

1,000+ teams

2015

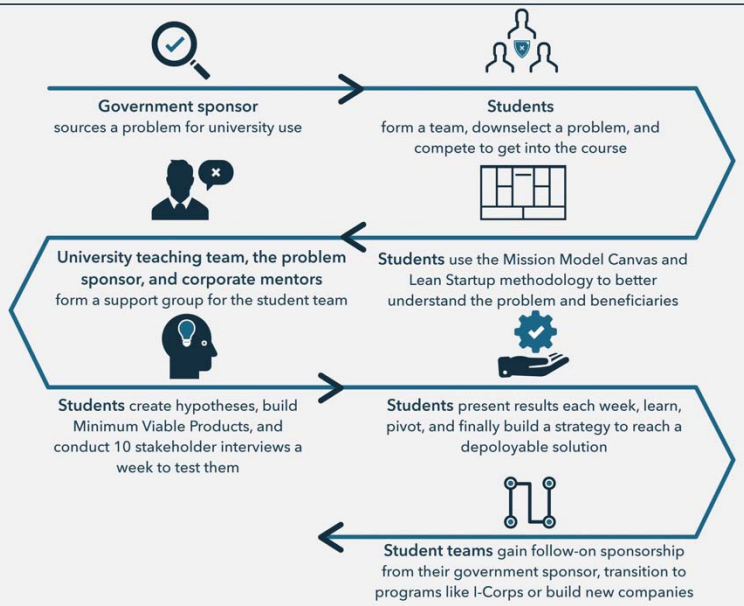
2015

2016

HACKING FOR DEFENSE | H4Di

Overview

Hacking for Defense is a for-credit class that gives students the opportunity to build solutions for real-world problems from the Department of Defense and Intelligence Community that address the nation's emerging threats and security challenges.



Partners & Sponsors

MD5 · JIDO · SOCOM · NDU · DIUx · AWG · NAVAIR · 75 Ranger Rgt

AFNWC · NSA · ARCYBER · TRANSCOM · VA · SOUTHCOM · MEDCOM · CIA

Learn More

The H4Di community is growing daily. Please contact us at contact@h4di.org or visit h4di.org if you would like to learn more.

Adopted by the NSF

(National Science Foundation)

550+ teams, 1,700+ team members
Taught by 50 NSF Sponsored Universities

Thanks!