INFO5992 Understanding IT Innovations

Week 12: Innovation by Startup companies and Opportunities

A/Prof Jinman Kim

Semester 1, 2017

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UoS Outline

Week	Lecture Topics	Activity
1. 6 Mar	UoS Introduction; Definition of Innovation; Innovation System; Innovation in Australia	*N/A*
2. 13 Mar	Introduction to Technological / IT innovation	***Tute 1*** *– Massive Open Online Courses – Enabling technologies and Peer-review*
3. 20 Mar	Dynamics of Technological / IT Innovation; Source of Innovation; Adoption of Technology; Dominant Design	***Tute 2*** *– Design Dominance in the Smartphone market*
4. 27 Mar	Disruptive Innovation; Industry Value Chain; Value Network analysis	***Tute 3*** *– Innovative Tech Practice – Cognitive services* *Group Presentation Introduction – Topics Released*
5. 3 Apr	Distributed innovation I: Open / Closed innovation; Platform innovation; Web APIs; Crowdsourcing / crowdfunding	*Mid-semester Quiz* *Group Presentation – Topic Selection* *Individual Assignment Introduction*
6. 10 Apr	Distributed innovation II: User innovation; Free and Open source software; Open Data	*Peer-review Introduction* ***Tute 4*** *– Innovative Tech Practice – Open source Geolocation and Maps*
	Easter (Break)	
7. 24 Apr	Platform ecosystems	Group Presentations I – IT Innovation Case Studies *Peer-review of Group Presentations*
8. 1 May	Group Presentations II – IT Innovation Case Studies	*Peer-review of Group Presentations*
9. 8 May	Group Presentations III – IT Innovation Case Studies	*Peer-review of Group Presentations*
10. 15 May	Judging Innovation - Innovation in Industry sectors	Group Presentations IV – IT Innovation Case Studies *Peer-review of Group Presentations*
11. 22 May	Innovation ecosystem; Sydney's innovation ecosystem Organisational Culture; Structure supporting innovation **(Bill Simpson – Data61)**	***Tute 5*** *– Sharing Economy* *Individual Assignment Submission*
12. 29 May	Innovation by Start-up companies and Opportunities	***Tute 6*** *– Business Model Canvas*
13. 5 Jun	Organisational Culture; Structure supporting innovation UoS Review	*UoS comments / questions*

Agenda

- Innovation by Startup companies and Opportunities
- Week13 – Exam Review / Exam Info
- Bring any Questions to ask
- Presentation marks will be released this week
- Report mark to be released in the next few weeks – will try before the exam!
- Exam date and location are xxx

Your Grades

- They are listed on an course Excel sheet
- Will continue to publish the results onto Blackboard

- If you do not see any marks on Blackboard, do not worry! It will not be there as it will be in the course Excel sheet

- Happy to discuss you in regards to your grades – email or setup a time to discuss

Innovation by Startup Companies

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Recap week1: Innovation as "Creative Destruction"

Schumpeter

- Economy is in a state of constant tumultuous change
- Innovation propels the economy
- Entrepreneurs within new firms drive innovation:
  - All companies react adaptively to change
  - Creative responses to change come via innovative acts by entrepreneurs
- Different forms of innovations:
  - New products; New organisations (e.g. mergers); New markets
  - Innovating firms emerge after technological breakthrough

Organising for Innovation: Overview

- A company's size and structure impact its ability to innovate
  - Some structures may foster creativity and experimentation
  - Others may enhance efficiency of product development
  - Some structures may enable both simultaneously
- Traditionally large companies have done most technological innovation in-house in R&D labs
- Trend towards more "open innovation"
  - involving other organisations and individuals in their innovation

Size and structural dimensions of companies

Schumpeter

- Size: Is Bigger Better?
  - In 1940s, Schumpeter argued that large firms would be more effective innovators
  - This is because they are:
    - Better able to obtain financing
    - Better able to spread costs of R&D
      - can spread over more products
  - Large size may also enable:
    - Greater economies of scale and learning effects
  - Taking on large scale or risky projects

Source: Schilling (2013)

Size and structural dimensions of companies

- However, large companies might also be disadvantaged for innovation because…
  - R&D efficiency may decrease due to loss from managerial control
  - Large companies can have more bureaucratic inertia
  - More commitments tie companies to current technologies
    - Learning effects (see Week 3); dominant design
- Small firms are often more flexible and entrepreneurial
  - Can change direction quickly based on changing circumstances or new observations (pivot)

- **Innovation favors agility - It's easier for a small company to be agile than a large company**

Source: Schilling (2013)

How can a couple of people beat and displace major global corporations?

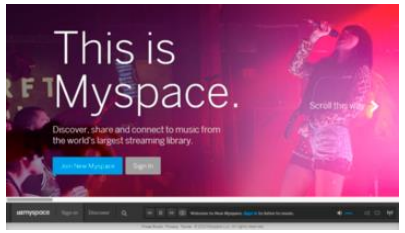
VS

digital

AltaVista Search
OnSite Knowledge

VS

News Corporation



https://www.quora.com/Why-did-Altavista-search-engine-lose-ground-so-quickly-to-Google

http://www.forbes.com/sites/adamhartung/2011/01/14/why-facebook-beat-myspace/#7fae4f177023

What's an entrepreneur?

- Dictionary definition:
  - **"the owner or manager of a business enterprise who, by risk and initiative, attempts to make profits"**
- (Collins English Dictionary, 2016)

- From French: someone who undertakes an activity

http://www.collinsdictionary.com/dictionary/english/entrepreneur

What's an entrepreneur?

- According to Schumpeter:

- May be in small or large companies
- Is not necessarily an entrepreneur all the time
  - May be a manager in a large company carrying out day-to-day management activities
- May or may not be person who provides funding
  - Not necessarily the "risk-taker" (in economic sense)

- Schumpeter:
  "it is leadership rather than ownership that matters"

What's a startup company?

Traditional approach: Treat startup as small version of large company

- Traditional approach (still often used today)

- Startups treated as small version of large company
  - Founders used techniques learned in business schools as used by big companies
- Most businesses needed a business plan to start
- Business plan needed for investment (bank, venture capital, etc)

Traditional approach: Treat startup as small version of large company

- Business plan focused on:
  1. Identifying business opportunity (addressable market)
  2. Problem to be solved
  3. Planned solution to the problem
  4. Forecast for income, profit, costs etc (e.g. for 5 years)

Traditional business plan

- The business plan usually has:
  - Exec summary
  - Description of product/service
  - Industry analysis
  - Customer analysis
  - Competitor analysis
  - Marketing and sales plan
  - Operations and HR plans
  - Financial plan

Frequently unsuccessful for tech startups as:

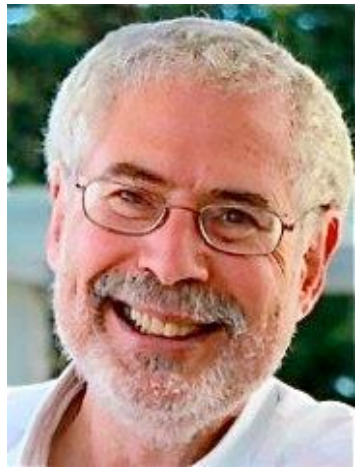
- For tech startups, there are many uncertainties
- The plan may have many untested assumptions
- Much of the plan may rely on these untested assumptions
- The business plan is often rigid and hard to change direction quickly

Established companies and startups are very different types of things

What's a startup company?

- Term first used in the 1970s
- Most used for starting technology companies

- Steve Blank:
  "a temporary organization in search of a scalable, repeatable, profitable business model"
- The Startup Owner's Manual (2012)



www.steveblank.com/about
Steve Blank
Engineer / entrepreneur /
Lecturer at Stanford and others

What's a startup company?

- Eric Ries:
  "a human institution designed to deliver a new product or service under conditions of extreme uncertainty"
- The Lean Startup (2011)

www.theleanstartup.com
Eric Reis
Software developer/
entrepreneur

Established companies vs startups

- Established companies…
- **Execute a business model**

- Startups…
- **Search for a business model**

How do I get an idea for a startup?

Paul Graham: How to get startup ideas

Paul Graham, Founder of Y Combinator

Some of their startups: Reddit, Scribd, Dropbox, Airbnb, Stripe, Heroku, Weebly, …

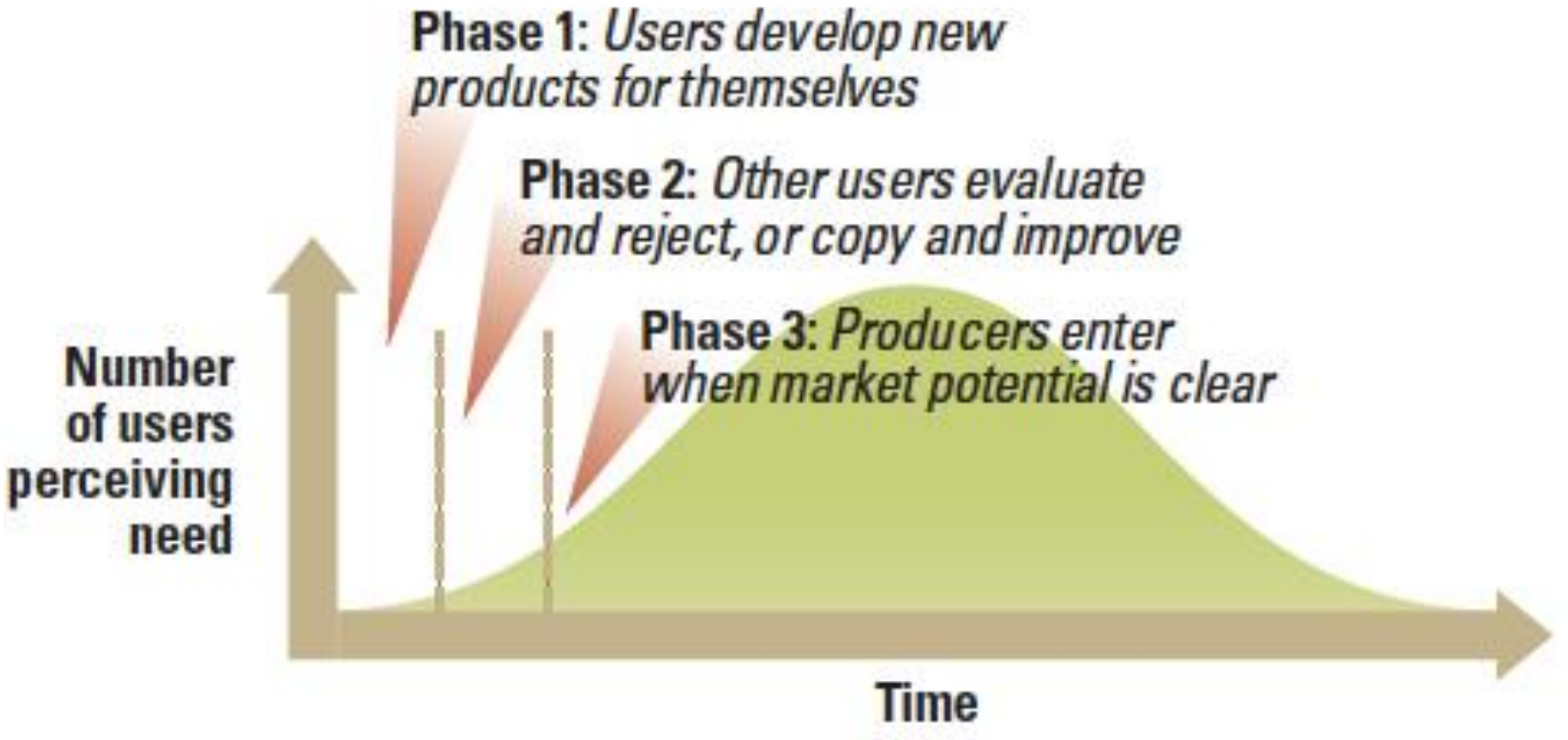
- The way to get startup ideas is not to try to think of startup ideas. It's to look for problems, preferably problems you have yourself.

  The very best startup ideas tend to have three things in common:
  - they're something the founders themselves want,
  - that they themselves can build,
  - and that few others realize are worth doing.
  - Microsoft, Apple, Yahoo, Google, and Facebook all began this way.

http://paulgraham.com/startupideas.html

Recap wk6: Many innovations start at "user innovation"

Eric Von Hippel
MIT Sloan School of Management



http://sloanreview.mit.edu/article/the-user-innovation-revolution/

Paul Graham: How to get startup ideas

- Real problems:
  - Address real problems, not made-up problems
- The "Well":
  - Build something a small number of people want a lot, rather than something a large number of people want a little
- Getting yourself ready
  - Be at the leading edge of a field (even if just a user)
  - "Live in the future, then build what's missing"
  - External stimulus hitting a prepared mind
- Noticing:
  - Not "think up ideas" but "notice"
  - It's OK to work on projects that produce "toys" as it prepares you to notice
  - "Live in the future and build what seems interesting"

http://paulgraham.com/startupideas.html

Differences between established companies and startups

Some differences between established companies and startups

	Established companies	Startup companies
Markets for products	Known	Mostly unknown (hypothesis only)
Customers	Known	Mostly unknown (hypothesis only)
Products	Known	Mostly unknown (hypothesis only)
Future product features	Learn from customers	Learn from potential customers and test hypotheses
Business model	Company executes the current business model	Company searches for the best business model
Product	Full specifications as needed by market	Minimum feature set (for speed to market and flexibility for change)
Product development	Smooth execution using proven methods	Pivots (until find market, customers, products, business model)
Structure	Relatively stable	Fluid

Based on work of Steve Blank
eg http://www.slideshare.net/sblank/why-product-managers-need-sneakers?from=ss_embed

Towards more systematic methods for startups

- Emerging “management science” for startups
- Techniques to help startups build successful innovative companies despite level of uncertainty
- Some influential books:
  - “Four Steps to the Epiphany”, Steve Blank, 2005
  - “Business Model Generation”, Alexander Osterwalder, Yves Pigneur, Alan Smith, and 470 others across 45 countries, 2010
  - “The Lean Startup”, Eric Ries, 2011
  - “The Startup Owner’s Manual”, Steve Blank and Bob Dorf, 2012
  - “The Value Proposition Design”, Alexander Osterwalder, Yves Pigneur, Greg Bernarda, Alan Smith, 2015
  - “The Leader’s Guide”, Eric Reis, 2015 (Kickstarter campaign)

The startup – 3 key principles

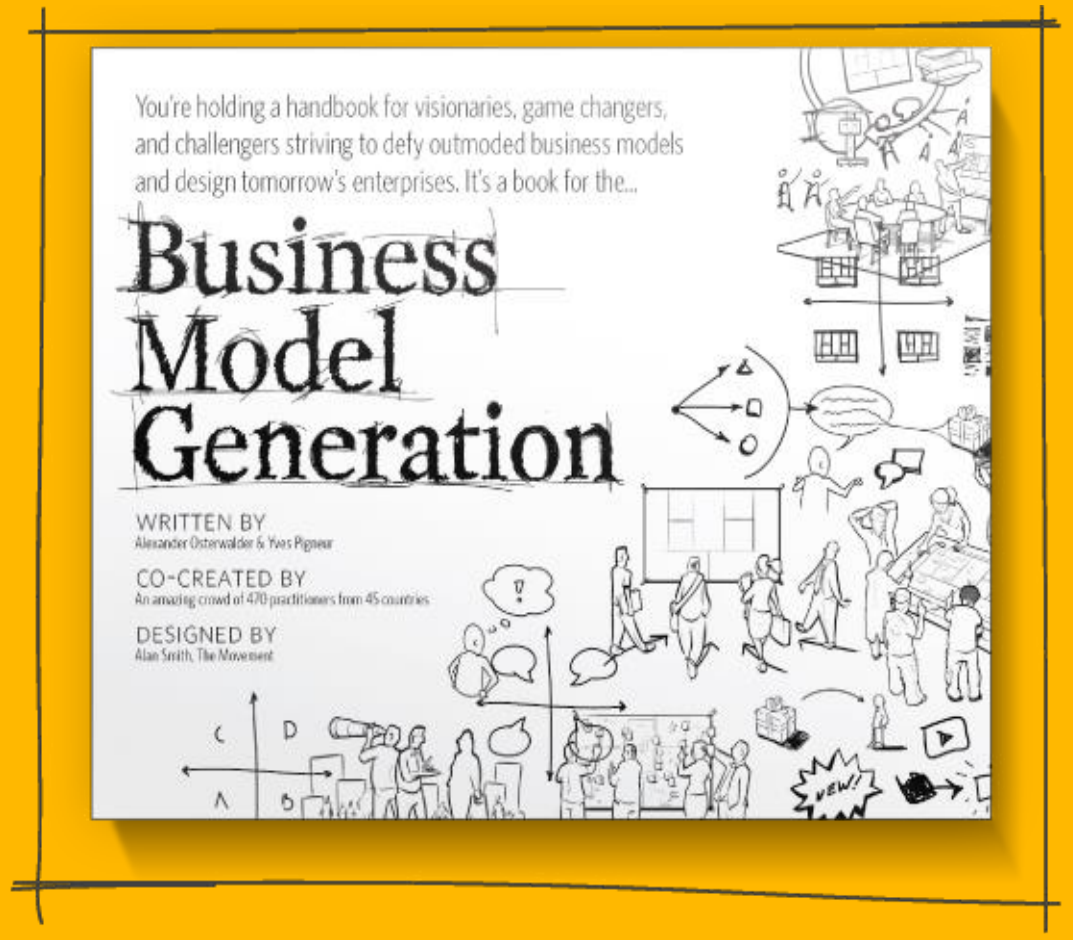
- Business Model Canvas
  "Sketch Out Your Hypotheses."

- Agile software development
  "Quick, Responsive Development."

- Customer Development
  "get out of the building"
  - including hypothesis-driven experiments with customers, pivoting etc

Steve Blank, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013, https://hbr.org/2013/05/why-the-lean-start-up-changes-everything

Business Model Canvas



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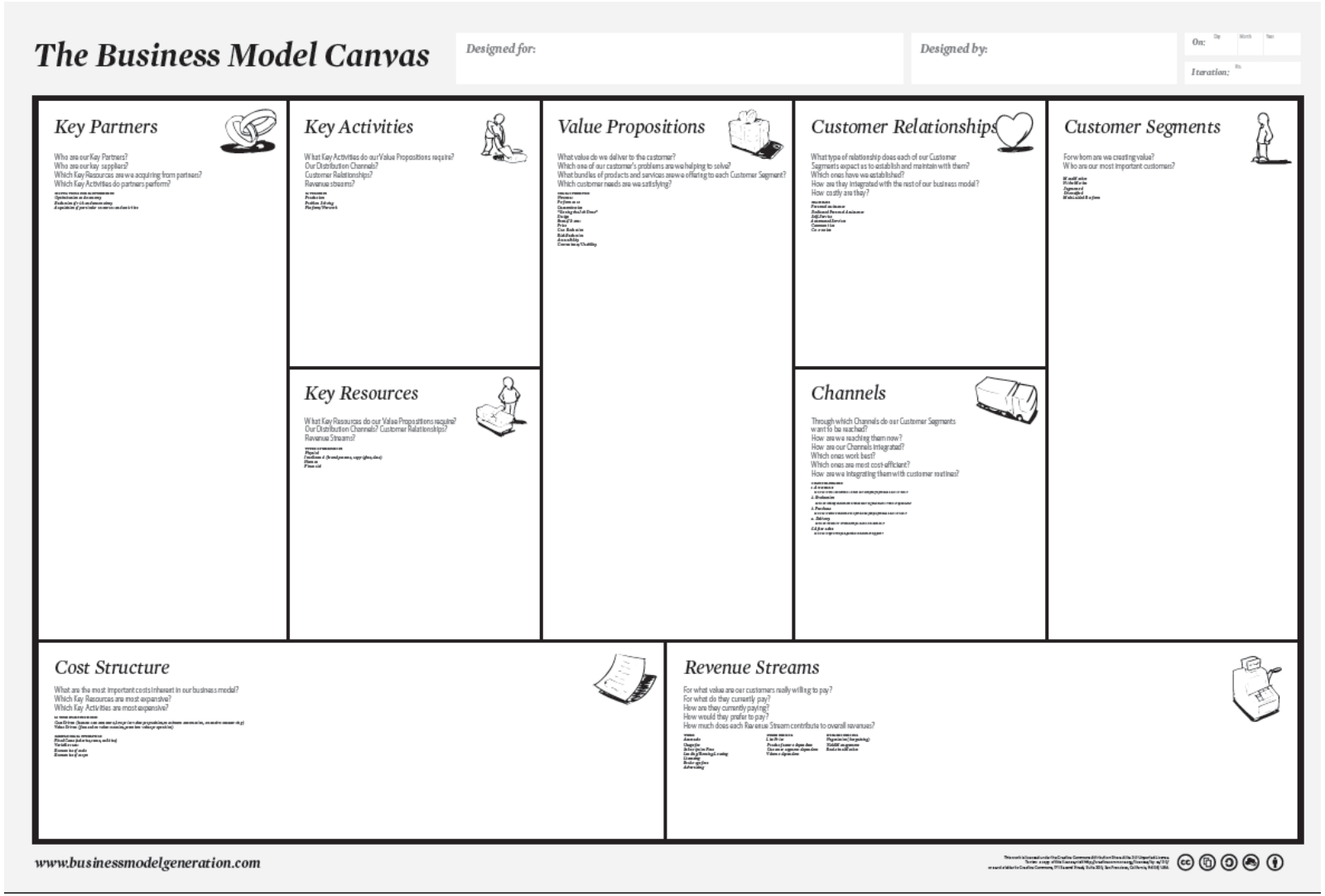
The Business Model Canvas

- Created by Alexander Osterwalder et al, 2010
- Involved 470 practitioners in 45 countries
- Studied hundreds of business models and extracted key aspects into a model to make a common framework and tested it

Alexander Osterwalder
http://alexosterwalder.com/

https://youtu.be/QoAOzMTLP5s
http://www.slideshare.net/Alex.Osterwalder/presentations

Business Model Canvas



https://canvanizer.com/downloads/business_model_canvas_poster.pdf

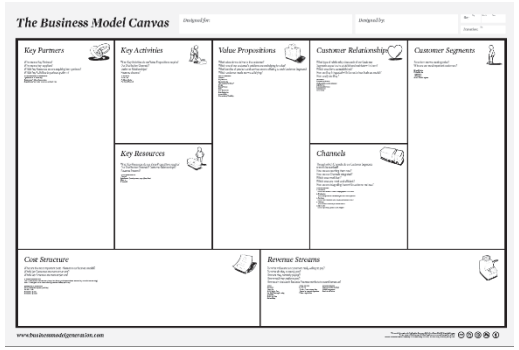
Filling in the Business Model Canvas

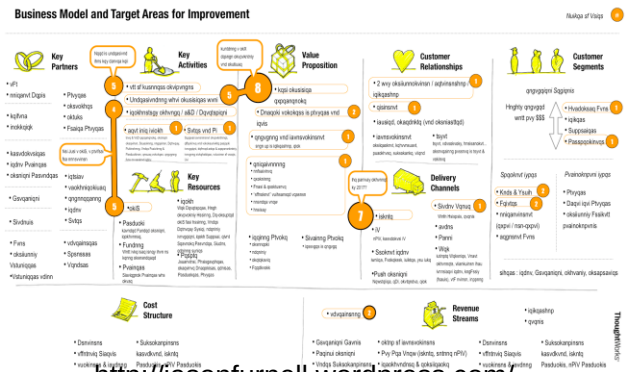
- Startup = the search for a business model
- Business model canvas = a representation of a business model

- **A startup can track its search for a business model by iteratively filling in a business model canvas**

- The Business Model Canvas:
  - Good for representing:
    - what's known (results of hypothesis testing); and
    - what hypotheses still need to be tested

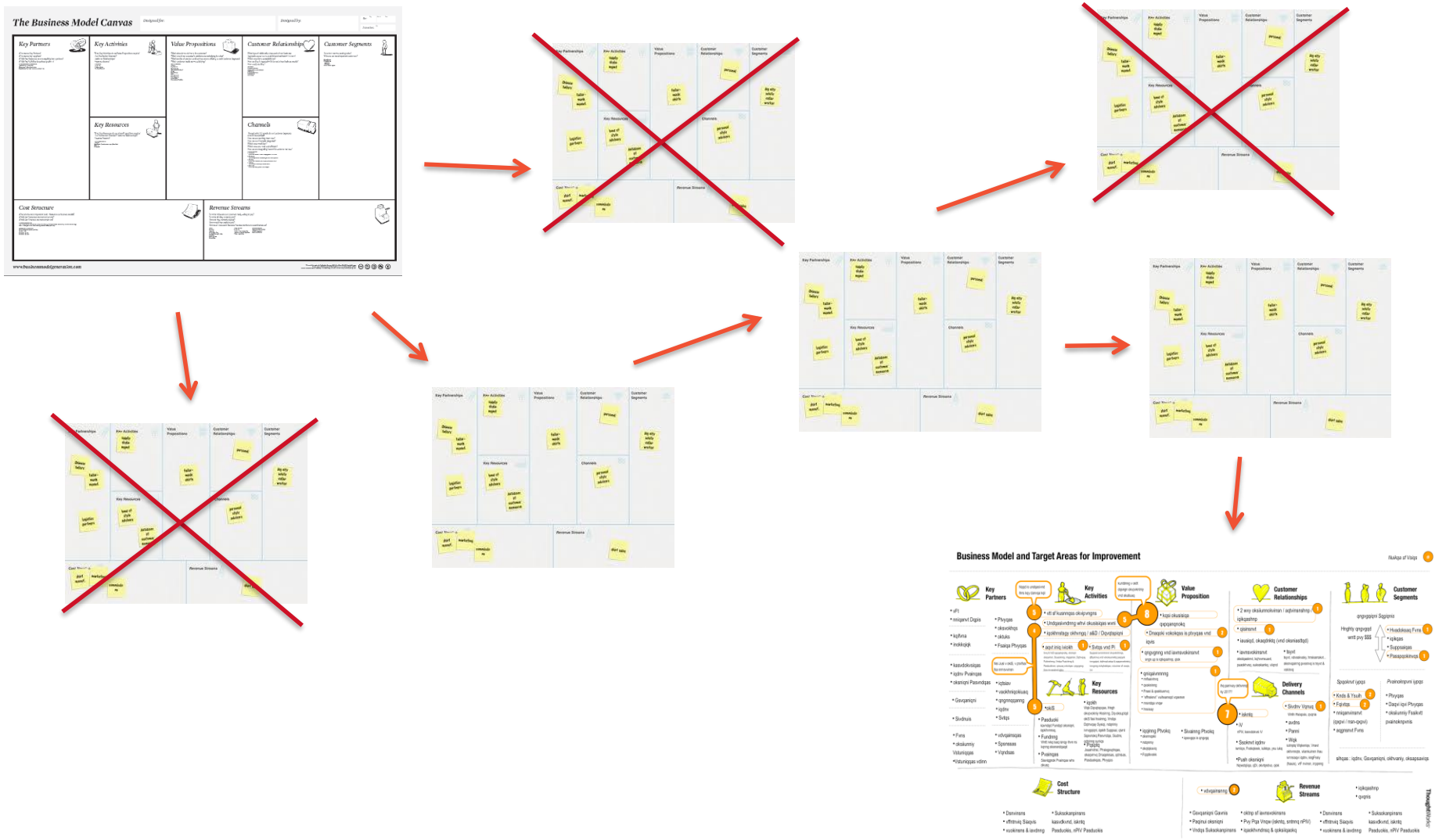
Filling in the Business Model Canvas



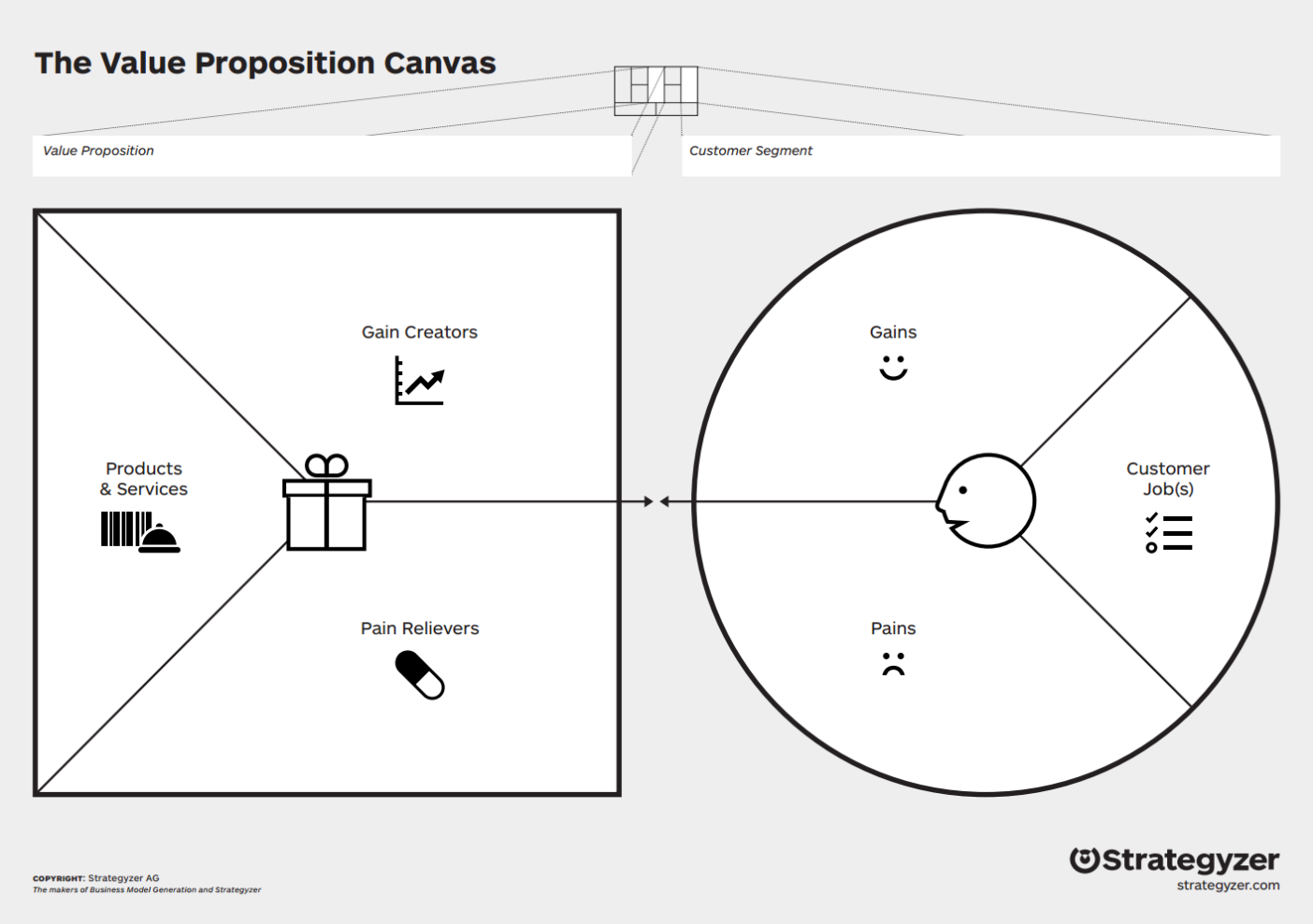


http://jasonfurnell.wordpress.com/

Filling in the Business Model Canvas



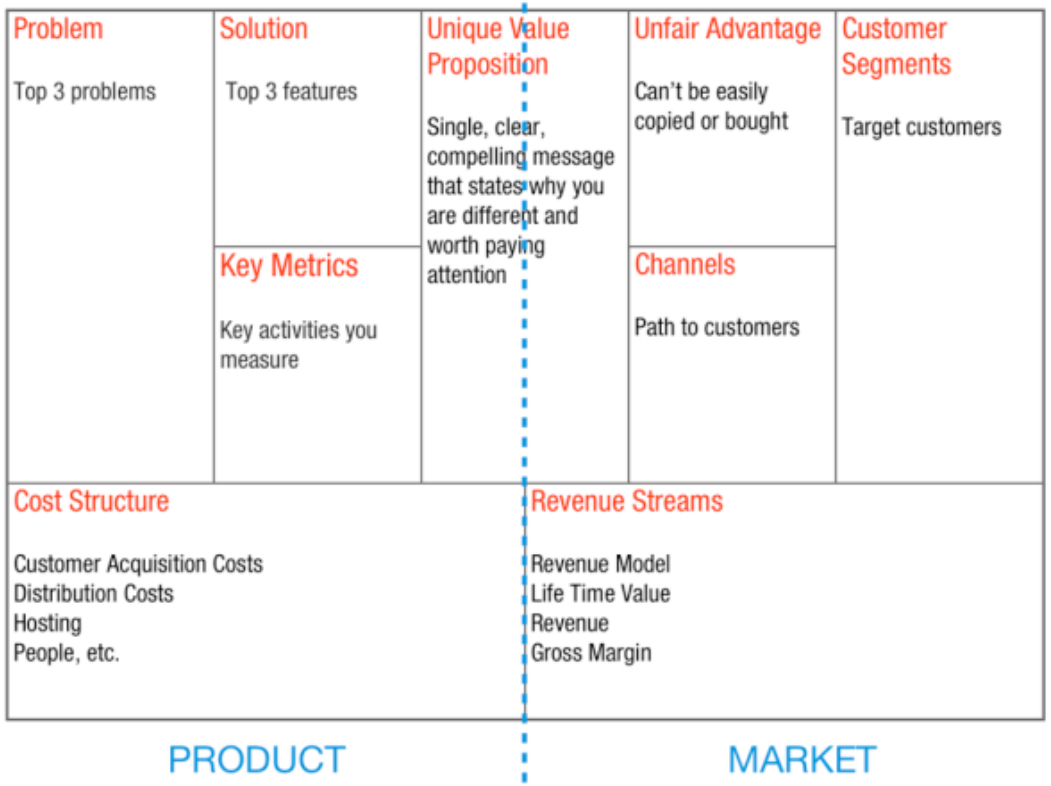
Value Proposition Canvas (2015)



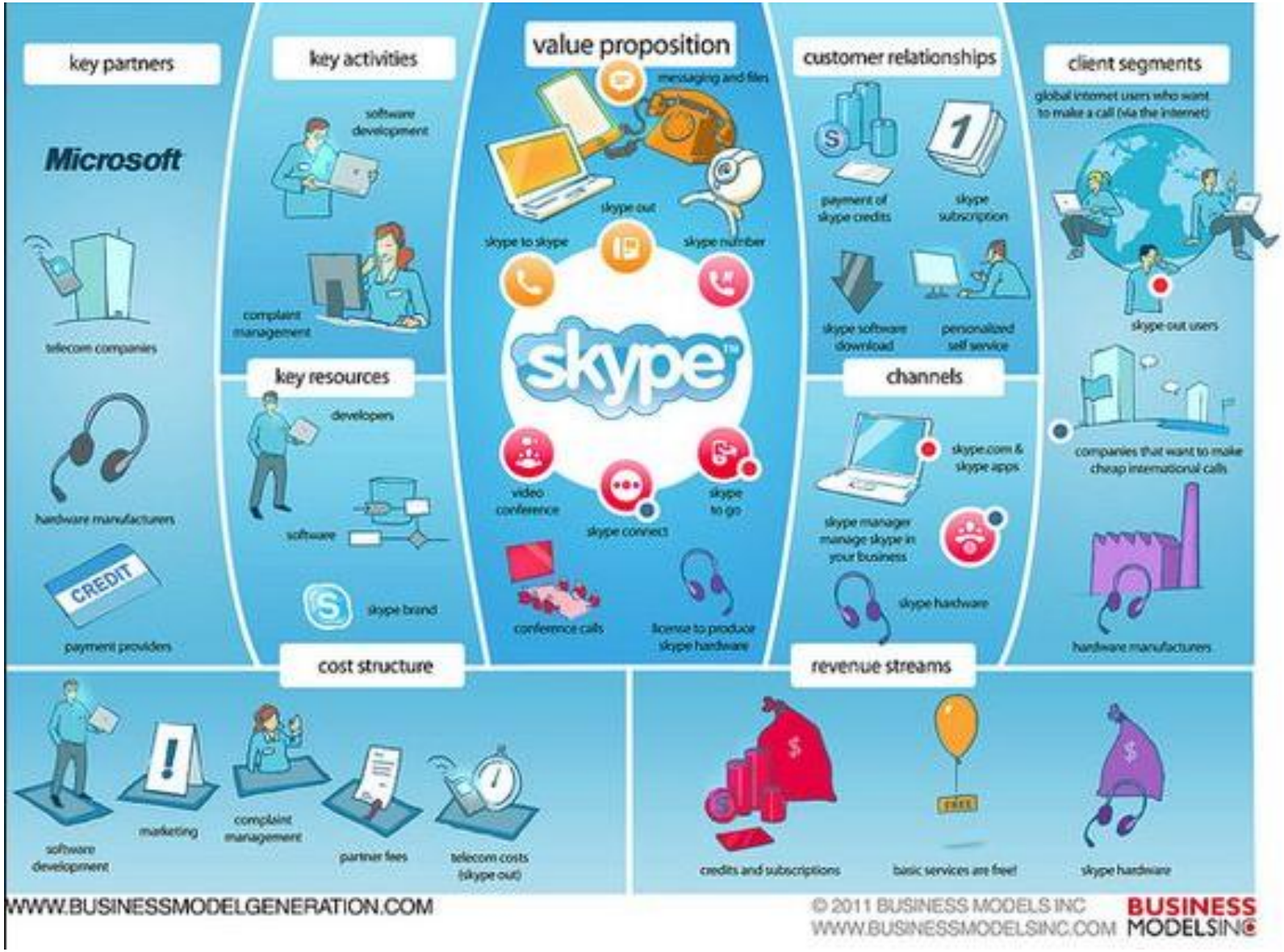
https://strategyzer.com/canvas/value-proposition-canvas

The Lean Canvas (Ash Maruya)

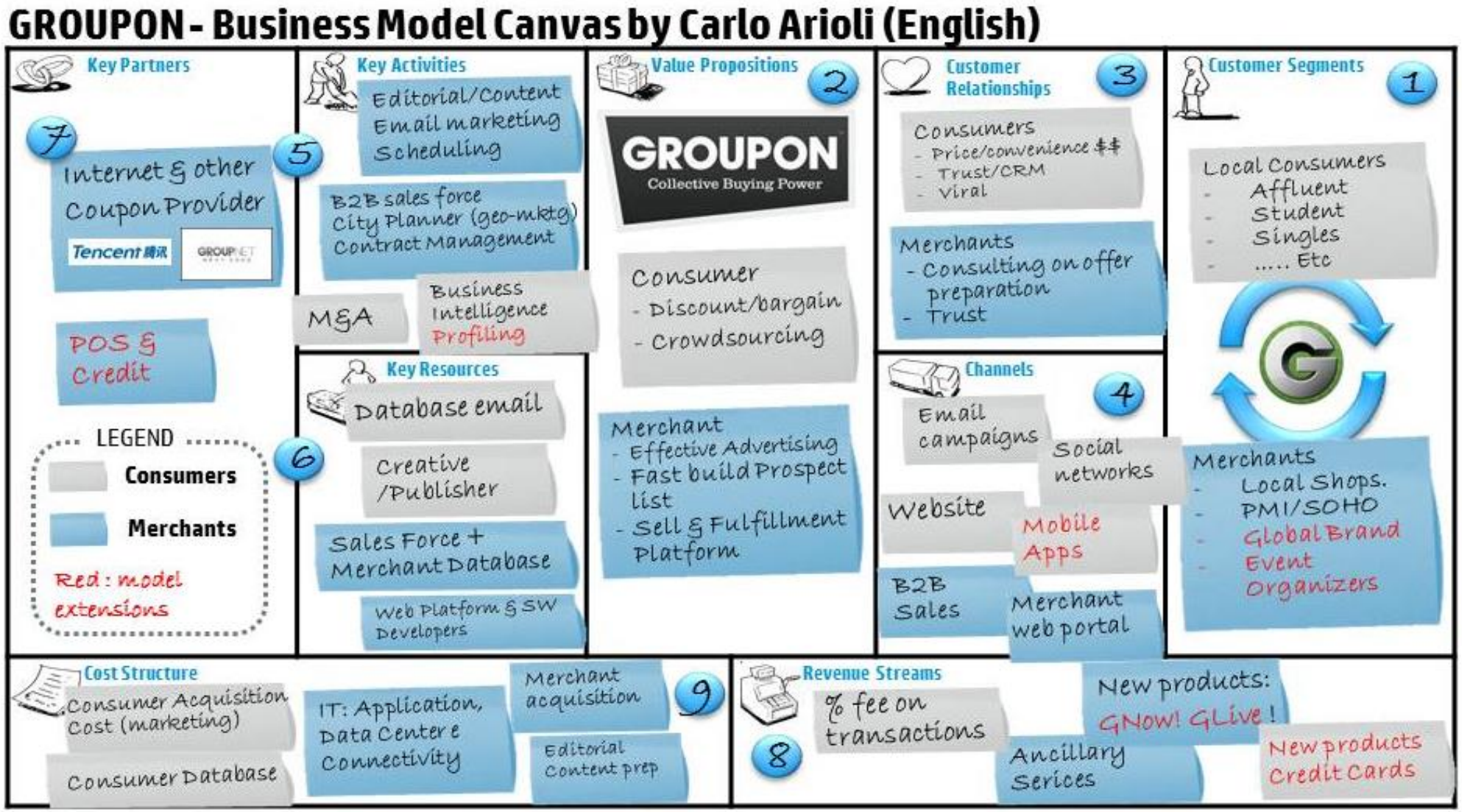
- Modified version of the Business Model Canvas that is designed specifically for startups



Example: Skype



Example: Groupon



http://www.marketingespresso.net/groupon-bm/

Tutorial 6

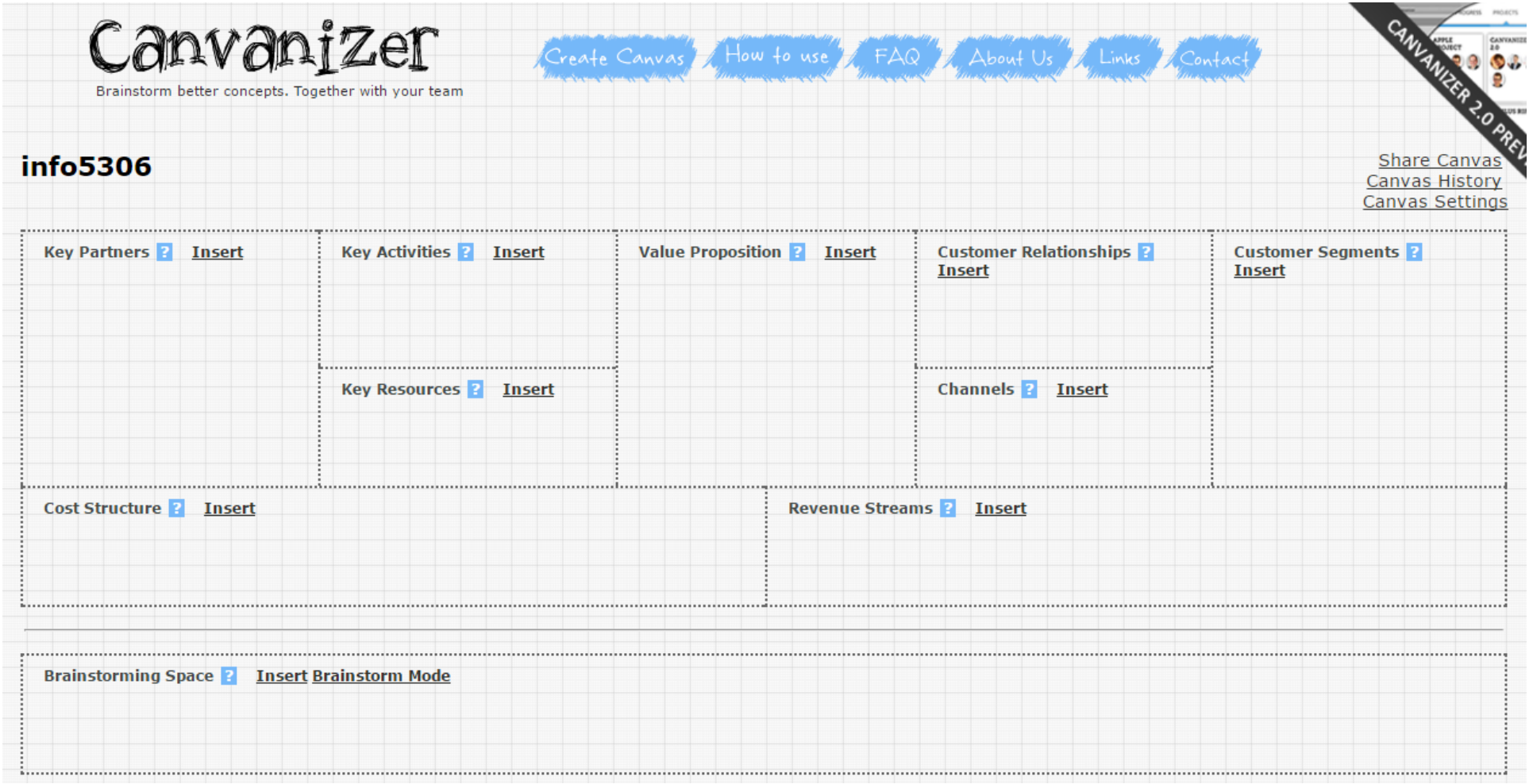
- We will study the development of a BMC.
- Within your group, you are asked to select a company and build your own BMC. The company can be one you have learned during your Innovation report.
- Alternatively, if you have an idea for a company (start up of your own!), you may use your company idea.

- Towards the end of the class, your group is to present the BMC to the class. When presenting to the class, you can either use the whiteboard, or print copies of your completed BMC and distribute it in the class.

You can use the BMC in several ways

- Download the template at https://strategyzer.com/canvas/business-model-canvas This will simply require your email address and you can download a pdf file. If the link does not work, you can find a PDF version on the Blackboard
- Use the PPT template available from the Blackboard
- You can use the free website which provides simple interactive tools to develop your BMC https://canvanizer.com/new/business-model-canvas This also requires your email address.

An example Tool



https://canvanizer.com/canvas/wWYI2J5eMRz5u

These methods are not just for startups!!
Any company can and should use them

Managing Projects for Innovation

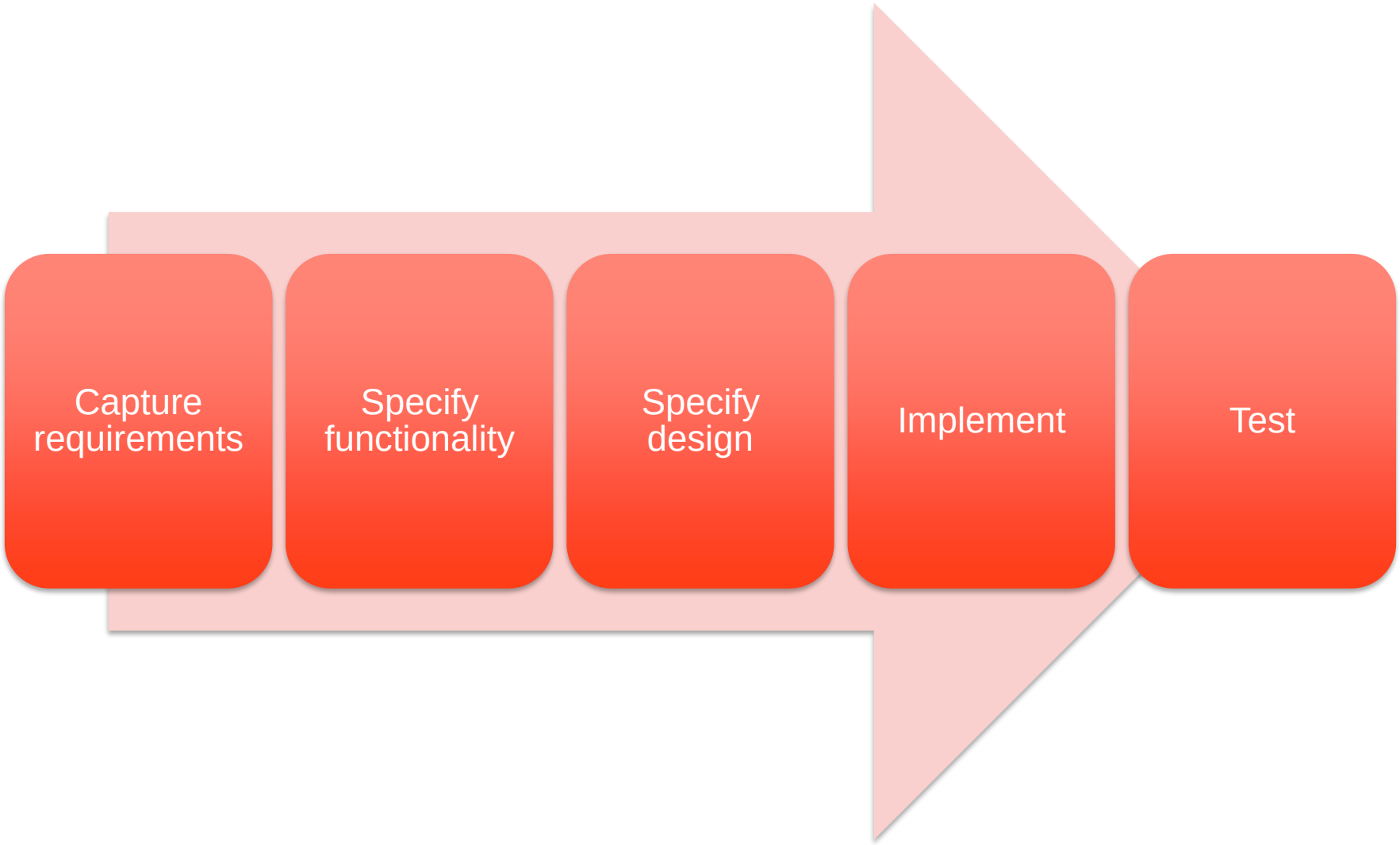
Agile Development

How can project management be done for invention and innovation?

Background

- In innovation projects, there are many unknowns:
  - Feasibility of idea may be unknown
  - Product or process concept may be vague
  - Target customers may be unknown
  - The way to make revenue may be unknown
- Some companies attempt to use traditional project management approaches for innovation projects
  - This often fails

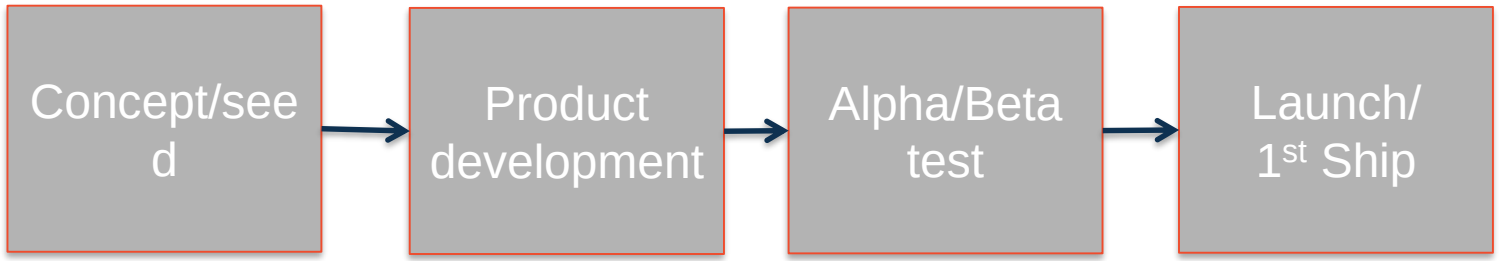
Traditional "waterfall" approach to software development



Introducing new products to a market: Traditional model

New Product Introduction model:

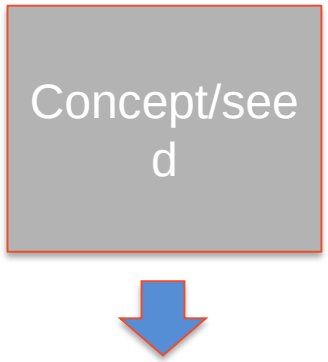
Works where customers are known, product features can be specified in advance, market well-defined, basis of competition understood



Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

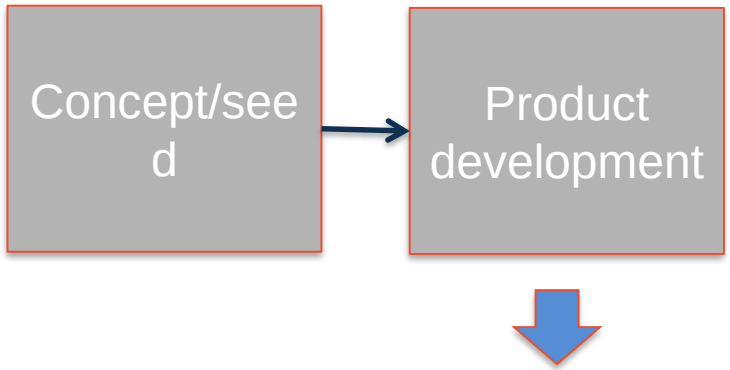


Come up with concept
Define product and product features
Determine customers
Do market research (statistical and some interviews)
Develop business plan

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

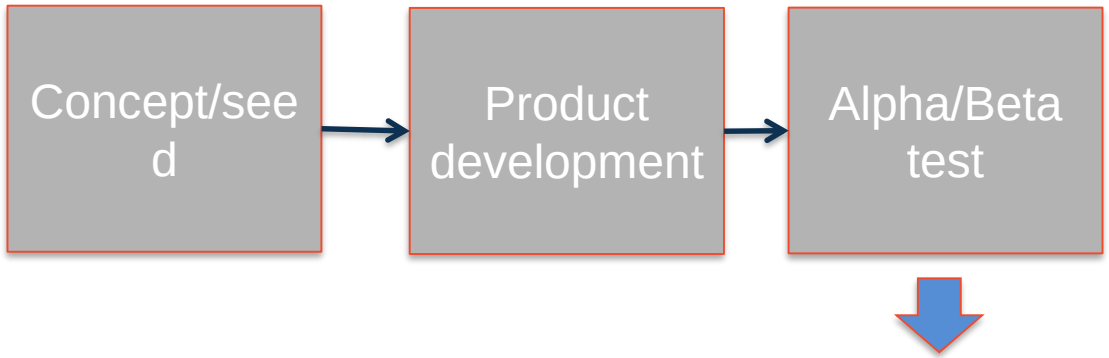


Specify market requirements
Develop product/service - typically using waterfall model:
Requirements, design, implementation, testing, maintenance
Promote future product/service

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

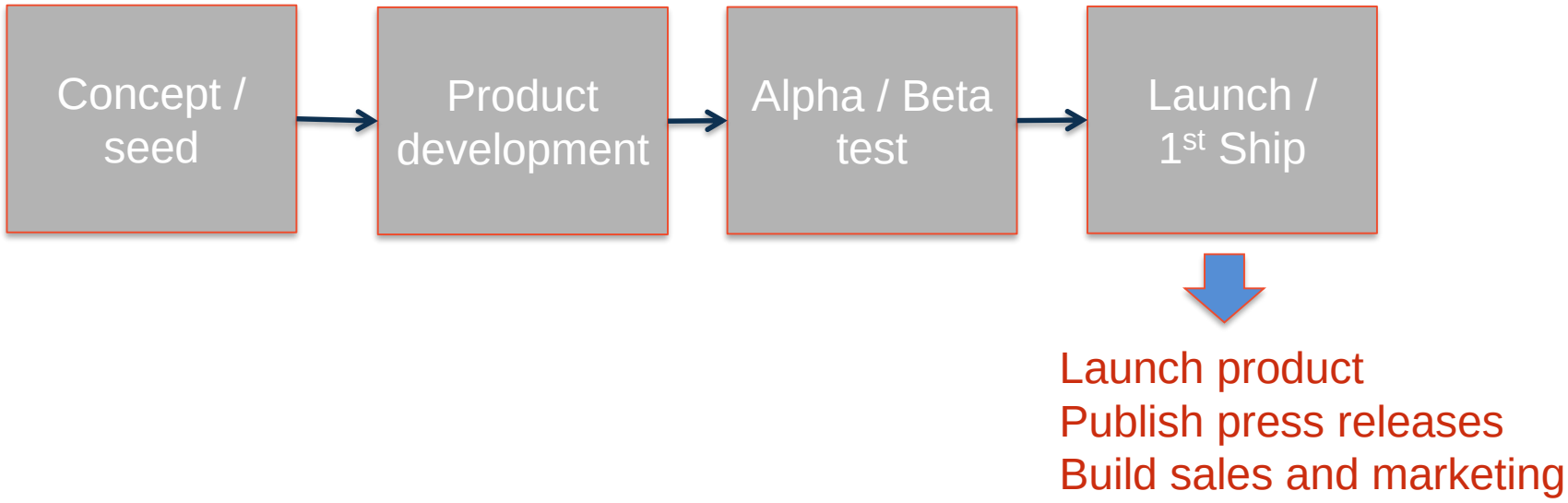


Sign up alpha/beta customers
Run alpha/beta trials
Develop sales and marketing materials
Get channel partners and build sales organisation

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:



Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

What's wrong with this model when there is high degree of uncertainty?
(eg where customers are unknown, needed features unknown, basis for competition not known)

Problem with traditional approaches

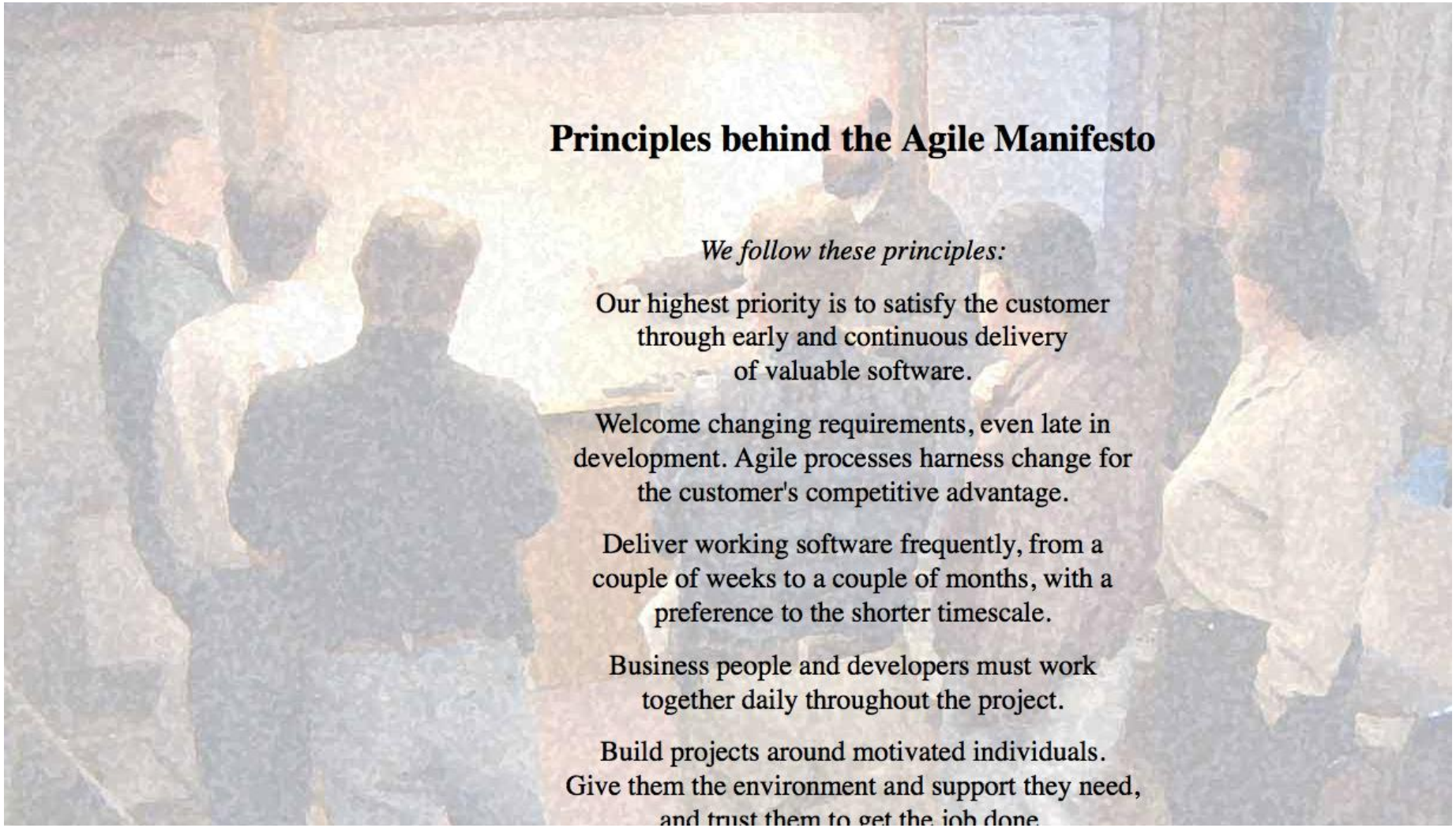
- Impossible to know all requirements in advance
  - The project takes time so the requirements at the time of capture may be different from those at the time of delivery
  - Some requirements are only clear when users are using the product
  - Too long to get customer validation of product

"The Agile Manifesto" (2001)

- We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
  - Individuals and interactions over processes and tools
    Working software over comprehensive documentation
    Customer collaboration over contract negotiation
    Responding to change over following a plan
  - That is, while there is value in the items on the right, we value the items on the left more.

http://agilemanifesto.org

"The Agile Manifesto" (2001)



Principles behind the Agile Manifesto

We follow these principles:

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

http://agilemanifesto.org/principles.html

Success of agile approaches on projects

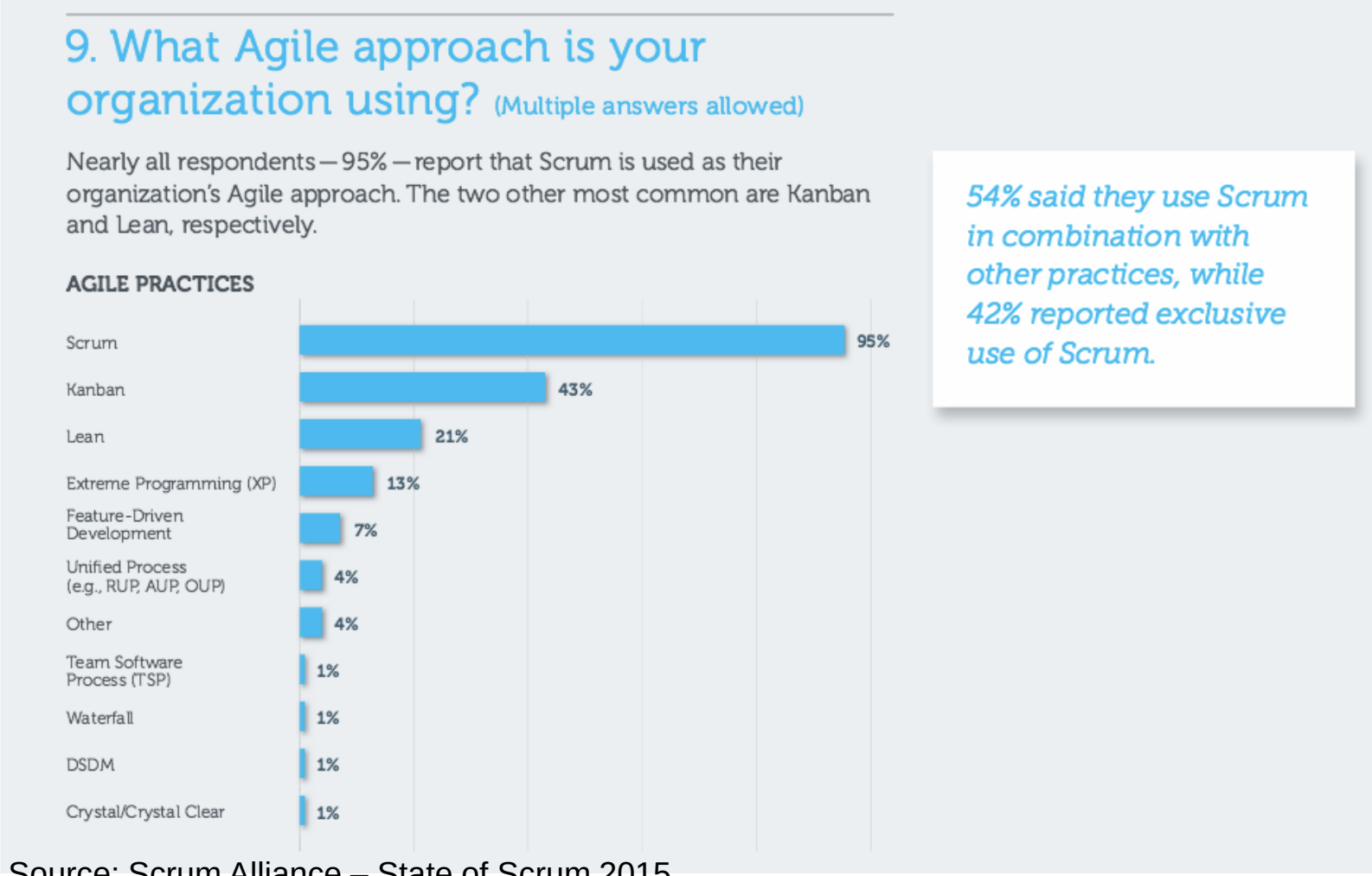
CHAOS RESOLUTION BY AGILE VERSUS WATERFALL

SIZE	METHOD	SUCCESSFUL	CHALLENGED	FAILED
All Size Projects	Agile	39%	52%	9%
	Waterfall	11%	60%	29%
Large Size Projects	Agile	18%	59%	23%
	Waterfall	3%	55%	42%
Medium Size Projects	Agile	27%	62%	11%
	Waterfall	7%	68%	25%
Small Size Projects	Agile	58%	38%	4%
	Waterfall	44%	45%	11%

The resolution of all software projects from FY2011–2015 within the new CHAOS database, segmented by the agile process and waterfall method. The total number of software projects is over 10,000

Source: The CHAOS Manifesto by the Standish Group 2015
referred to by http://www.infoq.com/articles/standish-chaos-2015

Types of agile development



Source: Scrum Alliance – State of Scrum 2015
https://www.scrumalliance.org/scrum/media/scrumalliancemedia/files%20and%20pdfs/state%20of%20scrum/scrum-alliance-state-of-scrum-2015.pdf

Customer development

Steve Blank

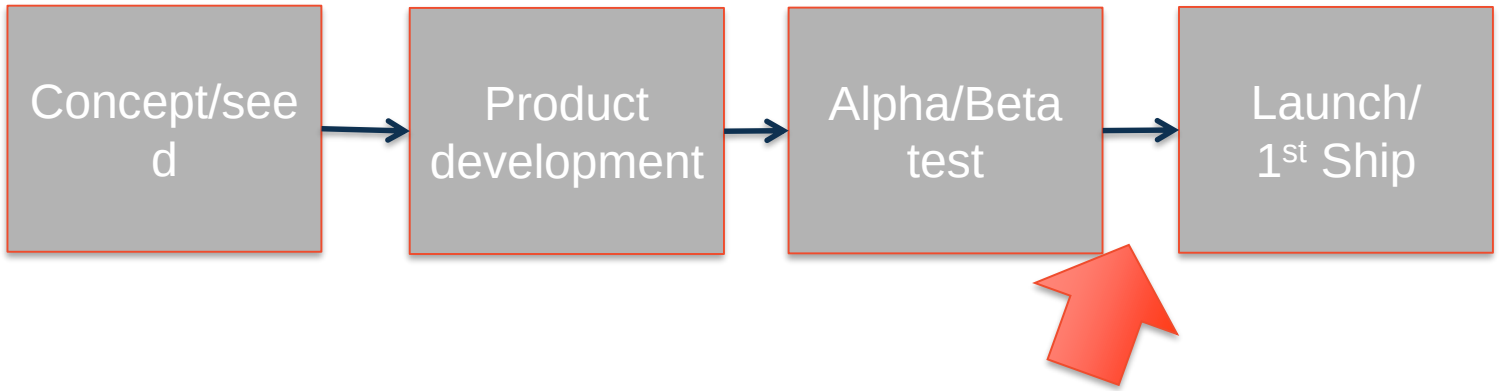
What's wrong with the New Product Introduction Model (for startups)

- "The 9 deadly sins of the New Product Introduction Model":
  1. Assuming "I know what the customer wants"
  2. The "I know what features to build" flaw
  3. Focus on Launch date
  4. Emphasis on execution instead of hypotheses, testing, learning and iteration
  5. Traditional business plans assume no trial and no errors
  6. Confusing traditional job titles with what a startup needs to accomplish
  7. Sales and marketing execute to a plan
  8. Presumption of success leads to premature scaling
  9. Management by crisis leads to a death spiral

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:



First contact between product and customer.
Too late!

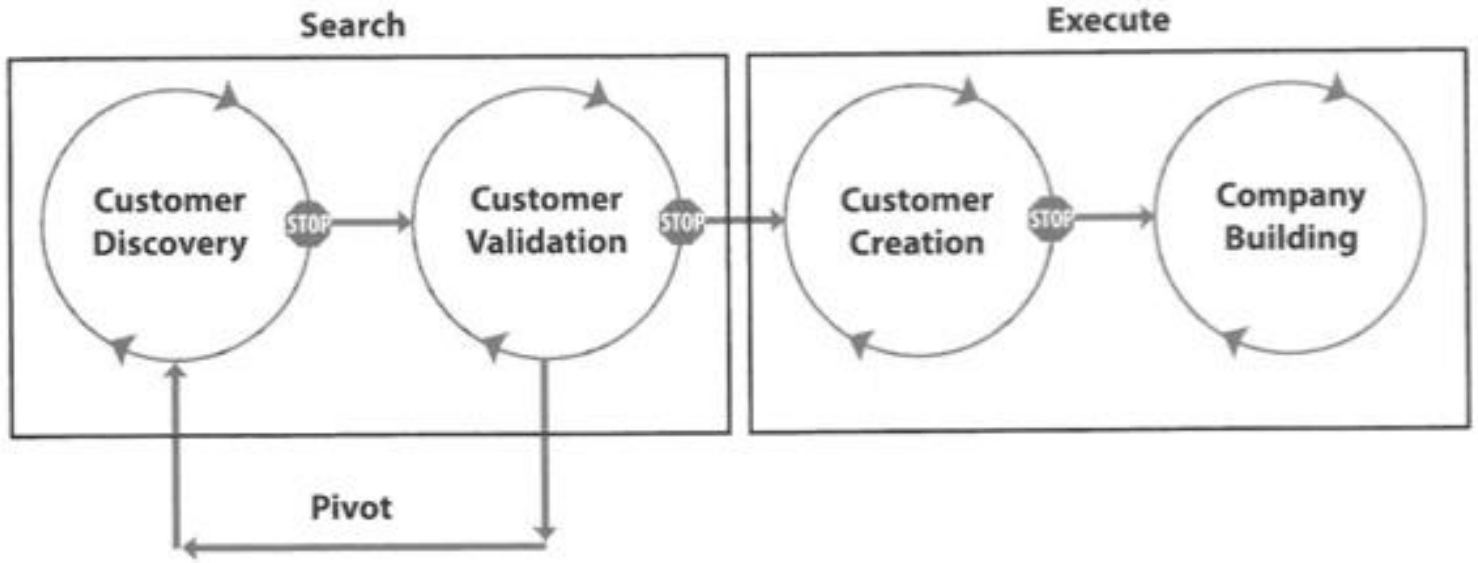
"No business plan survives first contact with customers" – Steve Blank

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Alternative approach for startups: Customer Development Process

Customer Development Process:

Works where customers are unknown, product features unknown, market unknown, basis of competition unknown – i.e.
Designed to solve “the 9 deadly sins”



Customer Development Process *(Figure 2.1)*

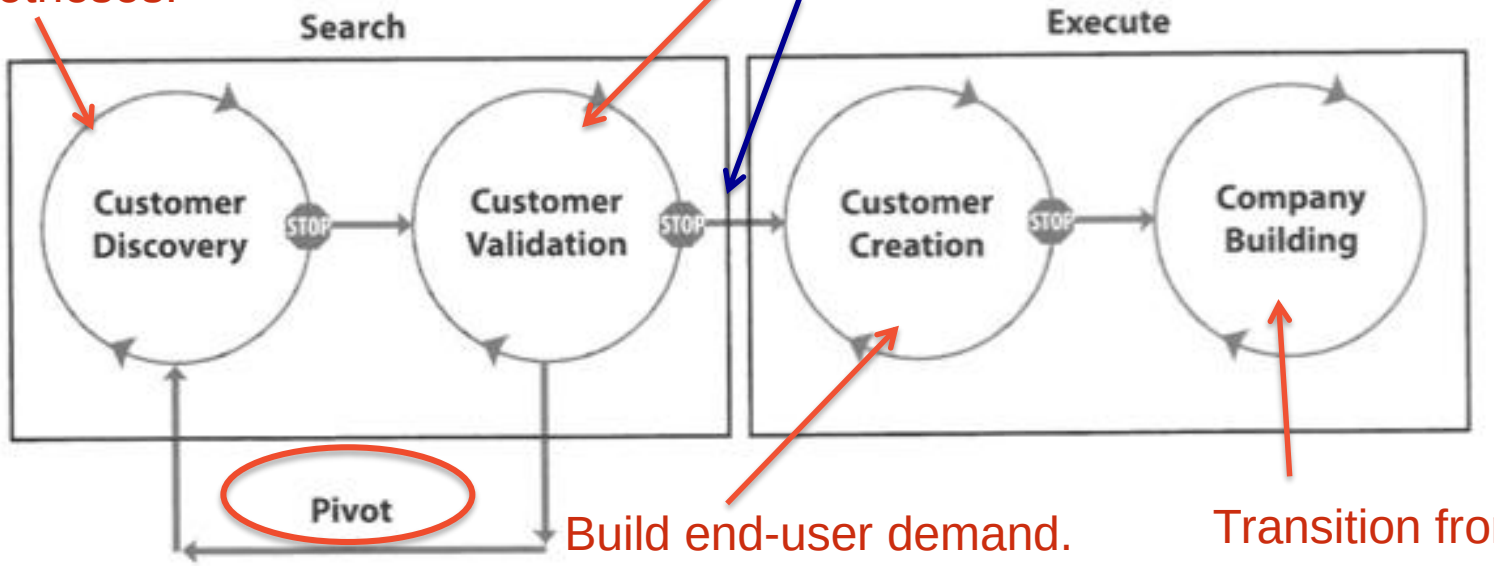
Source: Steve Blank and Bob Dorf, “The Startup Owner’s Manual” (2012)

Alternative approach for startups: Customer Development Process

Capture vision and turn it into business model hypotheses.
Develop plan to test hypotheses with customers.
Test hypotheses.

Test whether related business model is repeatable and scalable

Product/market fit



Build end-user demand.
Build sales channel.
Scale business.

Transition from startup to typical company

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

The Customer Development Manifesto (The 14 Rules)

Rule 1. There are no facts inside your building, so get outside

Rule 2. Pair Customer Development with Agile Development

Rule 3. Failure is an integral part of the search

Rule 4. Make continuous iterations and pivots

Rule 5. No business plan survives first contact with customers so use a business model canvas (more soon)

Rule 6. Design experiments and test to validate your hypotheses

…

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

The Customer Development Manifesto (The 14 Rules)

Rule 7. Agree on market type. It changes everything

- Bringing a new product into an existing market
- Bringing a new product into a new market
- Bringing a new product into an existing market and trying to:
  - Re-segment that market as a low-cost entrant
  - Re-segment that market as a niche entrant
  - Cloning a business model that's successful in another country

…

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

https://www.youtube.com/watch?v=6y3WIrgp_NY

The Customer Development Manifesto (The 14 Rules)

– …

Rule 8. Startup metrics differ from those in existing companies

Rule 9. Fast decision-making, cycle time, speed and tempo

Rule 10. It's all about passion

Rule 11. Startup job titles are very different from a large company

Rule 12. Preserve all cash until needed. Then spend

Rule 13. Communicate and share learning

Rule 14. Customer development success begins with buy-in

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

The Lean Startup

MVP, SyncDev, Product Market Fit, and more

The Lean Startup

- Eric Ries developed the concept of “The Lean Startup”
- Combines Steve Blank’s Customer Development process with Agile Software Development

www.theleanstartup.com
Eric Reis
Software developer/entrepreneur

- Video of Eric Ries speaking, Oct 2011:
- https://www.youtube.com/watch?v=tNw4Ht75DvA
- (10 minutes)

The Minimum Viable Product (MVP)

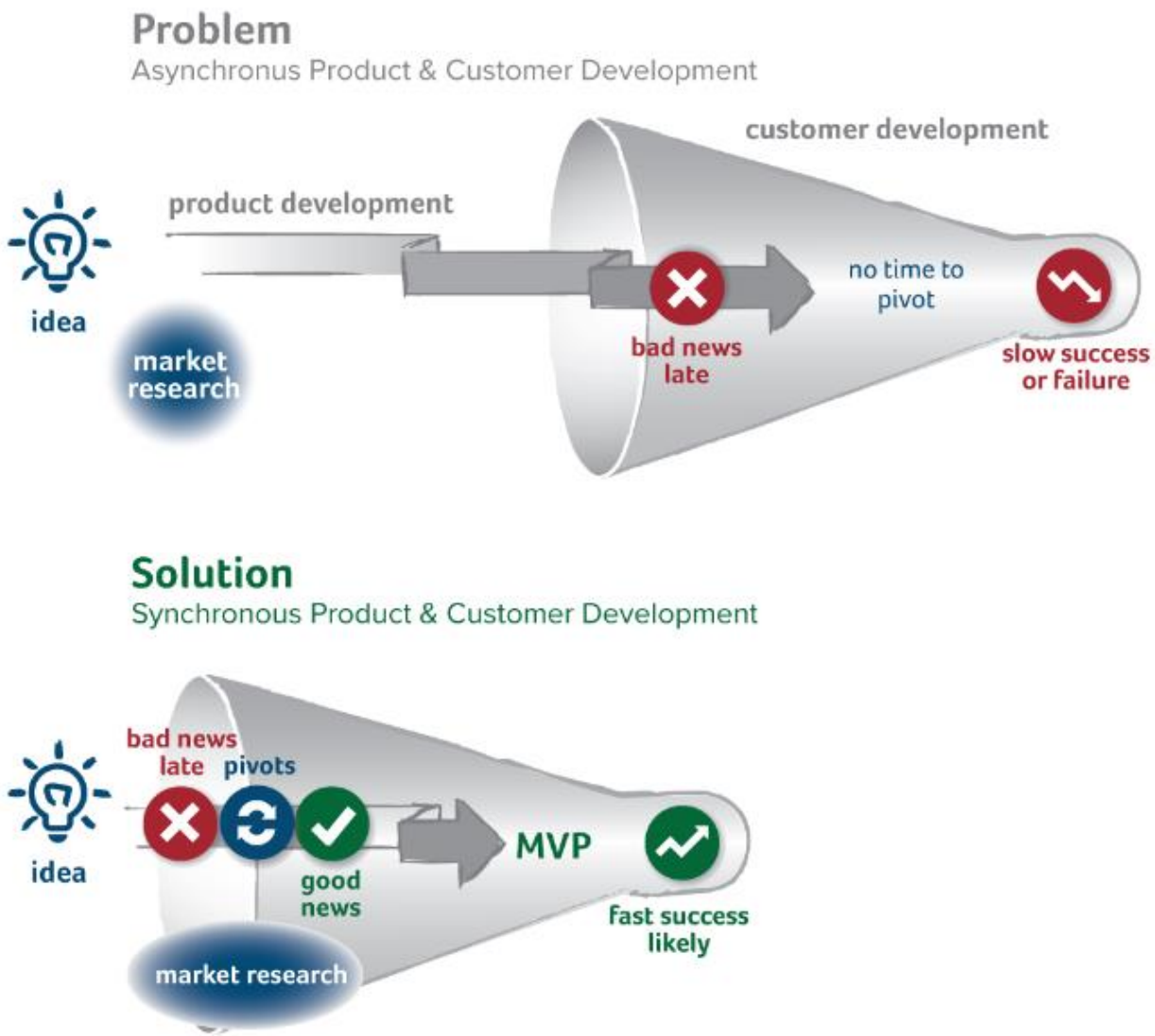
- Definition (from Eric Reis):
  "the minimum viable product is that version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort."

SyncDev

- "When I first said 'minimum viable product' I never had to repeat myself. The words went viral right before my eyes."

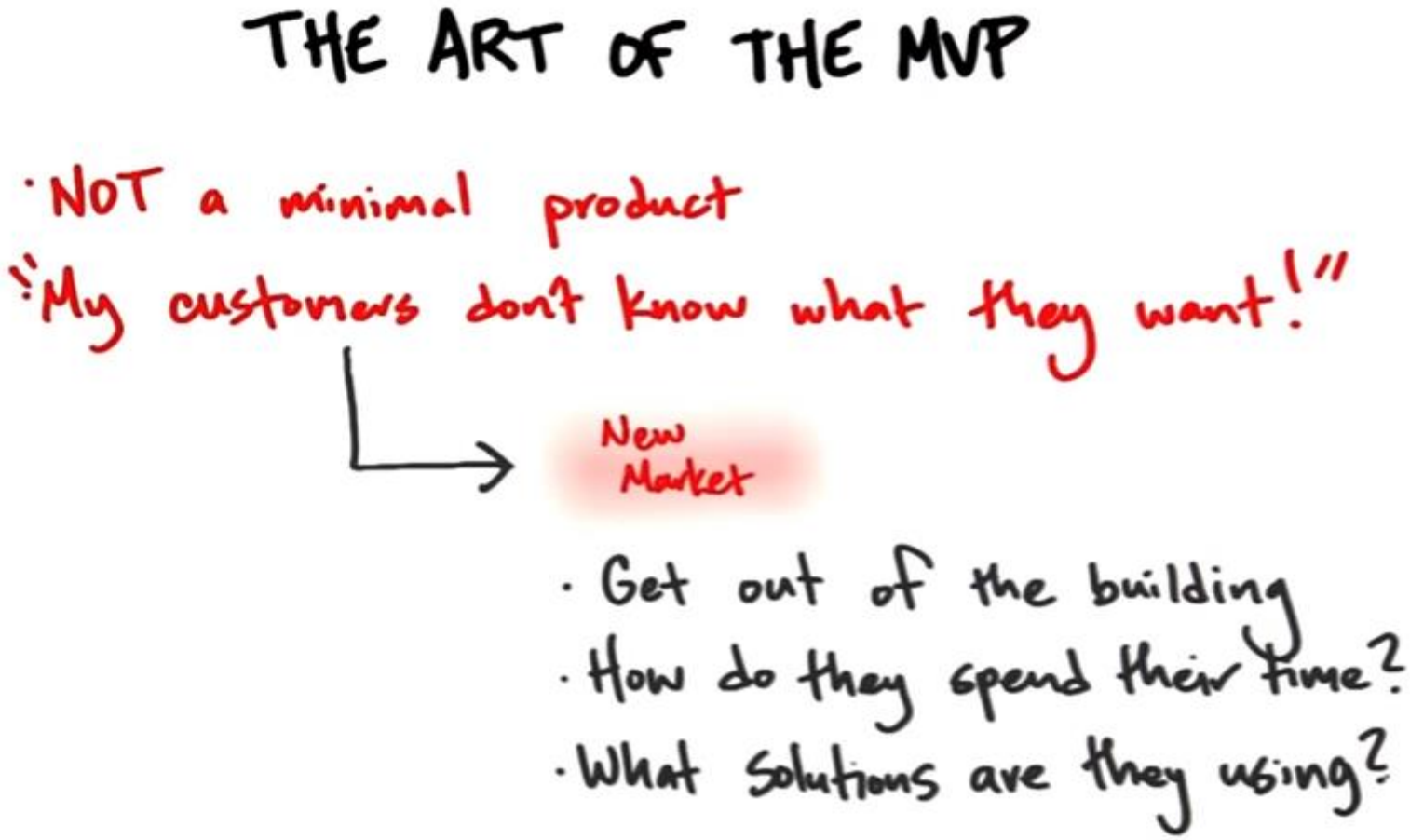
Frank Robinson,
CEO, SyncDev, Inc.

- "Frank Robinson independently came up with many of the concepts in Customer Discovery and Validation long before I wrote about them. Frank coined the term 'minimum viable product'. I liked it better than minimum feature set, which I used in my first book."
  - Steve Blank, Author and Entrepreneur



http://www.syncdev.com/minimum-viable-product/

The Minimum Viable Product (MVP)



https://www.youtube.com/watch?v=Fj0qsAyKPN8

Product Market Fit

- Definition (Marc Andreessen):
  "Product/market fit means being in a good market with a product that can satisfy that market."
- You can always feel when product/market fit isn't happening.
  - The customers aren't quite getting value out of the product, word of mouth isn't spreading, usage isn't growing that fast, press reviews are kind of "blah", the sales cycle takes too long, and lots of deals never close.

https://youtu.be/zfOsP3PmI1U

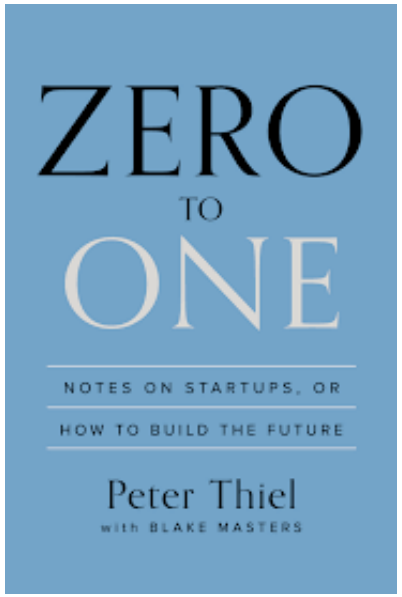
http://web.stanford.edu/class/ee204/ProductMarketFit.html

Monopolies: "Winner takes all" markets

Peter Thiel, co-founder of PayPal, entrepreneur and investor

http://www.forbes.com/profile/peter-thiel/

- Focus on big vision rather than purely incremental niche-making by pivoting
- Focus on monopoly for a time in a market (eg Goolge, Twitter, Facebook) rather than continual competition



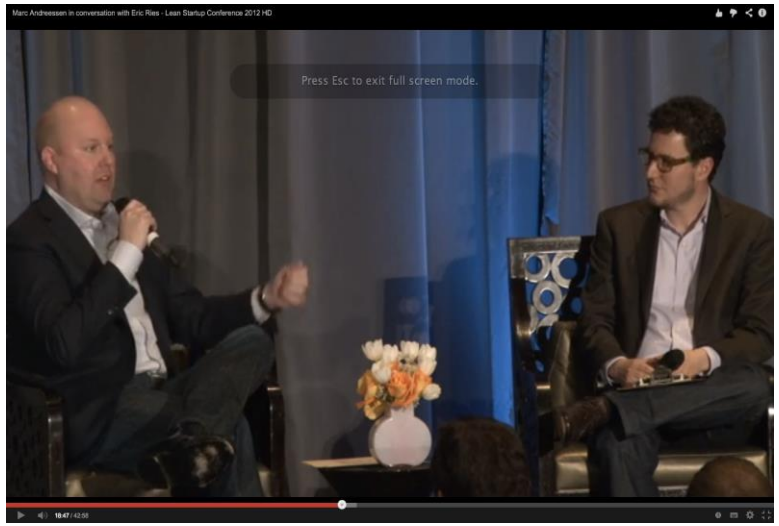
Differences between the Lean Startup approach and the traditional approach (for established companies)

Steve Blank (2013)

Good sources of tips for startups

- Steve Blanks' blog – http://steveblank.com
- Paul Graham's articles – http://paulgraham.com/articles.html

- "Lean Startup" isn't all you need to know - Marc Andreessen on role of lean startup - https://youtu.be/GGui1AB66k8?t=2416 (from 40:16 to end)



Summary

- According to Schumpeter, entrepreneurs inside new companies usually drive innovation causing creative destruction across markets
- A startup is “a temporary organization in search of a scalable, repeatable, profitable business model” (Steve Blank)
- Traditional new product introduction processes are not suitable for situations of uncertainty (eg most startups) as not enough is known about customers, needed features, etc
- Managing projects for innovation
  - Traditional project management approaches don’t work well with uncertainty
  - Uncertainty is natural in all innovation
  - Agile approaches are needed for innovation
- The Customer Development process has been designed to help scalable startups find a scalable business model
- Startups are seeking “product/market fit”
- The Lean Startup approach provides a useful model for IT startups which combines Customer Development and Agile Development
- The Business Model Canvas, Value Proposition Canvas and Lean Canvas provide useful templates to help guide development of businesses

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Group Presentation - Session I

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