

Business Models for Actuaries

Actuarial Society of Greater New York

8/8/17

Andrew M. Webster, M.S., ASA, MAAA

Speaker's Traditional Background

Education

- Bachelor's degree in pure Mathematics
- Bachelor's degree in Materials Science and Engineering
- Master's degree in Actuarial Science

Employment

- Epic Systems Corporation, Towers Watson, Presence Health
- 10-year career in healthcare and technology



Speaker's Non-Traditional Background

- Cofounder of Validate Health, a MATTER company (2014)
- Technology lead for the Chicago Actuarial Association (2014)
 - Website modernization
 - Predictive Analytics track
- Co-organizer of the Chicago Lean Startup Circle and participant in Lean Startup Challenge (2014)
- Illinois All-Payer Claims Database Committee Member (2014)
- Inaugural company and mentor for SOA non-traditional internship program (2015)
- SOA Predictive Analytics Pioneer (2015)
- Chicago Python Startup-Row winning company (2016)
- Advisor for Cyber Security Conference (2015 - 2016)
- Cofounder and Co-organizer of the Chicago InsurTech Meetup (2017)



Objectives

1. Entrepreneurial Options for Actuaries
2. InsurTech overview
3. Actuarial InsurTech Competency Framework
4. Lean startup 101
5. Business Model Canvas applied to InsurTech
6. Actuarial InsurTech Manifesto

I. Entrepreneurial Opportunities for Actuaries

Pent-up Demand

Fourth talk of five talks in 2017 on entrepreneurial opportunities for Actuaries & Mathematicians:

- May 15th, ASNY (Actuarial Society of Greater New York)
- June 13th, SOA Health Meeting
- July 29th, Mathematical Association of America
- August 8th, ASNY (Actuarial Society of Greater New York)
- December 12th, TCAC (Twin Cities Actuarial Club)

Actuarial Strengths for Entrepreneurship

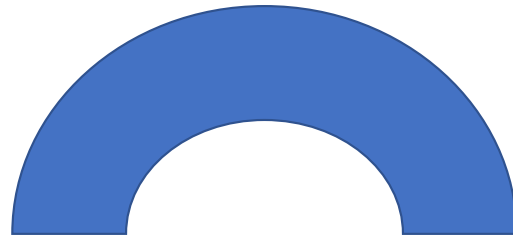
1. Actuaries are the means to their own economic production
2. High-degree of financial and business acumen necessary for fundraising, evaluating revenue models, ROI measurement/business value, negotiations
3. Intimate knowledge of regulatory landscape, future outlook and business implications
4. Deep subject matter expertise within their industry
5. Can apply scientific thinking to business model generation
6. Strong work ethic
7. High net worth individuals

Actuarial Areas for Growth

1. Personal financial risk aversion, Personal failure risk aversion, Professional failure risk aversion – preconceived notion of a linear actuarial career path
2. Complacency: Already in high demand, Existing lucrative stable traditional employment opportunities, Have existing professional commitments
3. Need to learn an entirely new set of general business skills and tasks for successfully operating a business

Timing for Full-time Entrepreneurship

- Younger – SOA/CAS Exam process
- Mid-career – Personal constraints
- Older – Opportunities may have passed



Successful Actuarial Founders: Chicago Health

- Dale H. Yamamoto – Red Quill Consulting (author of Fundamentals of Retiree Group Benefits)
- Ian Duncan – Solucia Consulting Inc. & Santa Barbara Actuaries (author of Healthcare Risk Adjustment and Predictive Modeling)
- Tom Herget – PolySystems, Inc. & Risk Lighthouse LLC (author of U.S. GAAP for Life Insurers)
- Tom Terry – The Terry Group (Past president of the American Academy of Actuaries and current president International Actuarial Association)
- Andrew Sykes – Health at Work
- Tom Donlon – Donlan & Associates (merged with Terry Group)
- Charlie F Larimer – CF Larimer Consulting and Bob Gold and associates, Inc.

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“The non-traditional actuarial opportunities of today are the traditional actuarial jobs of tomorrow”

- *Geoffrey Sandler, Senior Actuary, Health Policy at Aetna (2017)*

Where are the opportunities?

- Inefficient or non-transparent markets
- Underserved markets and industries
- Demographic shifts
- New regulations
- New technology (Insurtech)
- New use cases (e.g. Castlight)
- Minority Business Enterprise/Women Business Enterprise (MBE/WBE)



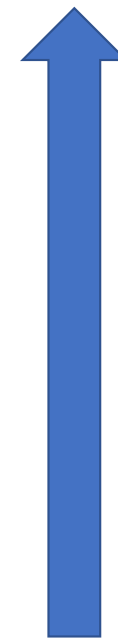
- A missed actuarial entrepreneurship opportunity...
- Founded in 2008 in San Francisco, CA
- IPO in March 2014
- Provides web-based platform for self-funded employees showing healthcare cost and quality
- Acquired Jiff HR corporate benefits software platform in April 2017

*<https://www.crunchbase.com/organization/castlight-health#/entity>

Entrepreneurship Spectrum

- Founder/Cofounder
- Employment at an InsurTech startup
- Intrapreneurship
 - Internal department projects
 - Rotations or transitions to incumbent venture funds
- 10% Entrepreneur*
 - Angel investor
 - Advisory

*<https://www.actexmadriverr.com/product.aspx?id=453139741>



Increasing
Professional
Risk and
% Equity

Steps to Intrapreneurship

- Internal innovations – How do you approach your manager?
 - Business model canvas
 - Scope of work with hours and budget
 - Revenue model for yourself – bonus, recognition, promotion, royalties
- Does your company have a venture arm?
 - Are there opportunities for rotation with portfolio companies?
 - Are there opportunities to transfer to portfolio companies?

Founder/Cofounder Spectrum

	Independent Actuary/Freelancer	Small Business	Found Startup
Definition	Single consultant/broker	Multiple employees	New business model
Advantages	Flexibility		Ultimate flexibility
Disadvantages	Lack of stability / resource scarcity		Uncertain success
Keys to Success	<ul style="list-style-type: none"> • Continuous Sales • Cash flow Management/Line of Credit 		<ul style="list-style-type: none"> • Funding • Scalability • Lean iteration



Increasing Professional Risk

InsurTech Start-up Job Posting

New York Start-up seeks Data Scientist and Strategy Analyst #77282 #jobs #datascience #datascientist #stats

For Position 77282, a New York start-up seeks a Data Scientist and Strategy Analyst.

Compensation up to \$110K + Company Stock. Ideal candidates will have some experience at an investment bank or a consulting firm or an entrepreneurial start-up.

Python, R and SQL programming skills required. Some experience with insurance a plus. Must have at least two years of data analytics experience.

Apply to Ezra Penland Actuarial Recruitment at <http://www.EzraPenland.com/nontraditionaljobs> , or email actuaries@EzraPenland.com and mention Position 77282, or call us at (800) 580-3972.

*<http://www.ezrapenland.com/2017/07/31/new-york-start-up-seeks-data-scientist-and-strategy-analyst-77282-jobs-datascience-datascientist-stats/> (retrieved on 8/1/17)

Traditional versus Non-Traditional Probabilities of Success

266 Chief Actuaries* & continued insurance carrier consolidation

Members Search Result					
266 Members Found / 20 Shown.					
Name	Job Title	Organization	City	State/Province	Country
Epperson, Keith A	Chief Actuary	Bright Health	Minneapolis	MN	USA
Falcone, Michael A	Chief Actuary	Global Aerospace	Short Hills	NJ	USA
Fefferman, Alan S	Chief Actuary	Alan Fefferman - Actuarial Services Ltd.	Petach Tikva		ISR
Feigenbaum, Martin	Chief Actuary	MLF Consulting Group Inc	Valley Stream	NY	USA
Foster, Richard S	Chief Actuary, Retired	Centers for Medicare and Medicaid Services	Baltimore	MD	USA
Fournier, Christian	Chief Actuary	Insurance Corp of British Columbia	North Vancouver	BC	CAN
Fransen, Walter H	Chief Actuary	AIG	Toronto	ON	CAN
Fung, Paul Kin Yan	Chief Actuary	Kang Mei Health	Beijing City	Beijing	CHN
Gallagher, Patrick	Chief Actuary	Intergo	New York	NY	USA
Garside, Anne M	Chief Actuary	Plymouth Rock Assurance Company	Boston	MA	USA
Gifford, Bruce R	Chief Actuary- Bond & Financial Products	Travelers Insurance	Hartford	CT	USA
Gildea, Susan I	Chief Actuary	Berkshire Hathaway Specialty Insurance	Boston	MA	USA
Go, Tian-Teck	Chief Actuary, Pensions (Acting)	Financial Services Commission of Ontario	Toronto	ON	CAN
Goebel, Brian F	Chief Actuary	Molina Healthcare	Long Beach	CA	USA
Goh, Ser Kee	Chief Actuary & Appointed Actuary	AIA Singapore	Singapore		SGP
Goss, Stephen C	Chief Actuary	Social Security Administration	Baltimore	MD	USA
Graeber, Jan	Chief Actuary, Life, Accident and Health	Texas Dept of Insurance	Austin	TX	USA
Graham, David S	Chief Actuary		Chicago	IL	USA
Griffin, Paul J	Chief Actuary	Actuarial Designs & Solutions	Scarborough	ME	USA
Grinnell, Brian C	Chief Actuary	State Teachers Retirement System of Ohio	Columbus	OH	USA

1 2 3 4 5 6 7 8 9 10 ...

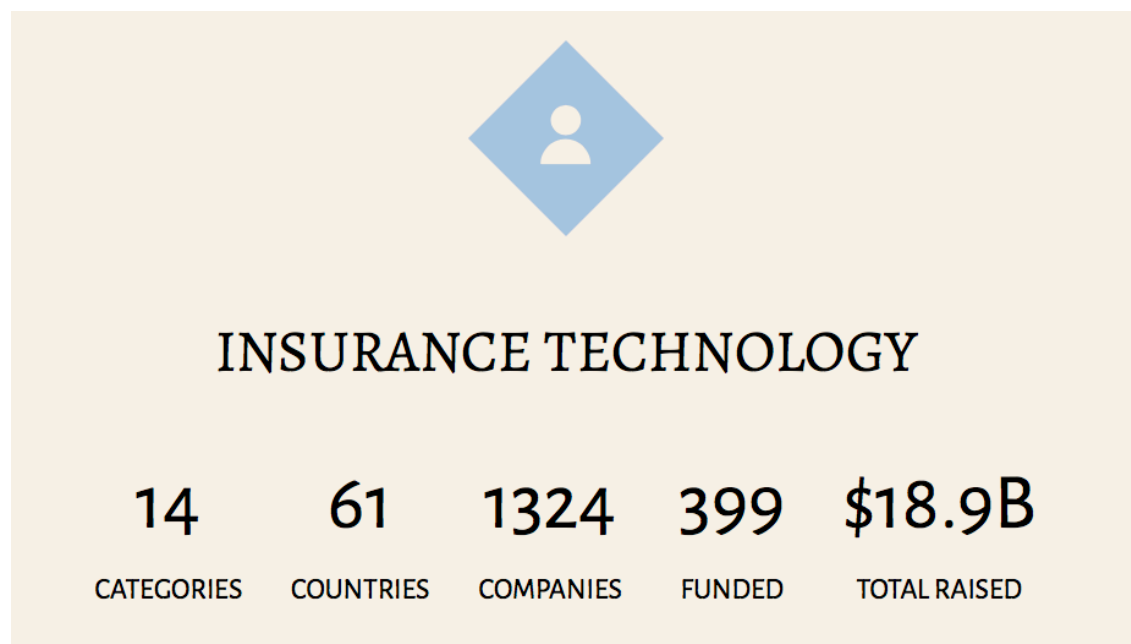
*<https://www.actuarialdirectory.org/SearchDirectory.aspx> (as of 8/1/17)

Traditional versus Non-Traditional Probabilities of Success

1,324 InsurTech Start-ups & growing :

Which need a Chief Actuary?

*<https://www.venturescanner.com/insurance-technology> (retrieved on 8/1/17)



An Actuarial Skills Gap Exists




- Drafting and identifying elements of business model canvases
- Writing business plans (except for writing scopes of work if consultant)
- Testing business models in the wild and “getting out of the building” and listening closely to non-actuaries
- Marketing and sales (unless currently a partner at a consulting firm)
- Developing and testing revenue models
- Scaling business models
- “Tech for Actuaries”

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Tech for Actuaries

- Tech speak to help actuaries
- Web technology and restful API protocol
- Co-working/effectively interacting with IT/software developers
- Modern computer development methodologies
- Programming skills, languages and application architecture (e.g. procedural -> functional -> object-oriented code)

Thesis

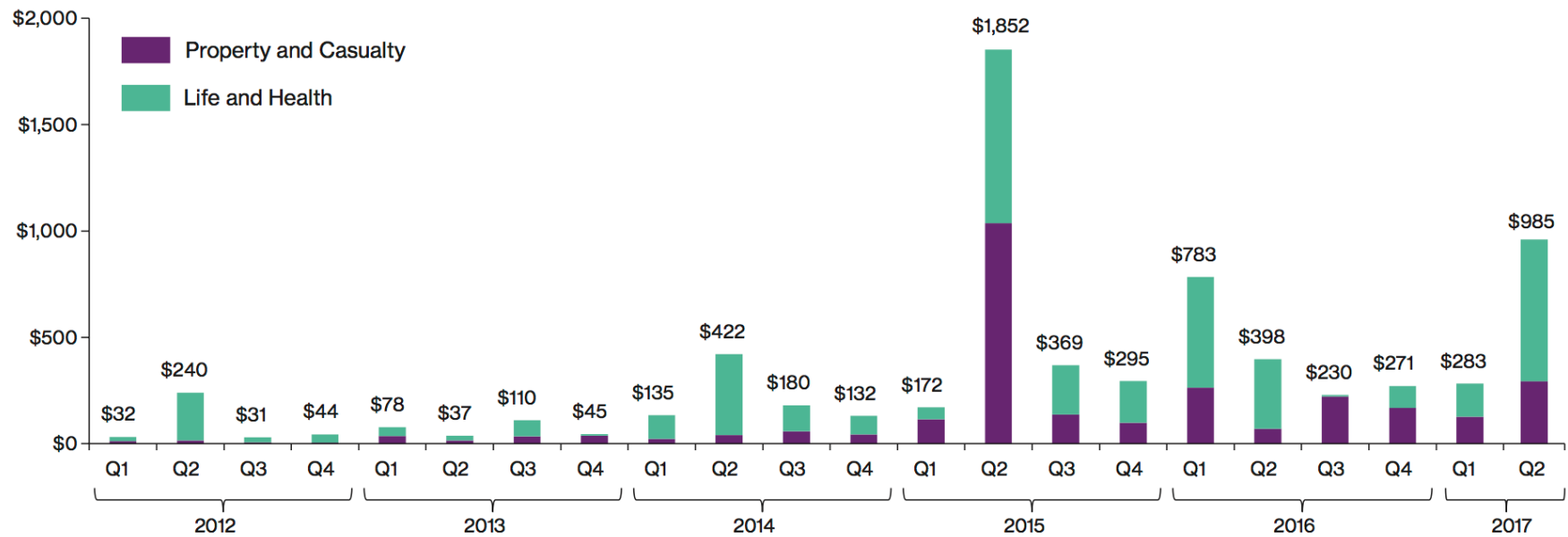
<p>1. Insurance is being disrupted and access to venture capital is abundant and expanding</p>	
<p>2. Actuaries are ideally suited to be entrepreneurs and capture entrepreneurial opportunities through the emerging InsurTech industry</p>	
<p>3. However, an actuarial skills gap has been identified and needs to be addressed before actuaries can seize entrepreneurial activities</p>	

II. InsurTech Industry Overview

Investment Over time

Quarterly InsurTech Funding Volume – All Stages

(\$ in millions)



*CB Insights Q2 2017 InsurTech Quarterly Report

Insurance Value Chain



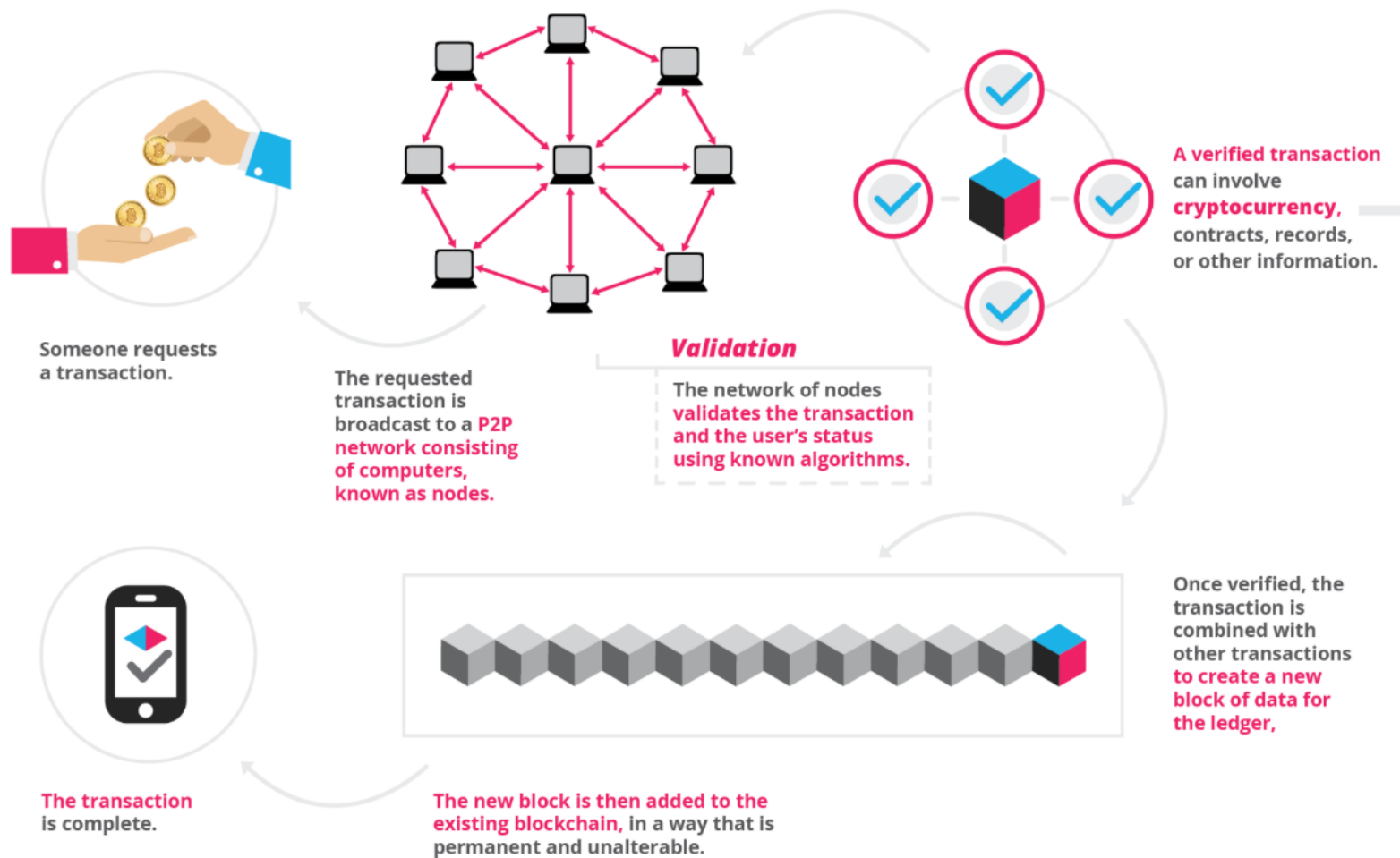
*CB Insights Q2 2017 InsurTech Quarterly Report

4 Axes (P's) of Disruption Potential

- Profitability
- Proximity (to the policyholder)
- Persistence
- Productivity (increased revenue)

Enabling Technologies versus Business Models

- Blockchain/cryptocurrency
- Drones
- Cybersecurity
- IoT/sensors (Internet of Things) – e.g. wearables, smart homes, telematics
- Cloud computing
- Artificial Intelligence/Predictive Analytics/Big Data
- Distributed computing
- Deep learning
- SaaS (Software-as-a-service)
- Peer-to-peer (P2P)/Microinsurance/Crowd-funding
- Chatbots/AI



*<https://blockgeeks.com/guides/what-is-blockchain-technology/>

Awareness **Choice** **Purchase** **Use**

financeAds

NAVERA

VIRADO

BeneStream

hearsay social

Aggregators

Goji, policy bazaar, ValChoice, baybot, Accuure, facile.it, ANIVO, constructaquote.com

Underwriters

eagleeye ANALYTICS, VERACITY ID, connectome, Analyze Re, QuanTemplate

Protect your bubble.com

Clover, kroodle, tröv, Neosurance, Slice, SCHUTZKLICK, pablow

Policy management

riskgenius, CLARK, Knip

Services

QMap, OSCAR, FinanceFox, BookDoc, tiassiste24, URGENTLY

Claims

pokitdok, TYCHE, Shift Technology

Internet of things

Air, AMODO, THE FLOOR, DRIVE SPOTTER, DigitalTech, Gaitup, TrueMotion, ybrain, accuscore, roost, Zbie, caret, CalAmp

P2P

DYNAMIS, UVAMO, friendsurance, Wecover, inspool, besure, teambrella, Lemonade, DanInsurance, VERSICHERIX, insPeer, AXIEME, PeerSure, So-Sure

*<https://www.linkedin.com/pulse/my-four-ps-insurtech-matteo-carbone>

Automotive
(140 Companies)

Employee Benefits
(86 Companies)

Enterprise/Commercial
(129 Companies)

Health/Travel
(138 Companies)

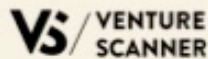
Data/Intelligence
(115 Companies)

Consumer Management
(80 Companies)

INSURANCE TECHNOLOGY

Comparison/Marketplace
(367 Companies)

Education/Resource
(39 Companies)



Contact info@venturescanner.com to access the full market report and data with all 1,316 companies

Infrastructure/Backend
(274 Companies)

User Acquisition
(102 Companies)

Life, Home, P&C
(133 Companies)

P2P Insurance
(29 Companies)

Product
(36 Companies)

Reinsurance
(33 Companies)

The graphic above shows only a sampling of companies in each category. Data as of July 2017

*<https://venturescannerinsights.wordpress.com/tag/insurtech/> (July 30th, 2017)

Types of Business Models

- Online distribution and sales
- Aggregation and quoting (e.g. BankRate)
- New insurance markets
- New or hyper-customizable insurance products
- External big data, predictive analytics and artificial intelligence
- Customer re-segmentation
- Gig economy workforce (e.g. WeLook)

New Carriers vs Supporting Solutions

- New carriers
 - Oscar
 - Clover
 - Lemonade
 - Singapore Life
 - Next Insurance
- Supporting & point solutions

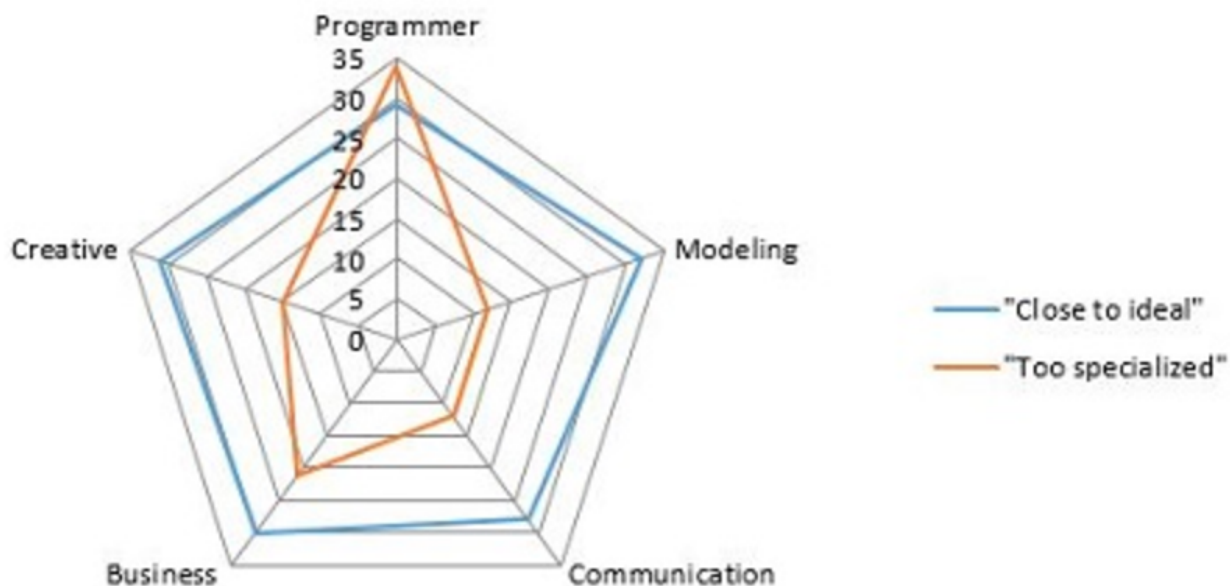
InsurTech Priorities for Actuaries

1. New insurance markets
2. New insurance products
3. New data sources
4. New insurance product design (e.g. usage-based insurance, resegmentation -> adverse selection)
5. Integrating results with “on-demand” insurance products

What is an Actuary's Role at an InsurTech Startup?

- Product pricing
- Market assessments
- Statistical ROI measurement (both external and internal to incumbent)
- Customer segmentation (underwriting, cohort profitability analysis)
- General data science and predictive analytics
- Regulatory and compliance
- Business development and strategy

Modern Definition of the Actuary, Mathematician or Data Scientist



<http://www.kdnuggets.com/2014/09/hiring-data-scientist-what-to-look-for.html> (Retrieved July, 28th 2017)

Data Workflow and Skills



<https://www.datacamp.com/community/blog/data-engineering-vs-data-science-infographic#gs.TeXjoi0> (Retrieved July 28th, 2017)

Big Data Roles and Activities

1. Define the problem

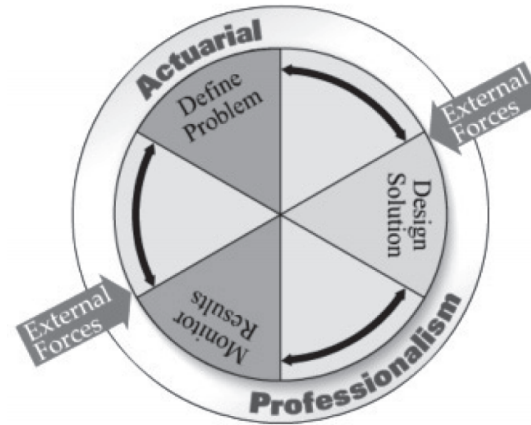
- Design thinking
- Subject-matter expertise
- Problem interviews

2. Design Solution

- Exploratory data analysis
- Data visualization
- Model development



Actuary / Mathematician
Data Scientist



3. Monitor Results

- Model validation
- Sustainable deployment
- Software integration



Application
engineer

Analytics practiced within the actuarial control cycle*

*Bellis, Clare, Lyon, Richard, Klugman, Stuart and Shepherd, John. (2nd Ed) Understanding Actuarial Management: The Actuarial Control Cycle. Institute of Schaumburg, IL. Actuaries of Australia and the Society of Actuaries (2010). <https://www.soa.org/Files/Pubs/book-understanding-act.pdf>

QuanTemplate

- Founded in 2013 in Gibraltar
- \$10.25 million in funding
- QuanTemplate is a data management and analytics platform built specifically for the complex needs of the insurance and reinsurance industry

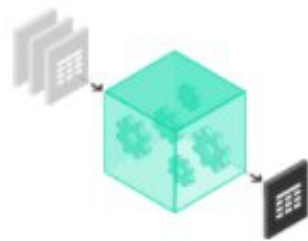
QuanTemplate



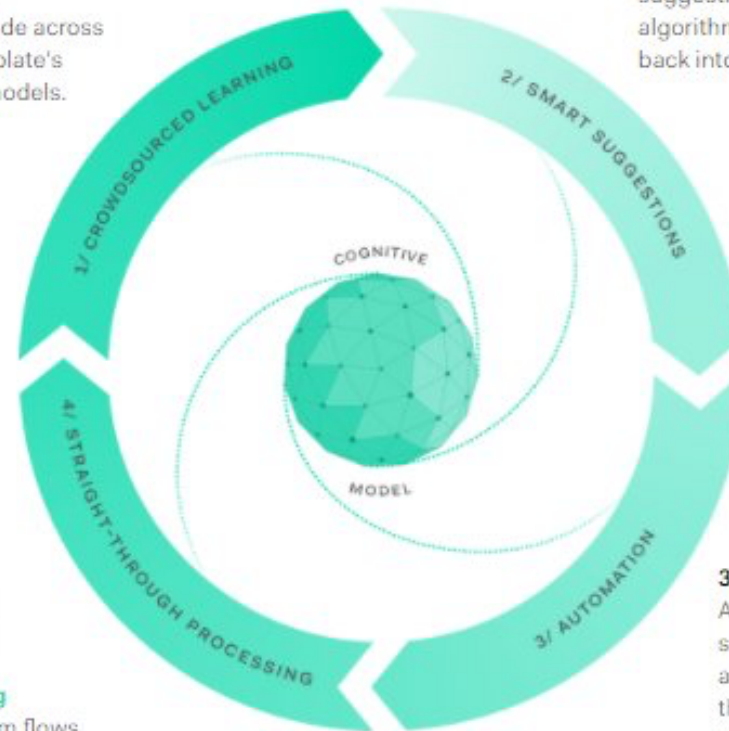
1/ Crowdsourced learning
Data preparation choices made across the market inform QuanTemplate's cognitive decision-making models.

SUGGESTION	STRENGTH
BROKER ID	86.2%
Map to master	

2/ Mapping suggestions
QuanTemplate makes data mapping suggestions based on learning algorithms. Manual adjustments are fed back into the decision-making model.



4/ Straight-through processing
Any new data fed into the platform flows straight through, minimising the need for manual data work.



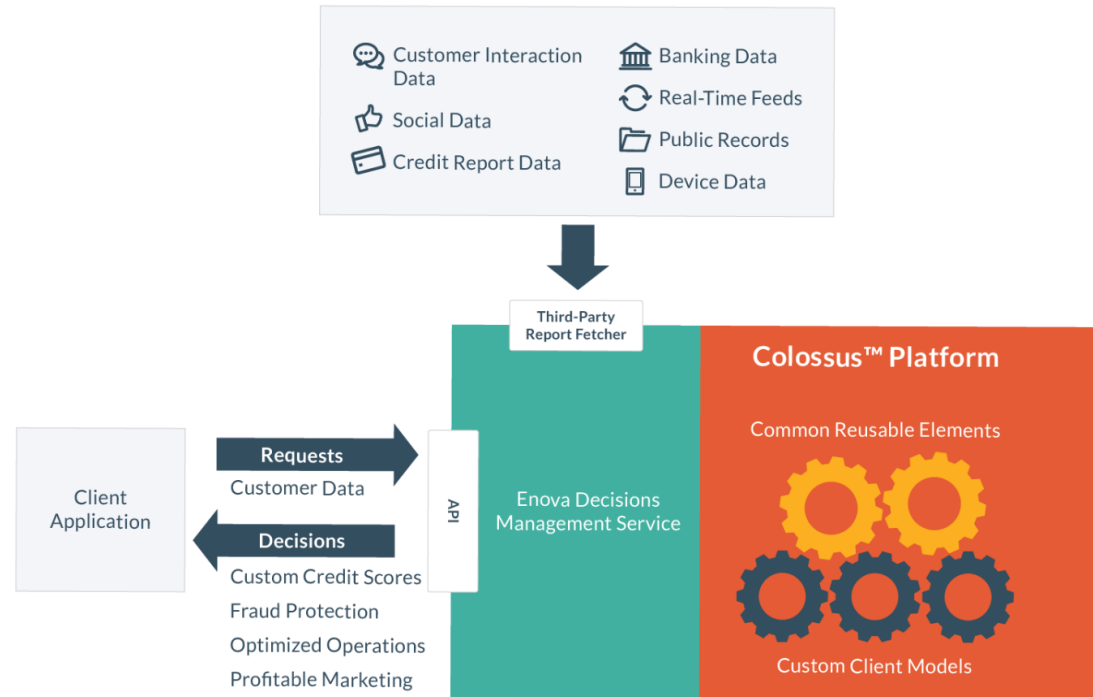
3/ Automation
Above a defined strength threshold, suggested mappings can be applied automatically, dramatically accelerating the speed of bringing in new data sources.

Artificial Intelligence



On-demand personal loan workflow

Colossus™ Decision Management Platform with Real-Time Customizable Scores and Decisions



Runs a variety of algorithms from regression to machine learning, as well as simple decision rules

Sub-second decisioning time

Deploys models built in SAS®, R, Python™, and other analytics platforms and environments

Thousands of transactions evaluated per hour

Integrated with multiple third-party data providers

Rapid model implementation and improvement

III. Business Model Generation

Business Model Generation for Actuaries

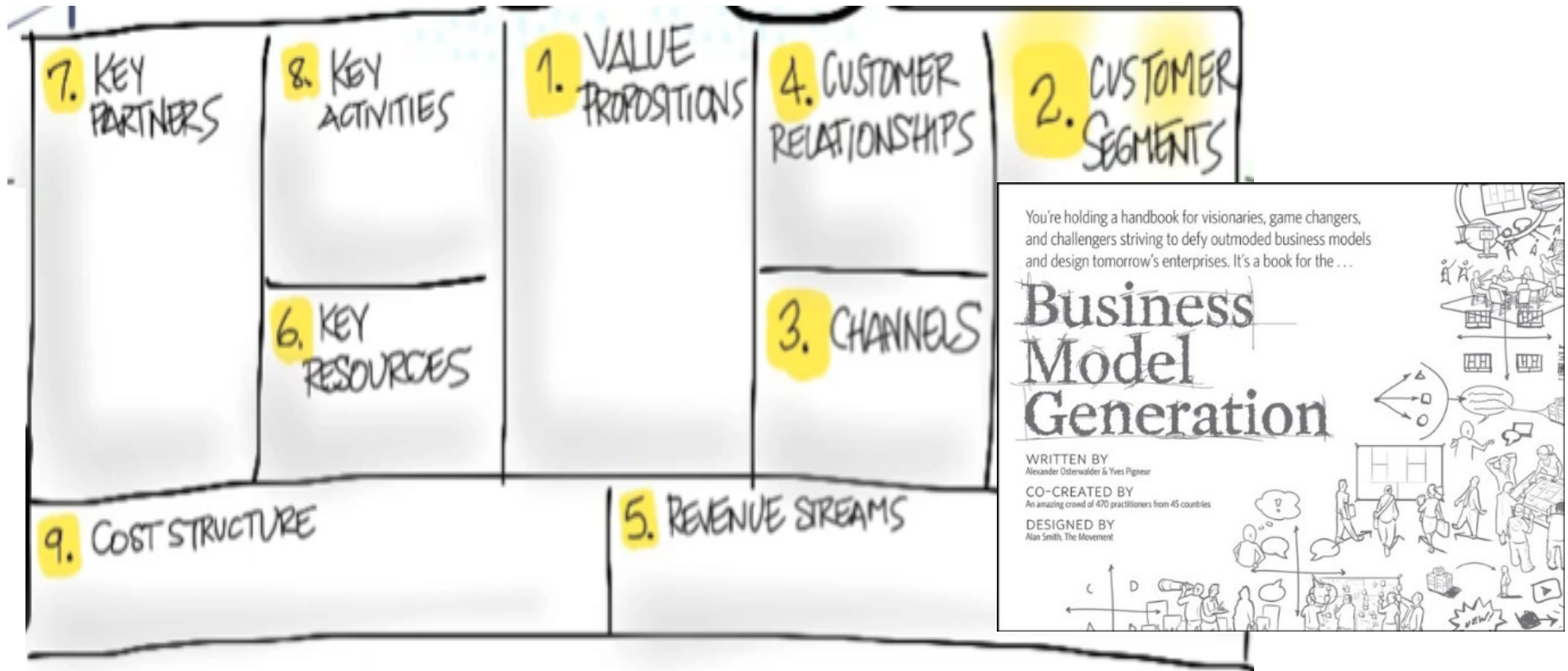
Knowing the nuts and bolts of the underlying business improves the business impact of the actuarial modeling/predictive analytics

Actuarial Role	Principal
Intrapreneur	Employer's business model
Consultant	Client's business models
Entrepreneur	Your own start-up or small business model

“Ideas are Worthless
Execution is Everything”

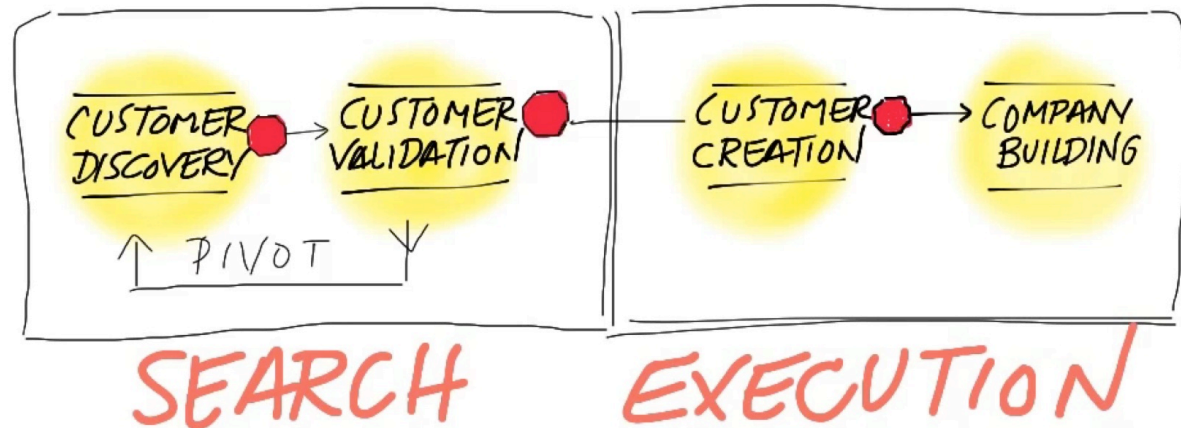
-Josh Steime

Business Model Canvas



The Lean Method

- There are No Facts Inside Your Building — Get Outside
- Using the Business Model Canvas
- Use Customer Development to Test Your Hypotheses
- What is a Pivot?



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

Getting Out of the Building: Customer Development

- What is Customer Development?
- How Do You Start the Customer Development Process?
- Customer Discovery is a Series of Conversations
- Statistical Validation of Business Canvas Assumptions
- When do you stop?

A startup is not a small company...

A startup is a temporary organization that
is iteratively testing a new business
model

Minimum Viable Product (MVP)

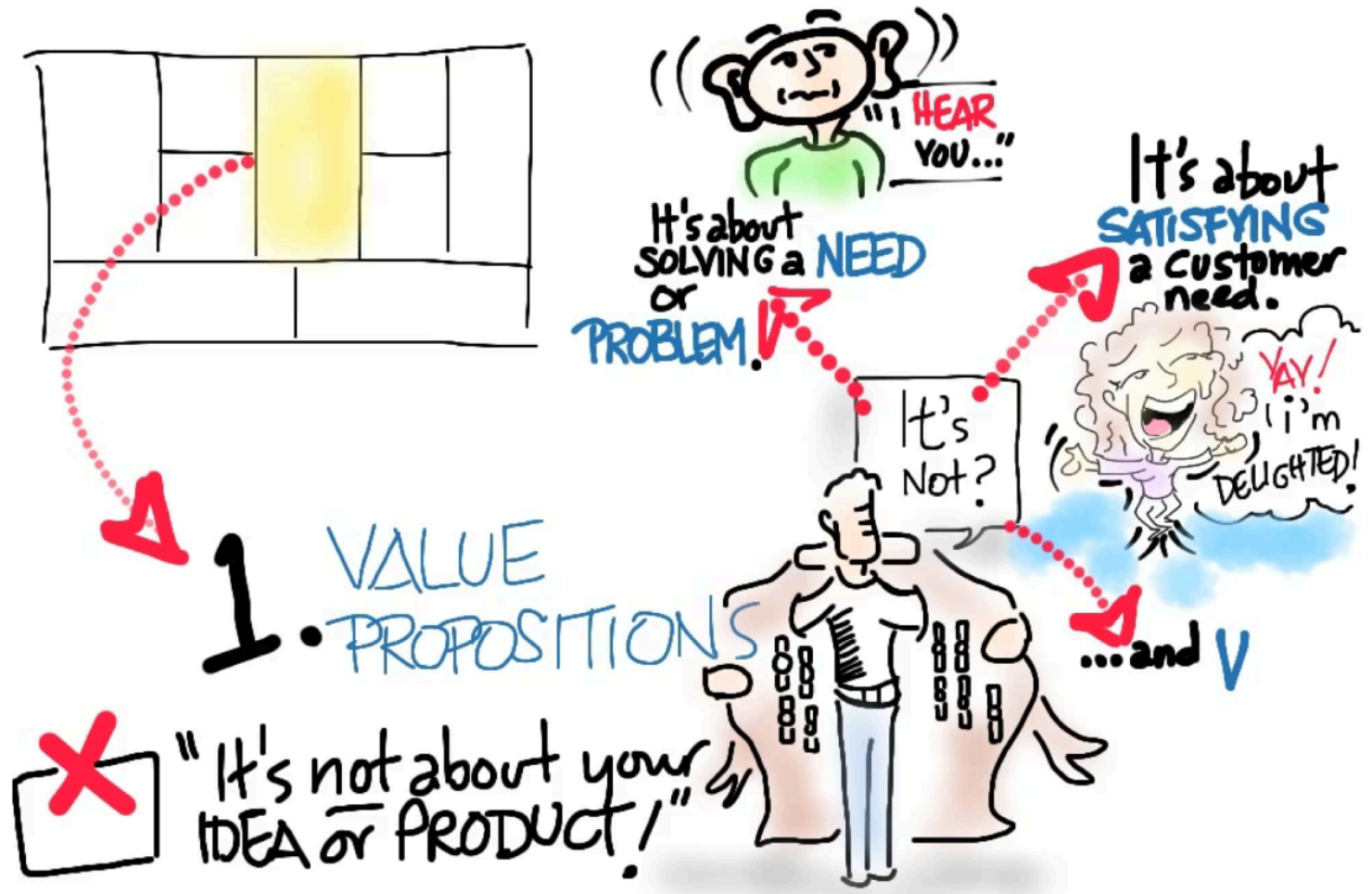
- What is a Minimum Viable Product?
- What to Test, Why to Test and How to Test
- You're Not Building a Product ... You're Getting Customer Feedback
- Use MVPs to Run Experiments
- Real World Example of an MVP

Priorities for MVP

- First, test your understanding of the problem (pain)
- Next test your understanding of the solution (gain)
- Proves that it solves a core problem for customers
- The minimum set of features needed to learn from early adopters
 - Interviews, demos, prototypes, etc
 - Prototypes are necessary for physical products
 - Lots of eyeball contact

Lean Startup Challenges w/ InsurTech

- Insurance is capital intensive
- Industry risk aversion
 - Financial and regulatory compliance constraints
 - Concerns about cybersecurity
- Marketing controls and regulation
- Deeply entrenched incumbents



Pains in Insurance

- Access (e.g AllLife)
- Affordability
- Tailored pricing (e.g. Beam Dental, Health IQ)
- Customer understanding/document tracking (e.g. CBien)
- Transparency (e.g. Amino)



- Founded in 2004
- \$6.5 million in funding
- AllLife is the only South African insurer of people living with HIV/AIDs. Sadly, prior to AllLife, many HIV patients would be told their lives were un-insurable. Now AllLife tells that they can lead long, productive lives so much so that they'll insure it.



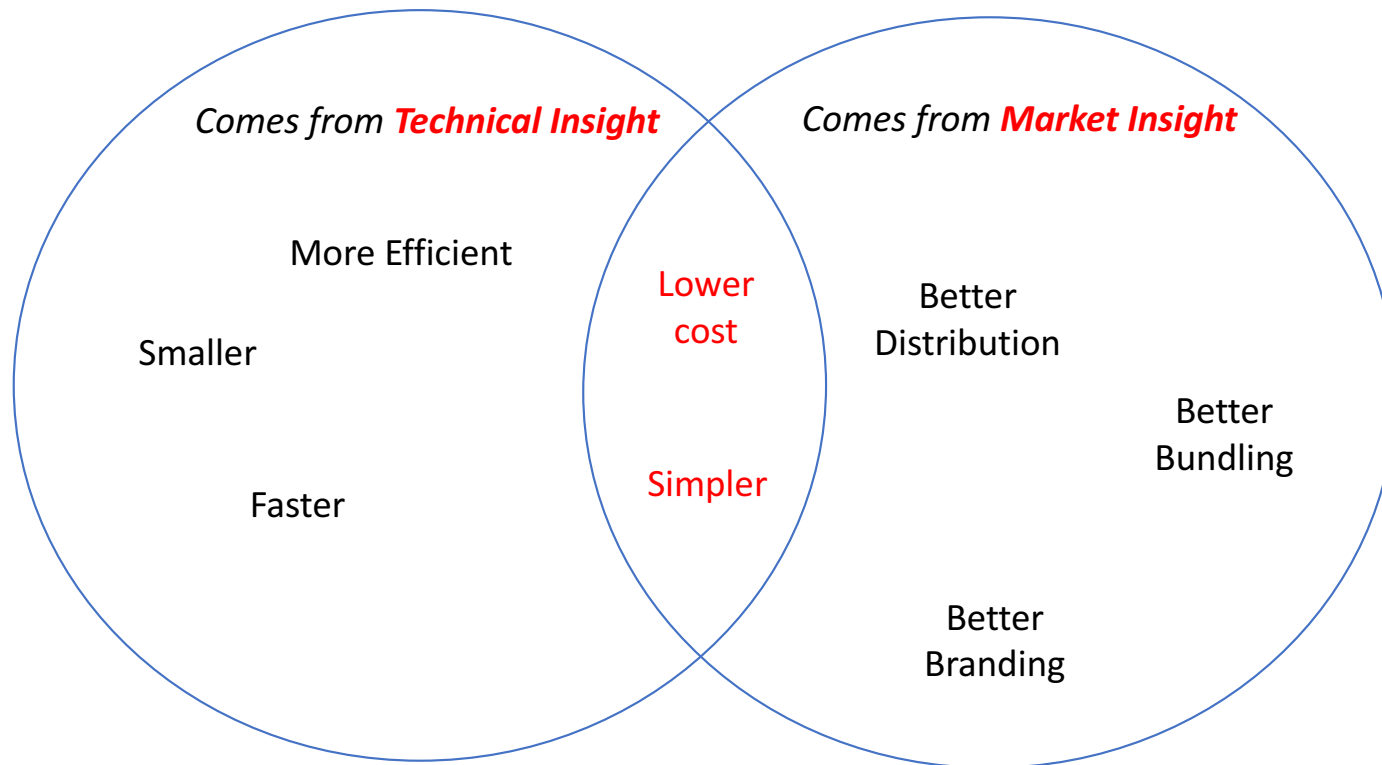
- Raised \$4.5 million June 2017
- Dental benefits company that offers employers, individuals and families a unique approach to dental care by pricing according to how often members brush their teeth

*<https://www.crunchbase.com/organization/beam-technologies#/entity>

Pain Killer – Is it a One-Time Problem or Ongoing Need?

- Are you solving a Problem?
- Are you fulfilling a Need?
- For who?
- How do you know?
- Rank each pain your products and services kill according to their intensity for the customer.
 - Is it very intense or very light?
 - For each pain indicate the frequency at which it occurs

Types of Value Propositions

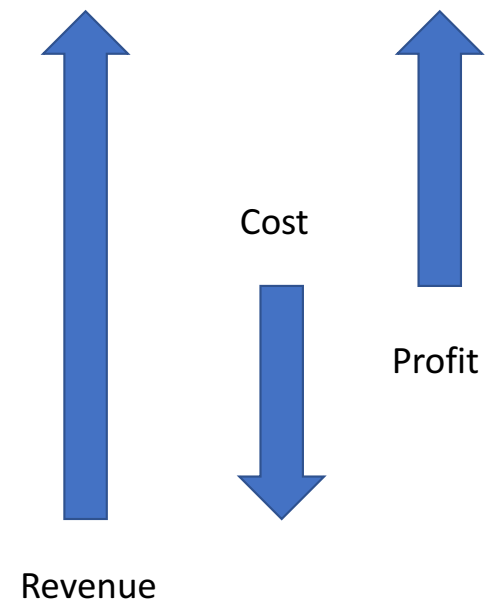


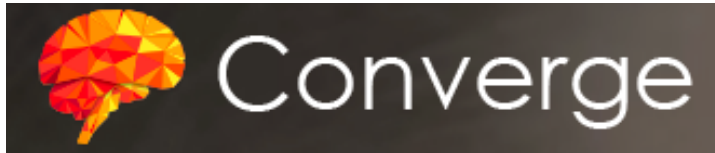
Gain Creators

- Create savings that make your customer happy? (e.g. in terms of time, money and effort, ...)
- Produce outcomes your customer expects or that go beyond their expectations? (e.g. better quality level, more of something, less of something, ...)
- Copy or outperform current solutions that delight your customer? (e.g. regarding specific features, performance, quality, ...)
- Make your customer's job or life easier? (flatter learning curve, usability, accessibility, more services, lower cost of ownership, ...)
- Create positive consequences that customer desires? (makes them look good, produces an increase in power, status, ...)
- Do something customers are looking for? (e.g. good design, guarantees, specific or more features, ...)
- Fulfill something customers are dreaming about? (e.g. help big achievements, produce big reliefs, ...)
- Produce positive outcomes matching your customers success and failure criteria? (e.g. better performance, lower cost, ...)
- Help make adoption easier? (e.g. lower cost, less investments, lower risk, better quality, performance, design, ...)

Recognizing Business Value

- Identifying and reducing cost and waste
 - Claims expense management
 - Fraud detection (e.g.
- Increasing sales and revenue
 - Online marketing analytics
 - A/B testing
 - Customer churn prediction
- Optimizing business decisions to increase profit
 - Scenario analysis
 - Forecasting and prediction
 - Return on investment measurement





- Founded December 2014 in San Francisco, CA
- \$100k in February 2016
- Empowers companies to leverage the best of drones and skilled inspectors to examine buildings
- Controls loss adjustment expenses (see also BetterView)

★ Winning combination: Drone/UAV data collection + computer vision (machine learning)

*<https://www.crunchbase.com/organization/converge-3#/entity/>

snapshot

- Founded in 2010 in Chicago, IL
- \$43.25 million raised
- Uses mobile app to inspect auto damage to control loss adjustment expenses
- Cost containment by using preferred “network” of auto repair facilities to control claims cost (see also Tractable)

*<https://www.crunchbase.com/organization/bodyshopbids#/entity/>



Hackensack
Meridian Health

COTA

Horizon



Horizon Blue Cross Blue Shield of New Jersey

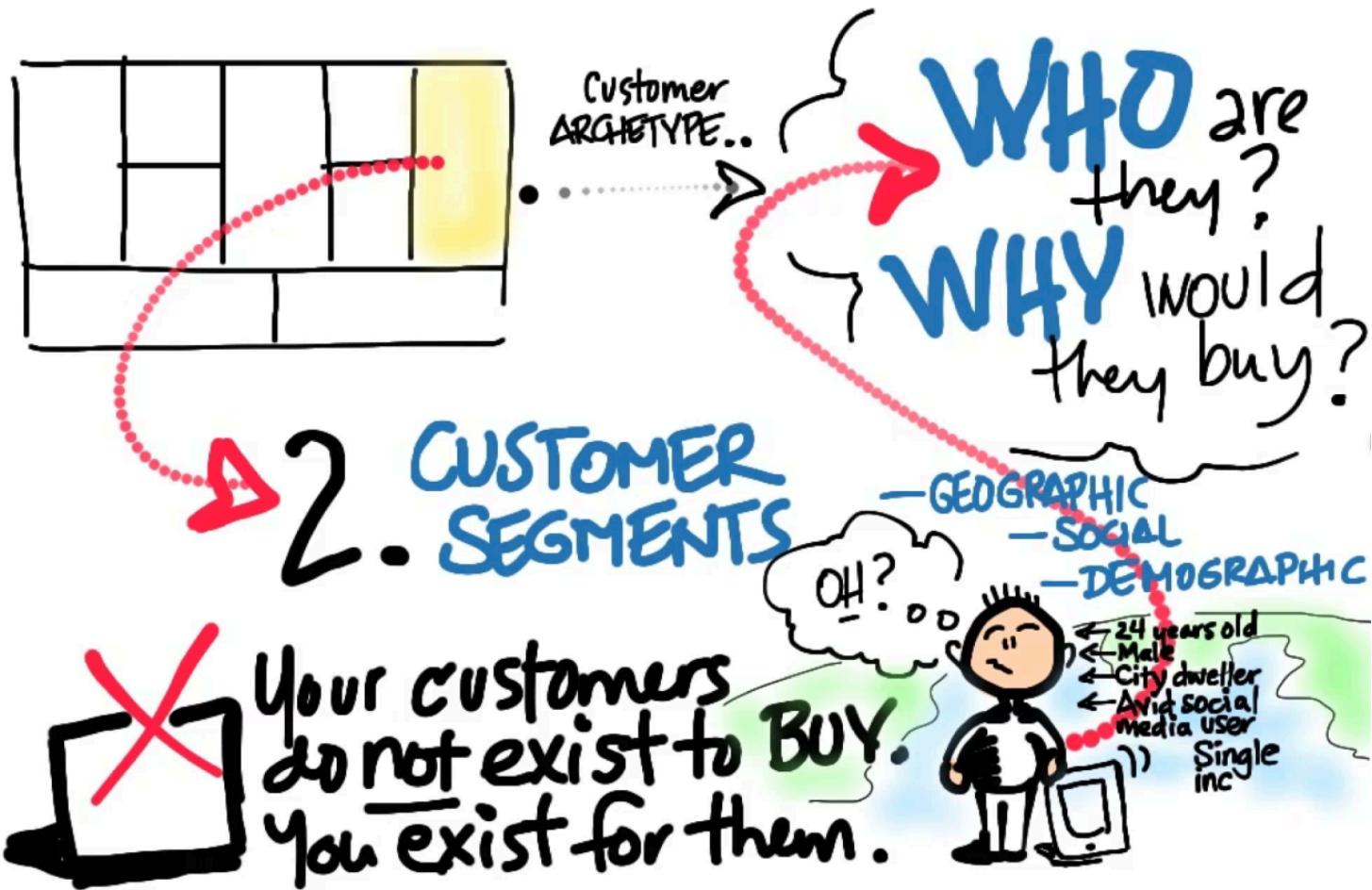
- COTA - Founded in 2011
- At least \$25 million in investment including Horizon BCBS NJ
- Cota builds solutions for healthcare to analyze, visualize, report, and manage real-world evidence and deliver precision medicine (claims expense management)
- Developed innovative bundled payment oncology program for PTAC

IBM

IBM Watson Health

Epic
with the patient at the heart

*<https://www.crunchbase.com/organization/cota-track#/entity/>



Customer Segmentation

- Get, Keep and Grow Customers
- Create Customer Demand
- Customer Archetypes: Getting to Know Your Customers
- Matching Archetypes to Acquisition – Underwriting?
- Growing Customers: The Lifetime Value
- The Biggest Mistake in Customer Acquisition
- Polarization

Customer Segmentation

- What functional jobs are your customers trying get done? (e.g. perform or complete a specific task, solve a specific problem, ...)
- What social jobs are your customers trying to get done? (e.g. trying to look good, gain power or status, ...)
- What emotional jobs are your customers trying get done? (e.g. esthetics, feel good, security, ...)
- What basic needs are your customers trying to satisfy? (e.g. coverage, ...)
- Are they buyers (e.g. comparing offers, deciding, buying, taking delivery of a product or service, ...)
- Are they co-creators (e.g. co-designing with solution providers, contributing value to the solution, ...)
- Are they transferors' e.g. brokers (how customers dispose of a product, transfer it to others, or resell, ...)

Market/Opportunity Analysis

- Identify a Customer and Market Need
- Size of the Market
- Competitors
- Growth Potential
- Existing Market?
- Resegmenting an Existing Market?
- New Market?

nextinsurance

- Founded in 2016 in Palo Alto, CA
- \$13 million seed in March 2016 and \$35 million Series A in May 2017
- General and professional liability insurance
- Segmented for photographers, contractors, etc.



- Founded in 2015 in NY
- \$4 million seed round in April, 2017
- Renters insurance for urban city dwellers

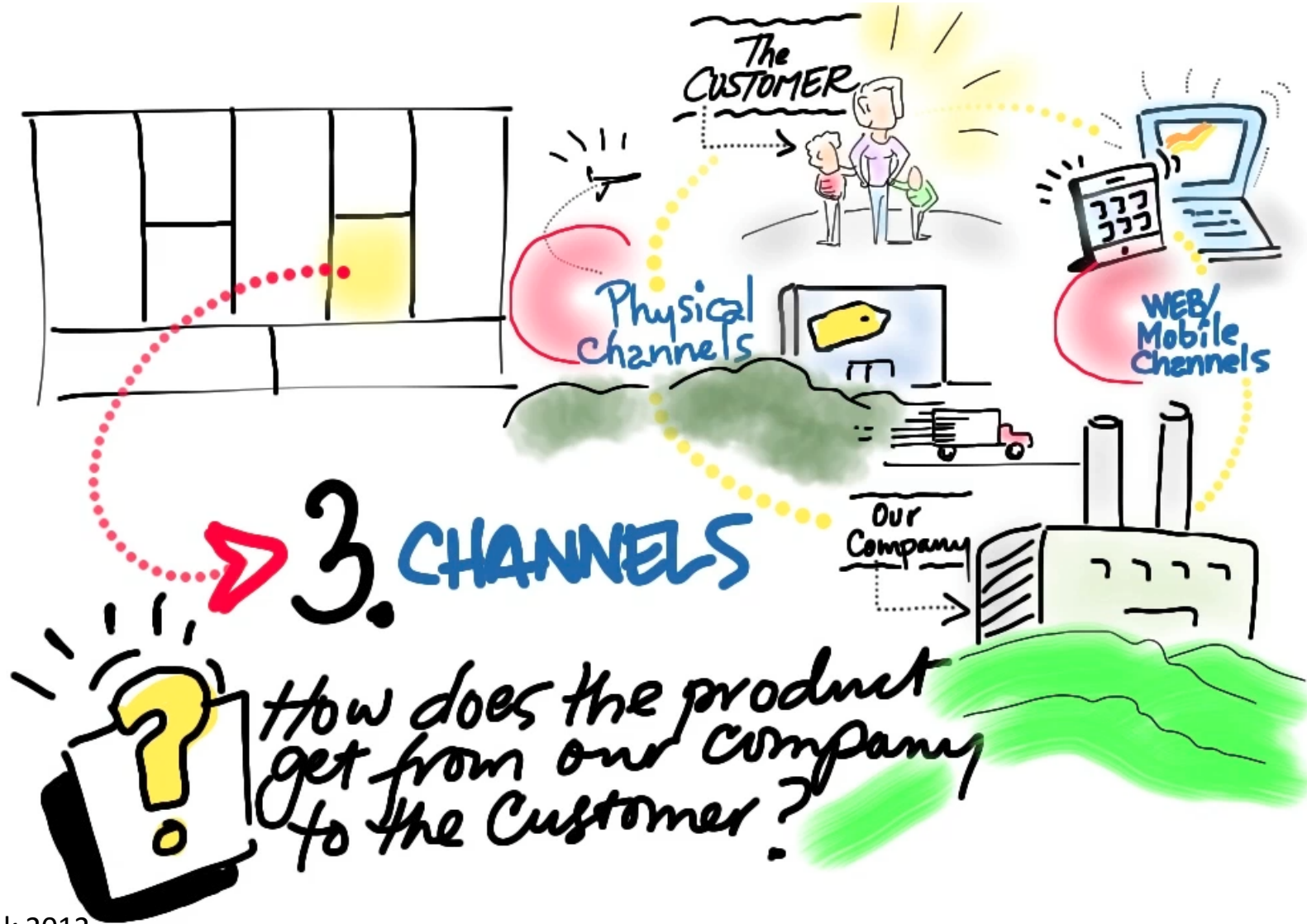
The logo for Health I.Q. features a stylized purple and green leaf-like icon to the left of the text "Health I.Q.". The text is in a dark purple, sans-serif font.

Health I.Q.

- Founded in 2014 in Mountain View, CA
- \$5.5 million in seed investment December, 2014
- Uses a health quiz to determine health aptitude
- Segments based on health conscious, activity level
- Sold \$5.7 billion in life coverage

New Products/Markets

- Smart Phone Insurance
- Cyber Insurance
- Drone Protection (e.g. Amazon warehouse "hive" patent)
- Medical Marijuana
- Peer-to-peer (P2P) (e.g. Smallticket)
- Geographically underserved areas (e.g. BIMA)

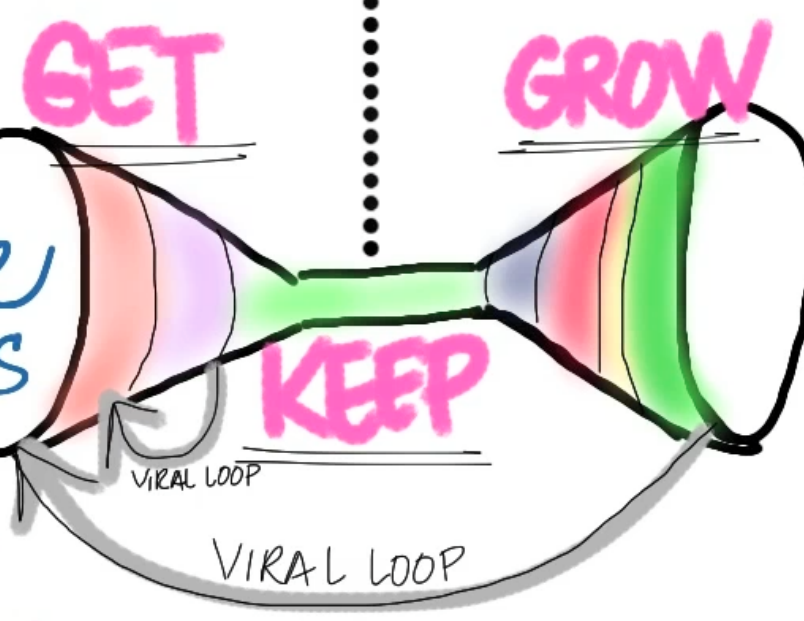
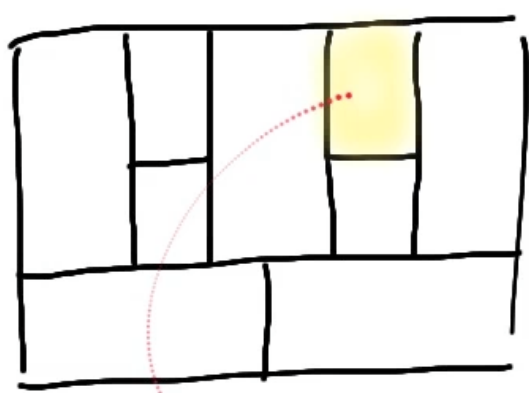


Online distribution of long duration policies

Life Insurance

- Getsurance
- Singapore Life
- Haven Life
- PolicyGenius
- Covr Financial Technologies
- Quilt
- Fabric Technologies

Just like in Channels,
these are DIFFERENT for
WEB/MOBILE VERSUS
PHYSICAL...



4 CUSTOMER
RELATIONSHIPS



How does a
company GET,
KEEP, GROW
CUSTOMERS?

Success Metrics

- Customer acquisition cost (CAC)
- Lifetime value (LTV)
- Churn rate/persistency



LTV > 3x CAC



Months to recover CAC < 12 months

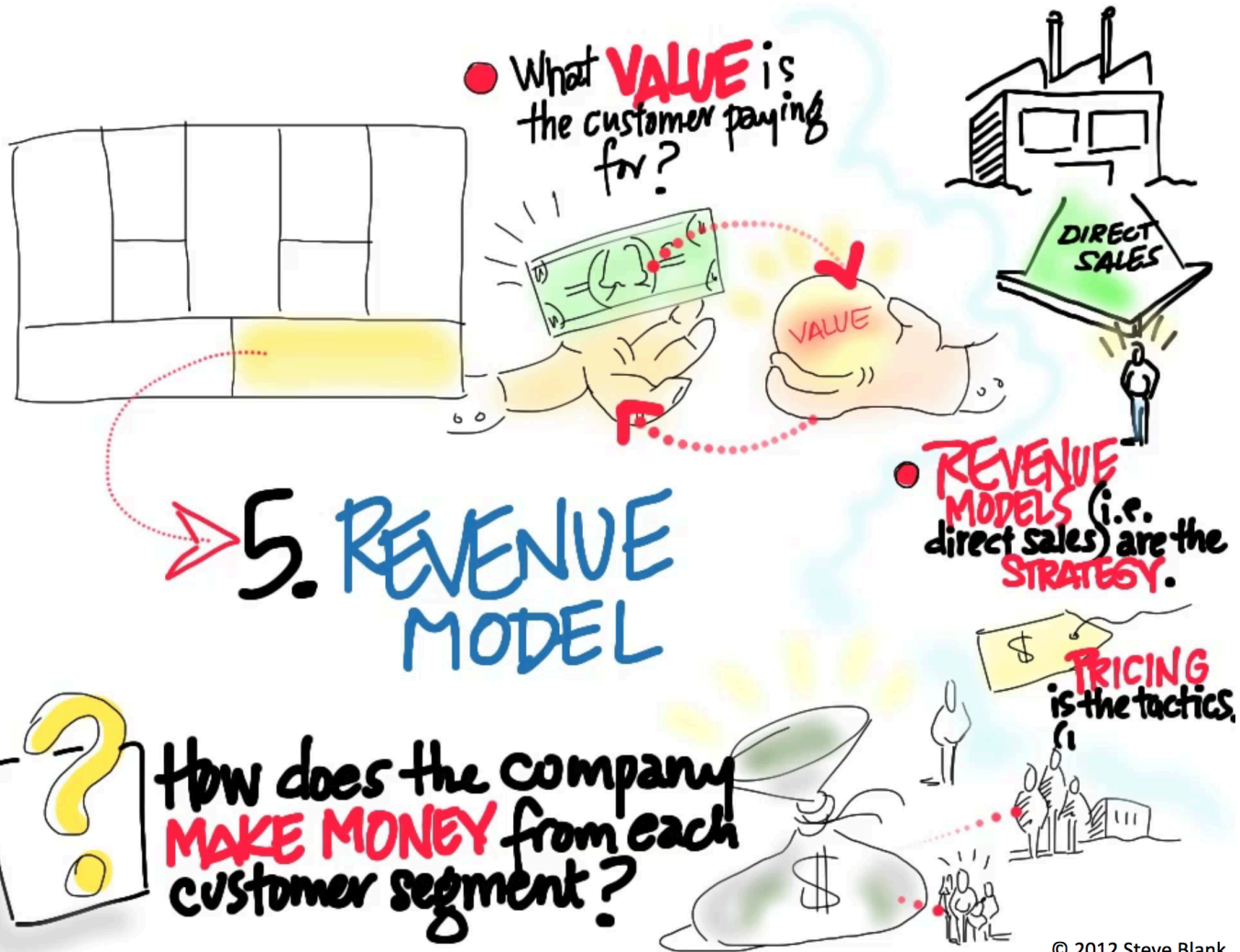
Required for Capital Efficiency

Customer Service Technologies

- Chatbots (e.g. Automat.ai)
- Artificial intelligence (e.g. Alexa – Amazon 1492)

AUTOMAT

- Founded January 2016 in Montreal, Quebec
- June 2017 \$8.3 million Series A
- Automat is helping companies use AI to talk to their customers, to understand them and serve them better
- The first Conversational Marketing platform powered by artificial intelligence



Revenue Models

- Asset Sales
- Subscriptions
- Freemium
- Pay-per-use, usage fee
- Renting
- Licensing
- Intermediation fee/Commissions
- Advertising
- Referral revenue
- Affiliate revenue

Pricing

- Cost plus markup
- Competitive pricing
- Volume pricing
- Value pricing
- Portfolio pricing
- Subscription
- Time/Hourly Billing
- Leasing

Additional Considerations

- Exclusive vs. non-exclusive license
- What do you price? What do you give away for free?
- How does cost vary at different production levels?
- Who stands to benefit the most from your solution?



- Smart scale and mobile app for monitoring weight loss

Who should pay? And how much?



- CONTRAVE is a prescription weight-loss medicine that may help some adults lose weight and keep the weight off
- Member gets a free scale and free app
- Research found twice as much medication adherence when using the Scaledown smart scale and mobile app
- CONTRAVE pharmaceutical company pays a per user fee to scaledown



MARKIT

- Mobile apps to help choose physician with lowest cost

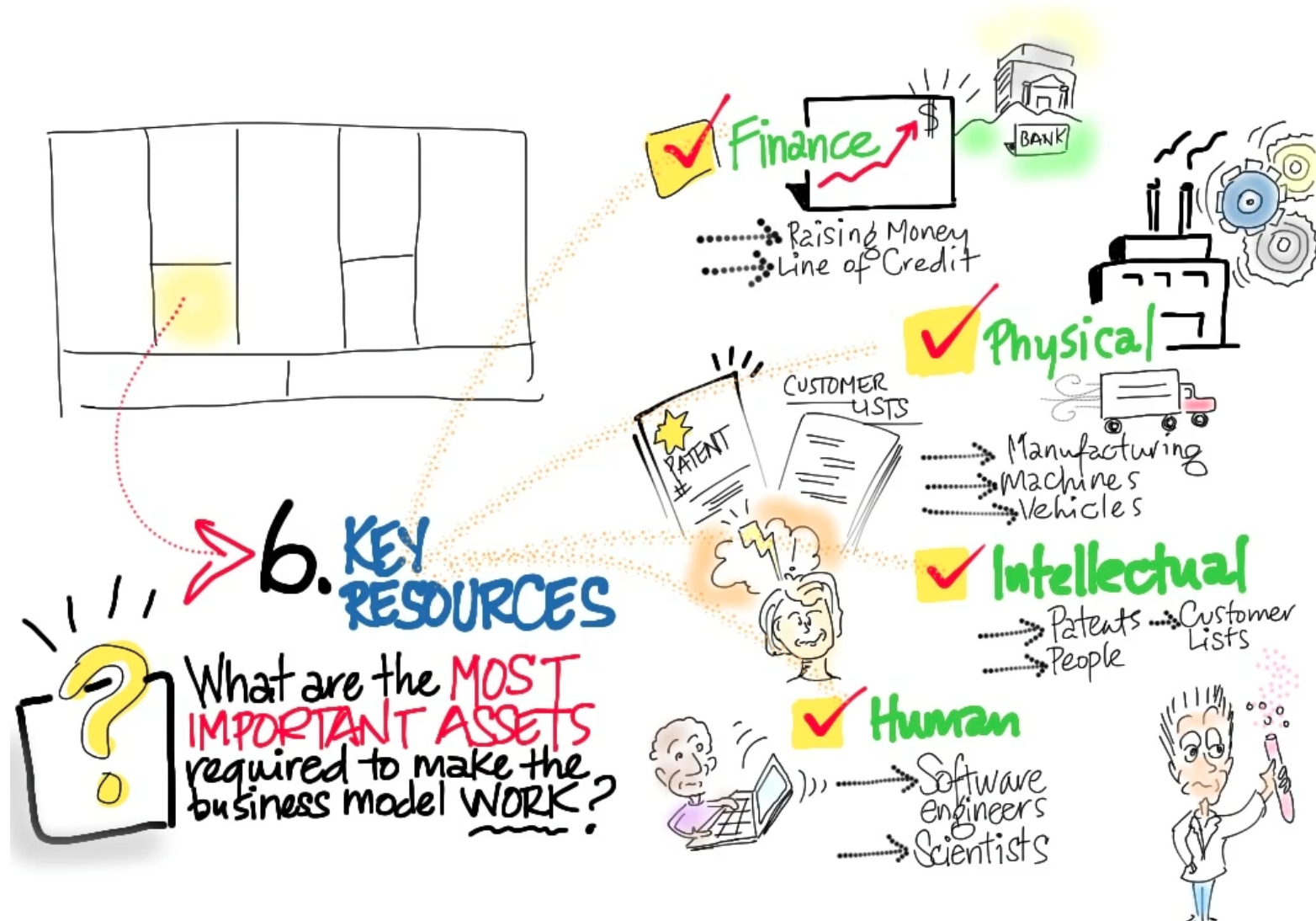
Who should pay? And how much?



MARKIT

- ~~Patient~~
- ~~Hospital~~
- ~~Physician~~
- Health Insurer/self-funded employer!

The end-user is different than the buyer



Big Data Strategies

1. Using sensors or IoT to collect new data elements
2. Externally harvesting data sources that have not been harvested before using data engineering (e.g. GeoQuant)
3. Liberating internal datasets (e.g. Allstate)
4. Managing anti-selection (e.g. Human Longevity and MassMutual)



Winning Combination of big data and data science/AI skills!



- Founded in 2013 in San Diego, CA
- \$300 million raised
- Human Longevity, Inc. (HLI) is a genomics and cell therapy company focused on extending the healthy, high performance human lifespan.
- Combating policyholder information asymmetry for MassMutual



- Claims Management
 - QuickCard Pay – real-time payment
 - Drones and aerial imaging – property
 - QuickFoto claim – auto
- Arity*
 - Arity turns massive amounts of driving data into insights that reduce risk and enhance driver safety, connectivity and value.
 - Fueled by 21+ billion miles of data



GeoQuant

- Founded 2016
- \$4 million seed June 2017
- GeoQuant is a revolutionary platform that fuses political science with computer science to help global investors.
- Measures political risk in real time by scraping web for data, news and social media content

<https://www.crunchbase.com/organization/geoquant#/entity>



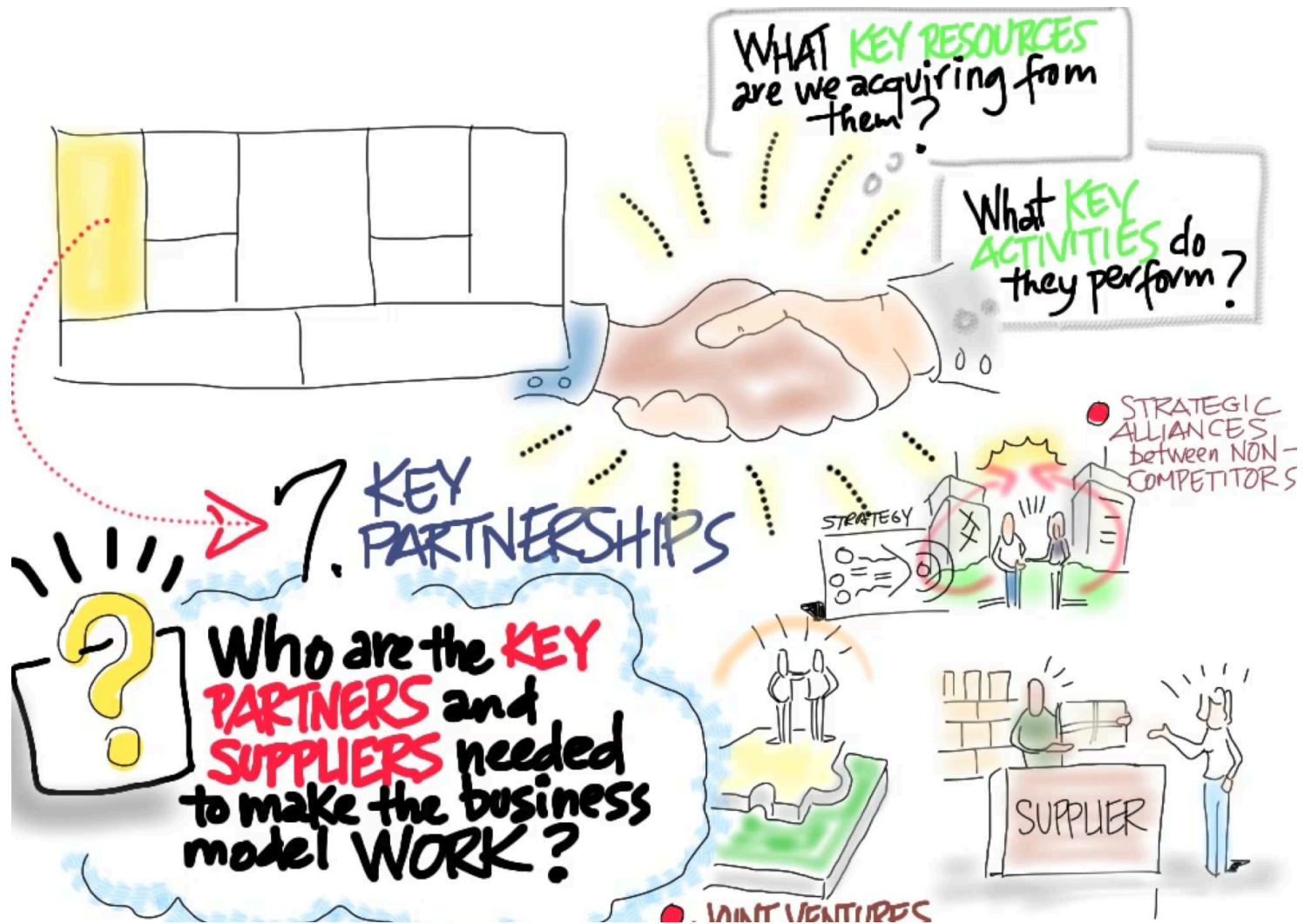
- Founded in 2012 in Somerville, MA
- \$7.5 million Series A in February 2016
- Understory develops smart weather station micro-grids that collect tactical weather data and analytics for extreme weather events.



- Founded 2016 in London, England
- \$6.48 million Series A in May 2017
- Neos, a connected home insurance service Designed to prevent the damage that would lead to a home insurance claim
- Neos' home technology, which includes cameras, motion sensors and smoke detectors, alerts homeowners of a break-in, leak or fire and contacts the 24 hour monitoring team to send out the right tradespeople.

Other Small Business Assets

- Credit score
- Customer contacts
- Search ranking
- Unique URLs/handles/links



InsurTech Partners

- Incumbents
- Insurer/re-insurer strategic investments – provides underwriting, pricing, advice in addition to funding
- Private equity/non-insurer venture capital – provides funding
- Strategic Partnerships (no equity) – Highly unexpected (e.g. Alipay and Taikang Health)

GIS Strategic Ventures (Guardian Life)

- Maxwell Health - Corporate benefits/HR aggregator
- Cohero Health – respiratory care management
- PokitDok – healthcare IT systems integrator

RGAx (RGA)

- Fabric Insurance Agency – online life insurance
- CXA Group – Corporate benefits aggregator
- K4Connect – Technology integrator
- Everplans – documentation sharing for end-of-life

Digital Partners (MunichRe)

- Augury – industrial IoT
- Neos – home IoT
- Next Insurance – online business insurance
- Trōv – personal property insurance
- Boughtbymany – social media to collectively negotiate insurance
- Relayr – technology platform for IoT
- Slice Labs – pay-per-use insurance for rideshare and homeshare

Others

- Allianz X
- American Family Ventures
- AXA Strategic Ventures
- Nationwide Ventures
- Northwestern Mutual Future Ventures
- Liberty Mutual Strategic Ventures
- Sandbox Industries (BlueCross BlueShield Venture Partners)



8. KEY ACTIVITIES



What are the **MOST IMPORTANT THINGS** the company must **DO** to make the business model **WORK**?

● PRODUCTION



● PROBLEM SOLVING

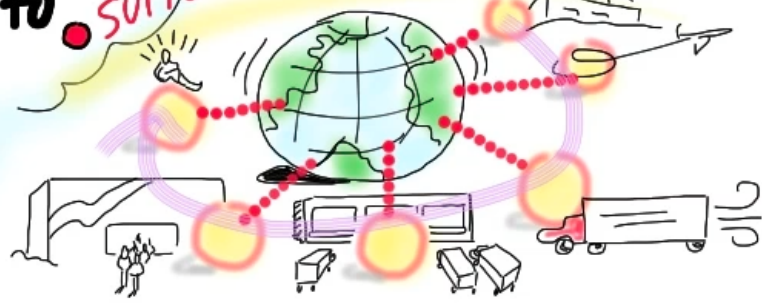
- CONSULTING
- ENGINEERING

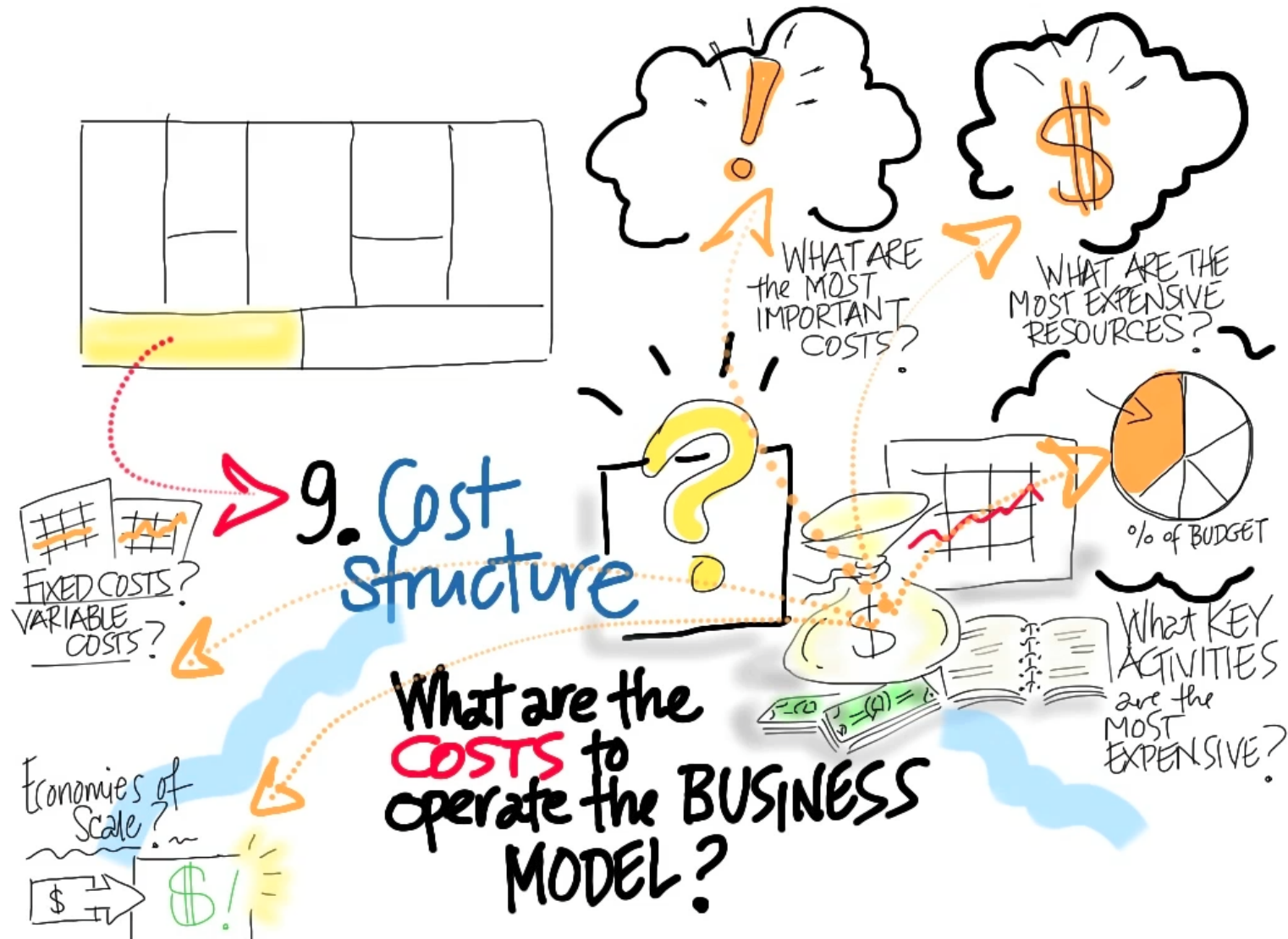


WE CAN SOLVE THIS!



● SUPPLY CHAIN MANAGEMENT





General Founder/Cofounder Advice

- Have a cofounder!
- Have a team with diverse skills and backgrounds
- Division of labor and organization structure
- Test and iterate your business model in a “lean” way
- Match scalability on the supply and demand side
- Anticipate cash flow challenges
- Recognize all assets

Seven Steps to Increase your business impact

1. **Industry Focus:** Pick one industry in which you have a personal interest
2. **Follow the Money:** Know the competitive and financial landscape in the industry and your company's business model
3. **Regulatory Awareness:** Subscribe to regulatory updates and anticipate impact of changes
4. **Multi-level communication:** Practice communicating the business value that you add at a 6th-grade level
5. **Be Lean:** Be conscious about over-engineering a solution given the time and money allotted
6. **Add Creativity:** Always be creatively and proactively defining problems that add business value
7. **Thought Diversity:** Value what non-technical individuals have to say

Actuarial Entrepreneurship Additional Resources

- Entrepreneurial & Innovation Section of the SOA:
<https://www.soa.org/sections/entrepreneur-innovate/entrepreneur-innovate-landing/>
- Technology Section: <https://www.soa.org/sections/technology/technology-landing/>
- Predictive analytics and Futurism Section:
<https://www.soa.org/sections/pred-analytics-futurism/pred-analytics-futurism-landing/>
- ACTEX eLearning Webinar:
The Actuarial Side Hustle: Entrepreneurial
Opportunities for Actuaries <https://www.actexamdriver.com/product.aspx>
- LinkedIn: #Insurtech Actuaries:
<https://www.linkedin.com/groups/12057846>

InsurTech Resources

- News
 - <https://www.dig-in.com>
 - <https://insurtechnews.com>
- Industry Research and Investment
 - <https://www.cbinsights.com/research/insurance-tech/>
 - <https://venturescannerinsights.wordpress.com/tag/insurtech/>
 - <https://www.willistowerswatson.com/en/insights/2017/07/quarterly-insurtech-briefing-Q2-2017>

Contact Info

<https://www.meetup.com/Chicago-Insurtech-Meetup/>

<https://www.linkedin.com/in/healthactuary/>

<https://www.soa.org/predictive-analytics/case-study-webster/>

Andrew.Webster@ValidateHealth.com

Actuarial InsurTech Manifesto

1. A competency framework for InsurTech actuaries
2. Standard taxonomy for InsurTech opportunities
3. External marketing campaign to educate the tech community on actuarial profession and value proposition
4. Prioritization of InsurTech opportunities for actuaries
5. “Technology for actuaries” to help bridge technology knowledge gaps
6. Further refinement of Lean startup methodology as applied to InsurTech
7. Actuarial Standard of Practice focusing on integrating actuarial models with real-time information systems