The Leadership Institute

April , 2017

Running a High Reliability Business Today Can Undermine Creating the Business of Tomorrow

You must create ambidextrous leadership to harness this tension to innovate

Dr. Chris Wasden
Executive Director

Our focus on high reliability causing us to fail to innovate and adapt in a turbulent market

1 Innovation research highlights the central role of tension

2 Innovator are ambidextrous leaders who harness tension

3 We have the greatest tension for innovation in world history

4 Ambidextrous leaders must create and harness tensions

We must apply Complexity Science to overcome our failure to innovate!

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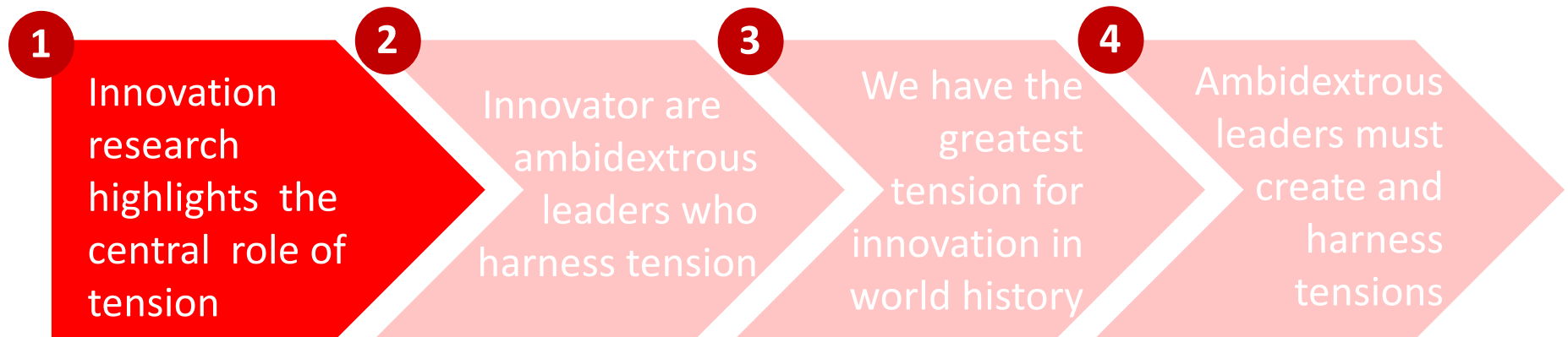
We must apply Complexity Science to overcome our failure to innovate!

Tension between incrementally improving the status quo and disrupting it
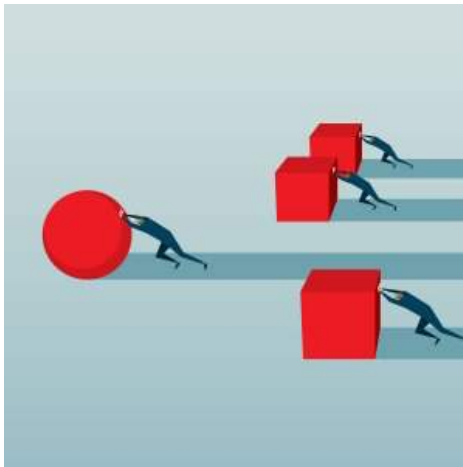
Disruptive Innovation

Sustaining Engineering

4
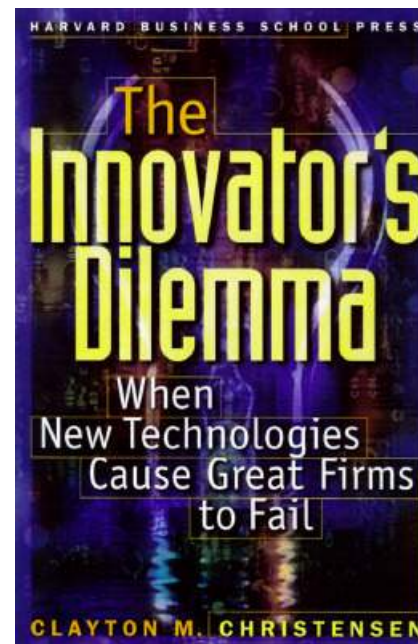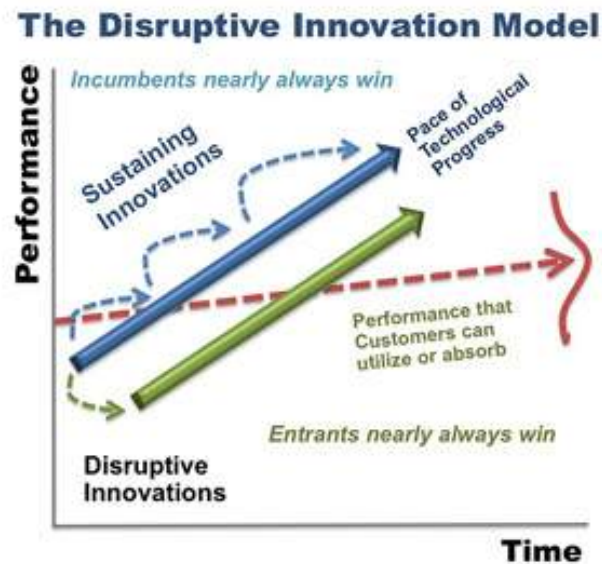
Tension between adding new technologies and creating new business models of value creation
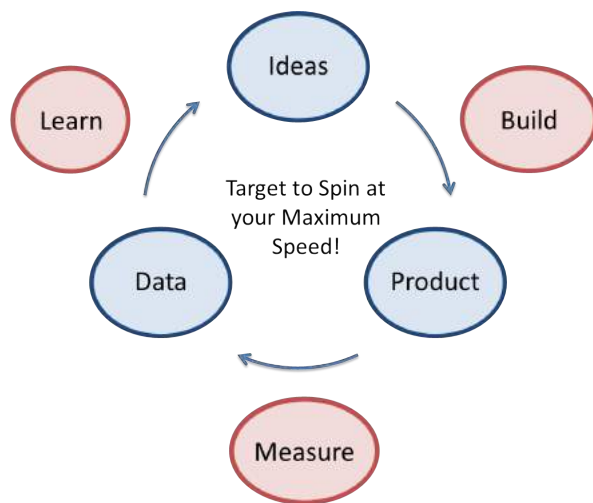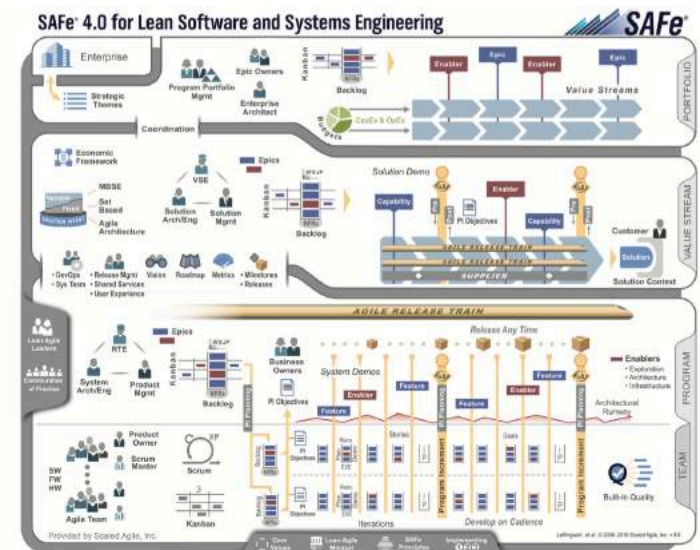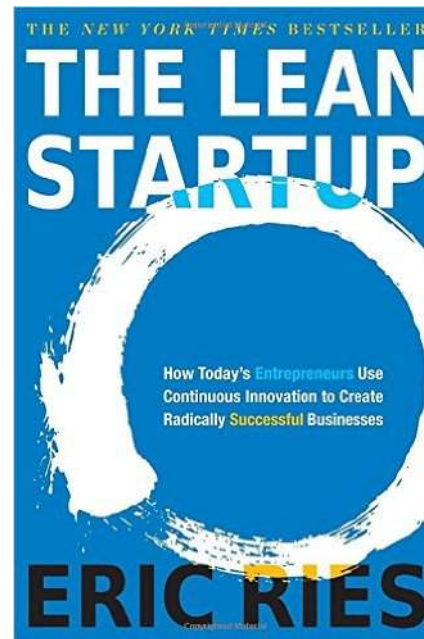
**Business Model
Innovation**

**Technological
Innovation**

Tension in how you regard and manage failure

Lean Startup   **Lean Scaled**
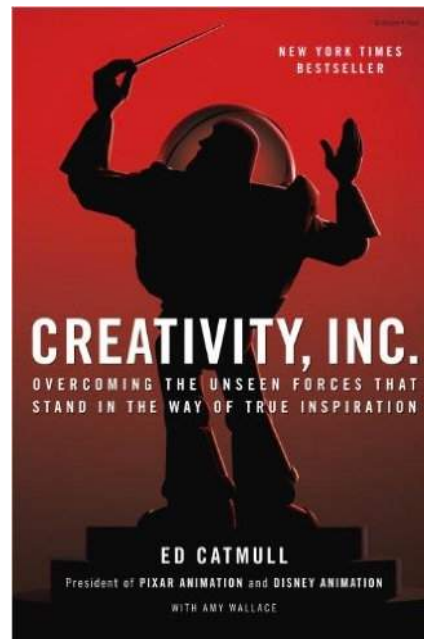

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Tension between nurturing the ugly baby and feeding the hungry beast

Ugly Baby
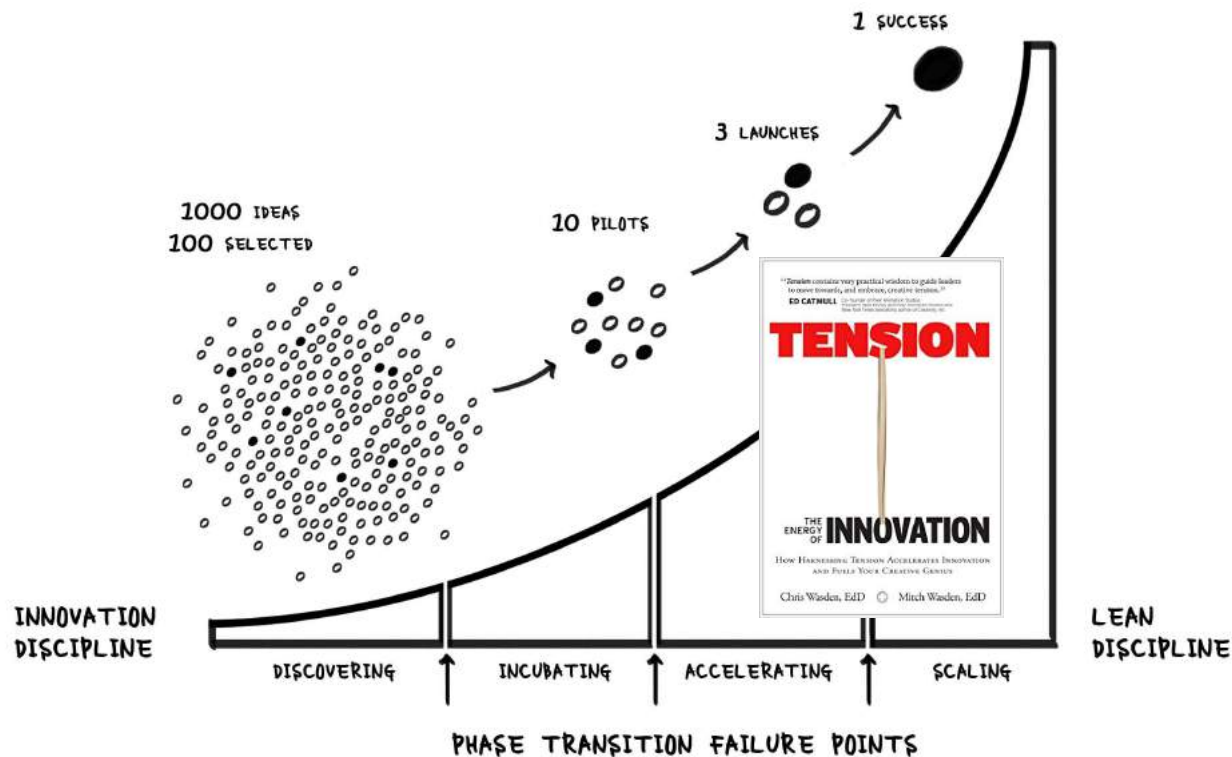
Hungry Beast

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Experience and research indicates a huge difference in the way that established companies and startups deal with innovation

Tension paradox is that all innovation is born at the edge of chaos but only succeeds by approaching the edge of equilibrium

MINDFULLY
Creating Tomorrow
EDGE OF CHAOS

MINDLESSLEY
Running Today
EDGE OF EQUILIBRIUM

Innovation Lifecycle

9

High reliability organizations struggle to innovate because of their fear of failure

**Moto: "Failure is not an option"**

If failure is not an option

Then neither is innovation

The problem is that lean six sigma discipline eliminates the raw materials of innovation – variation, interaction and selection

Failing 3 times in 1 million attempts

Innovation requires a different discipline that enables a mindful and efficient and effective way for fast, frequent, frugal failure
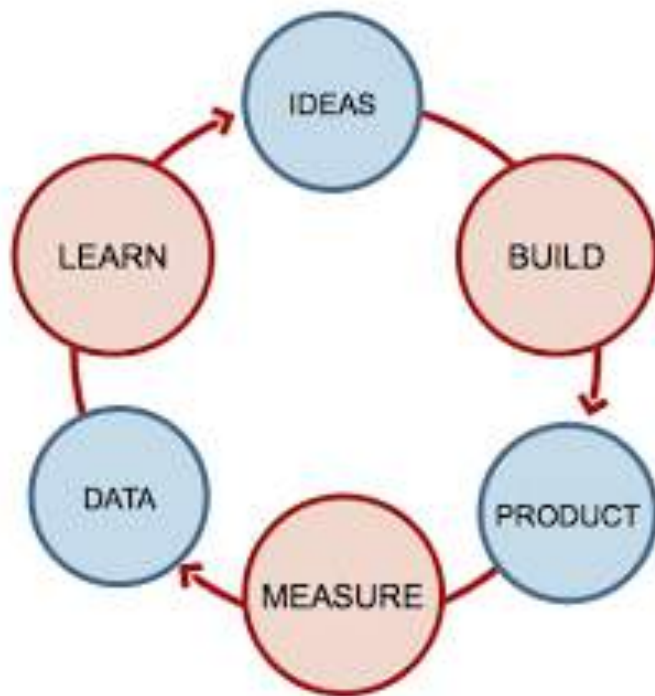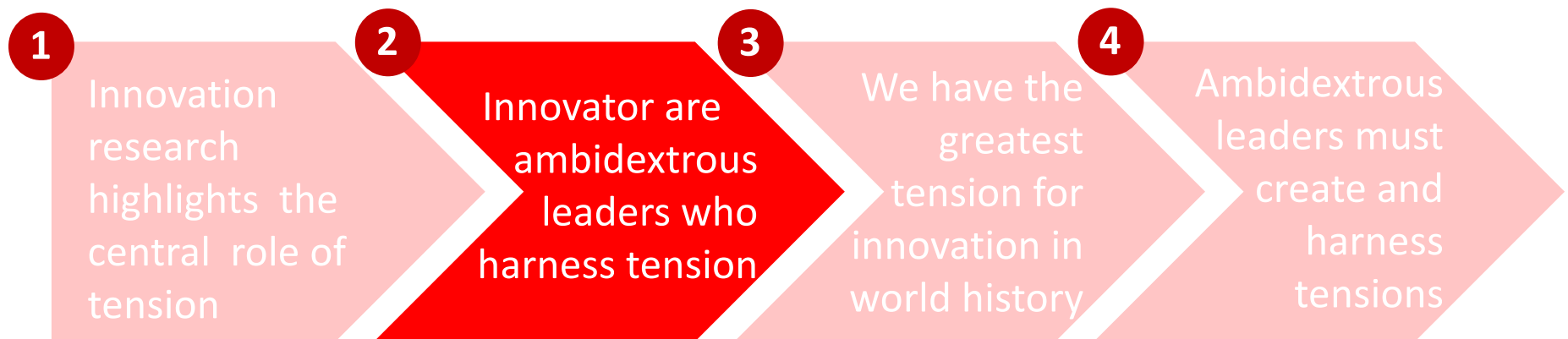

Failing about 90% of the time

# Simplicity doesn't precede complexity , it follows it.

Alan Perlis, First Recipient of the Turing Award in Computing

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Iconic innovative leaders are masters are harnessing tensions to power disruptive innovations
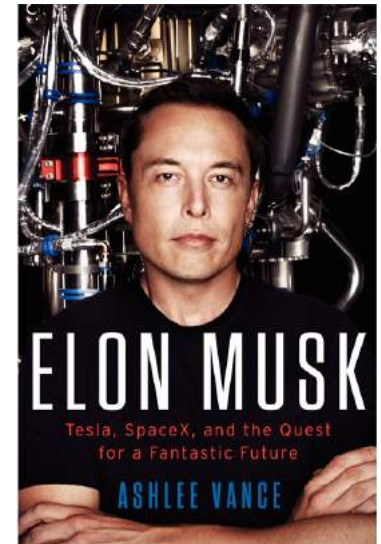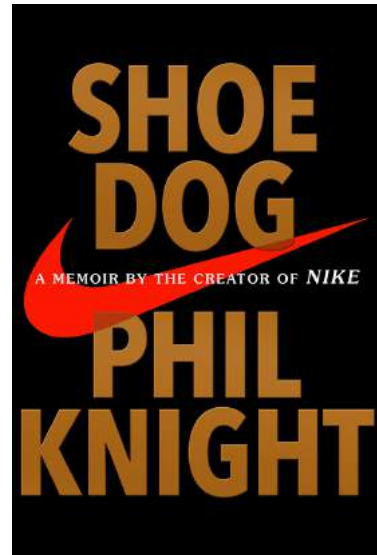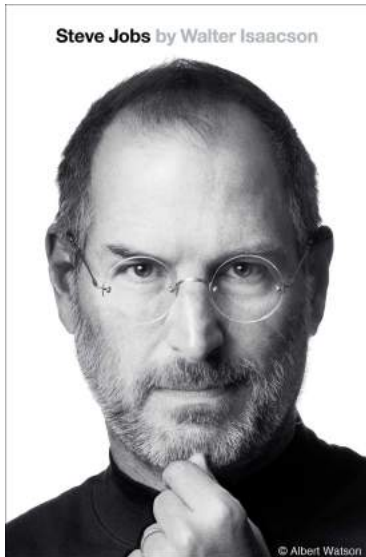
Great innovation leaders create, enable and harness creative tension to power the innovation processes

Variation

Interaction

Selection

"My job as a leader is to create discord and to impose deadlines."

Eric Schmidt, Chairman, Alphabet (Google)

These three process enable spontaneous order to emerge from chaos!

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Is tension good or bad?

How would you answer these three tension questions:

- How many of you enjoy and seek out tensions?

- How many of you create tensions to get other people to act?

- How many of you think that we can eliminate tensions in our lives?

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Innovative leaders create and harness tension as the energy source to power creativity, but …

What kind of tension do you harness?

Maladaptive Tension

- Fear and doubt
- Threats
- Reactive
- Belittling
- Mindless failure
- Emergent

- **Painful**

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- **Painful**

Adaptive Tension

- Tweaks and modifications
- Incremental improvement
- Sustaining engineering
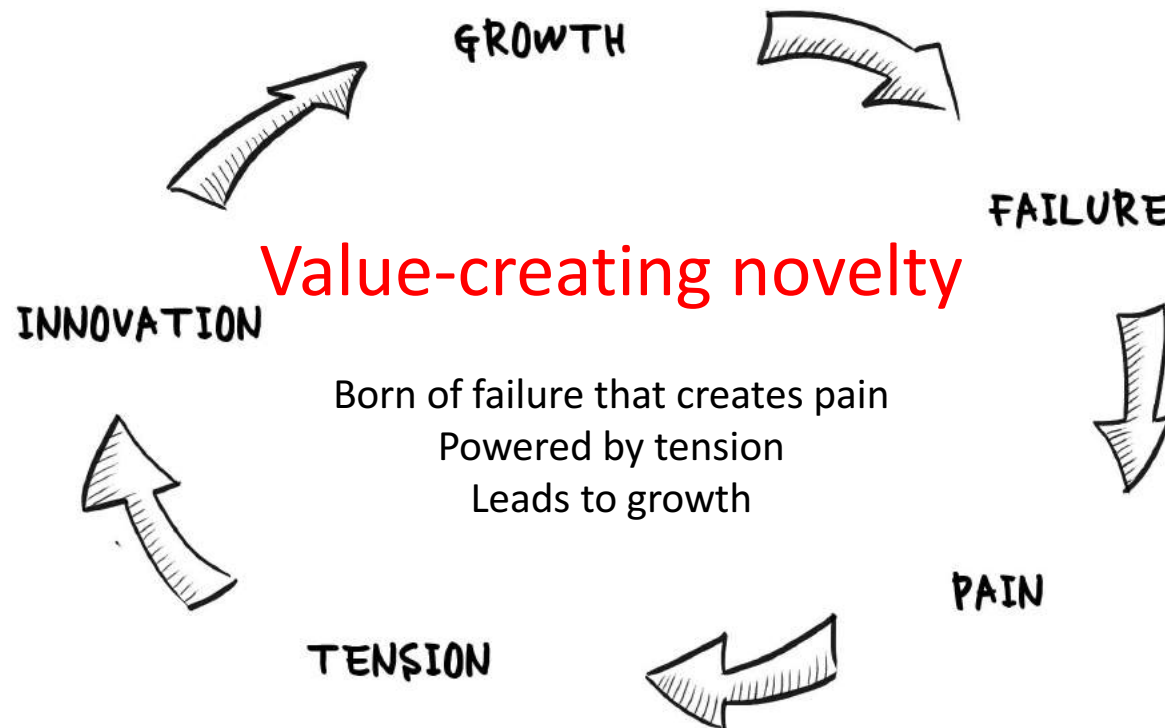- Six sigma innovation
- Rewarding
- Planned, directed

- **Predictable**

Innovative leaders create and harness tension as the energy source to power creativity, but …

What kind of tension do you harness?

| Maladaptive Tension	Adaptive Tension	Creative Tension
- Fear and doubt - Threats - Reactive - Belittling - Mindless failure - Emergent	- Tweaks and modifications - Incremental improvement - Sustaining engineering - Six sigma innovation - Rewarding - Planned, directed	- Radical and disruptive - Free will, agency - Transformative - Powerful - Inspired by faith and hope - Self-organizing
- **Painful**	- **Predictable**	- **Possible**

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These leaders apply the innovation cycle to create new sources of value

GROWTH

FAILURE

INNOVATION

Value-creating novelty

Born of failure that creates pain
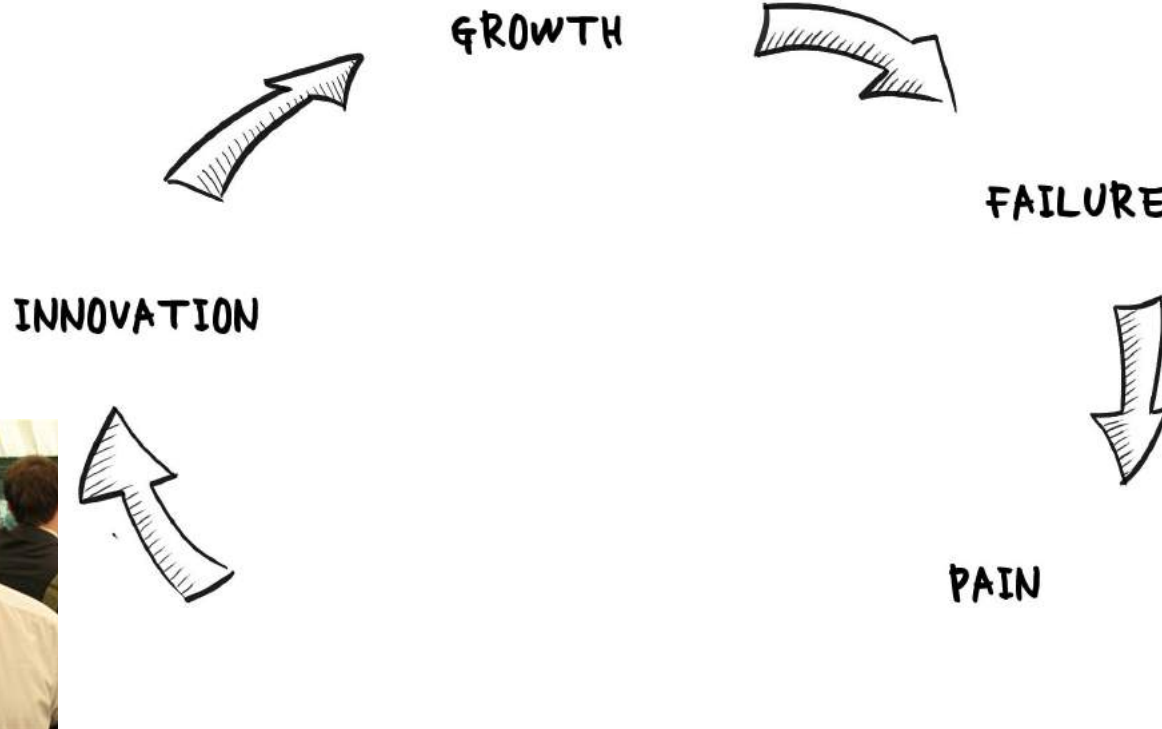Powered by tension
Leads to growth

PAIN

TENSION

TENSION
THE ENERGY OF INNOVATION

Joseph Schumpeter's Theory of Creative Destruction says that new order spontaneously emerges from the failure of the old

GROWTH
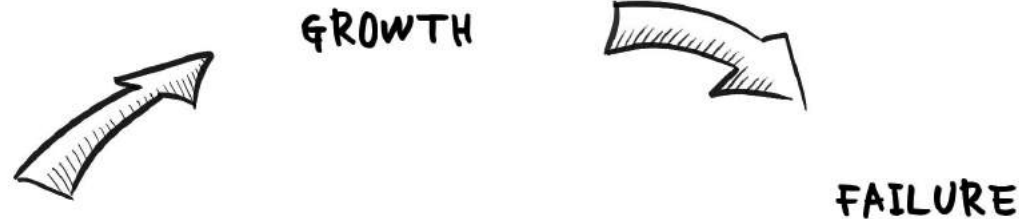
FAILURE

Karl Weick's Theory of Sensemaking says that we only learn and improve through experience failure and pain

GROWTH

FAILURE

PAIN

TENSION
THE ENERGY OF INNOVATION

25
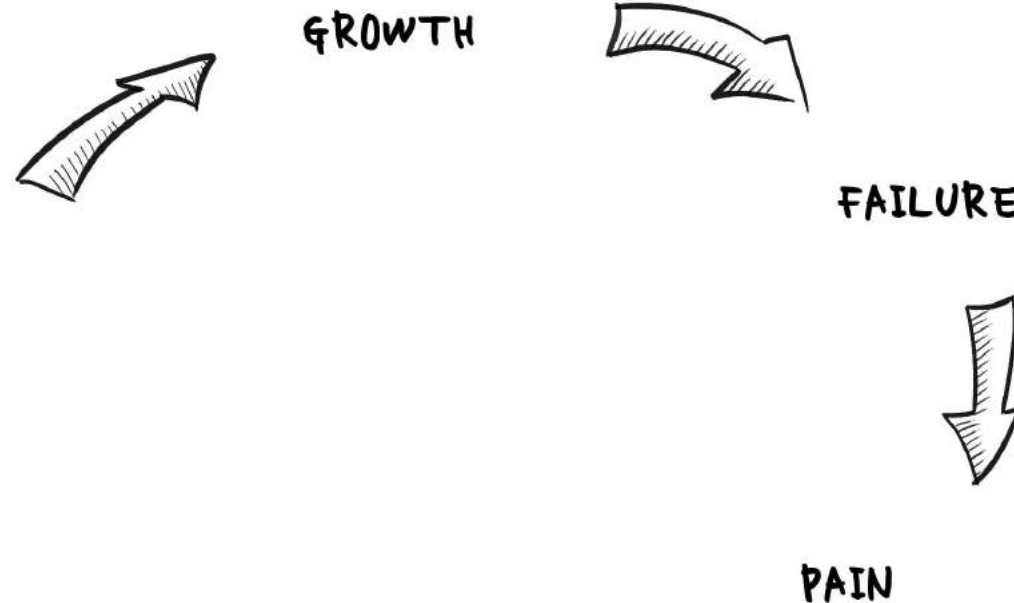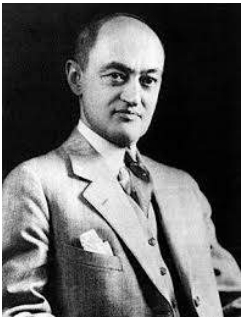
Rob Stone's Theory of Strong Structuration describes how we must have create structures and practices to innovate

GROWTH

FAILURE

INNOVATION

PAIN

TEN$ION

THE
ENERGY OF INNOVATION

HOW HARNESSING TENSION ACCELERATES INNOVATION AND FUELS YOUR CREATIVE GENIUS

Chris Wasden, EdD   Mitch Wasden, EdD

Walter Buckleys' Theory of Complex Adaptive Systems identifies "tension as the go" in all self organizing systems
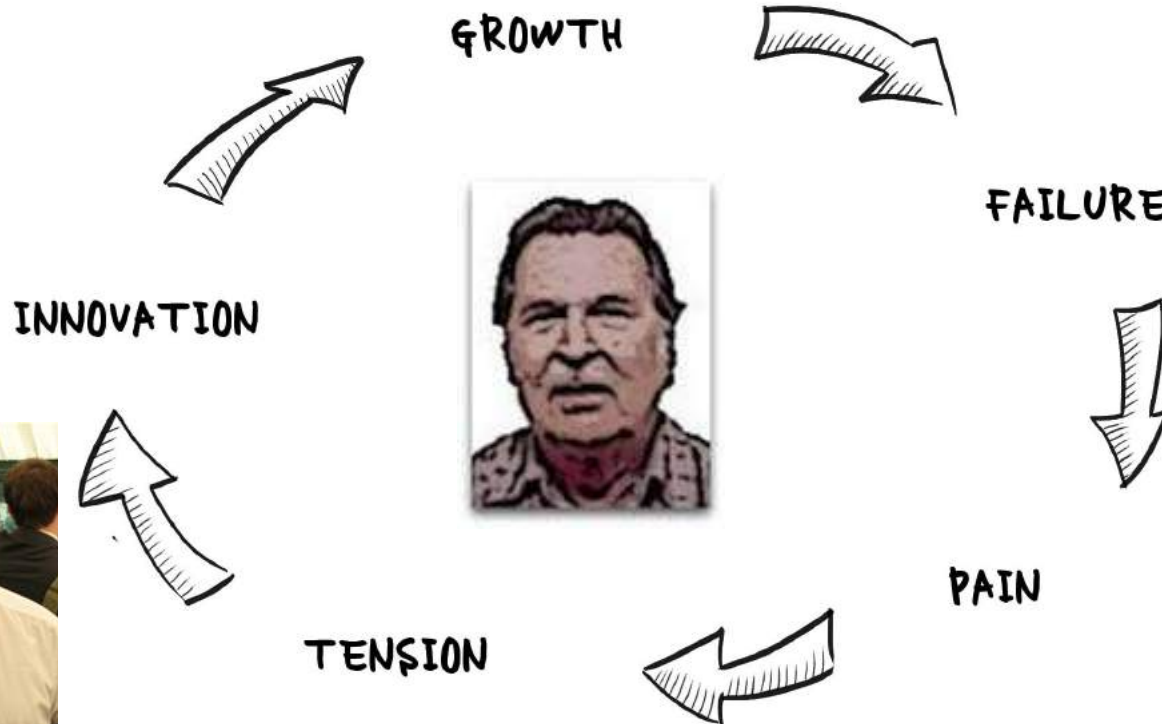
GROWTH

FAILURE

INNOVATION

PAIN

TENSION

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The difference between managers and innovative leaders is how they apply the innovation cycle and lifecycle
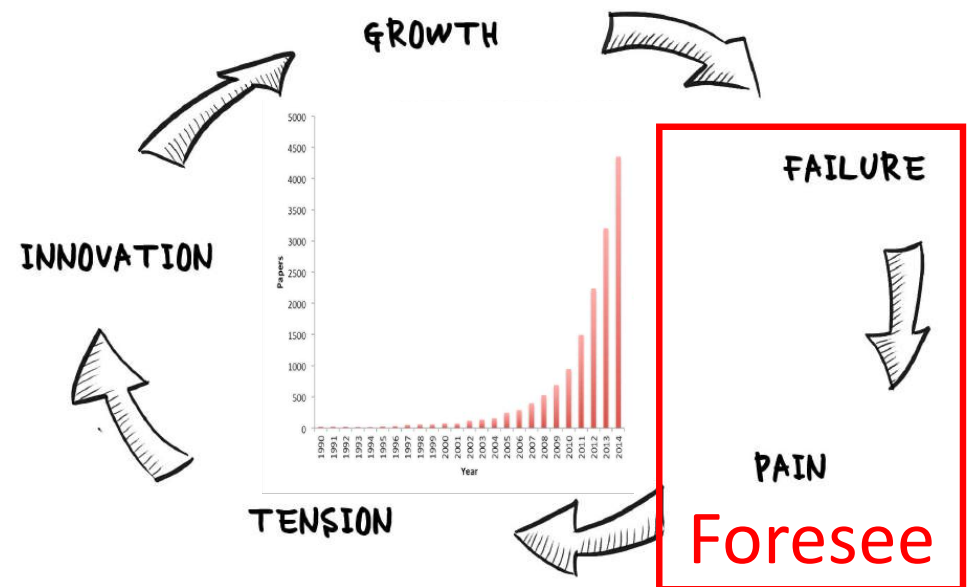
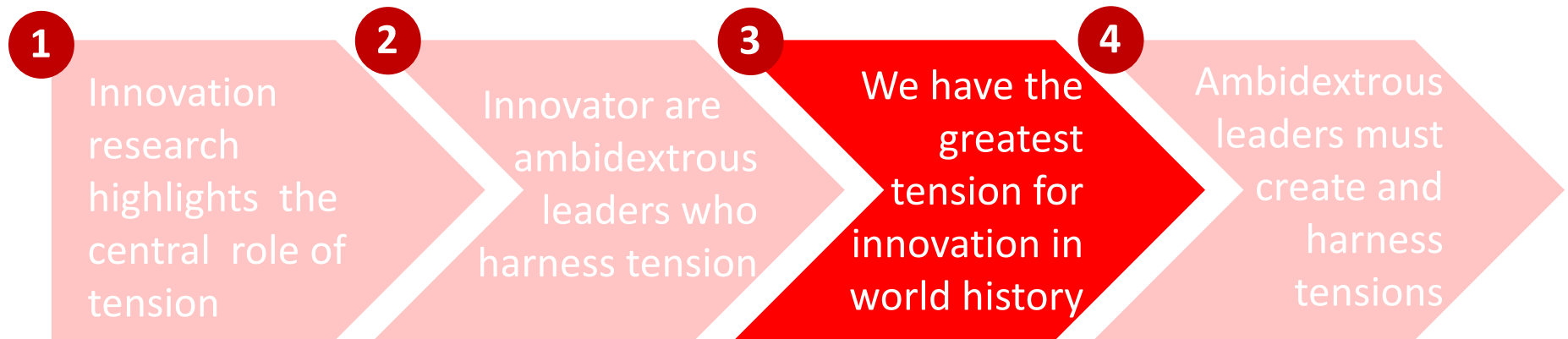The difference between managers and innovative leaders is how they apply the **innovation cycle and lifecycle**

Harness Creative Tension to change the world

GROWTH

INNOVATION

FAILURE

PAIN

TENSION

Bring it Forward

Foresee

29
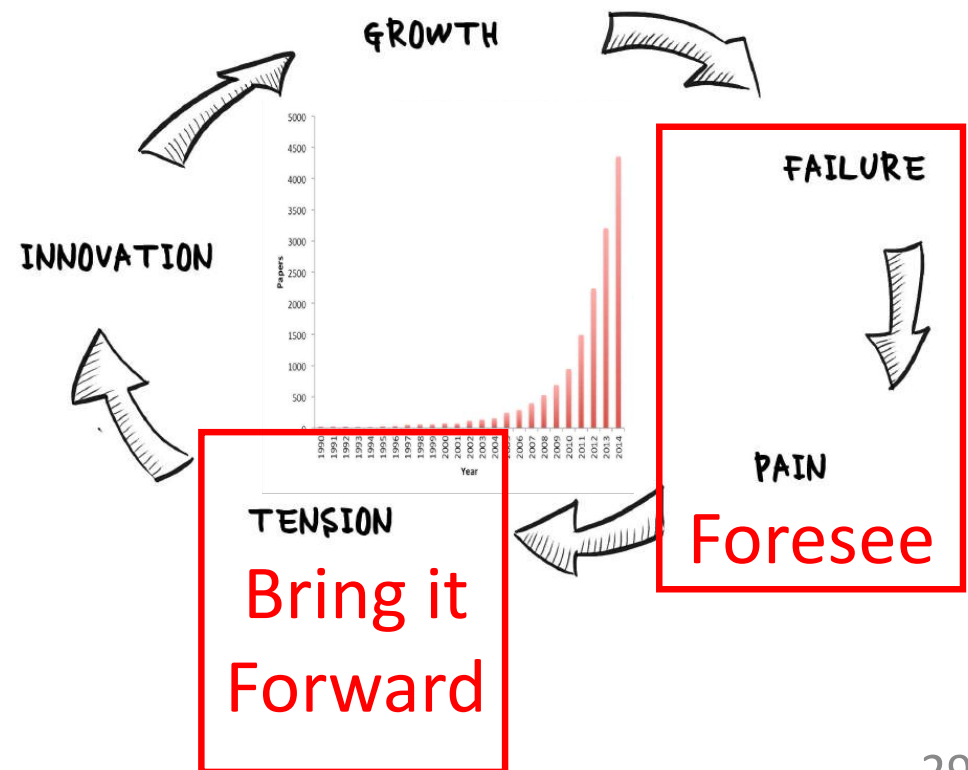
The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man.

George Bernard Shaw, author

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Exponential changes occurring in society are the leading indicators of emerging tensions

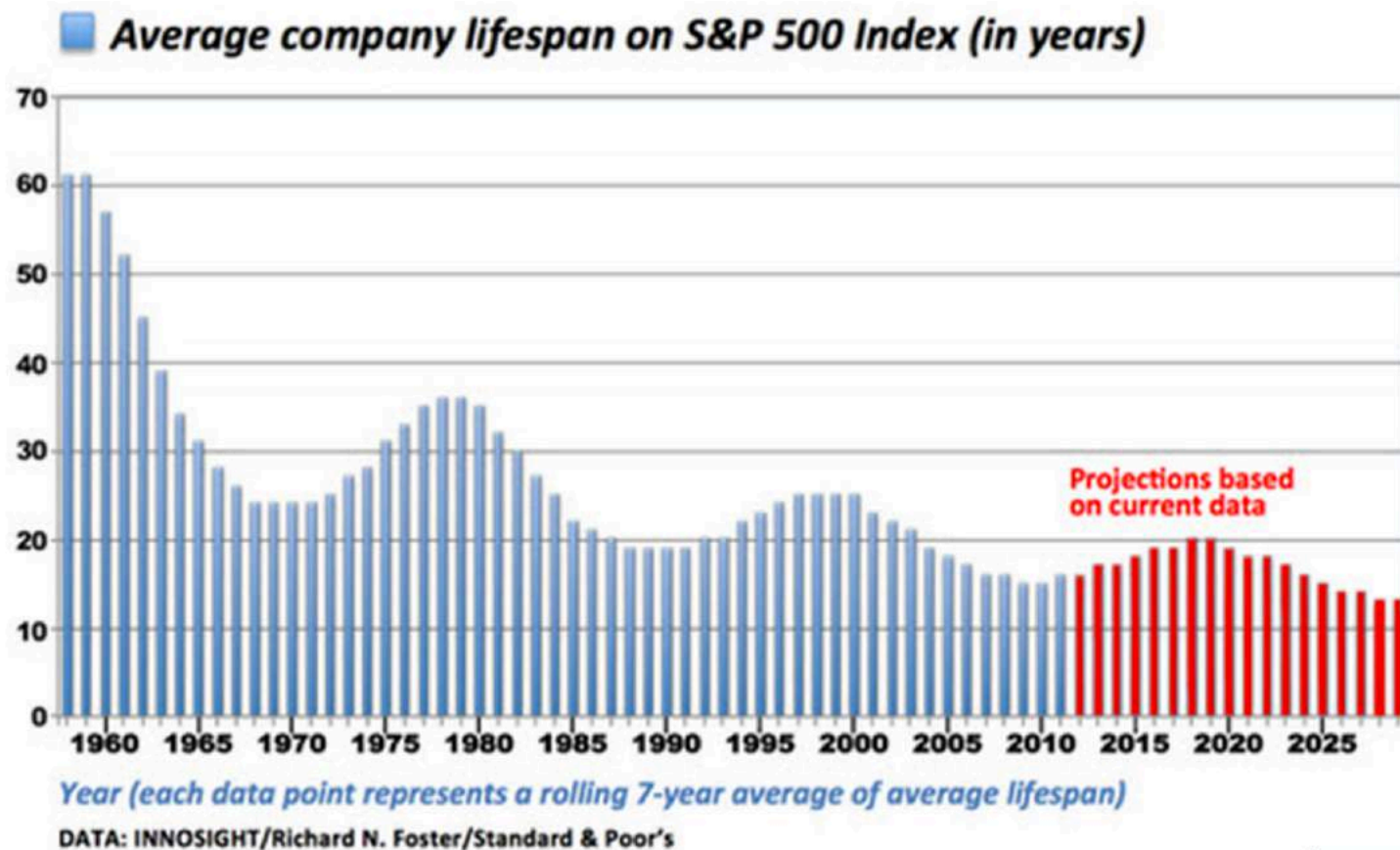Use of the phrase 'Exponential growth' by decade
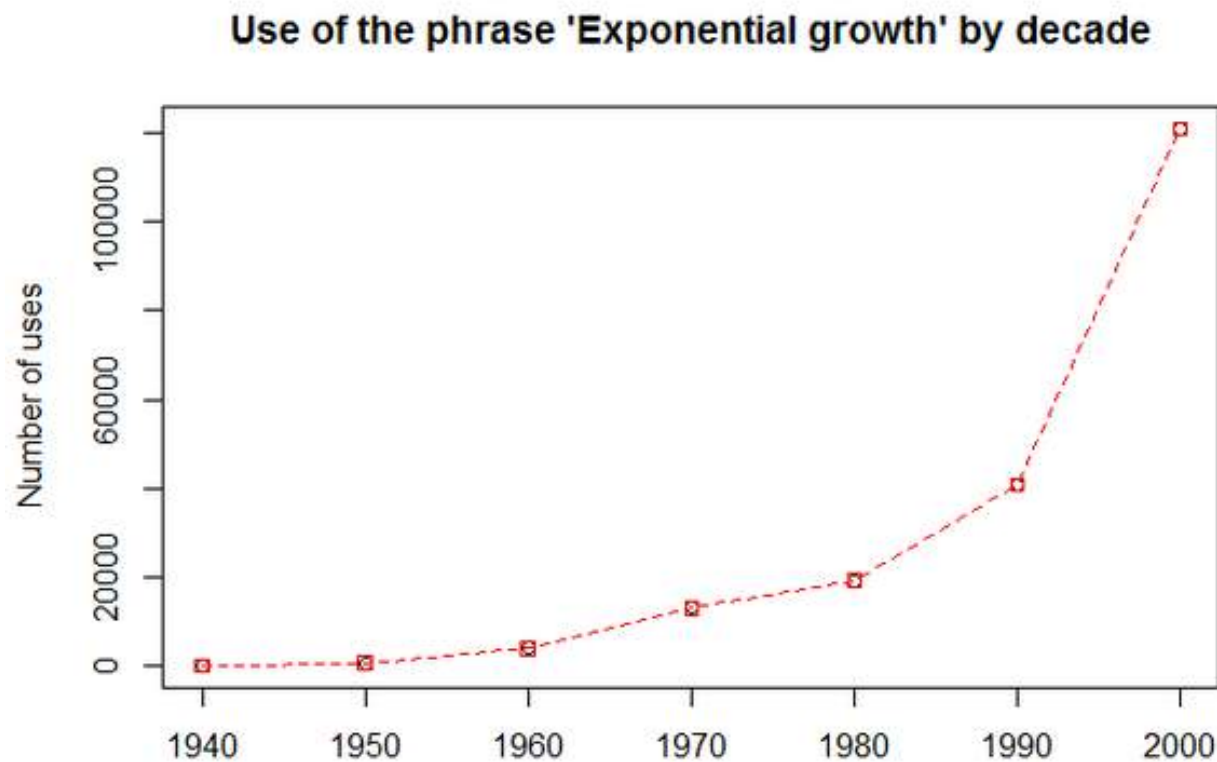
These tensions will create 200 centuries of change in just the 21ˢᵗ Century

Human Intuitive Perspective of Technological Advancement in Forty Years

A Trillion Times More Advanced

© Theemergingfuture.com
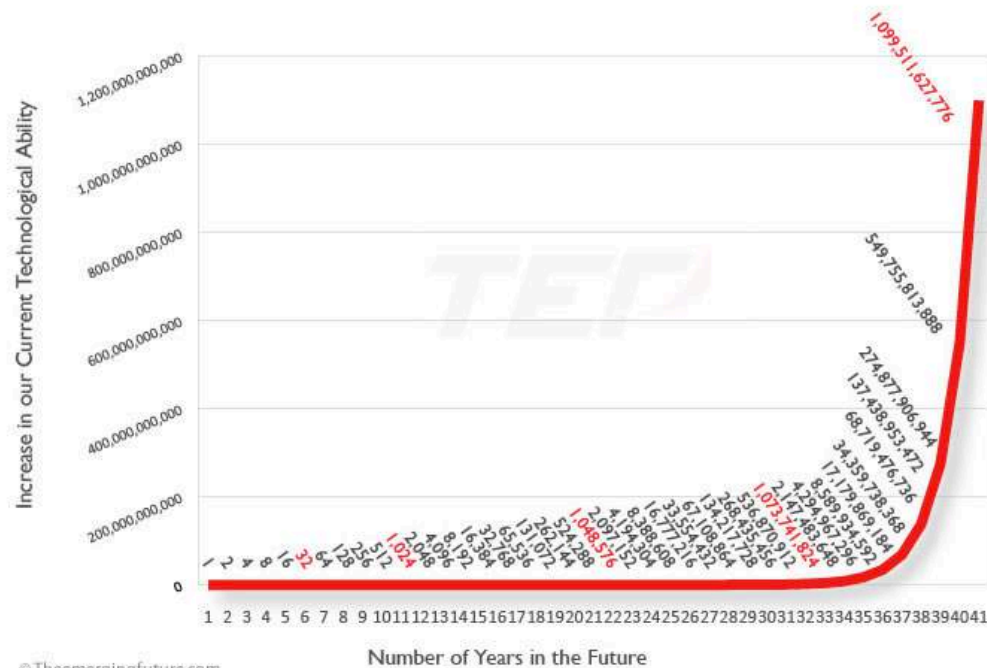
These tensions power creative destruction that is decreasing the life of the S&P 500 to just 12 years

Average company lifespan on S&P 500 Index (in years)

Projections based on current data

Year (each data point represents a rolling 7-year average of average lifespan)

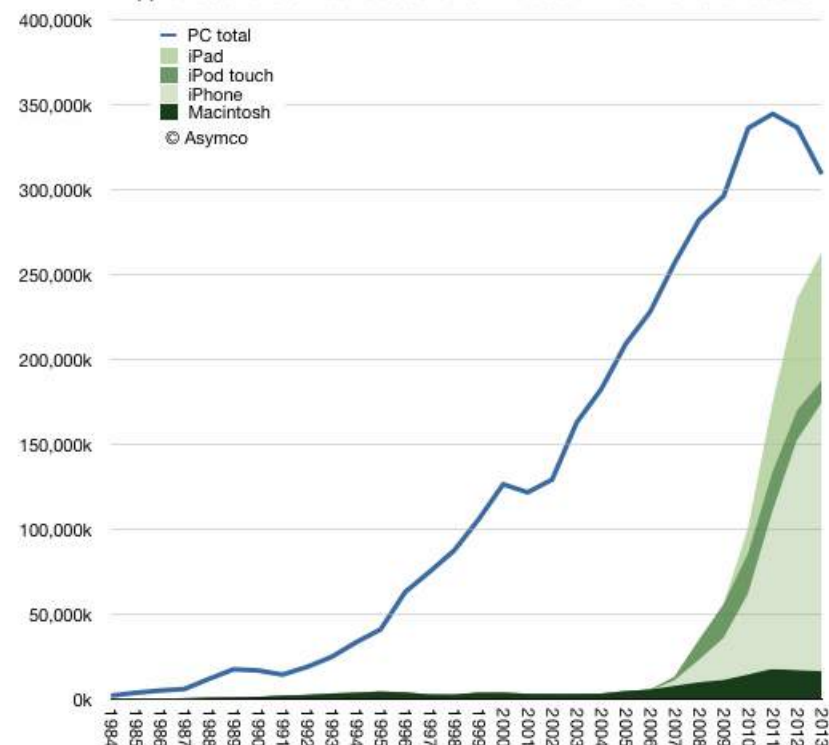DATA: INNOSIGHT/Richard N. Foster/Standard & Poor's

The emergence of mobile technology has completely changed the landscape for greater convenience in healthcare

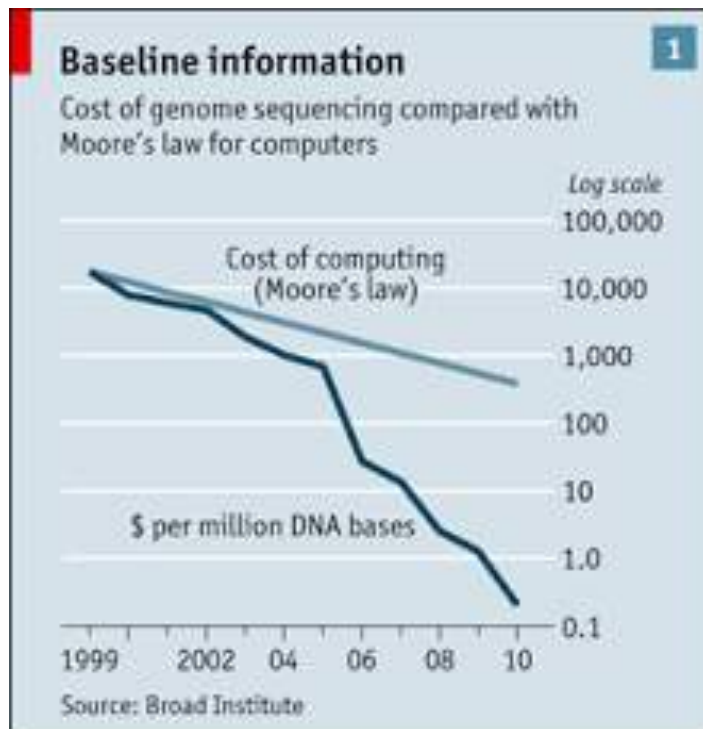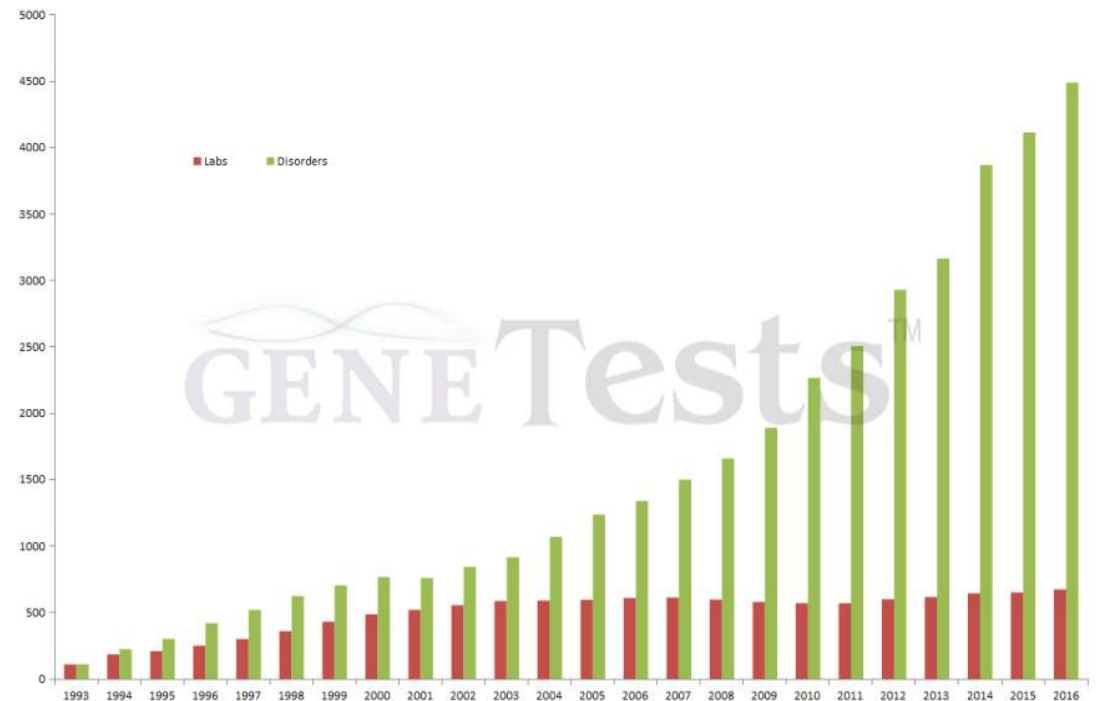| Eric Topol	The Rise of Mobile Technologies

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

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The double exponential decline in genomic costs has led to an exponential increase in genetic test - creating a new problem
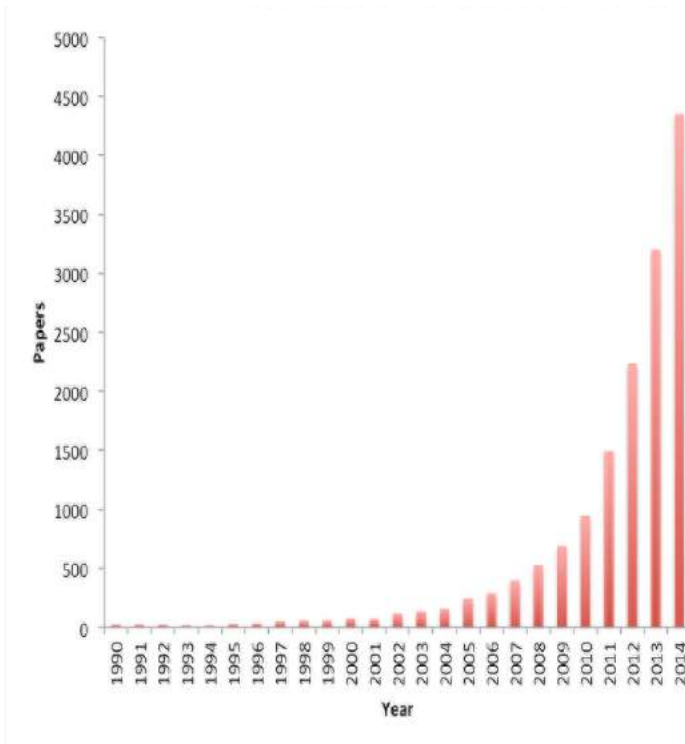
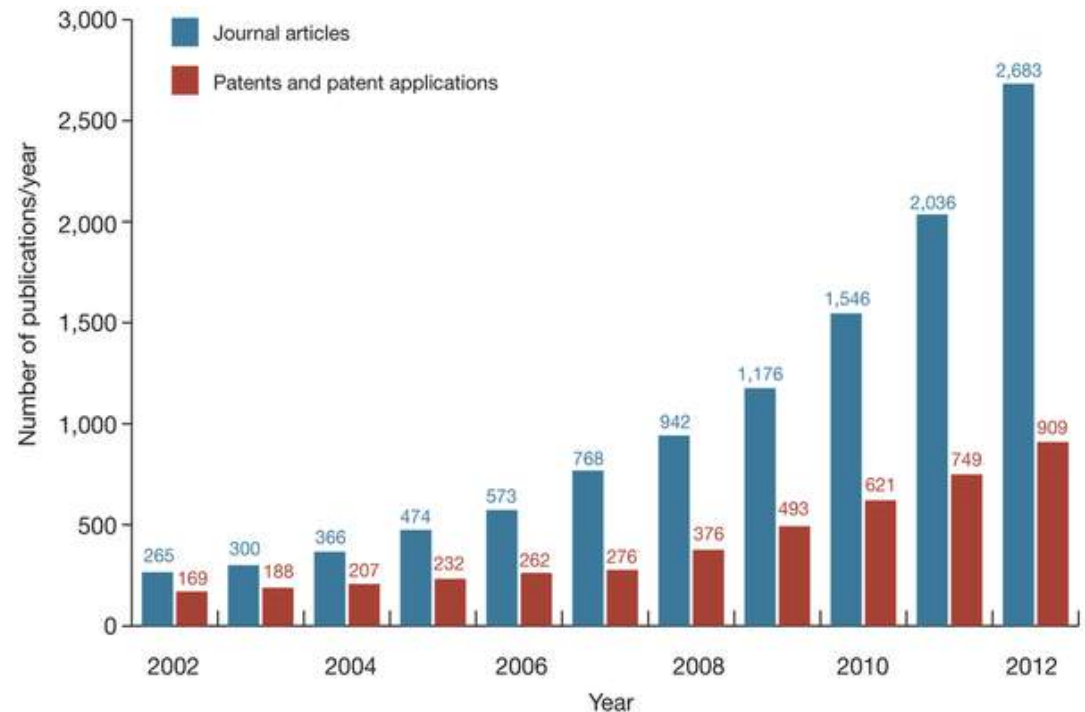| Cost of Genome Sequencing	Number of Gene Tests

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

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One of the largest emerging problems is making sense of the microbiome, which appears more important than the genome
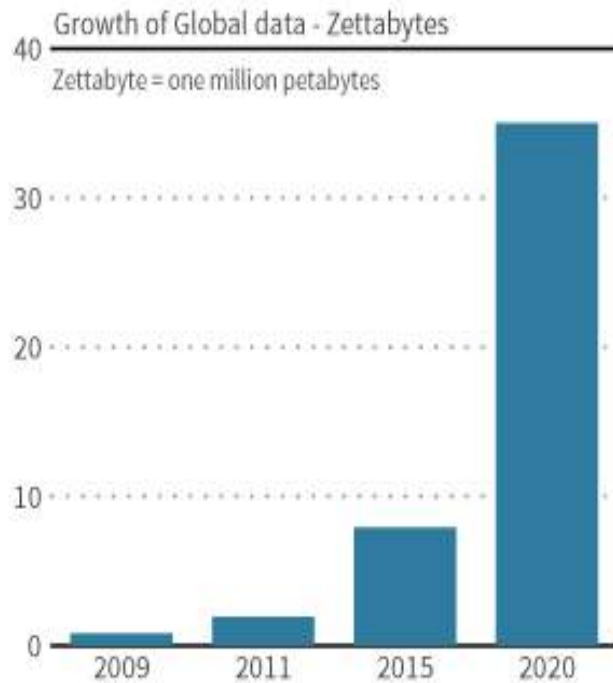
Microbiome Mentions	Microbiome Journal Articles & Patents

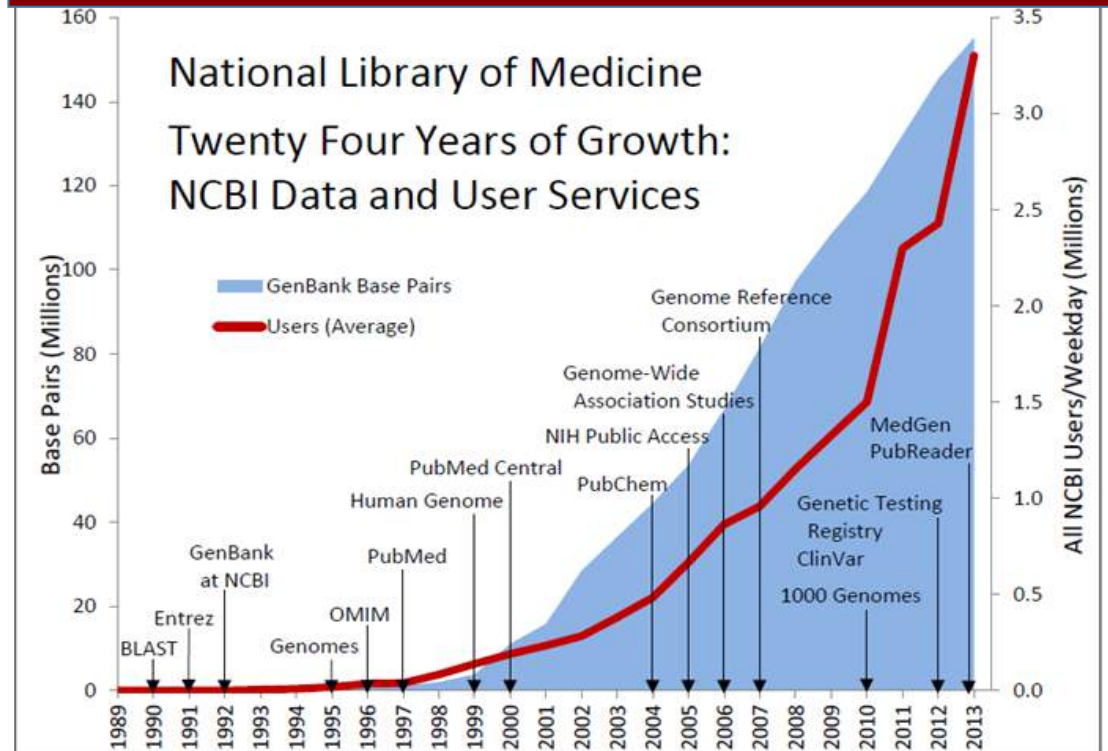**Problem**   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

Healthcare organizations are drowning in data, much of which comes from new types of testing

Growth in Big Data

Growth in Healthcare Related Data

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

RFID and the IoT are exploding and will revolutionize global sourcing, requiring new capabilities

Societal Problem

Problem Point of View Proposition Position Product Process/Plan People/Partners Possibilities Promotion Profit

IoT will be more disruptive than the internet to all aspects of business operations
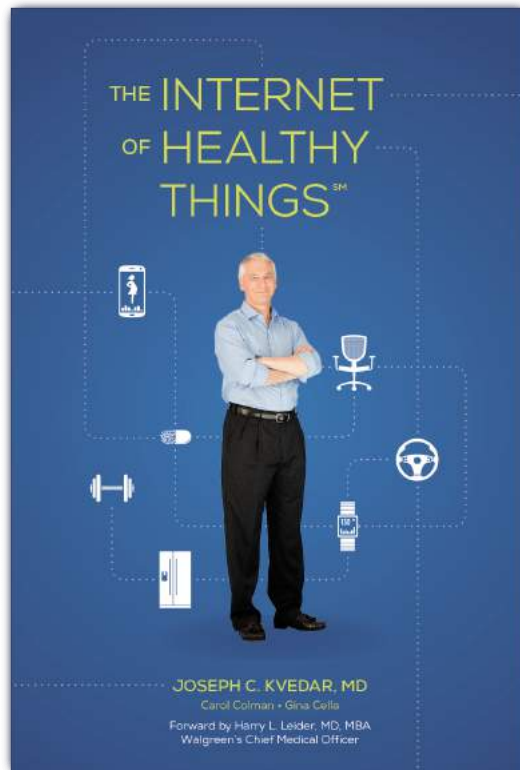
Industrial Devices - Largest

The 50 billion question
Worldwide number of internet-connected devices, forecast, bn

- Fixed communications
- Mobile communications
- Computers
- Consumer electronics and medical devices
- Industrial devices*
- Automotive
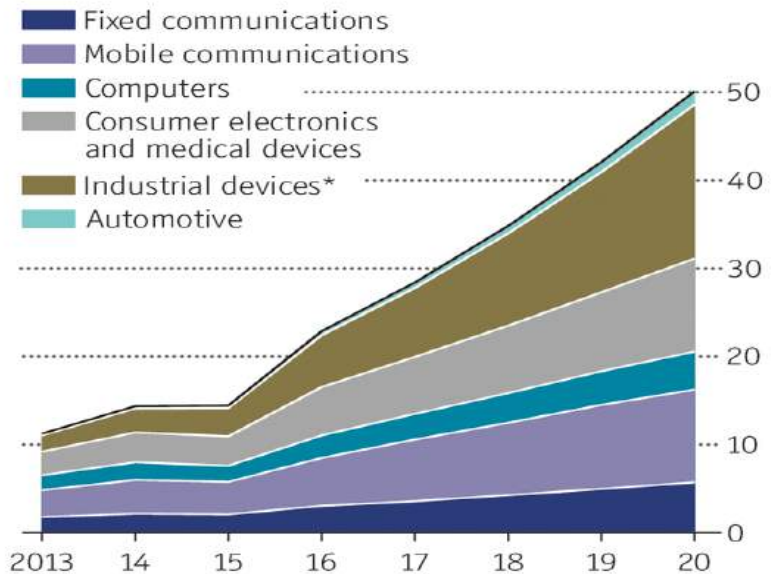
Source: Cisco   *Includes military and aerospace
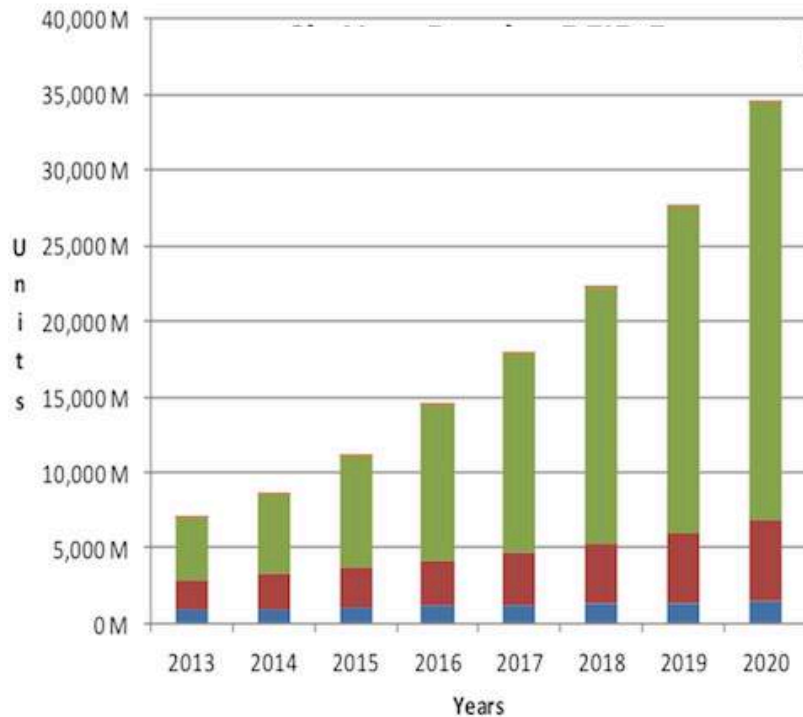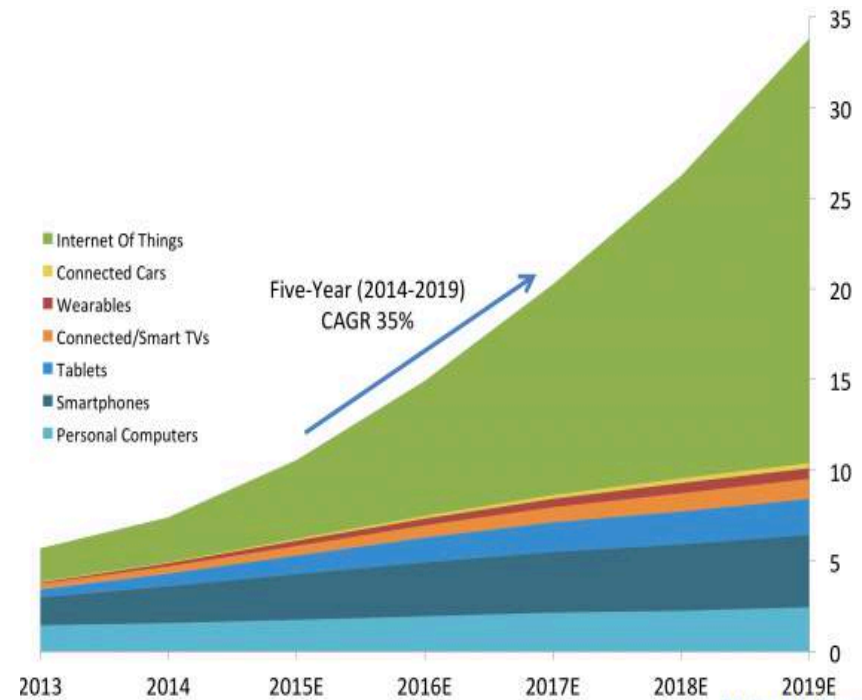
Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

Virtual reality is a new way of thinking and applying IoT in consumer, commercial and industrial applications

Societal Problem
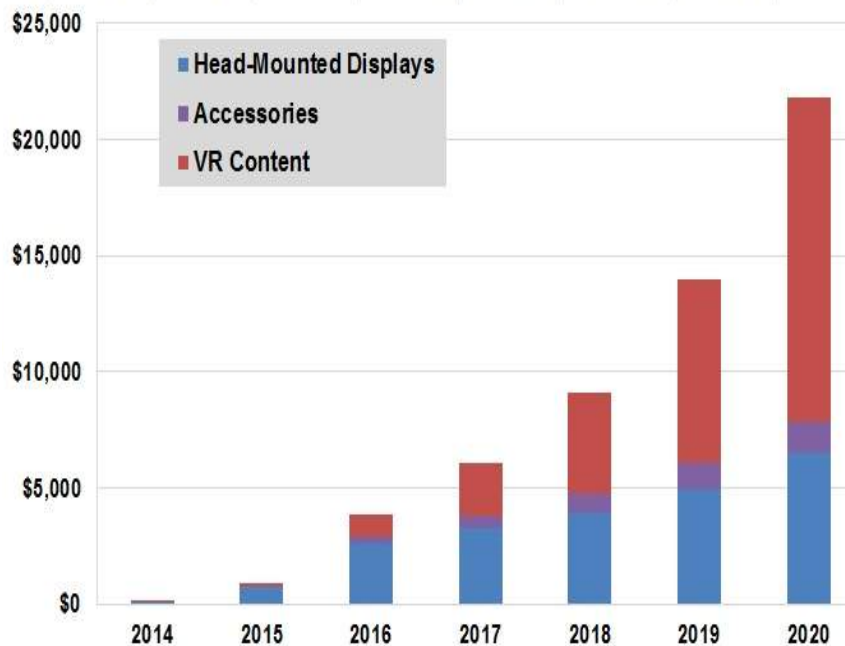
VR Revenue (M)	UCLA Neurosurgery

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

And similar growth in augmented reality will enhance products, marketing and retailing

Societal Problem

AR Revenue (M)	Case Western Anatomy
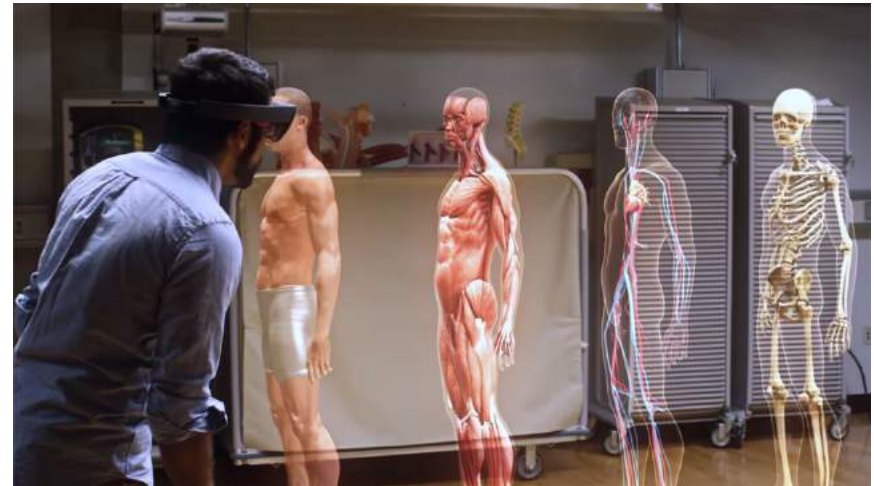
Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

IoT, Social Media, and Big Data are driving demand for analytics to predict, prevent, prescribe new behaviors

Societal Problem

Data Scientist Jobs	Big Data Tools Jobs

4
3

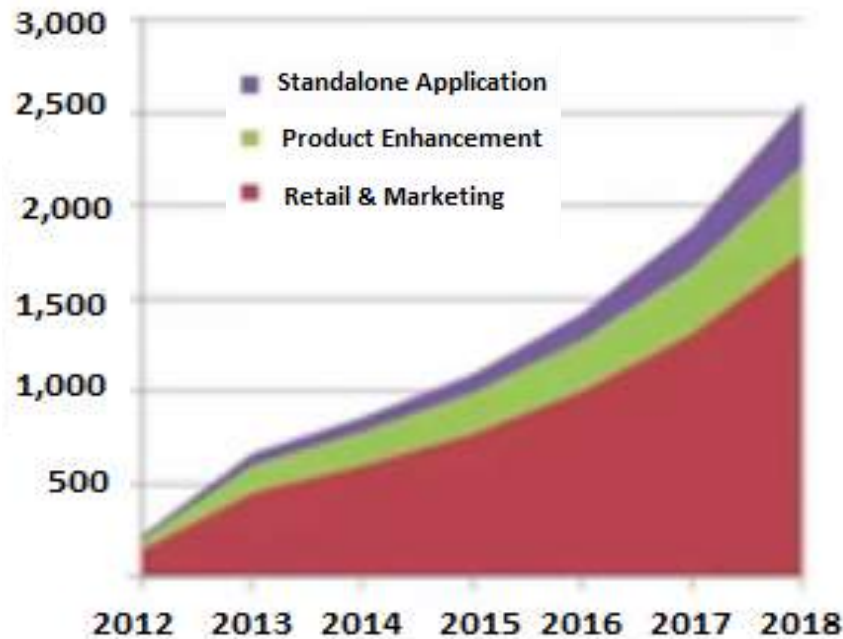**Problem**   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

Artificial Intelligence (AI) and chatbots are considered the next big thing to predict, prevent, and prescribe behaviors

Societal Problem

Artificial Intelligence Revenue	Alexa Your Virtual Doctor

Amazon Alexa Can Now Be Your Doctor

Lee Bell, CONTRIBUTOR
I cover the latest tech and health innovations FULL BIO ∨
Opinions expressed by Forbes Contributors are their own.

Just when you thought Amazon's virtual assistant knew enough already, WebMD – the hypochondriac's favorite website - has teamed up with the retail giant to give Alexa medical diagnosis capabilities.

The integration will allow Amazon Echo, Echo Dot and Fire TV users to ask Alexa basic health queries, such as "Alexa, ask WebMD what are the symptoms of a heart attack", or "Alexa, ask WebMD how to treat a sore throat."

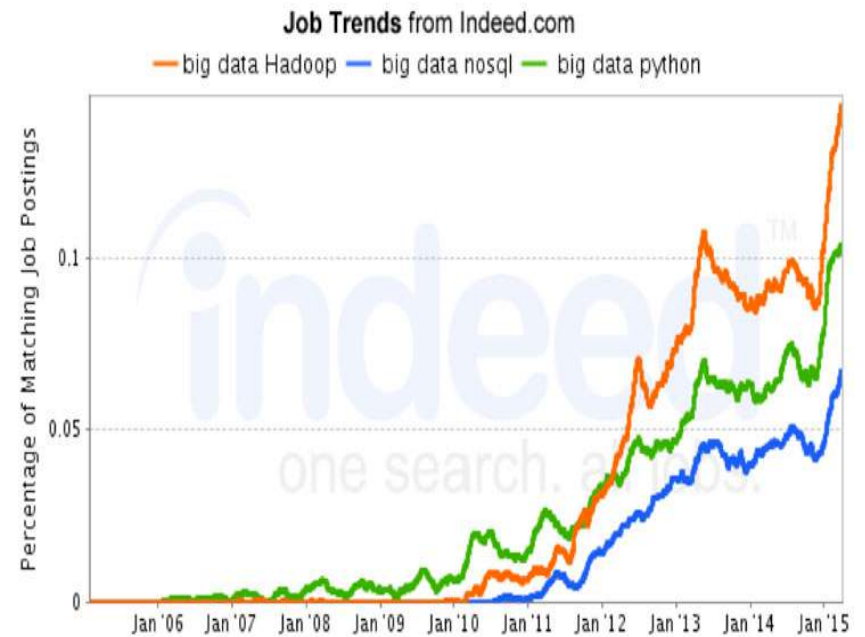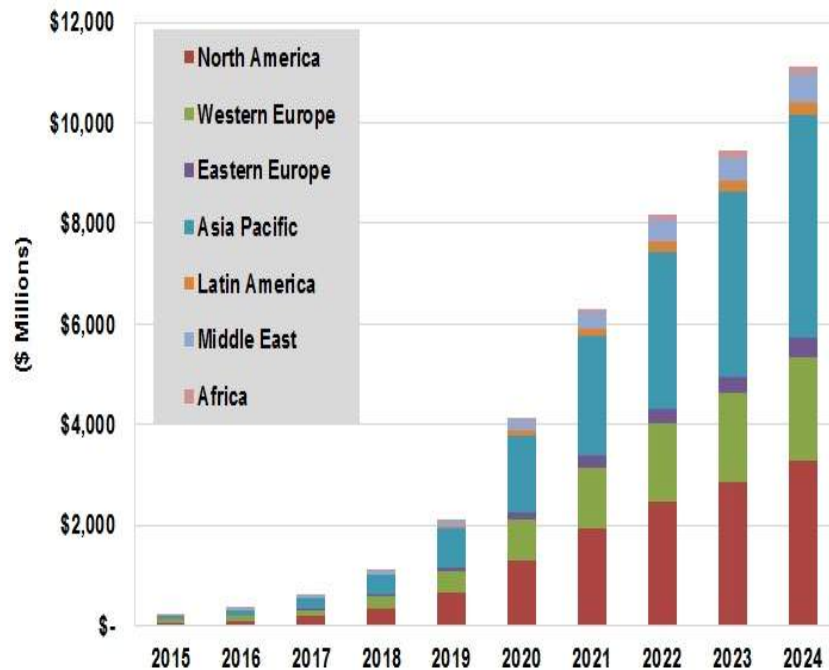*Amazon's Alexa virtual assistant now answers your basic health-related questions*

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

The growth of Uber and its expansion into new markets will likely disrupt other transportation services

Uber Driver Growth
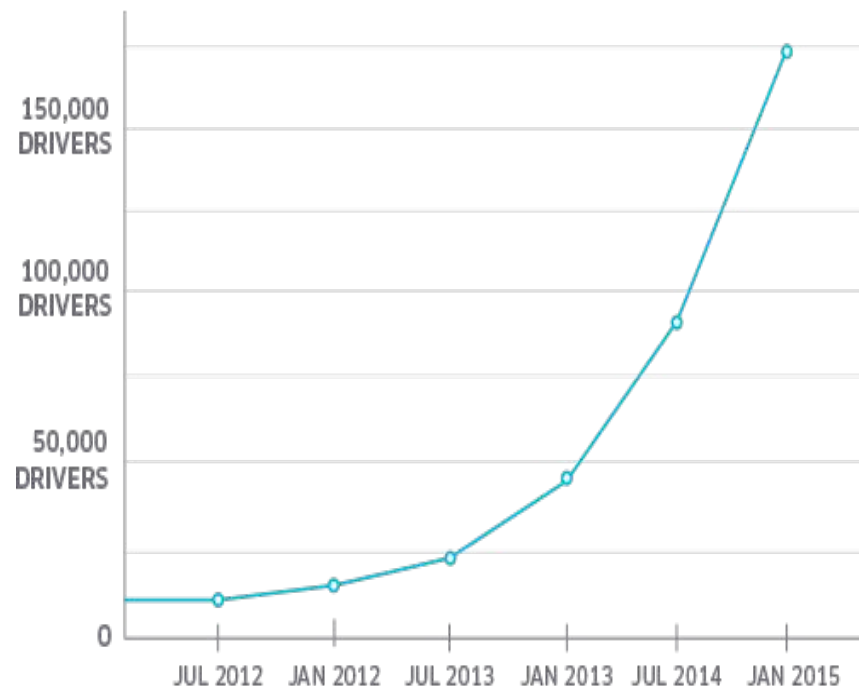
Uber Entering Healthcare

Hospitals Are Partnering With Uber to Get Patients to Checkups

The convenience could greatly reduce the likelihood of missed appointments.

ZHAI YUN TAN | AUG 15, 2016 | HEALTH

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

Drones represent an additional disruptive force in the global supply chain, but what about healthcare?
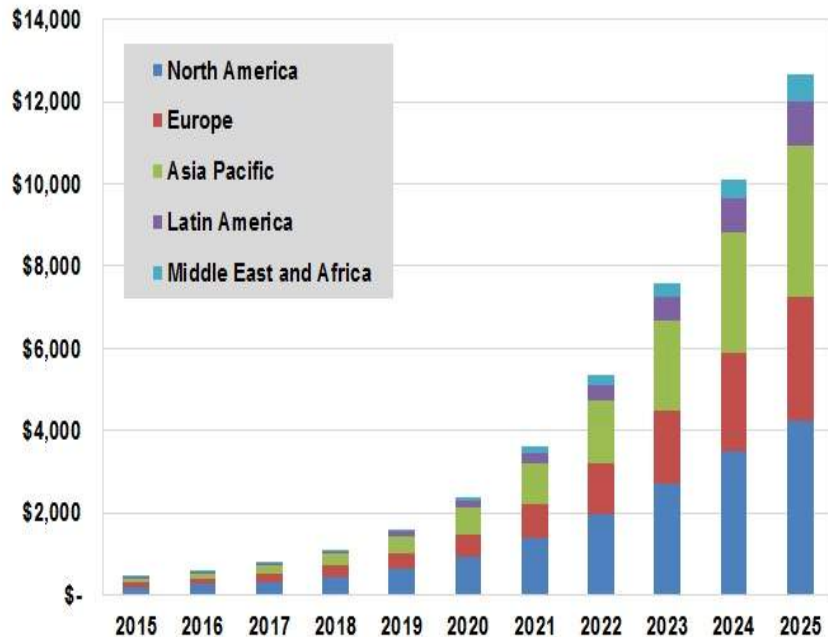
Societal Problem

Commercial Drone Revenues

Legend:
- North America
- Europe
- Asia Pacific
- Latin America
- Middle East and Africa

Healthcare Drones

Drones will begin delivering blood and medicine in the US

After launching in Rwanda, Zipline brings its fleet of medical drones to three US states

by Amar Toor | @amartoo | Aug 2, 2016, 6:03am EDT

f SHARE   ✔ TWEET   in LINKEDIN

Zipline International

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

Automation, AI are further driving changes in Additive Manufacturing (aka 3D printing)

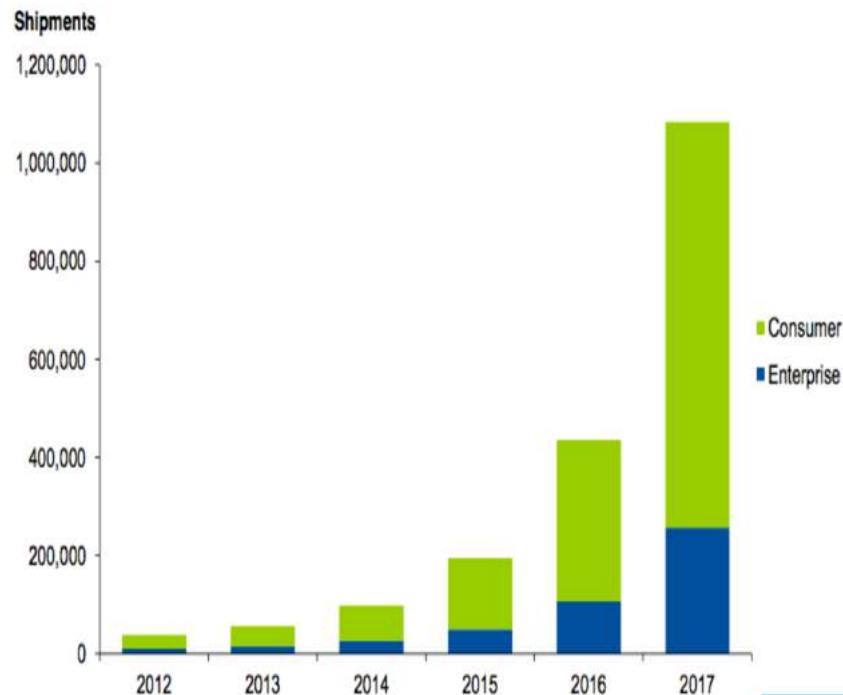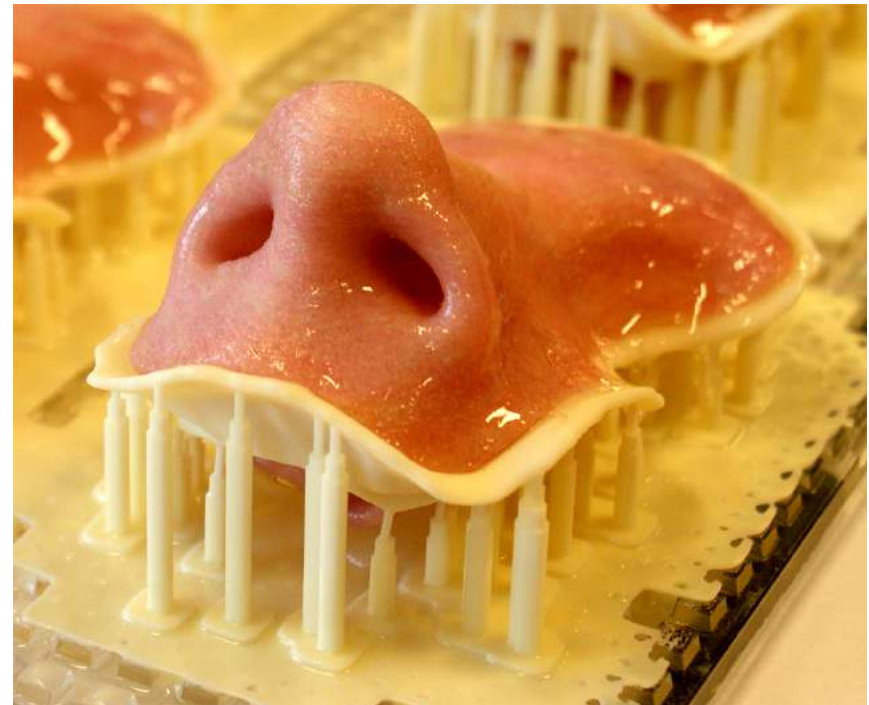| **Consumer & Commercial AM**	**Healthcare 3rd Largest Market**

Problem   Point of View   Proposition   Position   Product   Process/Plan   People/Partners   Possibilities   Promotion   Profit

We must abide the Law of Requisite Variety & Complexity

Variety in the External Environment	**=**	Variety in the Internal Environment

Organizations that fail to abide this law fail to survive

Are you living this law?

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We must abide the Law of Requisite Variety & Complexity

Variety in the External Environment = **Variety in the Internal Environment**

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We must abide the Law of Requisite Variety & Complexity
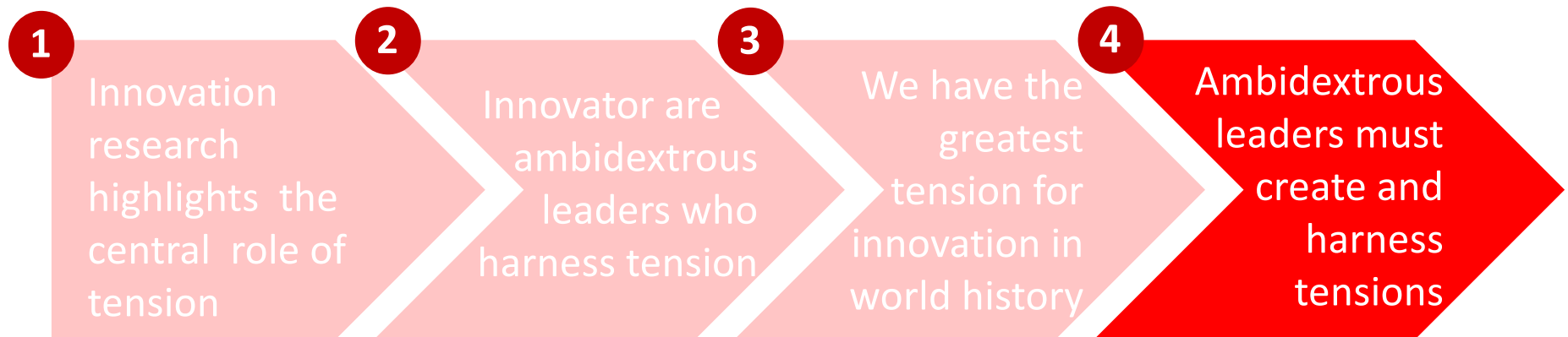
Variety in the External Environment = **Variety in the Internal Environment**

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The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function.

F. Scott Fitzgerald, author

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Life is like a ten-speed bicycle. Most of us have gears we never use.

Charles M. Schultz, cartoonist and author

We need to become ambidextrous to enable our people and organization to ride all kinds of cycles
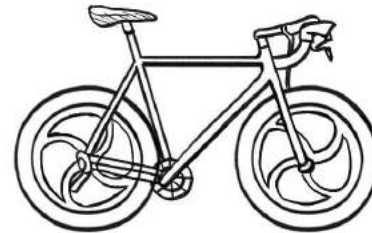

MOUNTAIN BIKE
DISCOVERING

HYBRID BIKE
INCUBATING

ROAD BIKE
ACCELERATING

STATIONARY BIKE
SCALING

Failure
90%

Failure
3 in 1 M

5

The Law of Requisite Variety requires digital innovation - becoming more like Amazon, Google, Apple

Would this create tension in your organization? Could it be a creative tension? Could it be transformational?

How do we eliminate 50% of all clinical visits within 5 years?

Doctors Adamson and Bachman have shown the way in their 2010 research

MAYO CLINIC

ORIGINAL ARTICLE

Pilot Study of Providing Online Care in a Primary Care Setting

STEVEN C. ADAMSON, MD, AND JOHN W. BACHMAN, MD

OBJECTIVE: To study the use of e-visits in a primary care setting.

PATIENTS AND METHODS: A pilot study of using the Internet for online care ("e-visits") was conducted in the Department of Family Medicine at Mayo Clinic in Rochester, MN. Patients in the department preregistered for the service, and then were able to use the online portal for consultations with their primary care physician. Use of the online portal was monitored and data were collected from November 1, 2007, through October 31, 2009.

RESULTS: During the 2-year period, 4282 patients were registered for the service. Patients made 2531 online visits, and billings were made for 1159 patients. E-visits were submitted primarily by women during working hours and involved 294 different conditions. Of the 2531 e-visits, 62 (2%) included uploaded photographs, and 411 (16%) replaced nonbillable telephone protocols with billable encounters. The e-visits made office visits unnecessary in 1012 cases (40%); in 324 cases (13%), the patient was asked to schedule an appointment for a face-to-face encounter.

CONCLUSION: Although limited in scope, to our knowledge this is the largest study of online visits in primary care using a structured history, allowing the patient to enter any problem, and billing the patient when appropriate. The extent of conditions possible for treatment by online care was far-ranging and was managed with a minimum of message exchanges by using structured histories. Processes previously given as a free service or by nurse triage and subject to malpractice (protocols) were now documented and billed.

Mayo Clin Proc. 2010;85(8):704-710

regulatory issues, and concerns over security, privacy, and confidentiality."[21] Also, electronic consultations to date have generally used online forms or secure e-mail. The information in these formats is unstructured and often lacks sufficient information, prompting the clinician to respond to the patient to request further information, which results in delays.[22] Furthermore, the lack of organization in an e-mail makes it difficult to code complexity; consequently, the same fee is often charged for all online consultations, regardless of complexity.[23]

> For editorial comment, see page 701

Isolated reports of the use of online consultations have been disappointing. For example, despite indications that electronic communication could decrease health care costs[24] and provide reimbursement from patients,[25,26] Fairview Health System has reported only 10 e-visits per week in a system with 400 physicians,[27] and Blue Cross of Minnesota processed about 30 e-visits per month in July 2008 and 90 e-visits per month in July 2009 (D. Hiza, MD, written communication, February 2010).

Studies have not described a portal for online patient consultations that has a structured medical history. Structured computerized histories were first described in the 1960s by

Largest study of its kind to test the idea of pushing more care to the home

2 years (2007-2009)

4,300 patients

56 clinicians in 4 locations

24 hour turn around

Portal technology

2,531 online visits
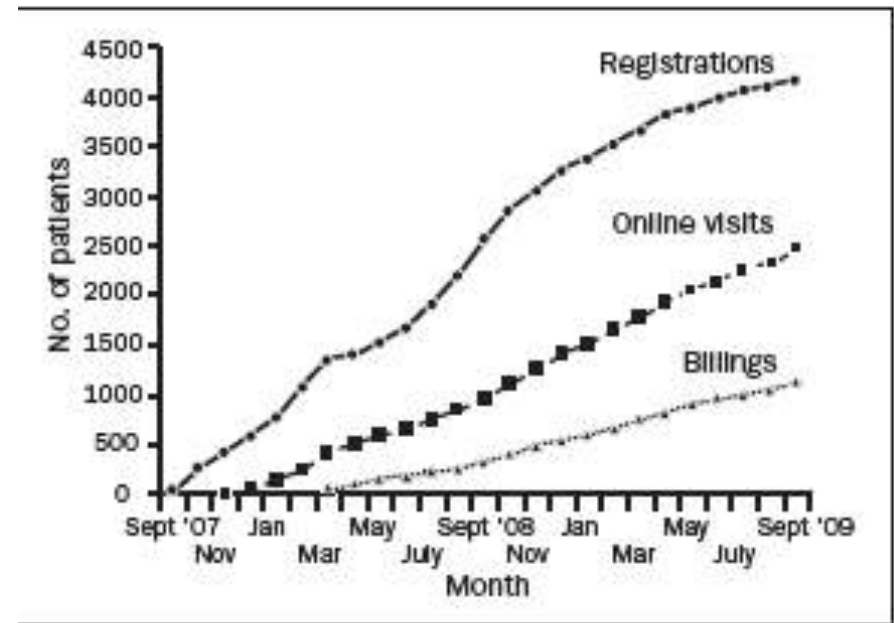
1,159 were billed

No marketing or promotion

FIGURE 2. Cumulative totals of patient registrations, online visits, and billings at each month during the study period.

There were two primary personas among these online patients, young moms and older daughters

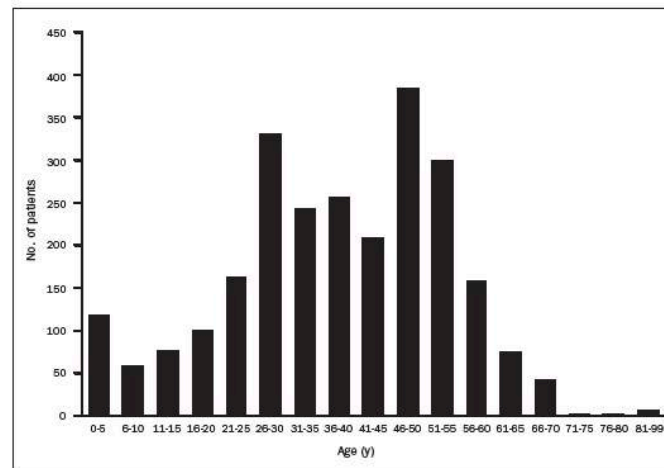
Working Mom

71% women
Monday 25%
Weekend 5%
8 AM to 4 PM

FIGURE 3. Ages of patients receiving online consultations.
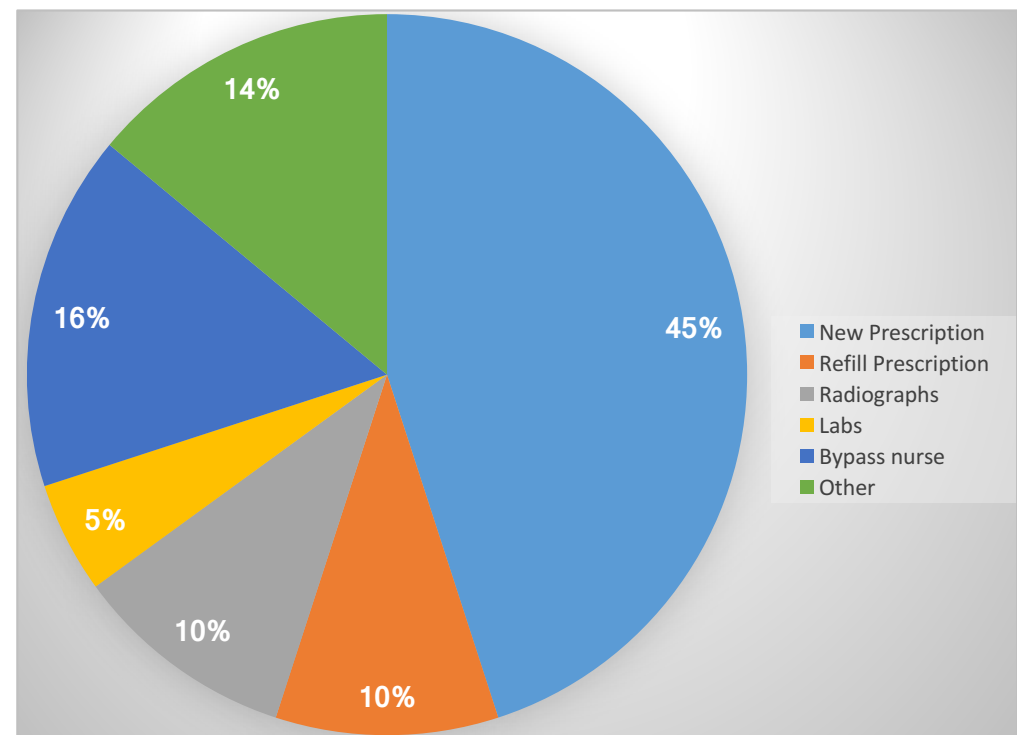

Working Daughter

40% of all problems were address WITHOUT an office visit – this was conservative – could easily have been 50%

TABLE 1. The 20 Most Frequent Reasons for e-Visits[a]

Reported problem	No. (%) of visits[b]
Sinusitis	218 (8.6)
Depression	134 (5.3)
Back pain	121 (4.8)
Cough	77 (3.0)
Anxiety	75 (3.0)
Hypertension	67 (2.6)
Abdominal pain	66 (2.6)
Headache	65 (2.6)
Urinary tract infection	63 (2.5)
Influenza	62 (2.4)
Allergic rhinitis	57 (2.3)
Dermatitis	55 (2.2)
ADHD	53 (2.1)
GERD	50 (2.0)
Vaginitis	47 (1.9)
URI	45 (1.8)
Insomnia	40 (1.6)
Asthma	39 (1.5)
Contraception	36 (1.4)
Hyperlipidemia	32 (1.3)
Total	1402 (55)

[a] ADHD = attention deficit hyperactivity disorder; GERD = gastroesoph-
ageal reflux disease; URI = upper respiratory tract infection.
[b] Of 2531 total visits.

Pie chart:
- New Prescription: 45%
- Refill Prescription: 10%
- Radiographs: 10%
- Labs: 5%
- Bypass nurse: 16%
- Other: 14%

… but did it make money?

11% just prescription refill

14% sent to the office for an appointment

Many seen in the office previous week or regular follow ups

What is the value of being able to see more patients in office?

TABLE 2. Billings for Patients Without Mayo Clinic Insurance (n=448)

Billed	No. (%)
None	236 (52.7)
Insurance/patient	145 (32.4)
Medicare	
Not billed	29 (6.5)
Billed	14 (3.1)
Medicaid	24 (5.4)

Dr. Erin Clark in Maternal and Fetal Medicine at the University of Utah wants to cut maternal visits by 50%

For nearly 30 years we have been trying to cut the number of visits in half

1989: U.S. Department of Health and Human Services

Caring for our Future: The Content of Prenatal Care Report of the Public Health Expert Panel on the Content of Prenatal Care

Proposed reduced frequency prenatal schedule for low-risk parous women based on the timing of specific events and tests that occur in pregnancy.

➔ **Reduced recommended visits from 14 to 8.**

Dr. Clark ran a clinical study with 200 women to test the idea of cutting visits by 50%

ENROLLMENT

Eligible Patients Approached, n=466

Declined participation, n=266 (57%)

Randomized, n=200

ALLOCATION

Allocated to Traditional Prenatal Care, n=100

Allocated to Remote Prenatal Care Arm, n=100

Withdrawn, n=4
- Switched insurance/provider, n=3
- Pregnancy loss prior to 16 weeks, n=1

Withdrawn, n=9
- Technical issues, n=4
- Switched insurance/provider, n=4
- Pregnancy loss prior to 16 weeks, n=1

ANALYSIS

Analyzed, n=96

Analyzed, n=91

She used digital health devices and applications
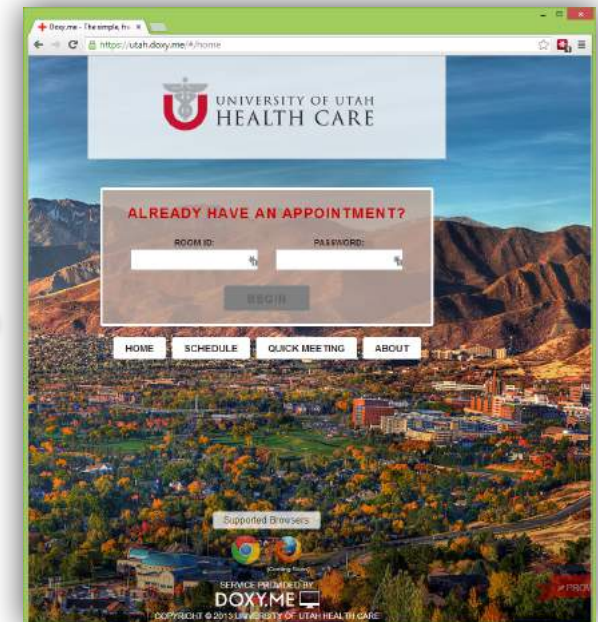
She found no meaningful difference in outcomes

|	Traditional (N=96)	Remote (N=91)
Gestational Age at Delivery, wks	39.4	39.4
Preterm Birth	7 (7.3%)	4 (4.4%)
Induction of Labor	39 (40.6%)	41 (45.1%)
Cesarean Delivery	12 (12.5%)	9 (9.9%)
Birth Weight, gms	3427	3345
IUGR	3 (3.1%)	1 (1.1%)
Fetal Demise	1 (1%)	1 (1.1%)

She found patients were just as satisfied
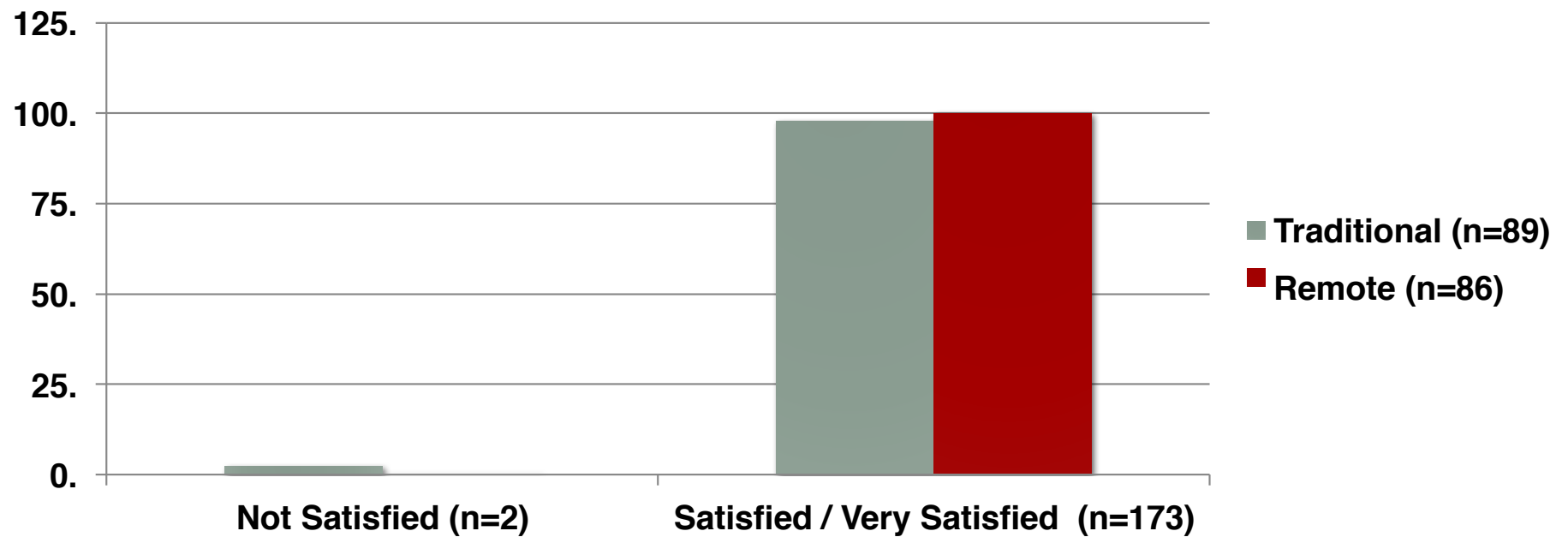
Patients were very happy with digital health remote monitoring

I am satisfied with remote prenatal care for monitoring my health during pregnancy.
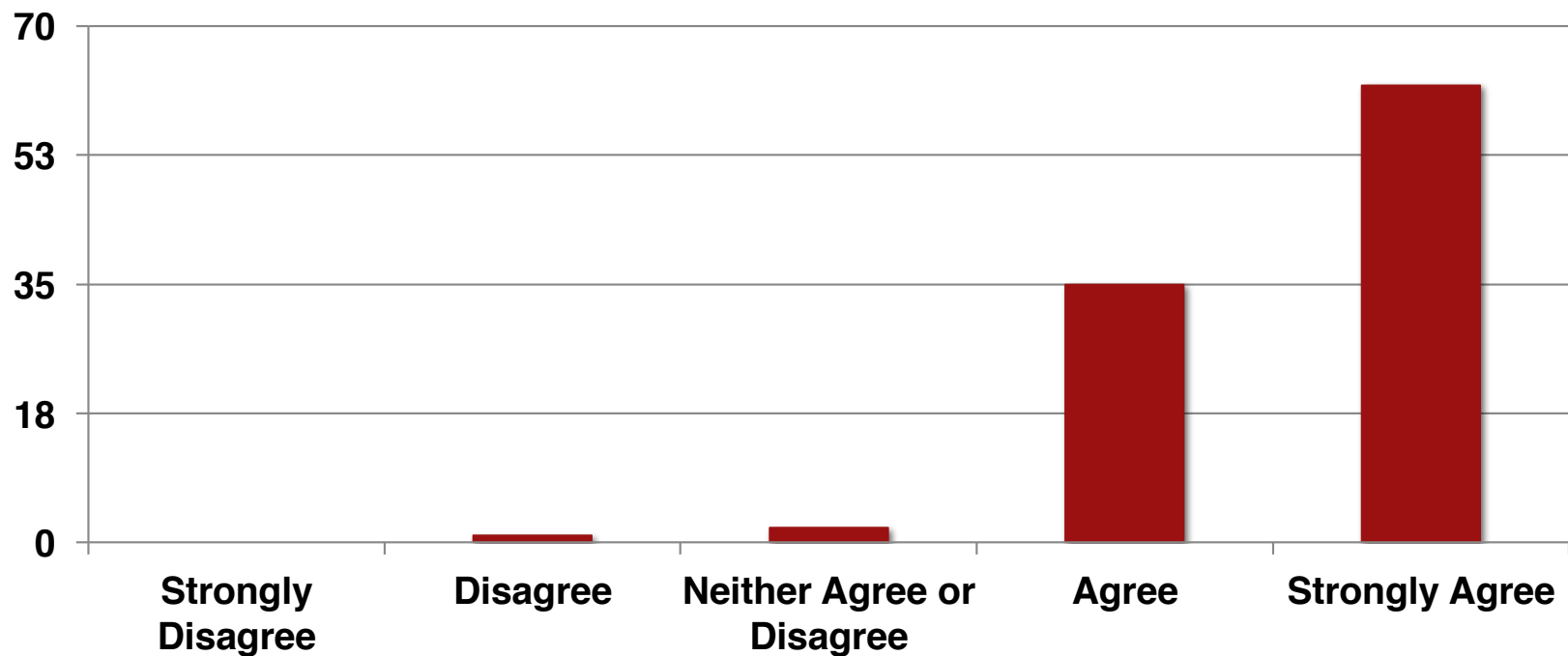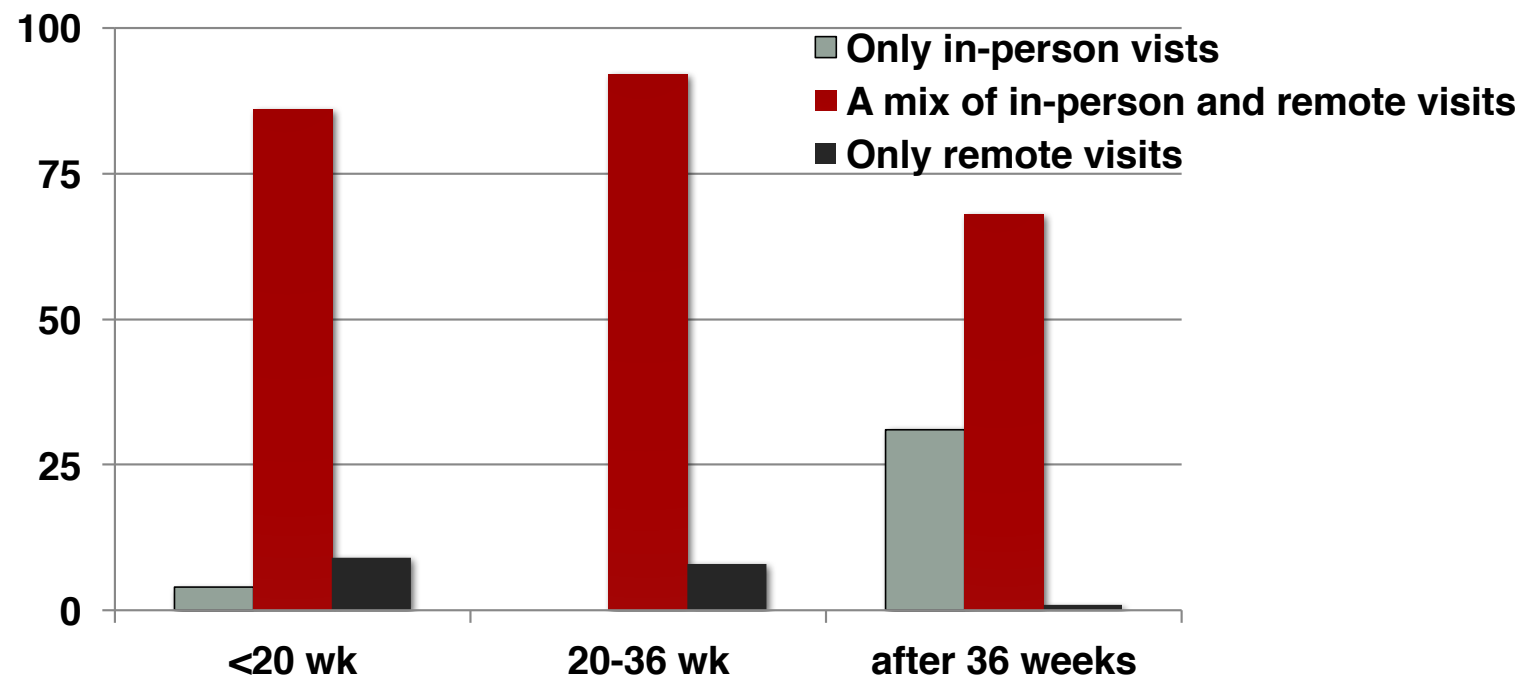
There were many reasons they liked and preferred it to traditional prenatal care
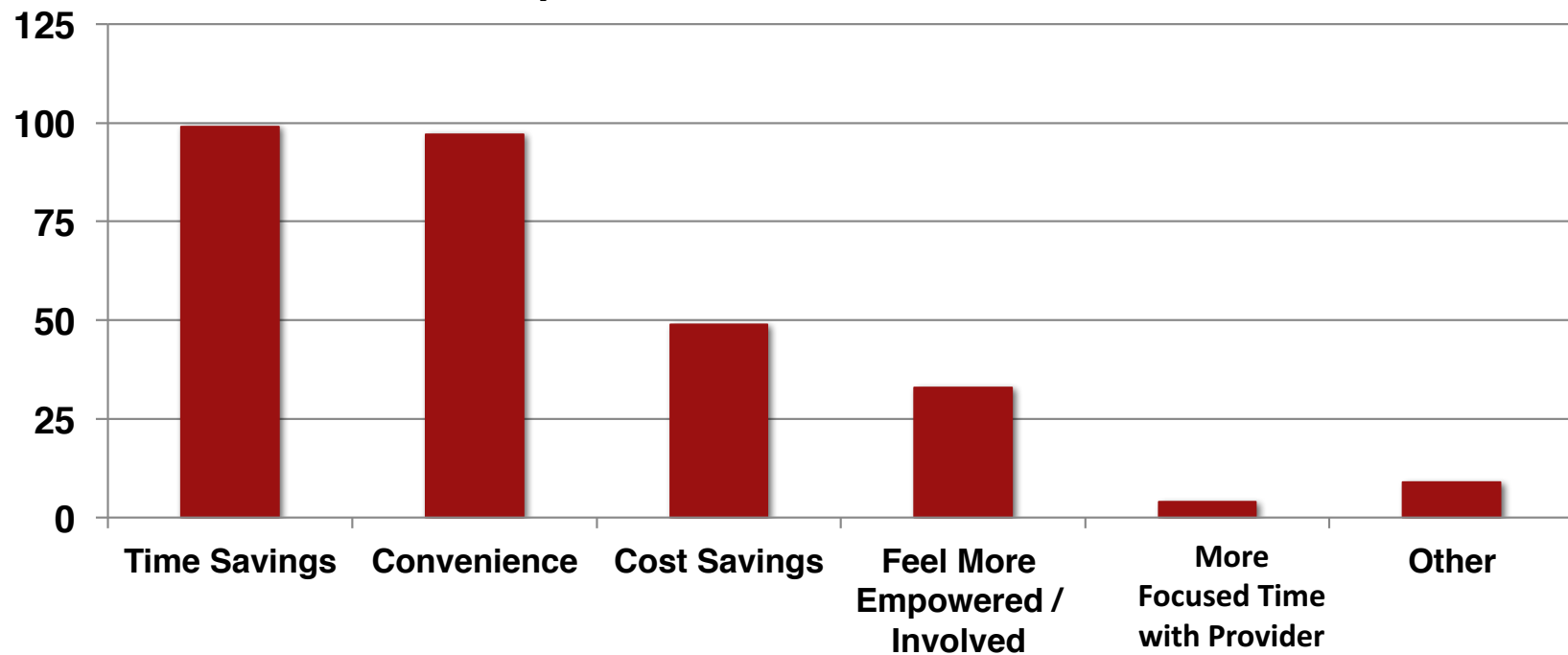
They nearly all preferred a mix of digital and analog health

We need bundled digital health solutions that are comprehensive to address the whole problem

Innovation in the new healthcare paradigm

Molecular Dx screening IDs patients who would benefit from treatment

Wireless Easypod injection device records dosage data and transmits to clinicians

Nurse call center intervenes when notified by device of patient non-compliance

Clinical nurses in physician's office assist in treating patient

EHR Integrates patient information

Value-based reporting to NHS demonstrates compliance and improved outcomes

Market share 10% —> 50%

Margins -20% —> +20%

What happens if you harness creative tension to cut visits by 50% in 5 years?

Clinician Shortages

Patient Access

Quality Outcomes

Health Costs

By applying Complexity Science to innovate you and enable spontaneous order to emerge!

Our focus on high reliability causing us to fail to innovate and adapt in a turbulent market

1 Innovation research highlights the central role of tension

2 Innovator are ambidextrous leaders who harness tension

3 We have the greatest tension for innovation in world history

4 Ambidextrous leaders must create and harness tensions
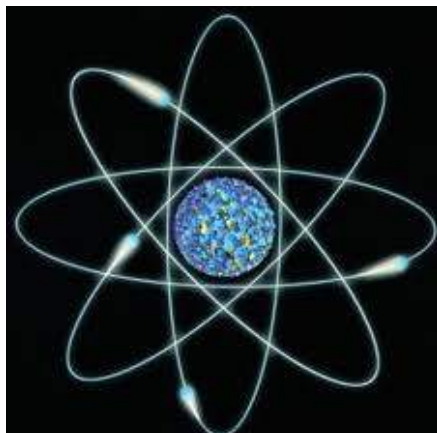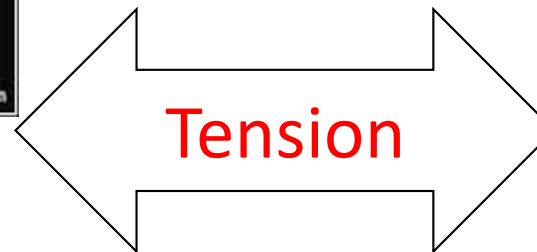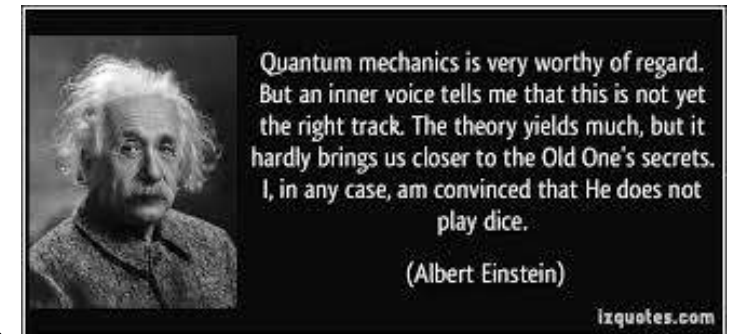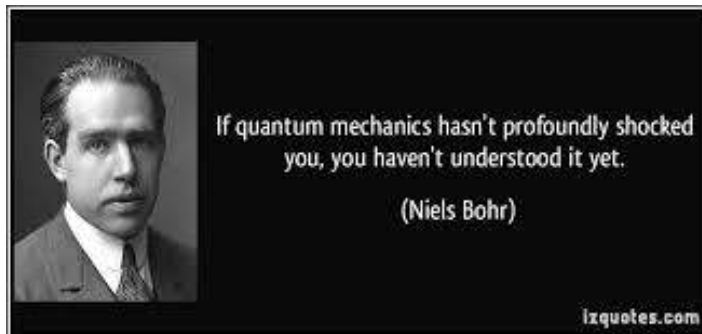
We must apply Complexity Science to overcome our failure to innovate!

I thought of that while I was riding my bicycle.

Albert Einstein, on coming up with the Theory of Relativity

Physics has struggled to unify the world of the big and the small … much like organizations do today

If quantum mechanics hasn't profoundly shocked you, you haven't understood it yet.

(Niels Bohr)

izquotes.com

Quantum mechanics is very worthy of regard. But an inner voice tells me that this is not yet the right track. The theory yields much, but it hardly brings us closer to the Old One's secrets. I, in any case, am convinced that He does not play dice.

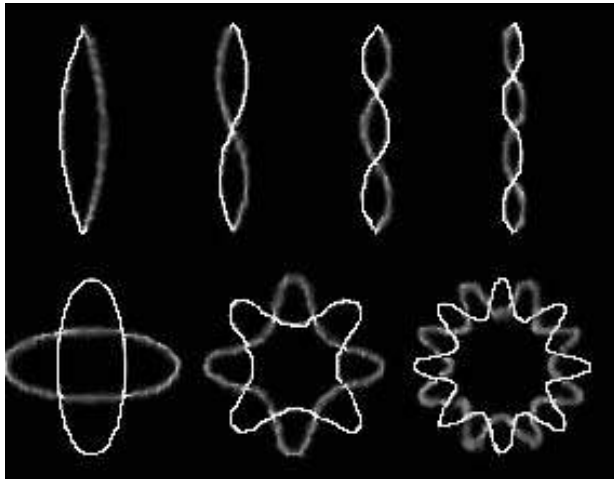(Albert Einstein)

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Tension

small
probable
uncertain
free will
radical

BIG
PREDICTABLE
CERTAIN
CONSTRAINED
INCREMENTAL

75

String theory has emerged as a crazy idea of how harnessing <u>tension</u> unifies both big and small in Complex Adaptive Systems

Vibrating strings at various tensions to deliver specific frequencies look to be the foundation for all existence and unify General Relativity and Quantum Physics

Strings	Quarks	Electrons	Atoms	Molecules
	Leptons	Protons		
	Hadrons	Neutrons		
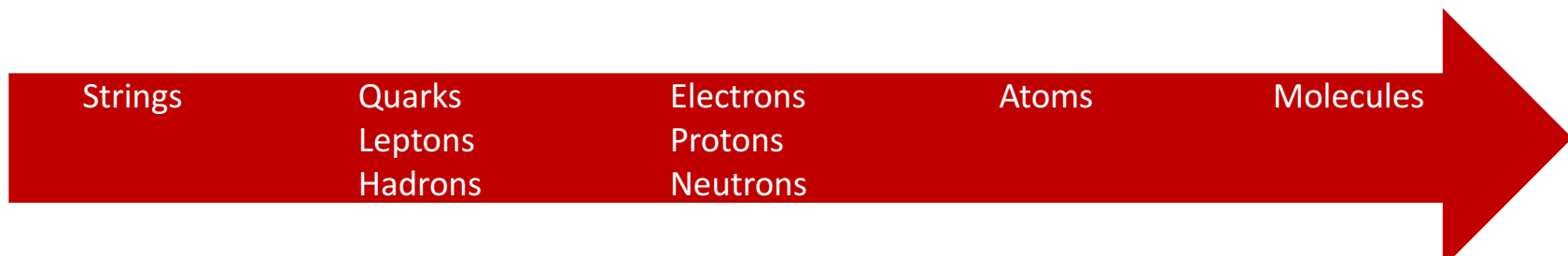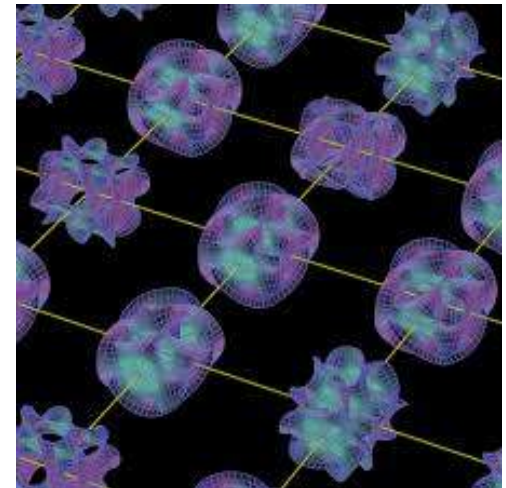
Is a theme of tensions and complexity crazy enough?

"We are all agreed that your theory is crazy. The question that divides us is whether it is crazy enough to have a chance of being correct."

Niels Bohr