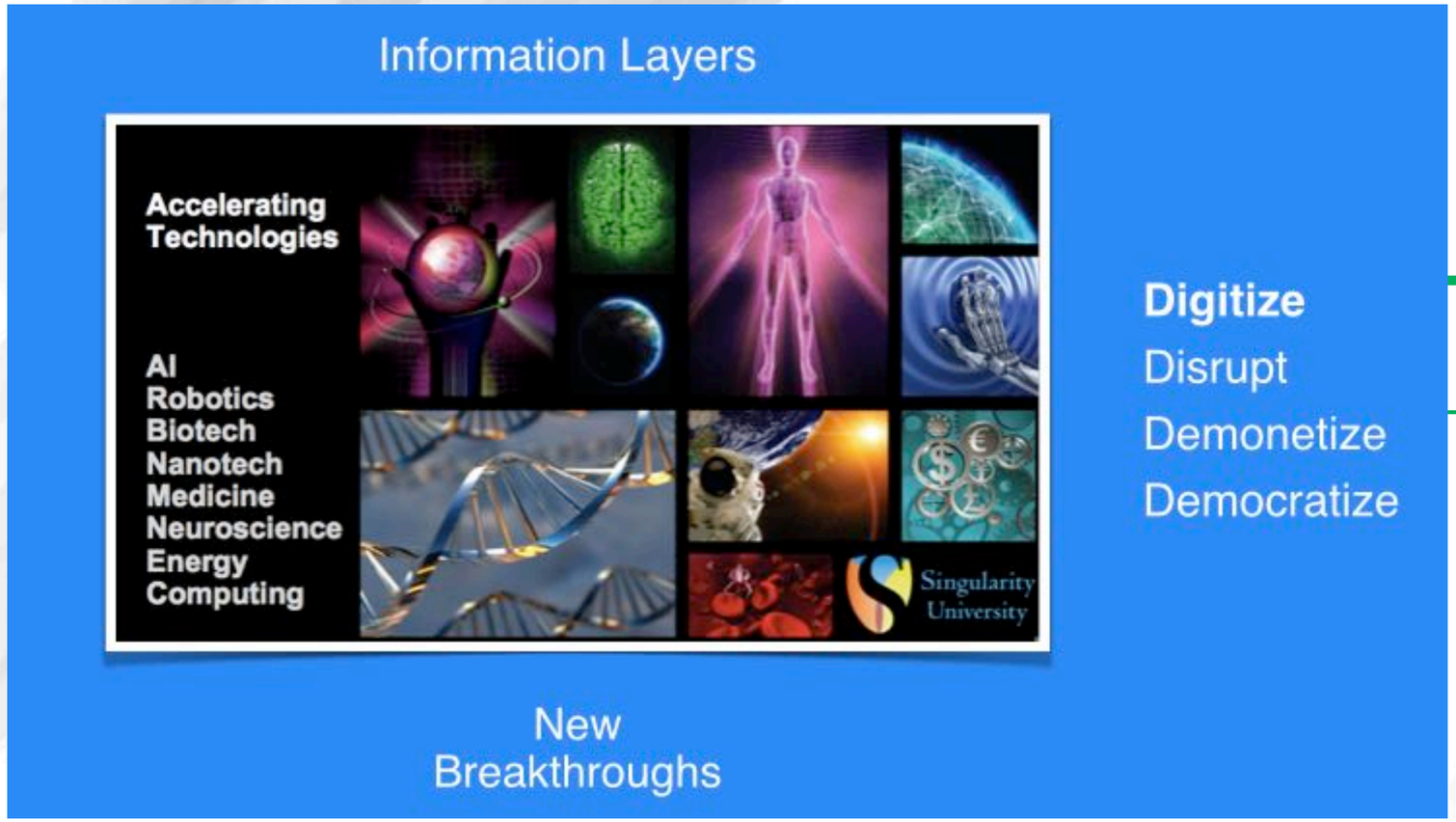
EXPONENTIAL DISRUPTION



SALIM ISMAIL

@salimismail

// Global Ambassador, Founding Executive Director

Singularity University

// Co-Founder

Angstro

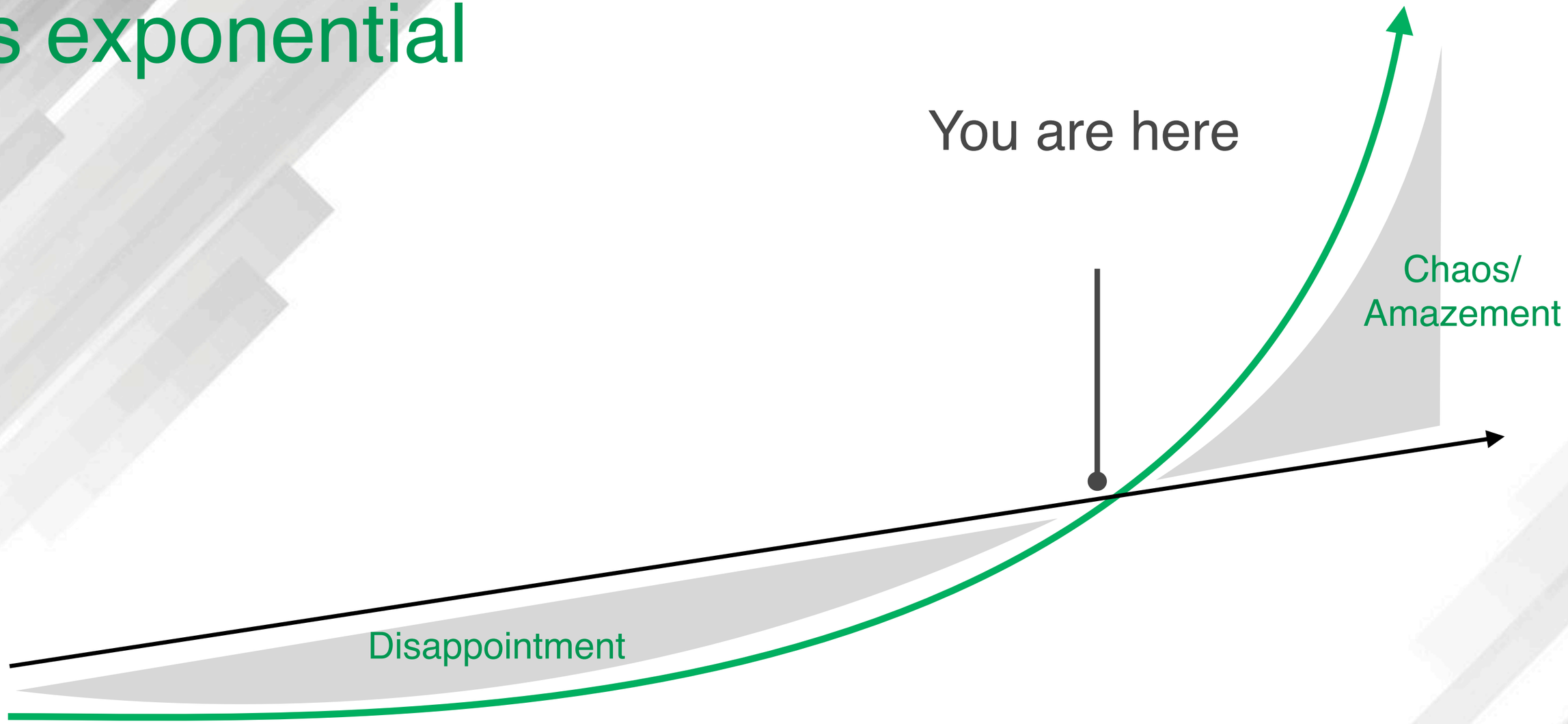
Confabb

PubSub

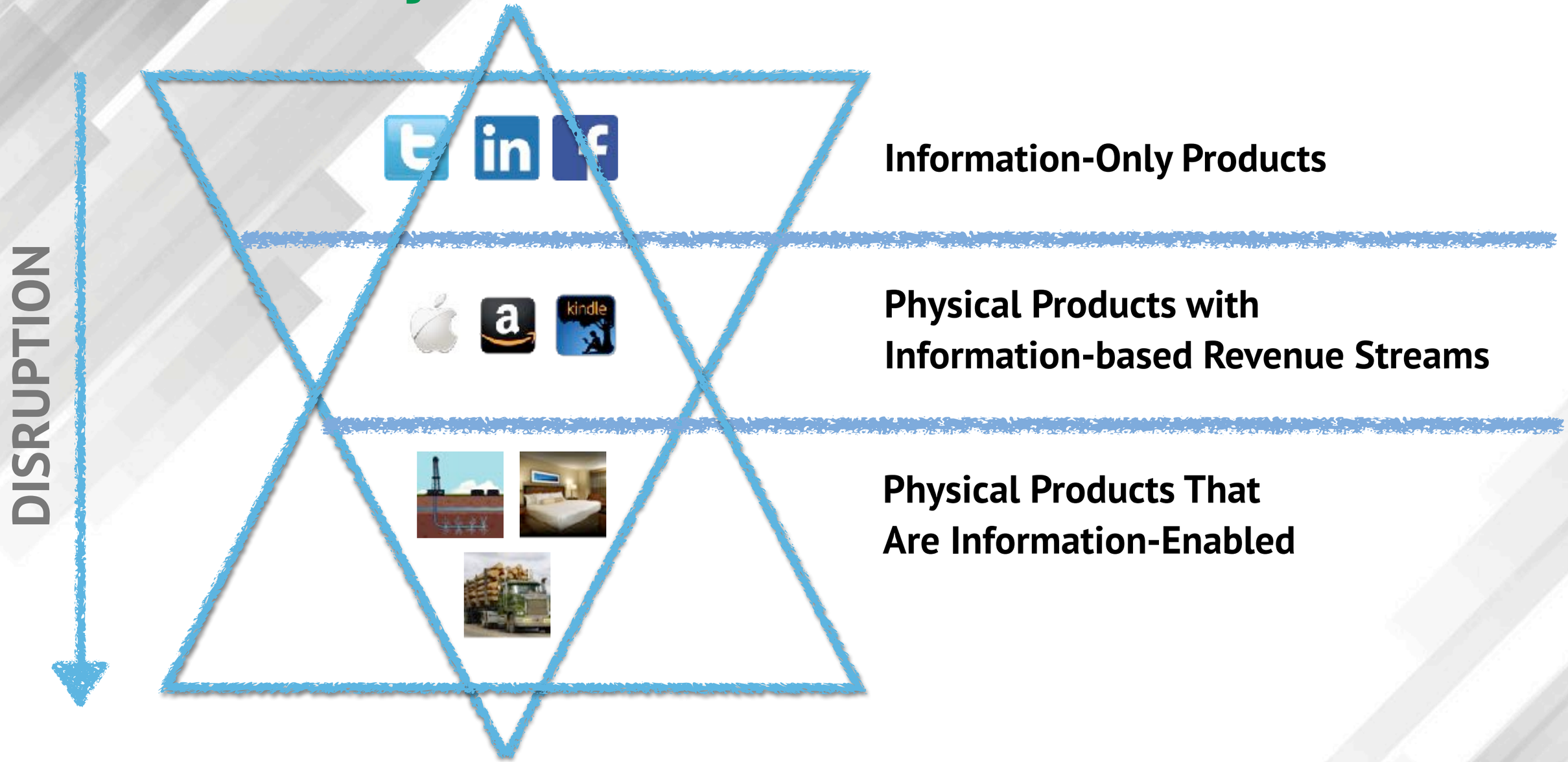
// Vice President

Yahoo

Deception of linear vs exponential



Industries by Information Enablement



Genentech

Autodesk

NOKIA

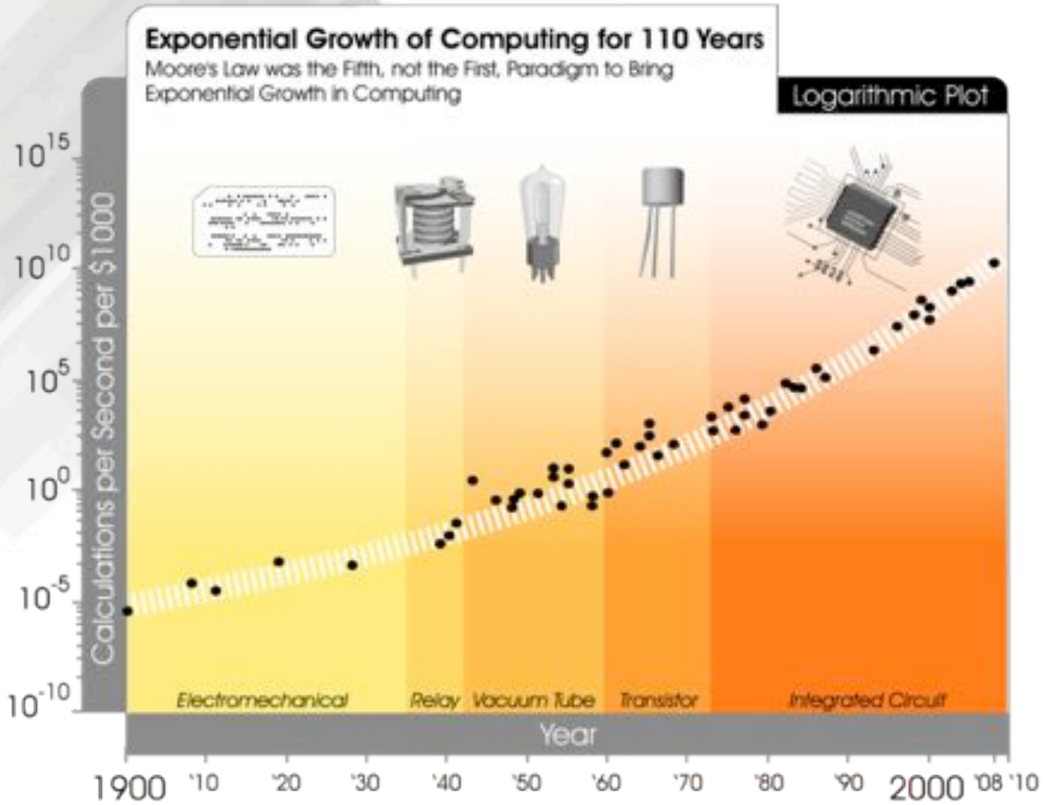
Google

Ewing Marion
KAUFFMAN
Foundation

ePlanet Ventures

CISCO

Singularity University was founded in Sept 2008 by Drs. Ray Kurzweil & Peter Diamandis



Accelerating Technologies

AI
Robotics
Biotech
Nanotech
Medicine
Neuroscience
Energy
Computing

Singularity University

10^{9+}

How will you positively impact
1 billion people in the next decade?

Made in Space

KEEP SHUT
WHEN NOT
IN USE
KOBALT

Grand Challenge
1.4 billion in extreme poverty
1 billion with no access to all-season roads

It will take Africa 50 years to catch up

DRONES
DRONES

amazon
PrimeAir

DISRUPT NY Winklevoss Twins to Chat Bitcoin at Disrupt NY Get Your Tickets Today

Gadgets matternet NAS founder Haiti

Matternet To Test The First Real Drone Delivery System In Switzerland

Posted 3 hours ago by John Biggs (@johnbiggs)

373 SHARES

Next Story

The Swiss postal service, Swiss Post, is going to attempt drone deliveries for the first time ever

CrunchBase

Matternet

OVERVIEW

Matternet is a 21st century transportation system that will transform the way we move goods locally. Matternet is creating an automated delivery network

36k trees a day

THE INDEPENDENT MONDAY 27 APRIL 2015

NEWS | VIDEO | PEOPLE | VOICES | SPORT | TECH | LIFE | PROPERTY | ARTS + ENTS | TRAVEL | MO

UK v / World v / Business v / People / Science / Environment v / Media v / Technology / Education v / Images / Obi

News > World

Ex-Nasa man to plant one billion trees a year using drones

Executive program overview

Executive Program Participants:

Entrepreneurs, CEOs, CTOs, investors, inventors, government leaders, and policy experts from around the world

Before: 75% had little or zero awareness of breakthroughs

IPP
INNOVATION
PARTNERSHIP
PROGRAM

After:

Game-changing impact
- 80% in 2 yrs
- 100% in 5 yrs

100% had immediate action items

Information Layers

Digitize

Disrupt

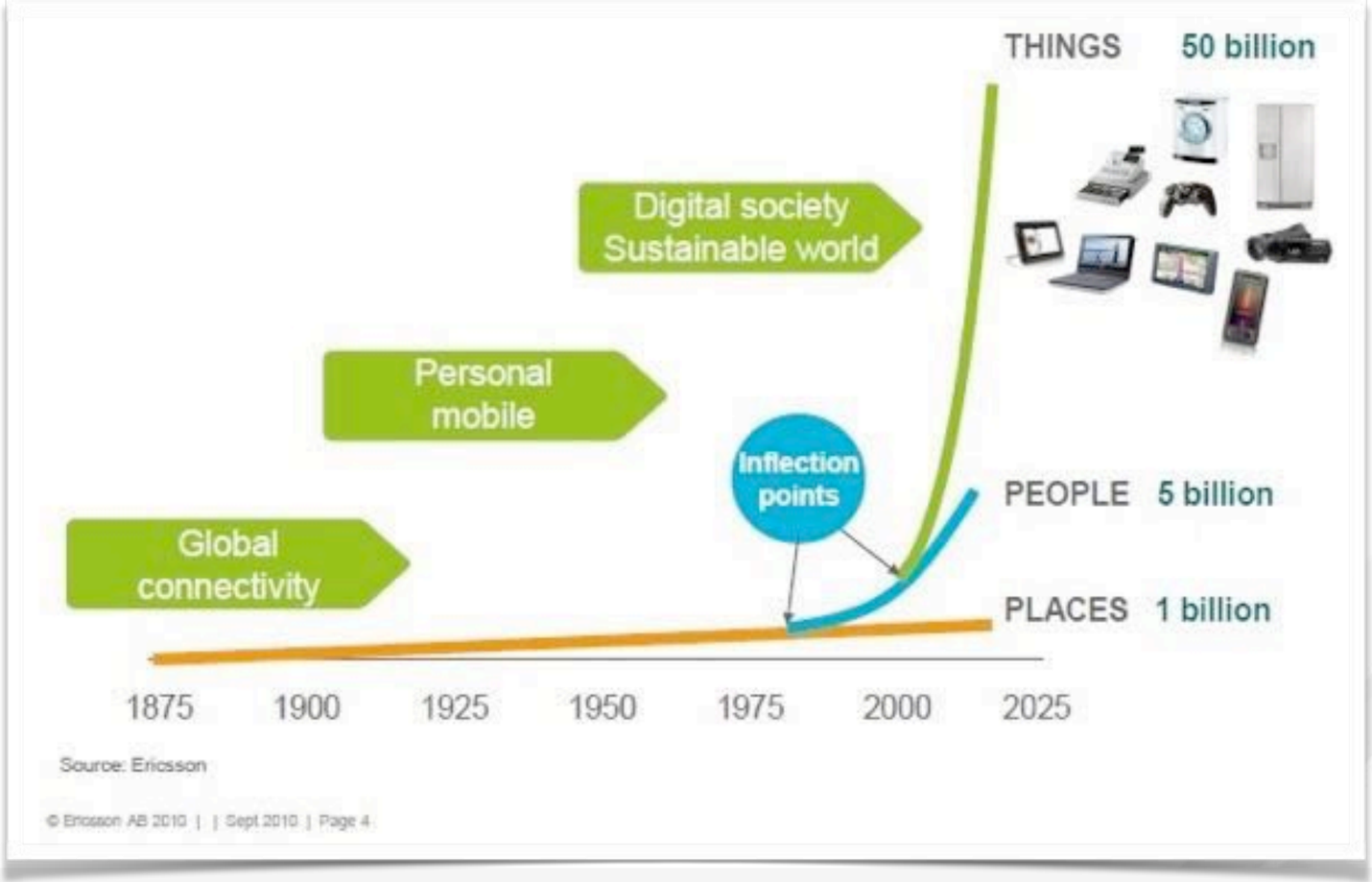
Demonetize

Democratize

New
Breakthroughs

Internet of Things

50B devices by **2020**



M2M communication will be

> 50%

of data traffic by 2030

1 trillion

connected devices
using low bandwidth

Google Confidential and Proprietary

Decoding human intonation *

18 years of research

Over 60,000 subjects world-wide

4 active researches

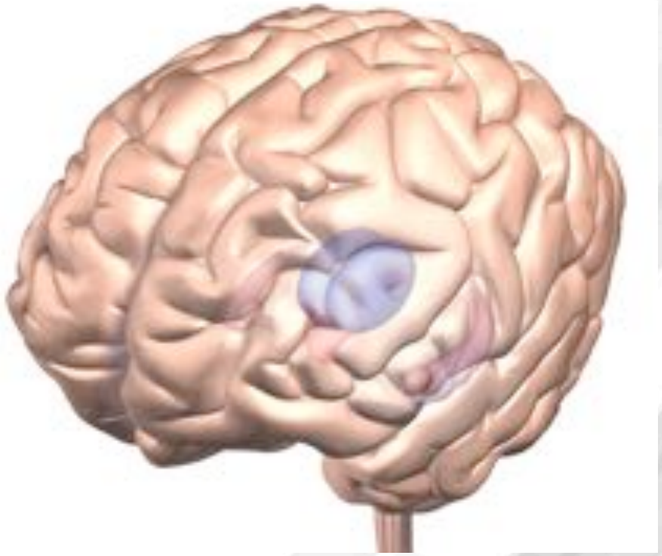
4 approved US patents
(and two more on the way…)

Major awards

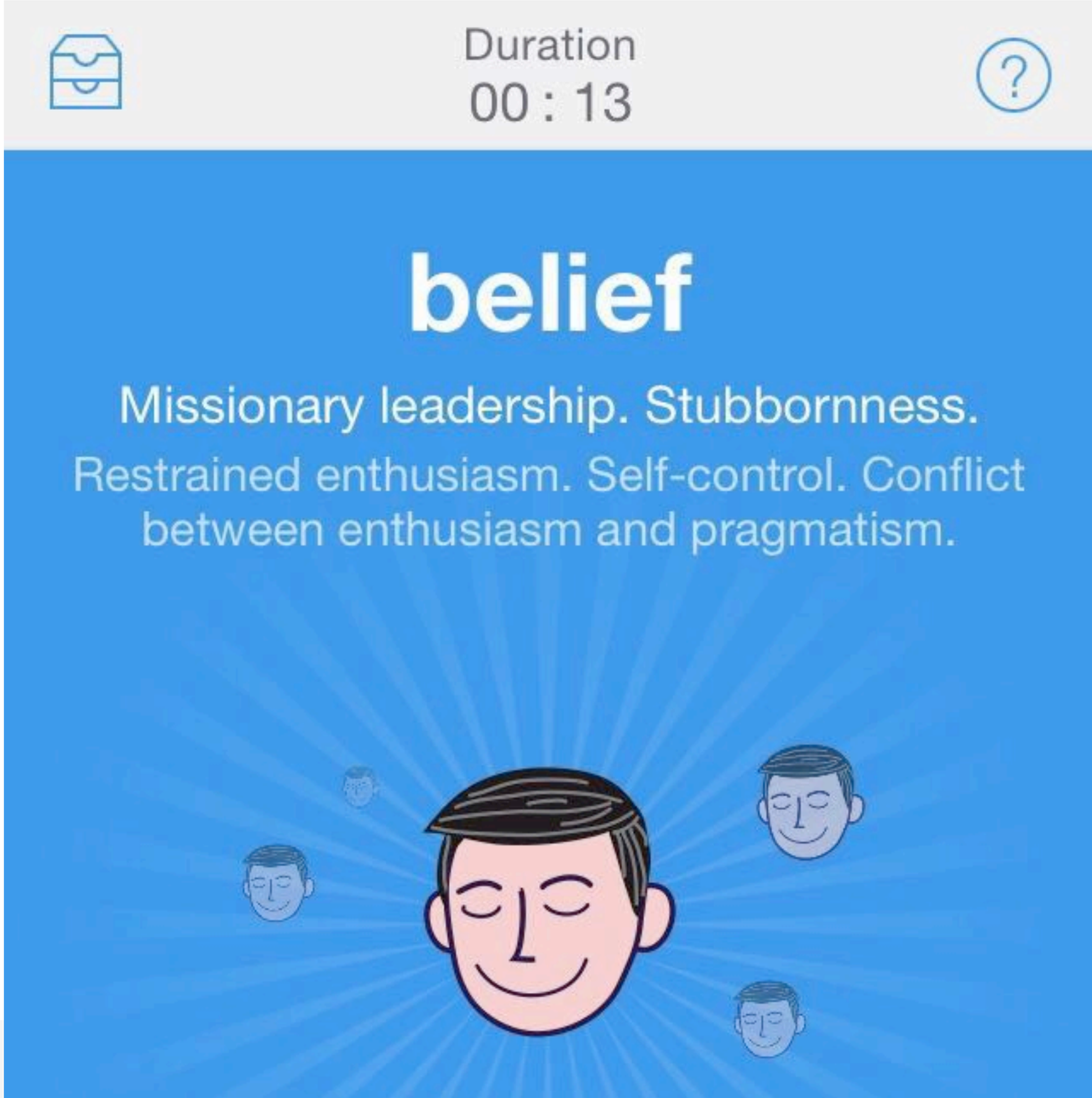
BEYONDVERBAL
THE SCIENCE OF EMOTIONS

Dr. Yoram Levanon
Decision Making, Physics

Dr. Lan Lossos
Neuropsychology

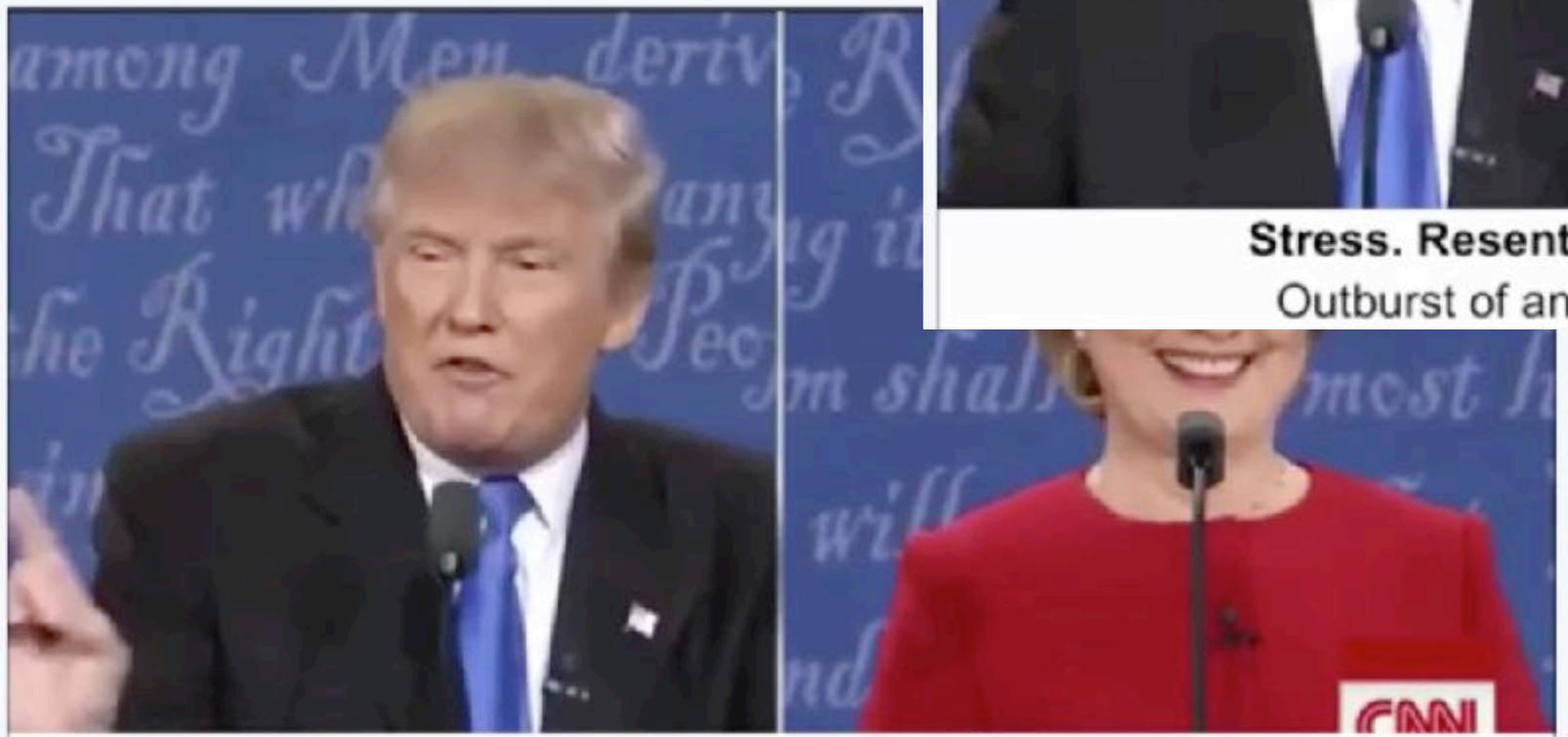


My mood/attitude ExpFin 2015



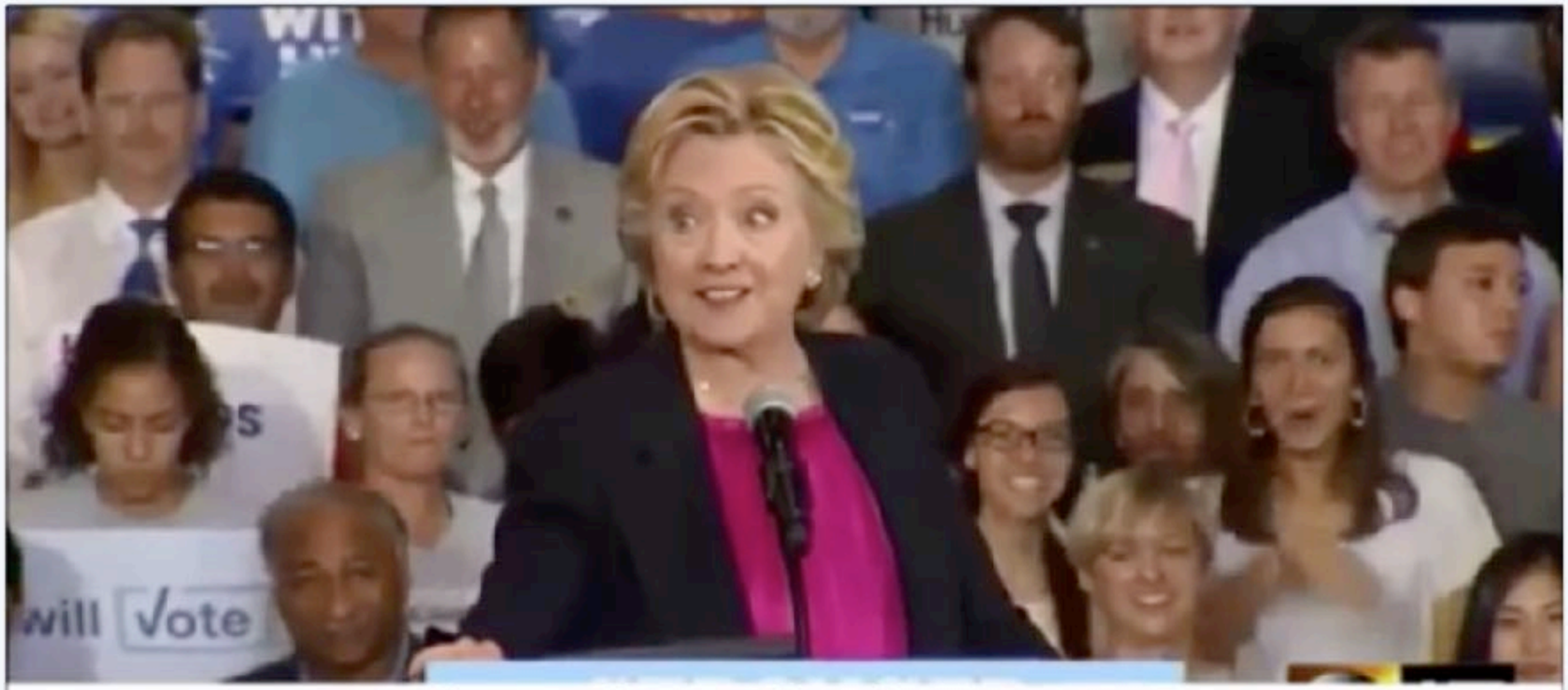
Stress. Resentment. Possibly vengeance.

Outburst of anger, possibly from rejection.



Conservatism and restraint born out of feelings of superiority.

Vain talkativeness. Arrogance.



Sense of control and patronage.

Sarcasm, cynicism, incompatibility between message and true intent.
Possibly pretending.

Information Layers

Digitize

Disrupt

Demonetize

Democratize

New
Breakthroughs

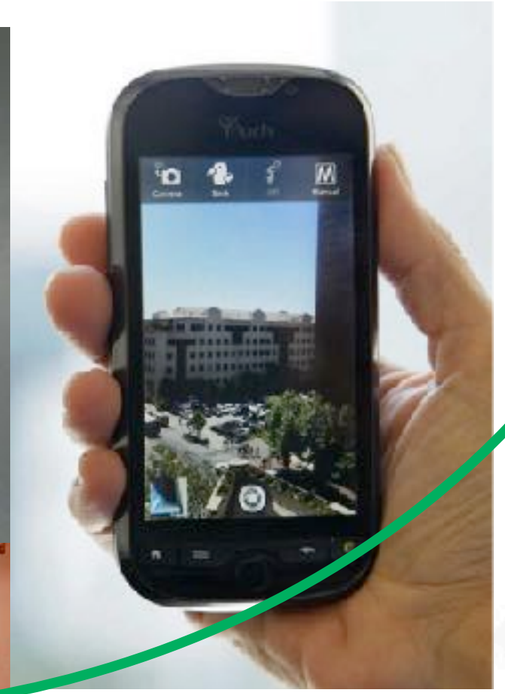
Why information » exponential

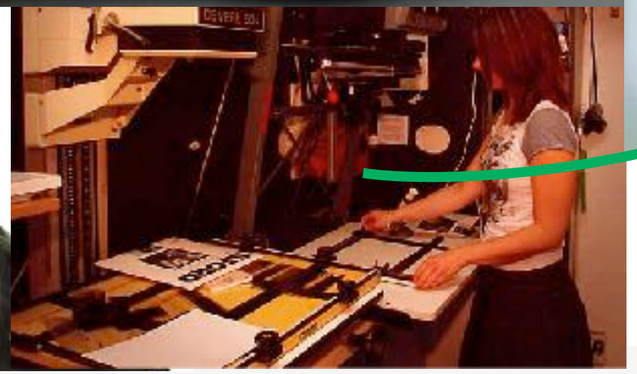
// marginal cost >> zero

// domain explodes

// problem space shifts

>scarcity to abundance



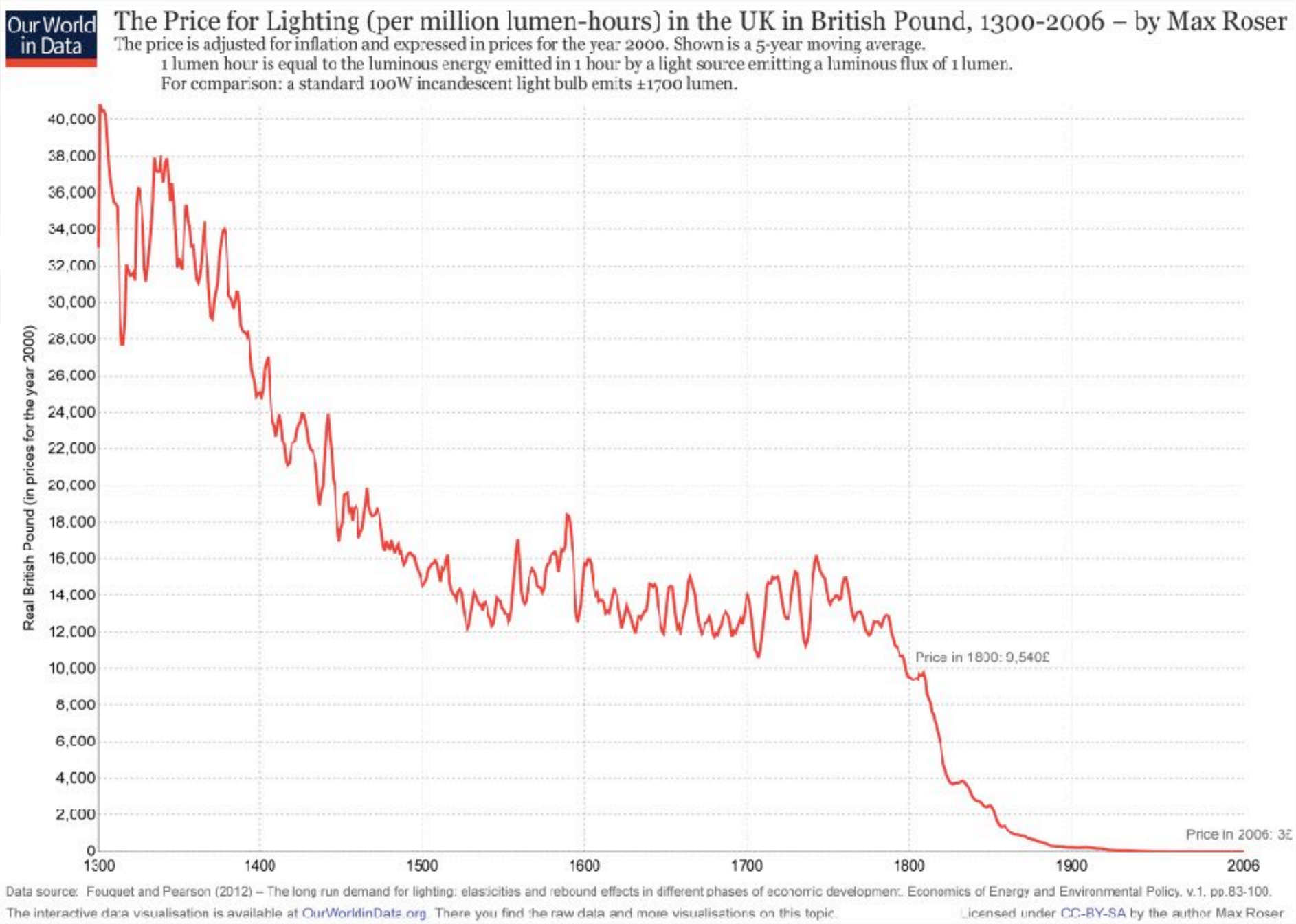


Accelerating Technologies

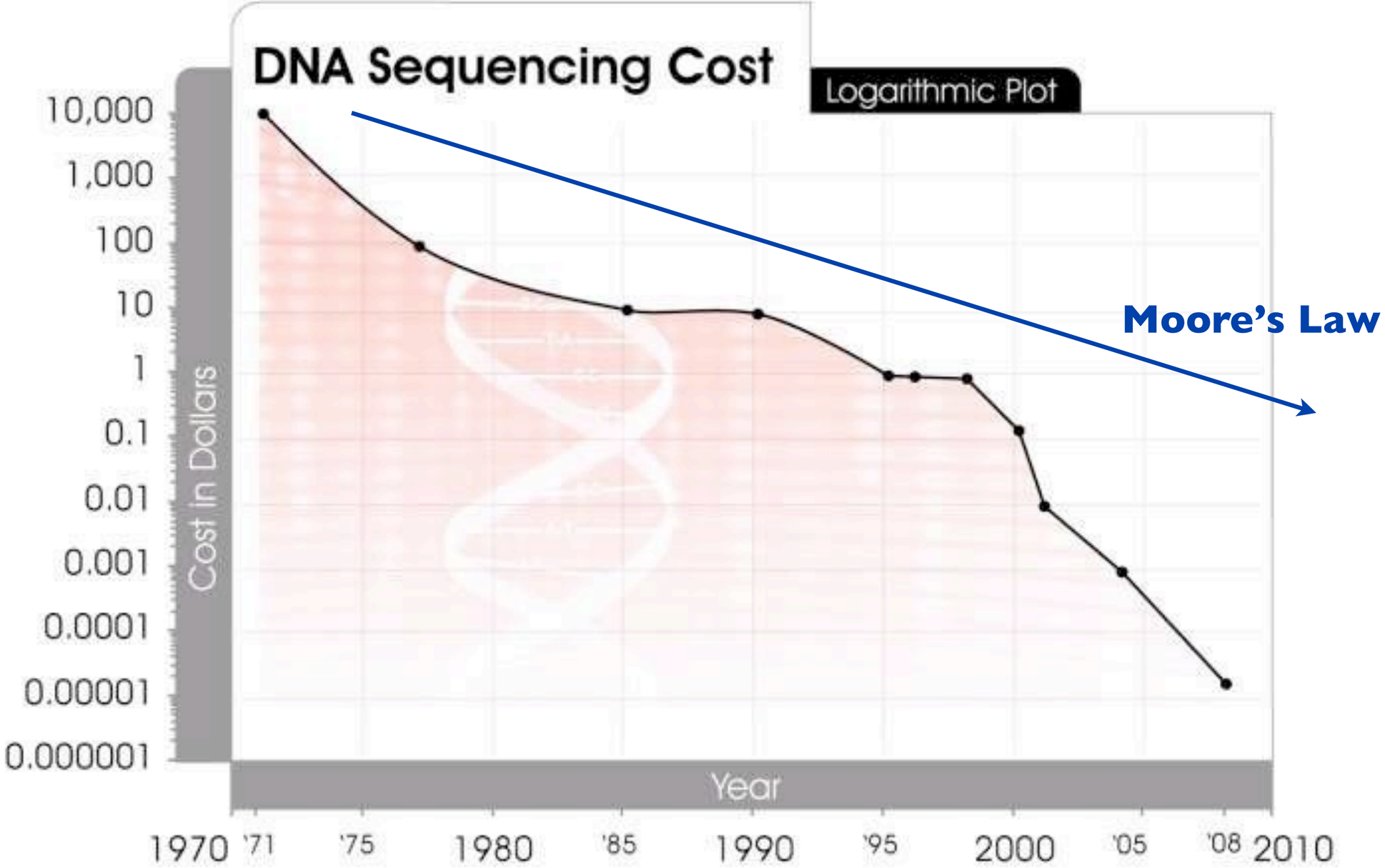
AI
Robotics
Biotech
Nanotech
Medicine
Neuroscience
Energy
Computing

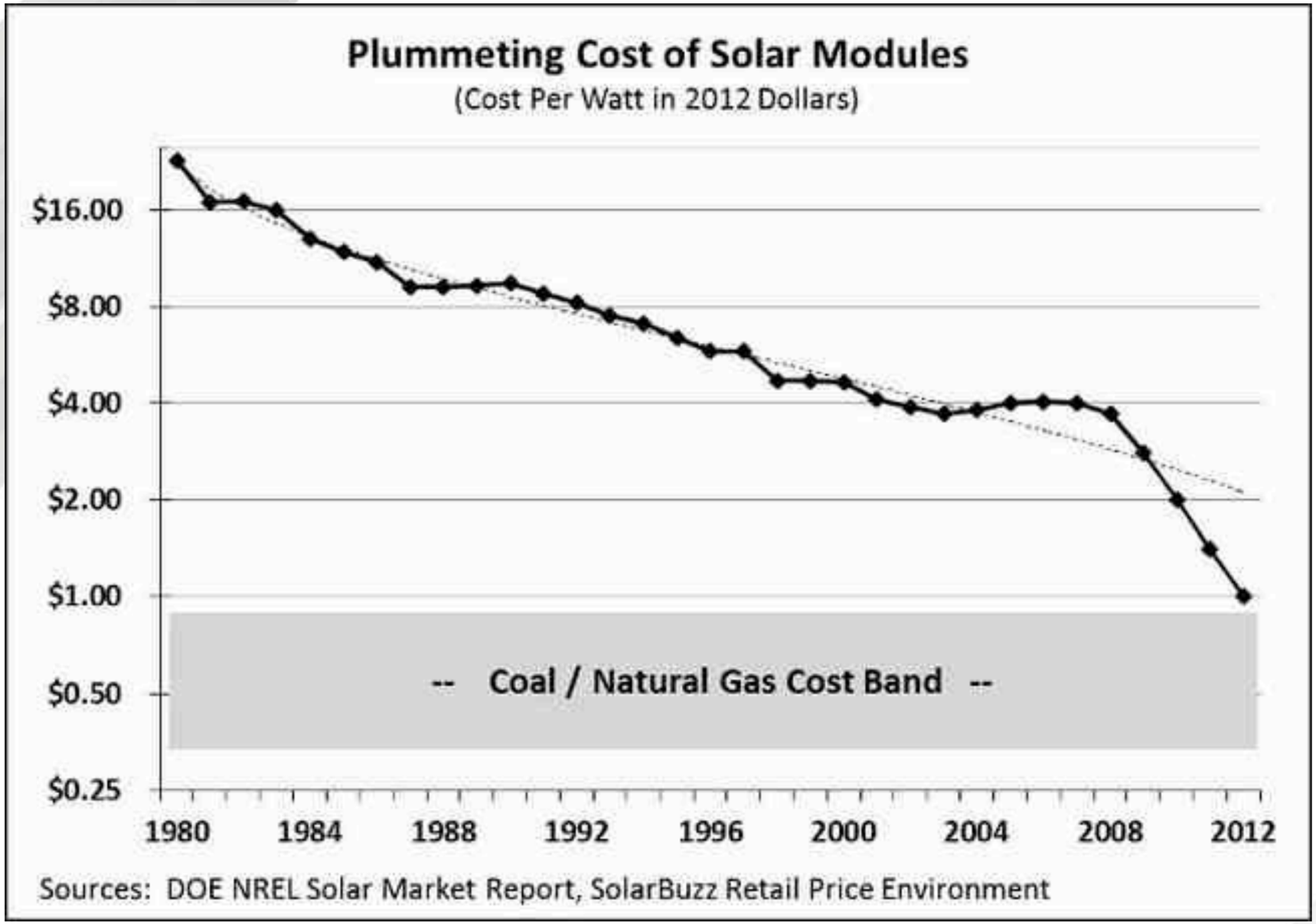
Singularity University

Cost of Light



Reading / Sequencing DNA

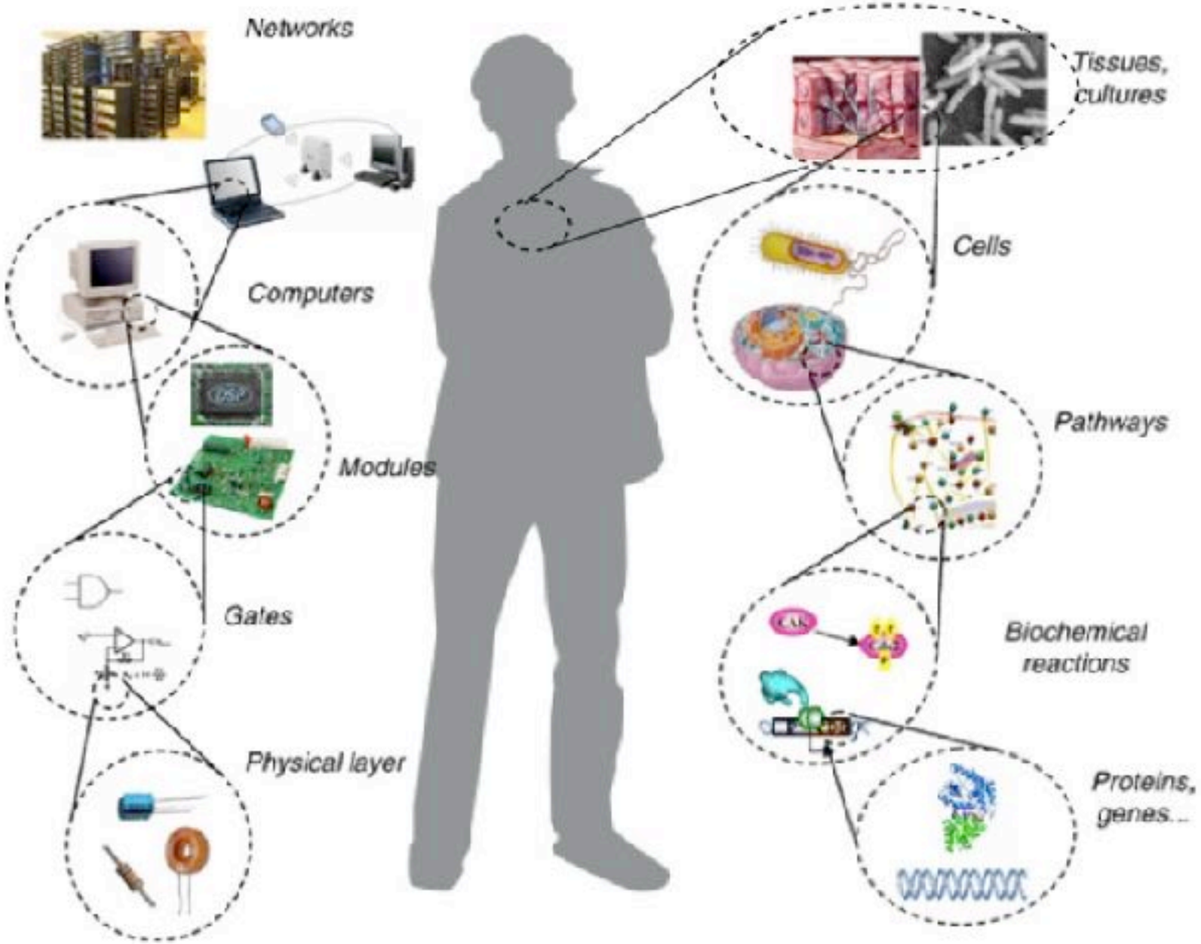



Plummeting Cost of Solar Modules
(Cost Per Watt in 2012 Dollars)
$16.00
$8.00
$4.00
$2.00
$1.00
$0.50
$0.25
-- Coal / Natural Gas Cost Band --
1980
1984
1988
1992
1996
2000
2004
2008
2012
Sources: DOE NREL Solar Market Report, SolarBuzz Retail Price Environment

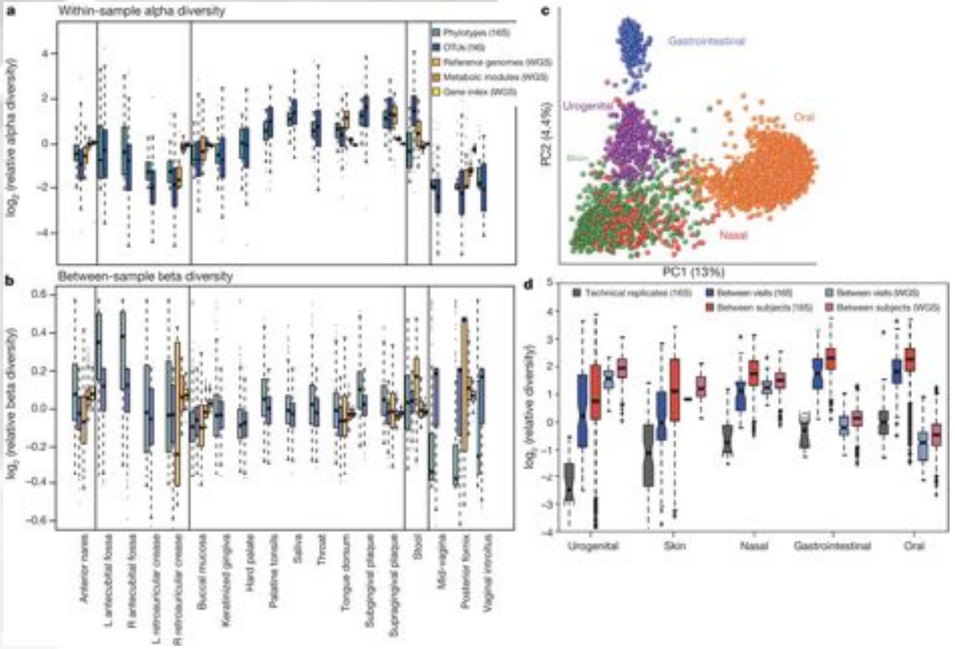
Biotech & Bioinformatics

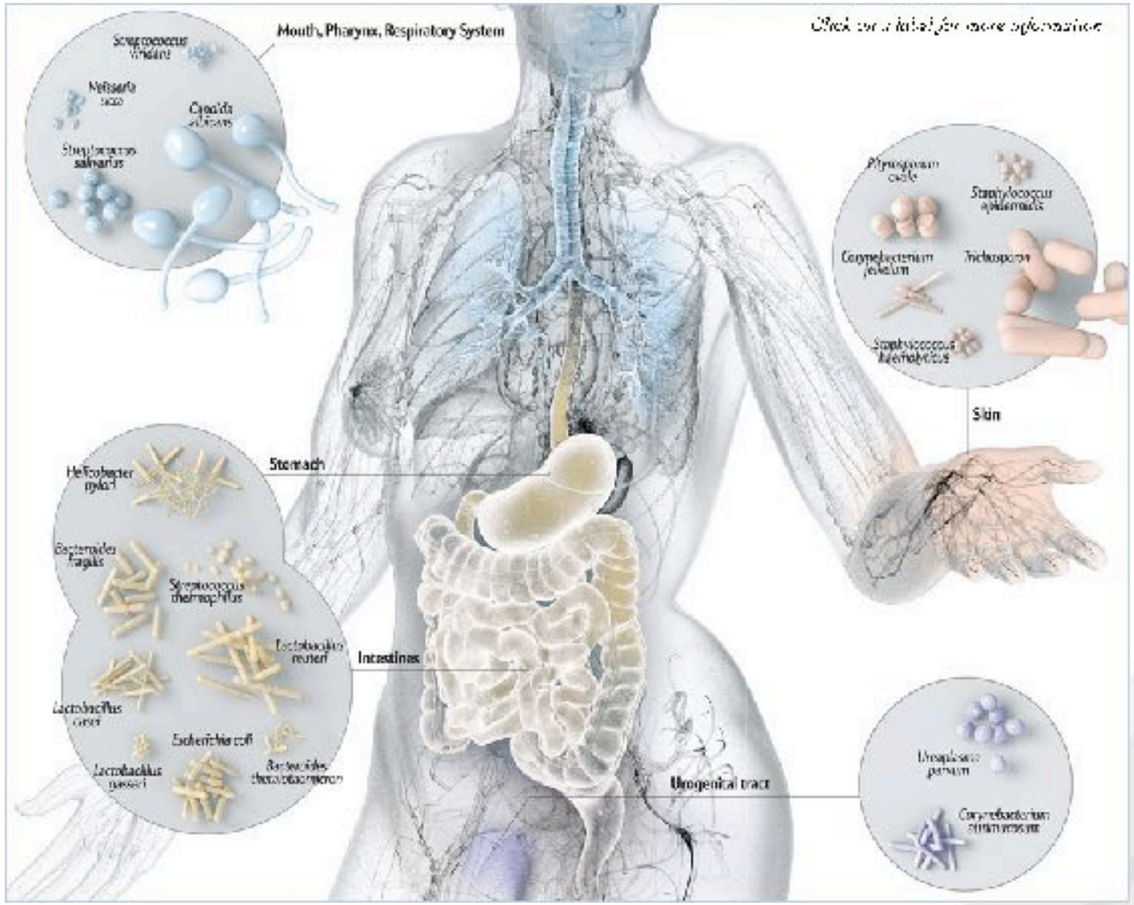
Raymond McCauley

(Biotechnology)
CSO-Genomera;
Founder - BioCurious



Micro Biome





How Gut Bacteria Could One Day Help Stop Diabetes Before It Starts

FROM OUR PARTNERS

SUGGESTED FOR YOU

David Duchovny Dishes On The Upcoming "X-Files" Miniseries

Research Shows Swapping Gut Bacteria Can Reverse Type 2 Diabetes and Other Diseases

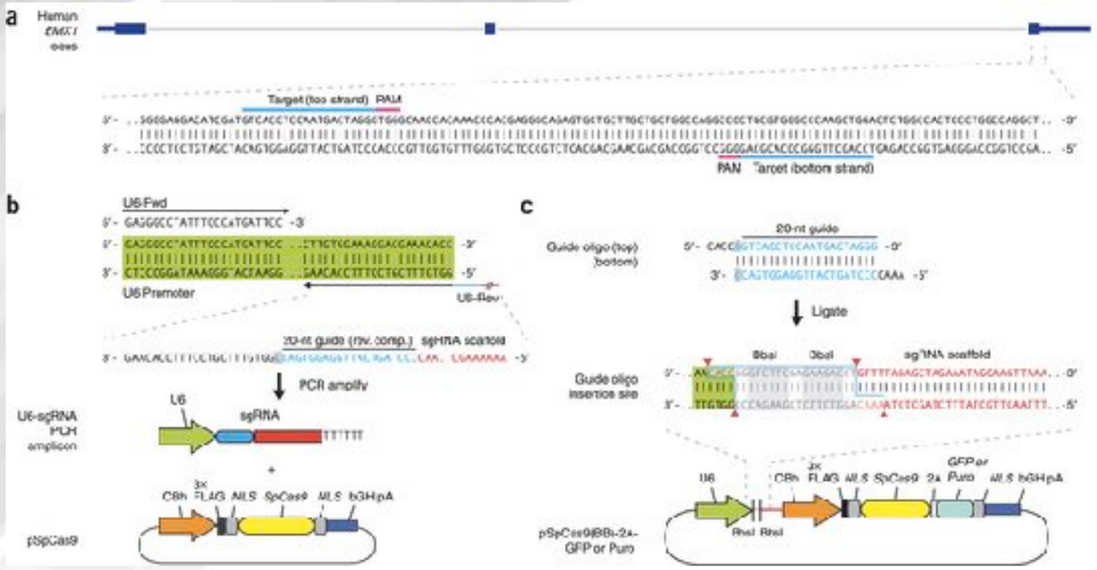
NEW HOT

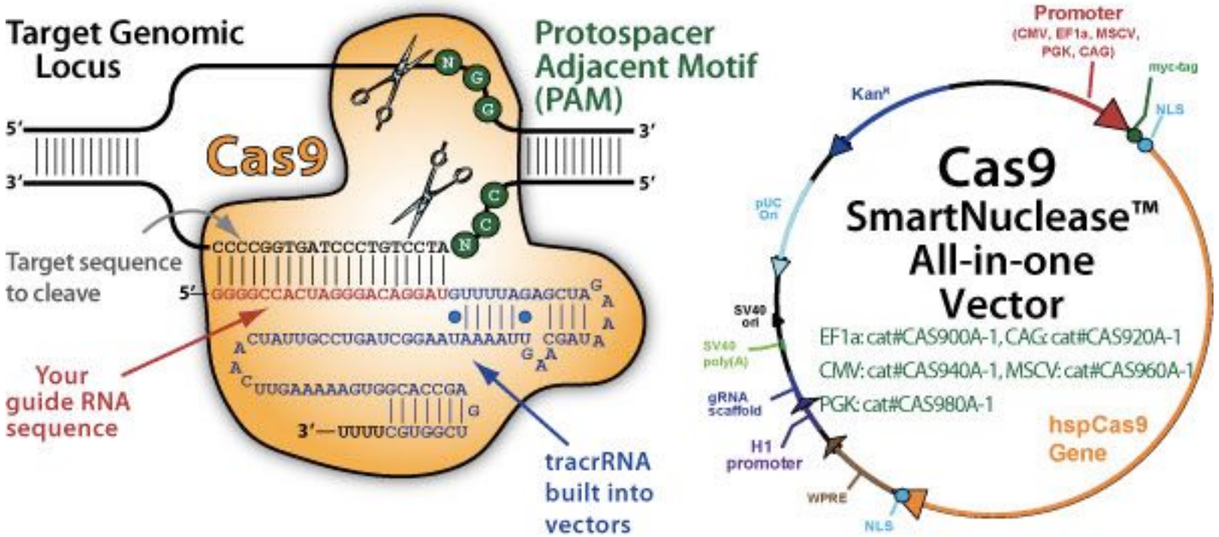
Support Local Food! Please Share...

1374 14 29 0 0

Share Pinterest Tweet Reddit Tumblr

CRISPR / CAS9


a
b
c
U6 Fwd
U6 Promoter
U6 Rev
PCR amplify
U6
sgRNA
U6-sgRNA PCR amplicon
pSpCas9
Guide oligo (top) (bottom)
20-nt guide
Ligate
Guide oligo insertion site
pSpCas9BB-2a-GFP or Puro


Target Genomic Locus
Protospacer Adjacent Motif (PAM)
Cas9
Target sequence to cleave
Your guide RNA sequence
tracrRNA built into vectors
Promoter (CMV, EF1a, MSCV, PGK, CAG)
Kan^R
NLS
Cas9 SmartNuclease™ All-in-one Vector
EF1a: cat#CAS900A-1, CAG: cat#CAS920A-1
CMV: cat#CAS940A-1, MSCV: cat#CAS960A-1
PGK: cat#CAS980A-1
hspCas9 Gene
SV40 ori
gRNA scaffold
H1 promoter
WPRE

Futurism
News
Infographics
Videos
Hard Science
Scientists Just Removed HIV from Human Immune Cells Using CRISPR Gene-Editing

Arctic Apple

Growing Meat

Modern Meadow

Making Leather and Meat Better

Modern Meadow applies the latest advances in tissue engineering to develop novel biomaterials to address some of our most pressing global challenges. We develop cultured leather and meat products which require no animal slaughter and much lower inputs of land, water, energy and chemicals.

IT TAKES **OVER 50 GALLONS** OF WATER TO MAKE **1 BURGER**

Capper et al, 2011

LIVESTOCK TRAVELS MORE THAN **1000 MILES** FROM FARM TO FRIDGE

USDA 2010

IT TAKES OVER **75 SQUARE FEET OF LAND** TO MAKE ONE HAMBURGER

Capper et al, 2011

ONE THIRD OF ALL AVAILABLE LAND GLOBALLY IS USED FOR **LIVESTOCK PRODUCTION**

FAO 2006

BY 2050 **70% MORE MEAT** WILL BE REQUIRED TO FEED THE WORLD

FAO 2009

THE AVERAGE AMERICAN EATS OVER **270 LBS OF MEAT** EVERY YEAR

FAO 2010

MORE ENERGY IS REQUIRED TO MAKE ONE BURGER THAN TO FULLY POWER **7 IPADS**

Capper et al, 2011

Modern Meadow

Accelerating Technologies

AI
Robotics
Biotech
Nanotech
Medicine
Neuroscience
Energy
Computing

Singularity University

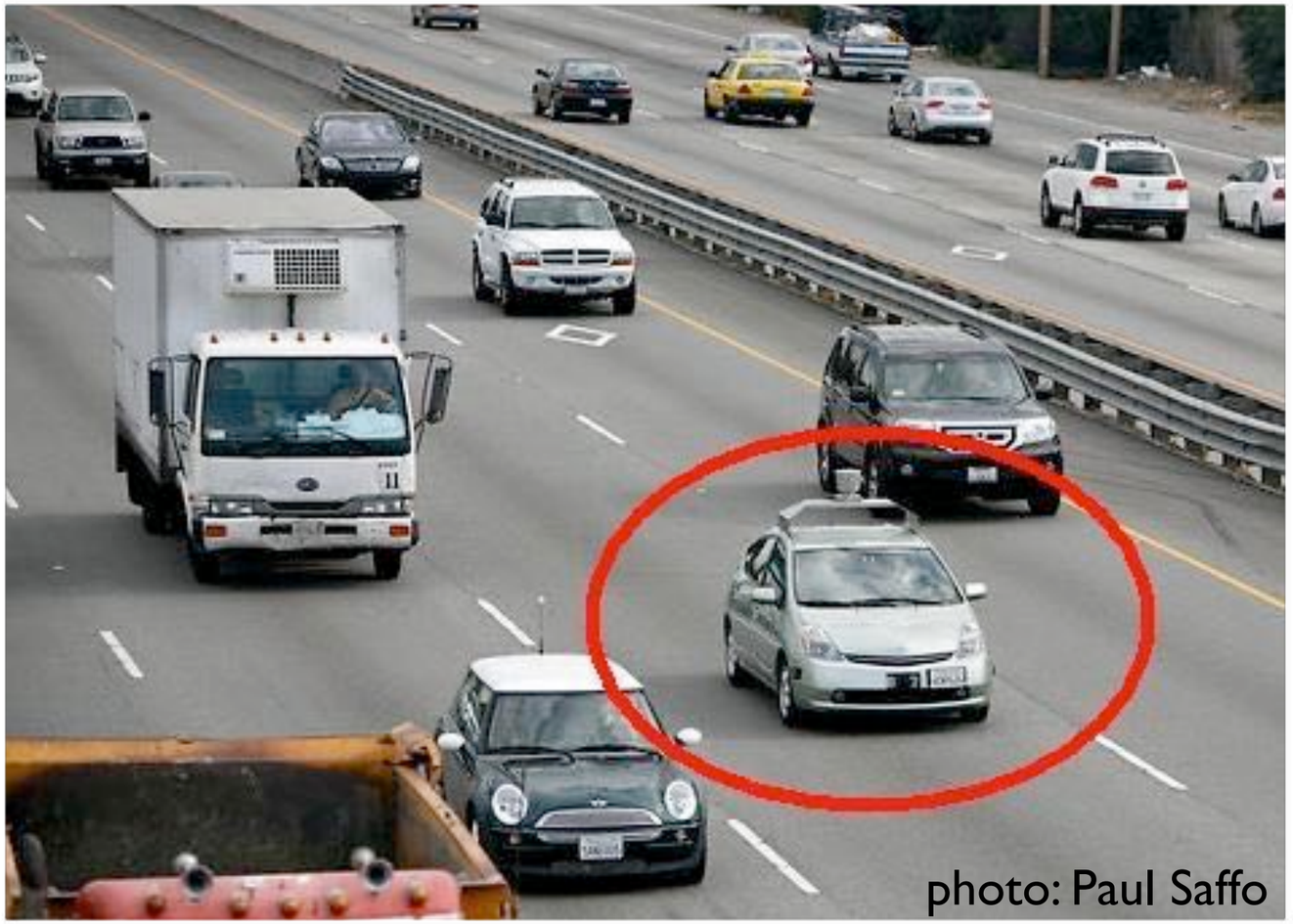
Proximity Shift

10-15x increase in capacity of roads

real estate values

Uber or drones = delivery vehicles

proximity less relevant



Vox WEDNESDAY, MAY 6, 2015

This is the first licensed self-driving truck. There will be many more.

Updated by Joseph Stromberg on May 6, 2015, 11:23 a.m. ET @josephstromberg joseph@vox.com

TWEET (257) SHARE

FORTUNE

NEWS POPULAR VIDEOS FORTUNE 500

Volvo CEO: We will accept all liability when our cars are in autonomous mode

Amazon is sunsetting its Square competitor

The head-scratching reason there's no mental health apps

Behind the scenes at Lucasfilm's

AUTOS AUTONOMOUS VEHICLES

Volvo CEO: We will ac liability when our cars autonomous mode

by Kirsten Korosec @kirstenkorosec OCTOBER 7, 2015, 3:34 PM EDT

THE VERGE

TRENDING NOW

The glorious Galaxy Note 7 is what happens when a company isn't afraid to go crazy

40 NEW ARTICLES

LOG IN | SIGN UP LONGFORM REVIEWS VIDEO TECH CIRCUIT BREAKER SCIENCE ENTERTAINMENT CARS TL;DR FORUMS

PREVIOUS STORY

Dreaming of a next-gen Nintendo console with modular controllers

NEXT STORY

SoundStage is an amazing VR music studio for the HTC Vive

TRANSPORTATION CARS UBER

32 COMMENTS

Uber's self-driving cars will pick up their first customers this month

A pilot program will assign the cars to random customers in Pittsburgh

By James Vincent on August 18, 2016 07:30 am @jjvincent

(Uber via Bloomberg)

Share on Facebook Tweet Share (280) Pin (1)

THE LATEST HEADLINES

Judge rejects Uber's $100 million settlement with drivers

Volvo and Uber ink deal to develop 'base vehicles' for autonomous cars

Nintendo says Pokémon Go is driving 3DS Pokémon game sales

This speaker pillow is 'powerful, expressive, and bold,' not 'versatile, outlandish, or impatient'

This woman is leaving adorable crocheted pokémon at pokéstops

$10 million

QUALCOMM TRICORDER XPRIZE

Artificial Intelligence Physician

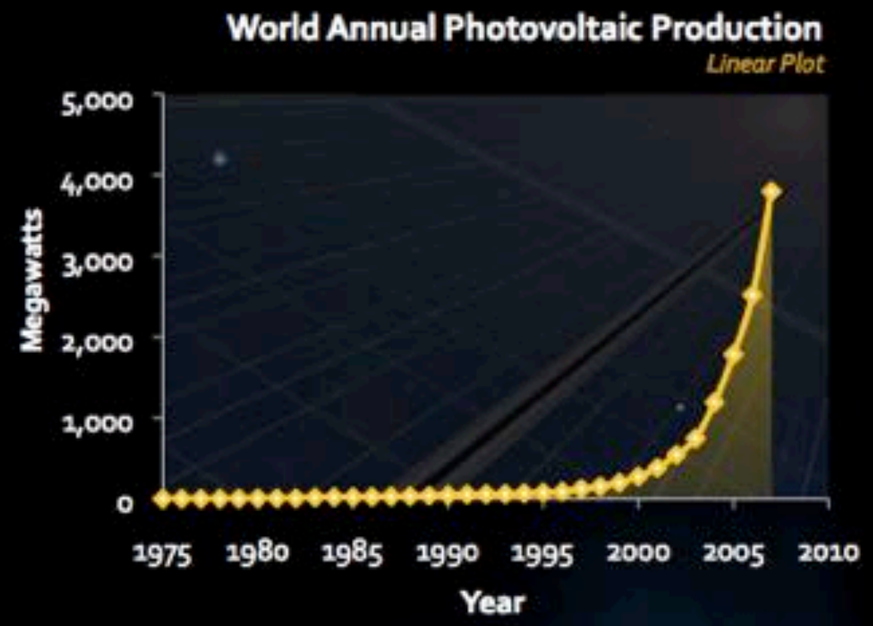
$\geq$

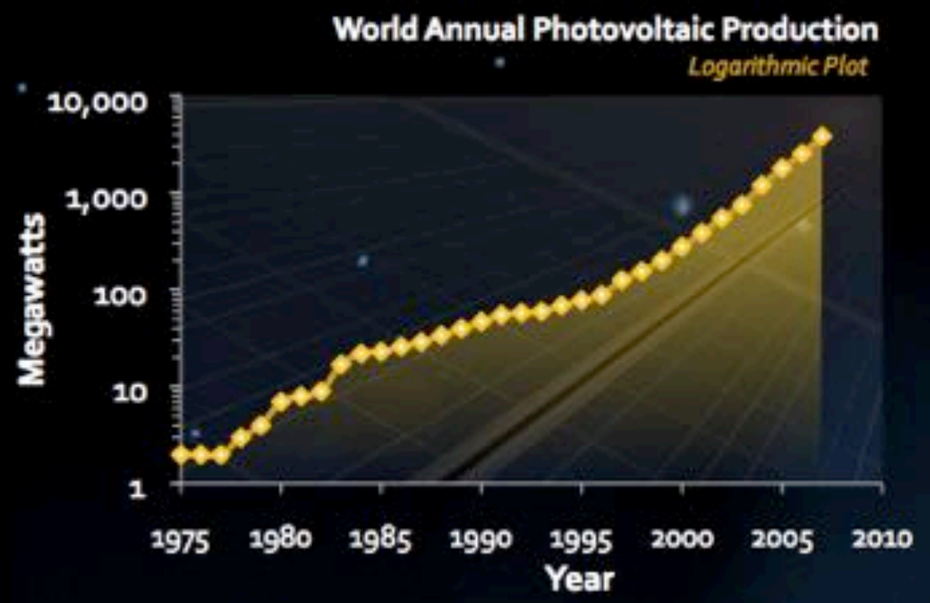
Scanadu

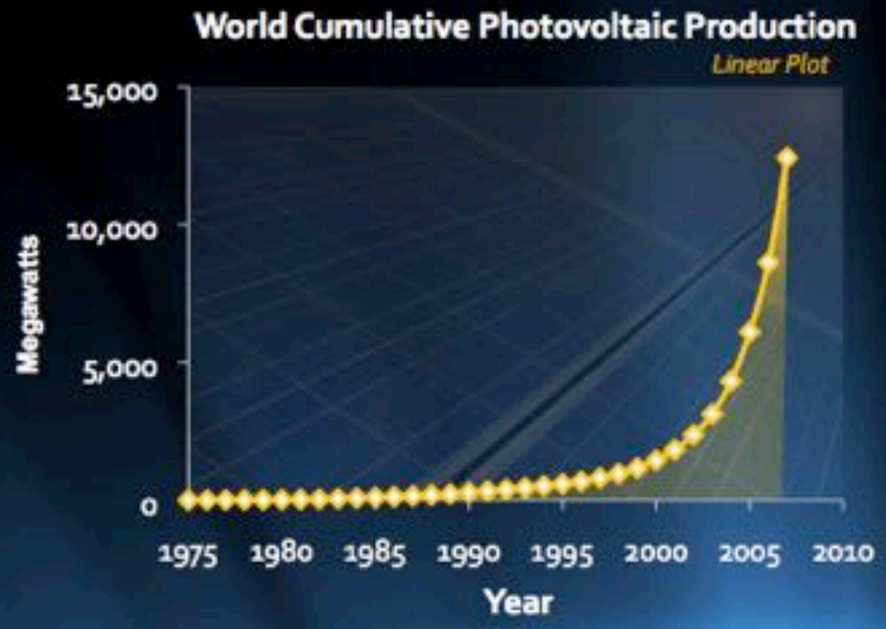
© 2012 CBS Interactive

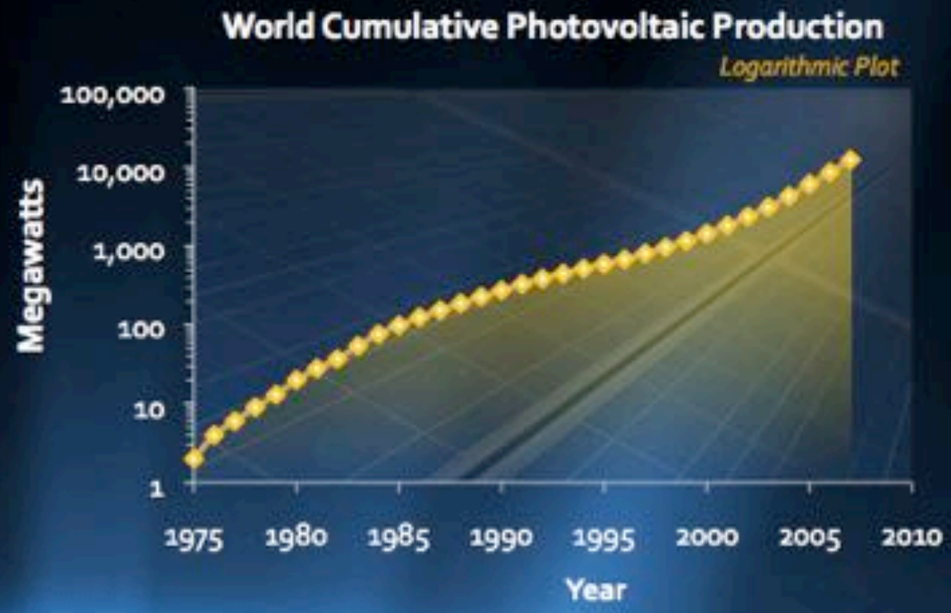
PWR
DATA
GEO
MET
BIO
COM TRANSMISSION
ACRT POOL
INTRSHP TRICRDR
EMRG
IMAGE RECORD
FWD INPUT
RVS ERASE
ID
TR-580 TRICORDER
STARFLEET RCD

Solar


World Annual Photovoltaic Production
Linear Plot
Megawatts
5,000
4,000
3,000
2,000
1,000
0
1975 1980 1985 1990 1995 2000 2005 2010
Year


World Annual Photovoltaic Production
Logarithmic Plot
Megawatts
10,000
1,000
100
10
1
1975 1980 1985 1990 1995 2000 2005 2010
Year

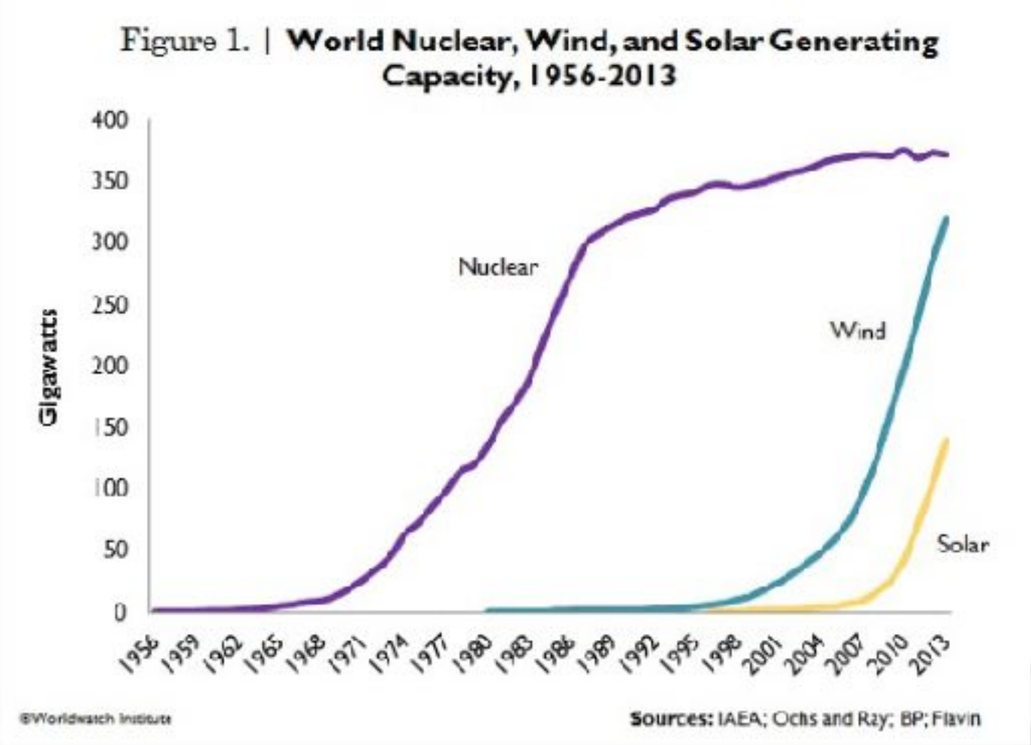

World Cumulative Photovoltaic Production
Linear Plot
Megawatts
15,000
10,000
5,000
0
1975 1980 1985 1990 1995 2000 2005 2010
Year


World Cumulative Photovoltaic Production
Logarithmic Plot
Megawatts
100,000
10,000
1,000
100
10
1
1975 1980 1985 1990 1995 2000 2005 2010
Year

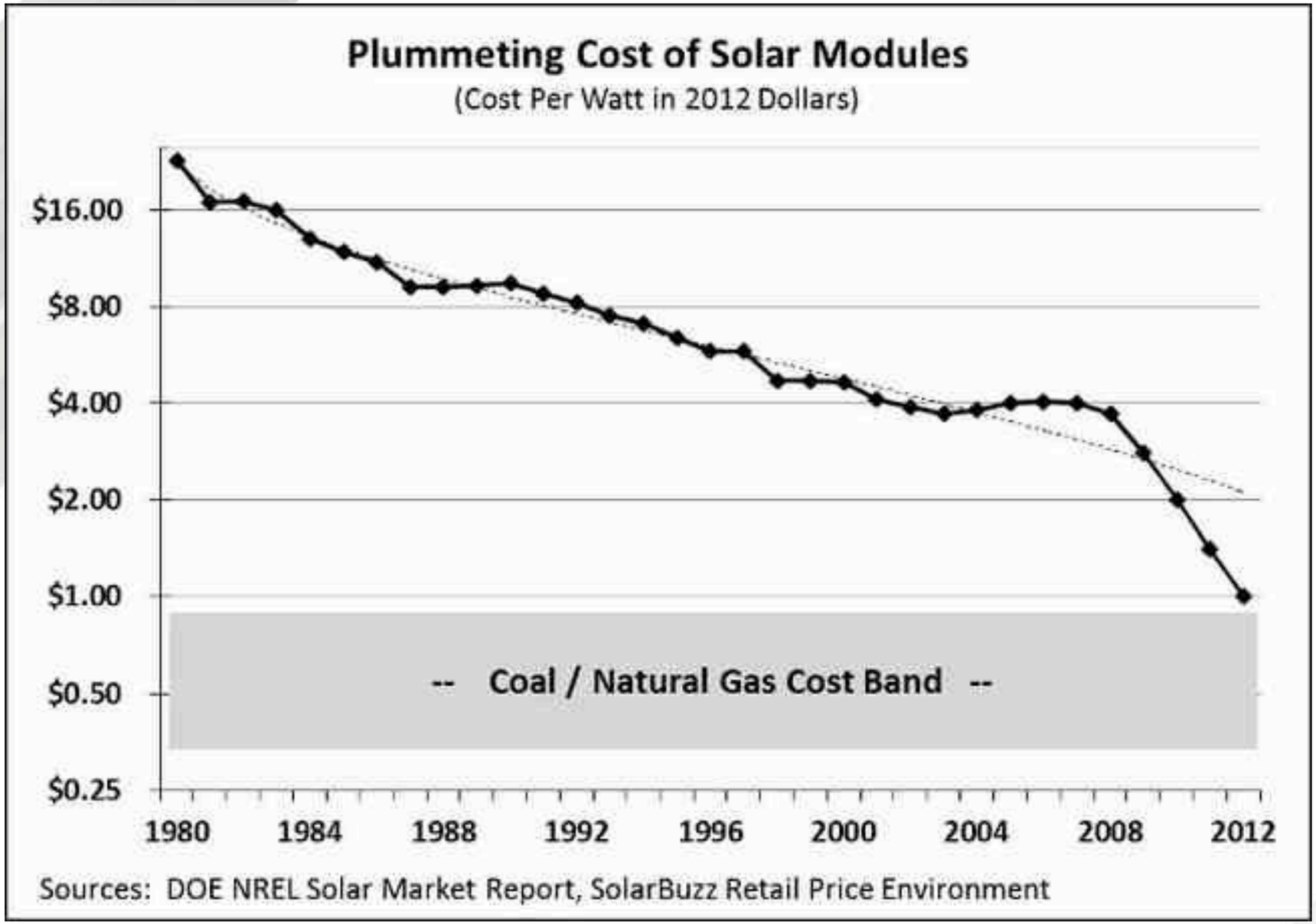
Relative cost of solar…

	1970-2013	1970-2020
Petroleum	5355x	16065x
Nuclear	1540x	4620x
Natural Gas	2275x	6825x
Coal	900x	2700x

Source: Tony Seba

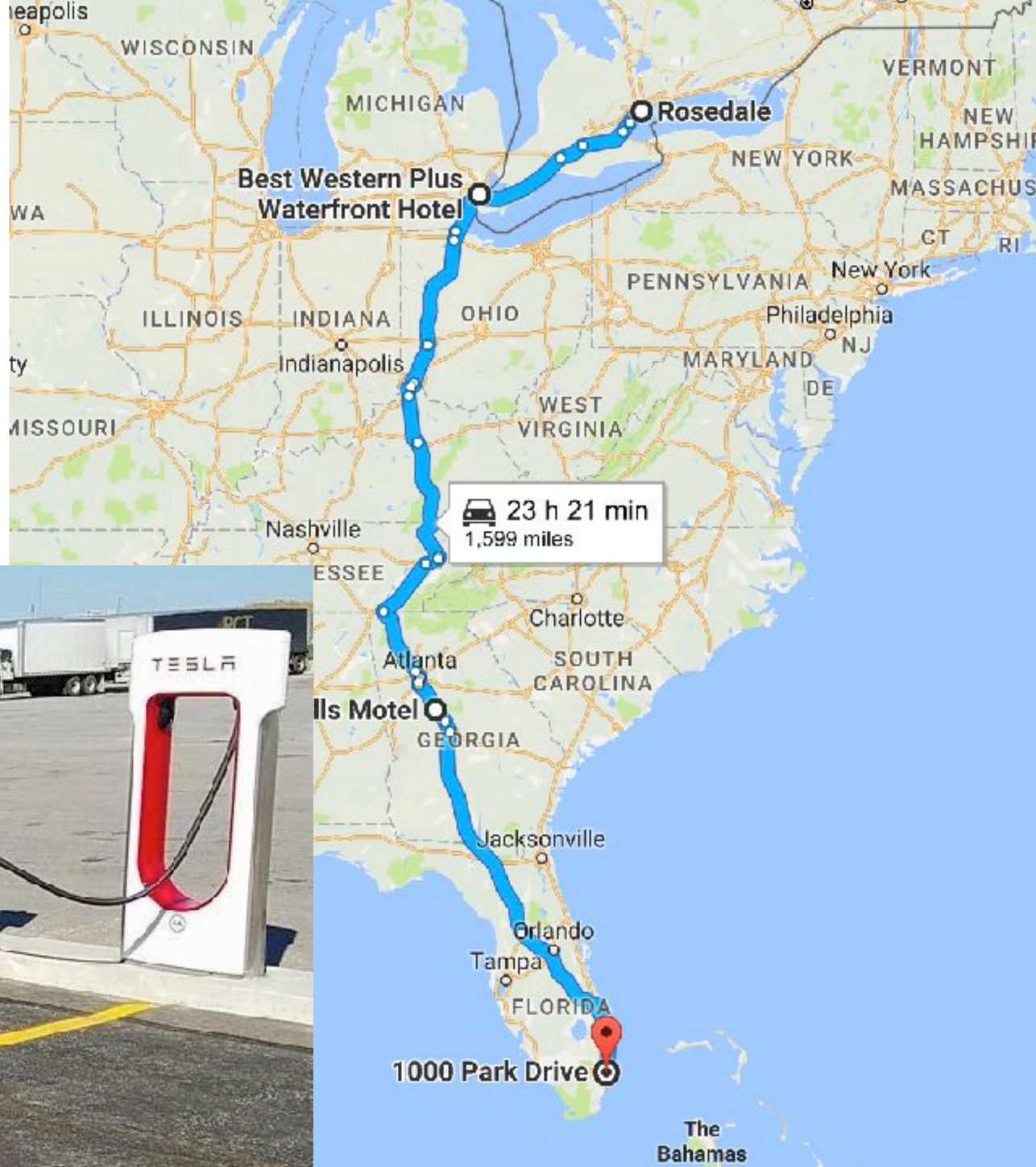


2016 == U.S. Grid


Plummeting Cost of Solar Modules
(Cost Per Watt in 2012 Dollars)
$16.00
$8.00
$4.00
$2.00
$1.00
$0.50
$0.25
-- Coal / Natural Gas Cost Band --
1980
1984
1988
1992
1996
2000
2004
2008
2012
Sources: DOE NREL Solar Market Report, SolarBuzz Retail Price Environment

Road Trip

Solar + sensors + robotics + mobile + batteries



Information Layers

Digitize

Disrupt

Demonetize

Democratize

New
Breakthroughs

Recent News

The Economist
Europe loses the mobile-phone war
Africa's new wealth
Japan's tea party
How to switch off the internet
The shoe-thrower's index
Print me a Stradivarius
The manufacturing technology that will change the world

The New York Times Magazine
WHO IS Watson?*
$5,300
$6,500
$13,400
ROBERT
erica
WATSON

IDEAS TECHNOLOGY DESIGN BUSINESS
WIRED
UK EDITION
SECRET STASHES
HACKED CARS BUILT FOR GANGSTERS
Plus MOVIES VS COMMON SENSE
FOLLOW THE MONEY
HOW ANGELLIST IS OPENING UP INVESTMENT
LIVE FOREVER!
AND SAVE THE WORLD
RAY KURZWEIL'S NEW SINGULARITY UNIVERSITY WILL CHANGE HOW YOU THINK

Society is not ready..

LIFE
Local & linear

LIFE
Exponential & global

The Bill of Rights

Ratified December 15, 1791

Article I

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.

Article II

A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed.

Article III

No Soldier shall, in time of peace be quartered in any house, without the consent of the Owner, nor in time of war, but in a manner to be prescribed by law.

Article IV

~~The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.~~

Article V

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; nor shall be compelled in any Criminal Case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.

Article VI

In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining Witnesses in his favor, and to have the Assistance of Counsel for his defence.

Article VII

In Suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved, and no fact tried by a jury shall be otherwise reexamined in any Court of the United States, than according to the rules of the common law.

Article VIII

Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishment inflicted.

Article IX

The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.

Article X

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

Regulatory Frameworks

// Privacy (cloud)

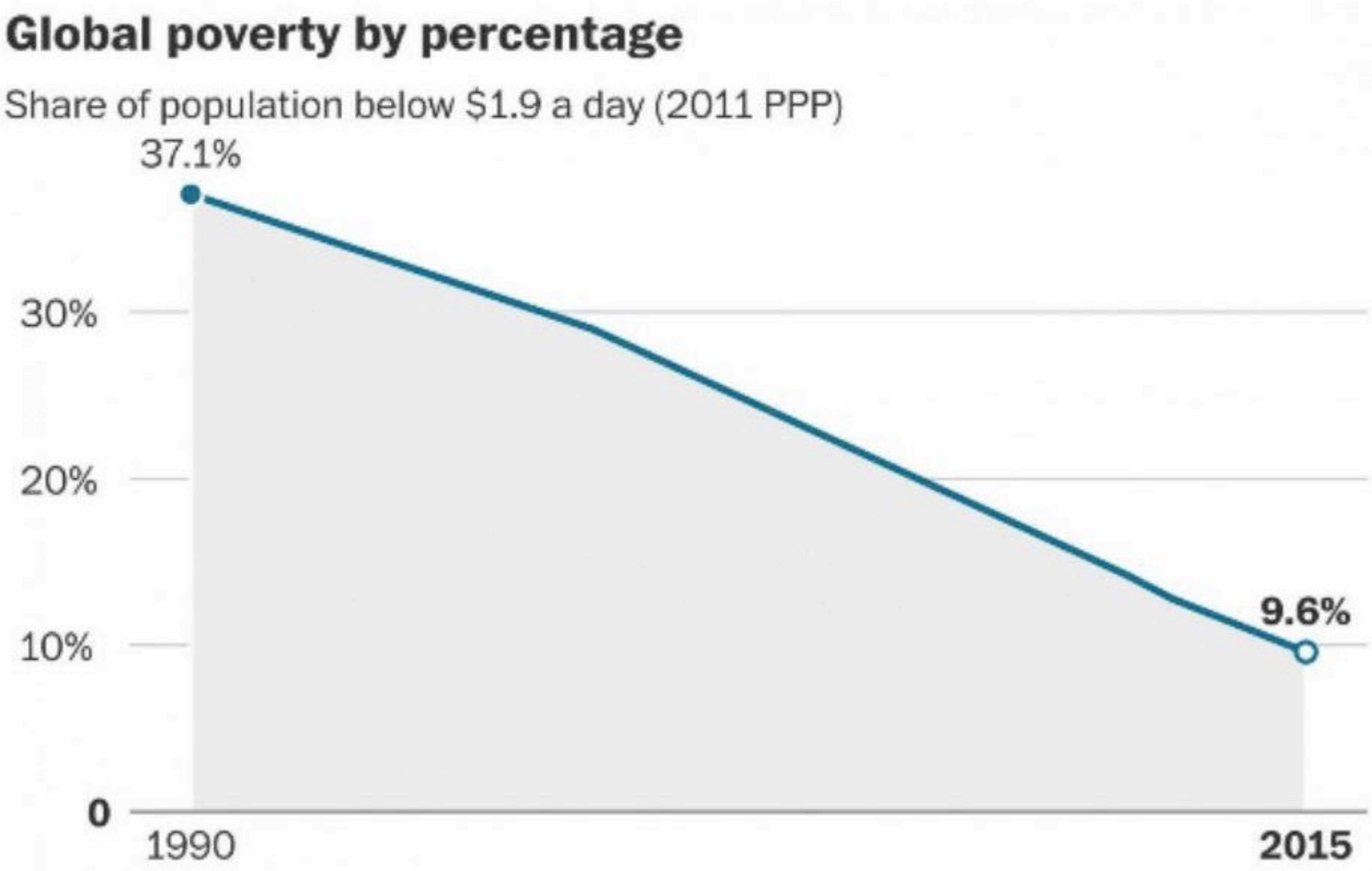
// Identity

// Anonymity

// Surveillance

- Retrospective
- Prospective

Global Poverty



Source: The World Bank

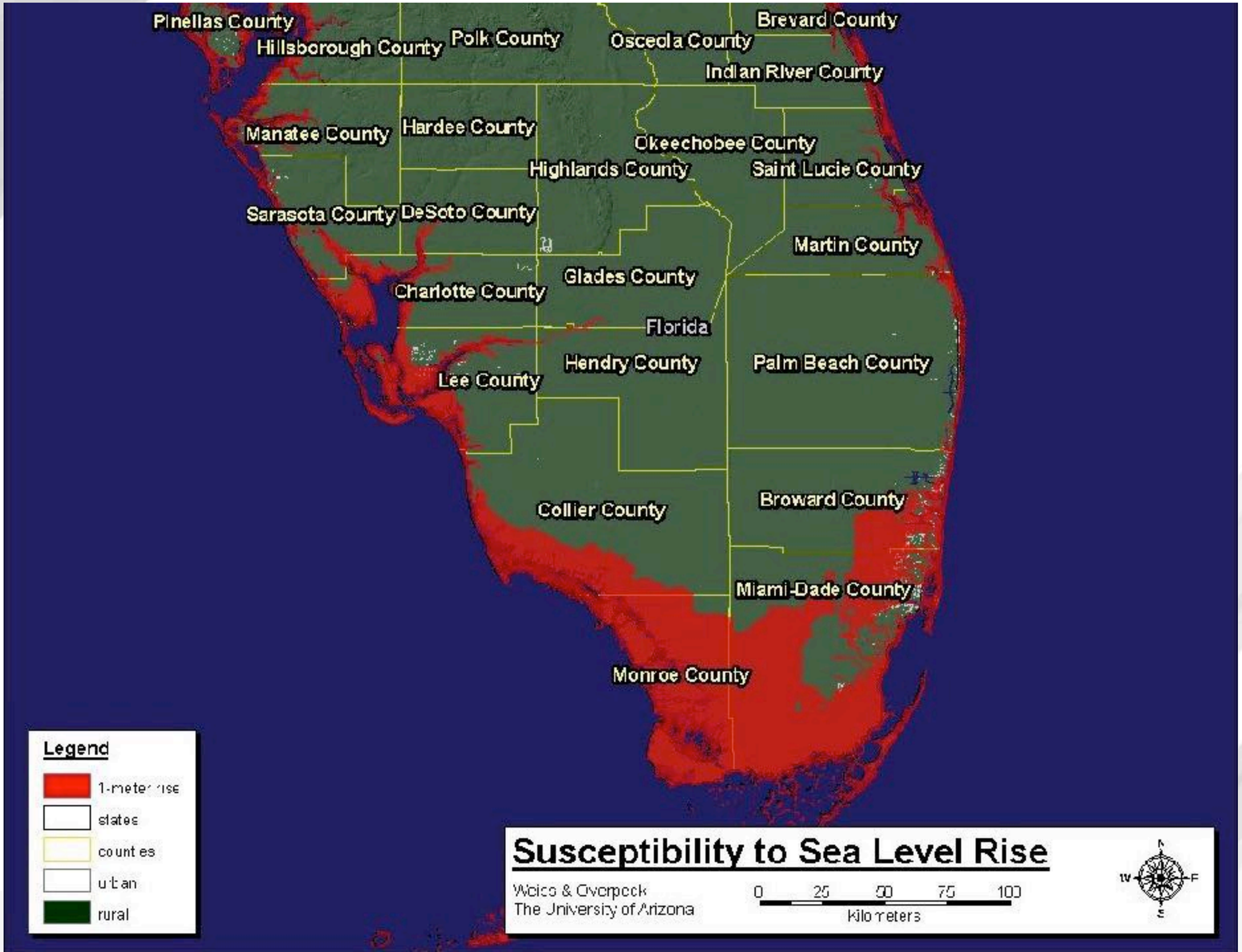
50 Jobs / 25 Industries Disrupted - Thomas Frey

1. Taxi drivers
2. Uber & Lyft drivers
3. Delivery (FedEx, UPS, USPS) jobs
4. Courier jobs
5. Bus drivers
6. Truck drivers
7. Valet jobs
8. Chauffeurs and limo drivers
9. Road construction flag people
10. Drivers-Ed teachers
11. Traffic reporters
12. Traffic analysts
13. Car licensing and registration
14. Drivers test people
15. Rental car agents
16. Crash testers
17. Forklift drivers
18. Lawn mower operators
19. Snowplow operators
20. Water truck drivers
21. Water taxies
22. Ambulance drivers
23. Trash truck drivers
24. Tractor drivers
25. Combine operators
26. Auto industry lobbyists
27. Sprayer operators
28. Horse trailer drivers
29. Grain truck operators
30. Automated fruit harvester operators
31. Crane operators
32. Road grader operators
33. Earth movers
34. Street sweeper operators
35. Cement truck operators
36. Fuel truck operators
37. Auto sales – new and used
38. Account managers
39. Auto auctions
40. Credit managers
41. Loan underwriters
42. Insurance agents and sales reps
43. Insurance claims adjusters
44. Insurance call center agents
45. Traffic reporters on the news
46. Sobriety checkpoint people
47. Pothole repair people
48. Emission testers
49. Road and parking lot stripers
50. Night repair crews

1. Roadside assistance
2. Auto repair shops
3. Body shops
4. Tow trucks
5. Glass repair
6. Auto locksmiths
7. Transmission repair shops
8. Auto part stores
9. Gas stations
10. Car washes
11. Oil change businesses
12. Detail shops
13. Tire shops
14. Brake shops
15. Emissions testing
16. Alignment shops
17. Driving tests
18. Road rage school
19. Parking garages
20. Valet services
21. Traffic cops
22. Traffic courts – lawyers, DA, judges
23. Driver licenses
24. Patrol cars and officers
25. DUIs and drunk driving checkpoints

http://www.futuristspeaker.com/job-opportunities/128-things-that-will-disappear-in-the-driverless-car-era/

SOUTH FLORIDA AFTER 1 METER



Information Layers

Digitize

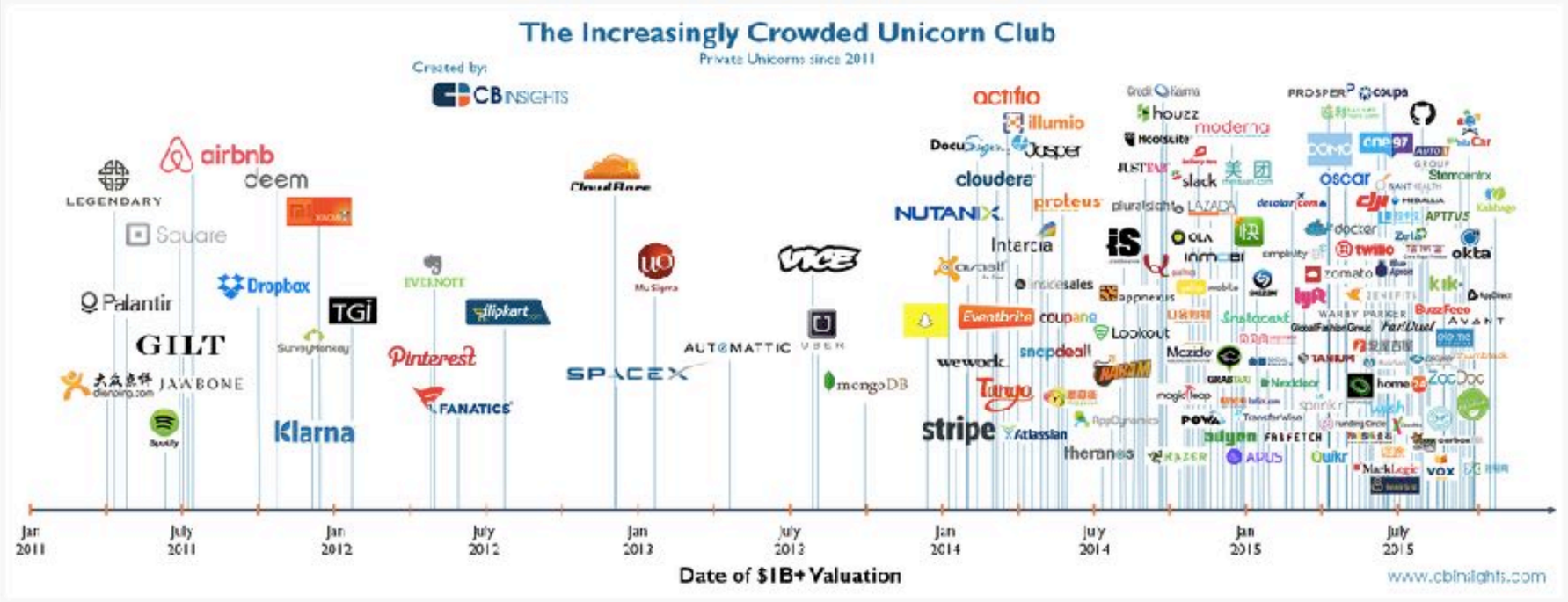
Disrupt

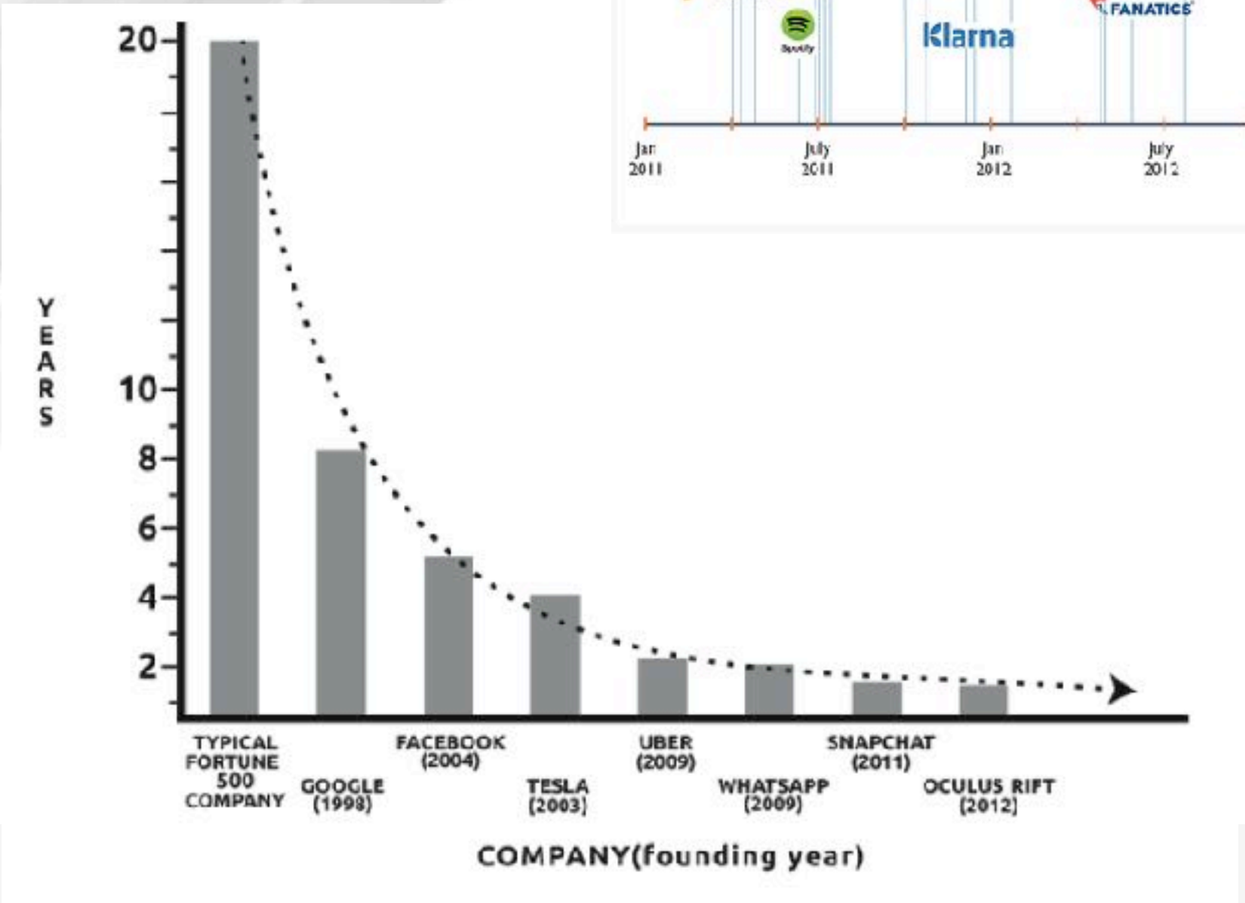
Demonetize

Democratize

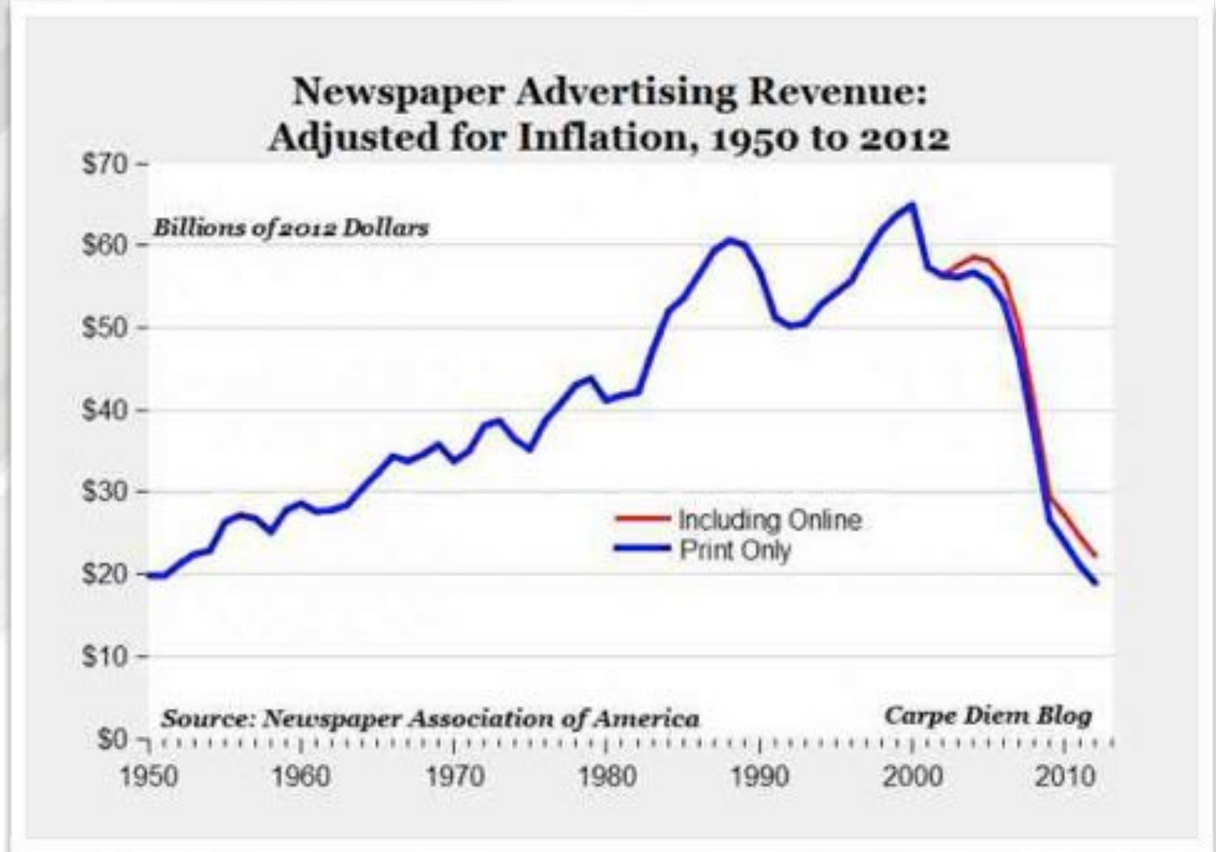
New
Breakthroughs

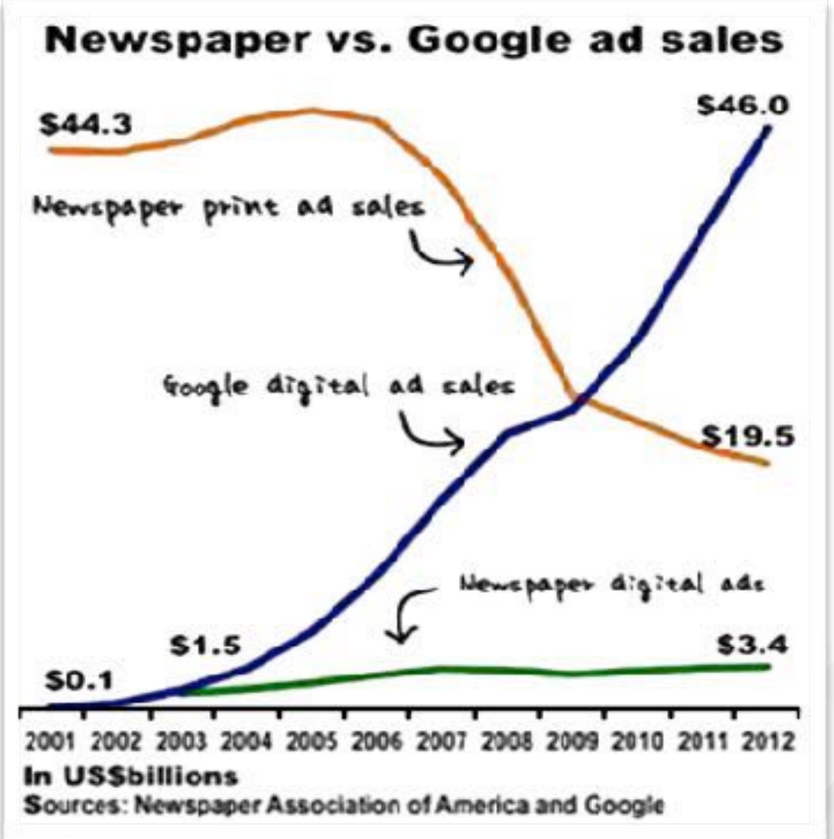
Market cap to a billion



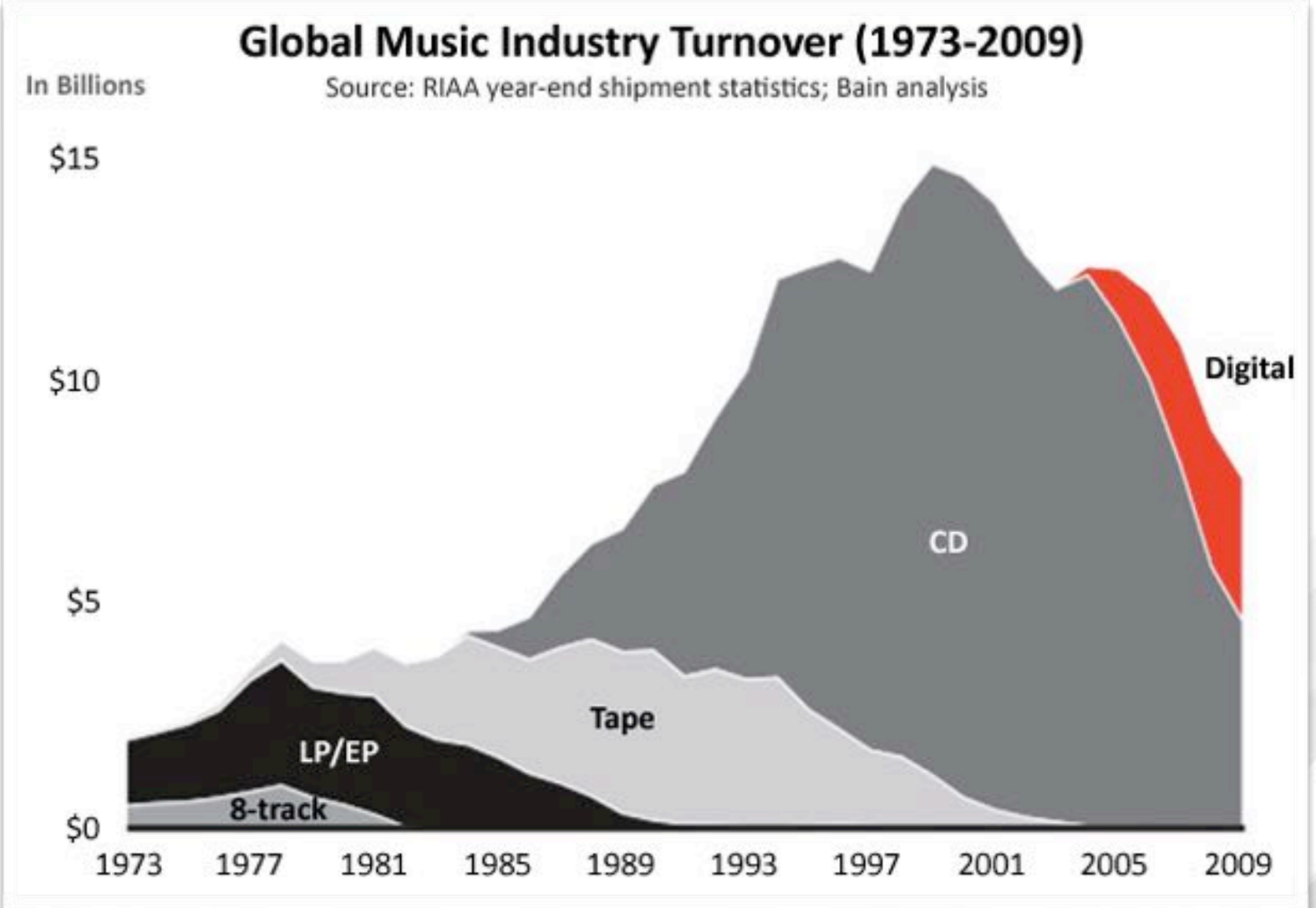


Newspapers


Newspaper Advertising Revenue:
Adjusted for Inflation, 1950 to 2012
Billions of 2012 Dollars
$70
$60
$50
$40
$30
$20
$10
$0
Including Online
Print Only
Source: Newspaper Association of America
Carpe Diem Blog
1950
1960
1970
1980
1990
2000
2010


Newspaper vs. Google ad sales
$44.3
$46.0
Newspaper print ad sales
Google digital ad sales
$19.5
Newspaper digital ads
$1.5
$3.4
$0.1
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
In US$billions
Sources: Newspaper Association of America and Google

Music


Global Music Industry Turnover (1973-2009)
In Billions
Source: RIAA year-end shipment statistics; Bain analysis
$15
$10
$5
$0
1973
1977
1981
1985
1989
1993
1997
2001
2005
2009
Digital
CD
Tape
LP/EP
8-track

Deception of linear vs exponential

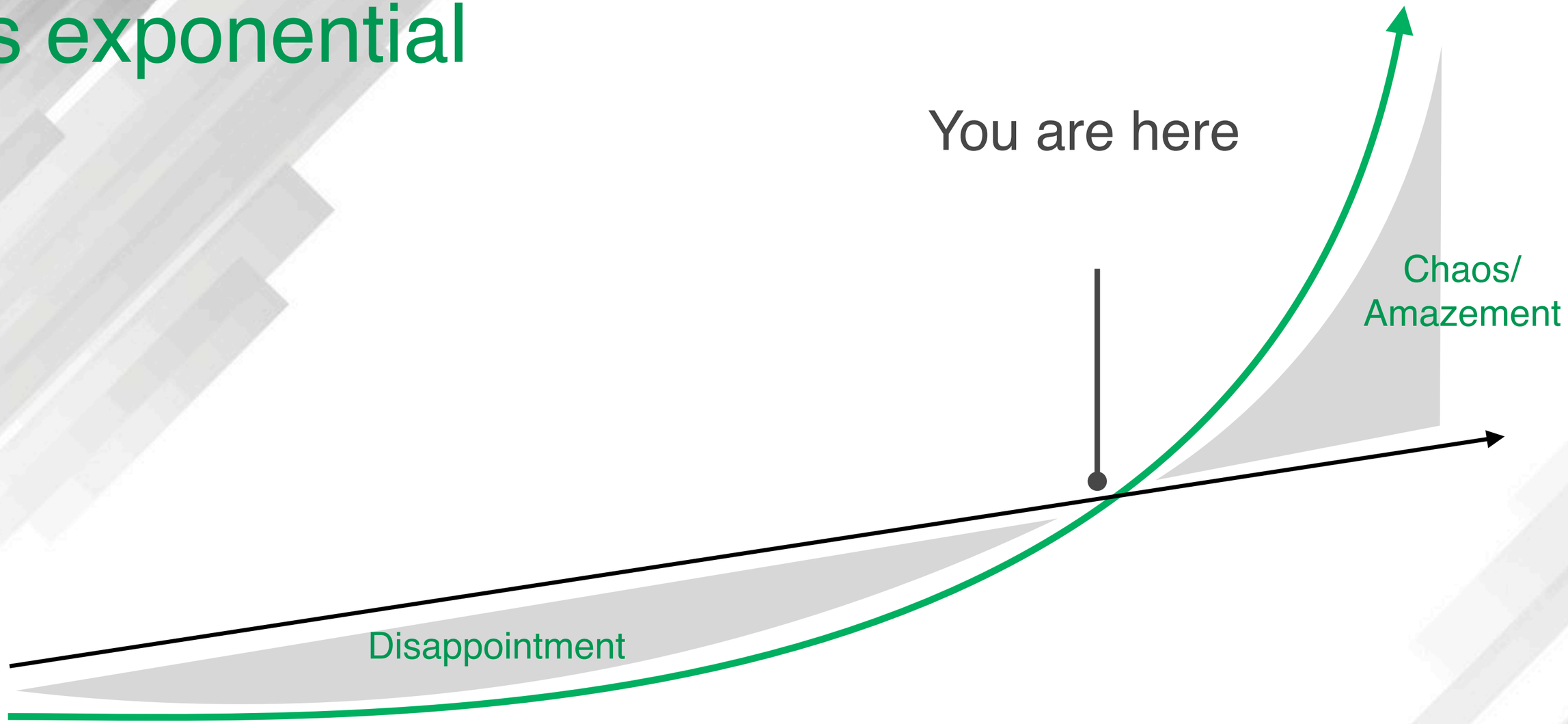
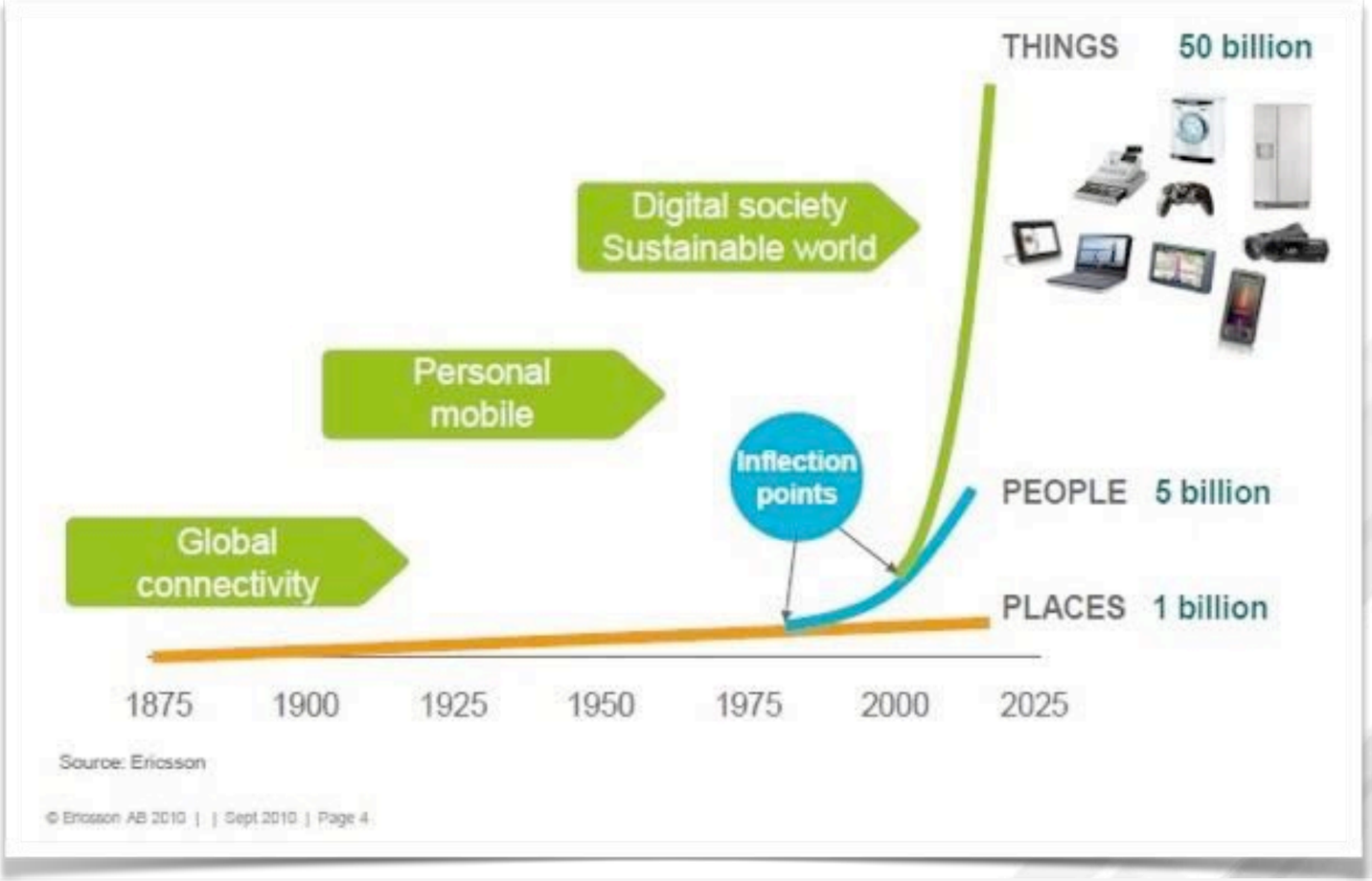


photo: Paul Saffo

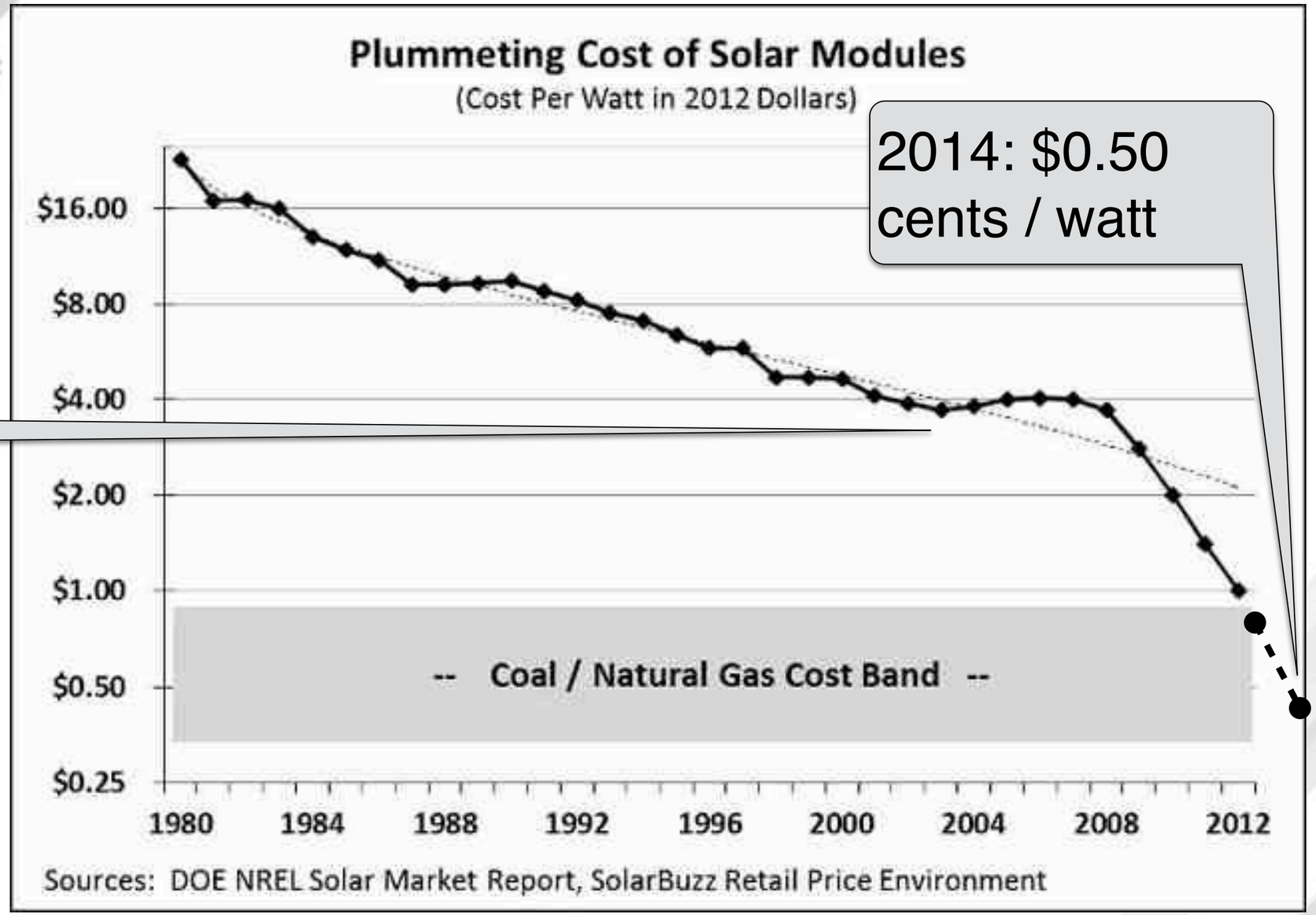
Internet of Things

~~50B~~ devices by **2020**

2015 Prediction:
500B by 2020



Top Solar Expert: cost of all components (polycrystalline silicon ingots, protective glass & silver in wiring) will never drop below $1/watt.



"Getting below $1 has exceeded my

Car Wash - Buenos Aires

Information Layers

Digitize

Disrupt

Demonetize

Democratize

New
Breakthroughs

Open Everything

Existing Businesses Disrupted

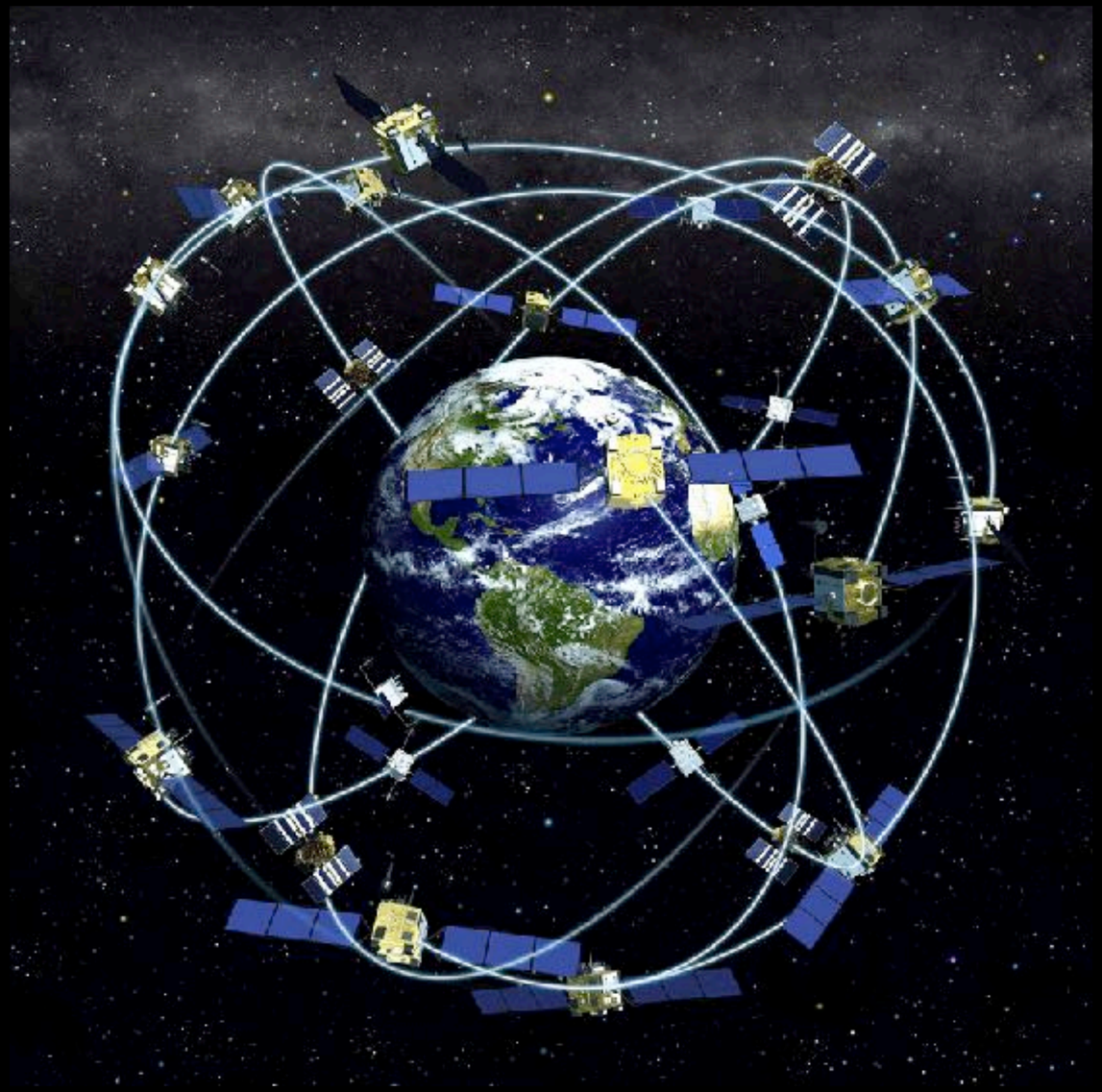
New Products & Services

Technologies Intersect

Open Source Communities Form

Costs Drop to Zero

Domain is Digitized



Emiliano, known to his friends as "EK", has a formal background in Number Theory and Philosophy but is better known for his groundbreaking work within the electronic security industry.

As a founder of Core Security Technologies, EK developed the first automated penetration testing software, earning the loyalty of clients such as Apple, Cisco, Homeland Security, NSA, NASA, Lockheed Martin, and DARPA.

EK's recent work as the Managing Director of Aconcagua Ventures has focused on increasing entrepreneurship, funding and innovation in South America.

CubeBug-2 (Manolito) and **Emiliano Kargieman** favorited 3h

Congrats!!!! #SingularityU alumn launches his second nanosatellite.. RT @earlkman: Manolito, aka @Cubebug2 is in orbit.

Open Everything

Existing Businesses Disrupted

New Products & Services

Technologies Converge

Open Source Communities Form

Costs Drop to Zero

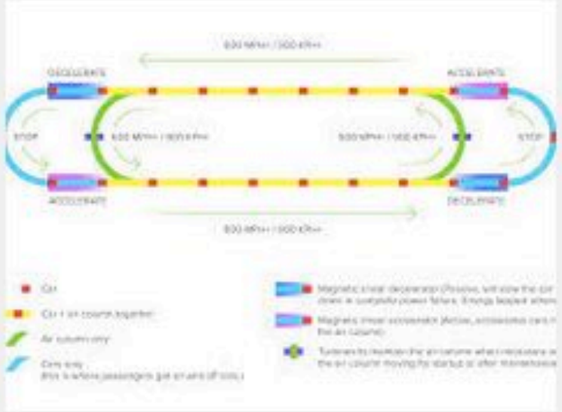
Domain is Digitized

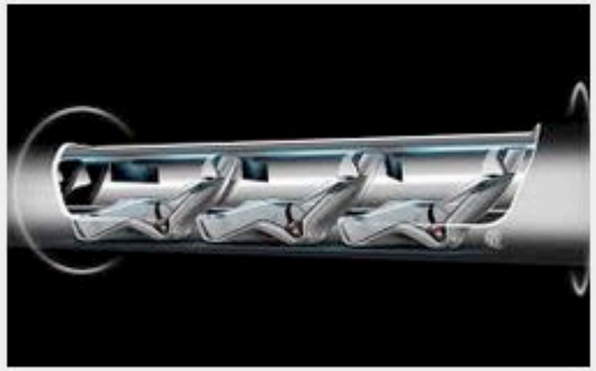
Hyperloop

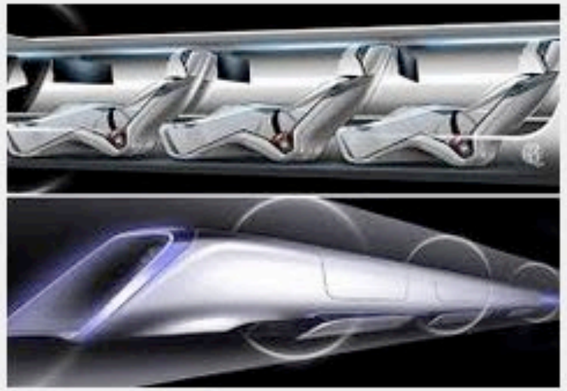
Tesla

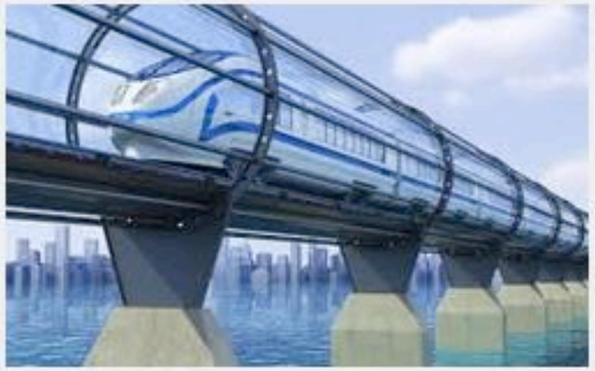
Concept

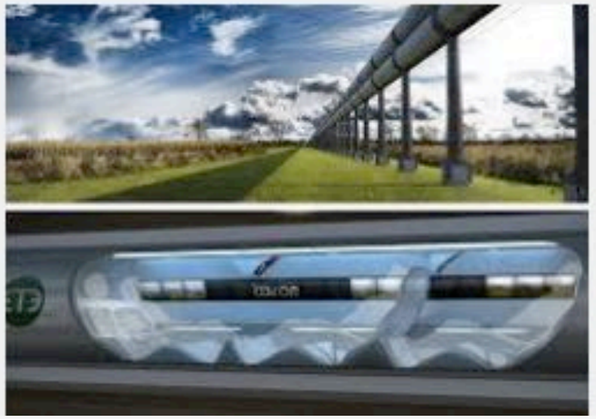
Map

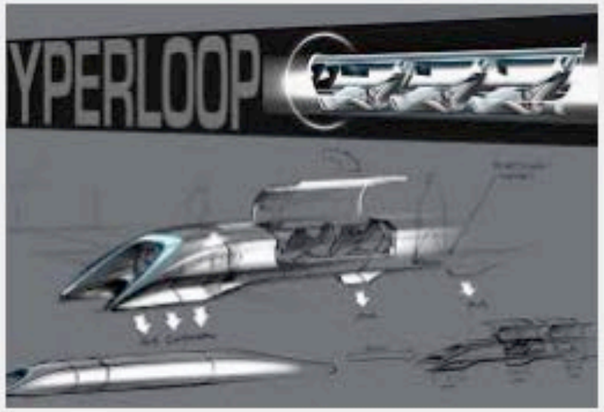




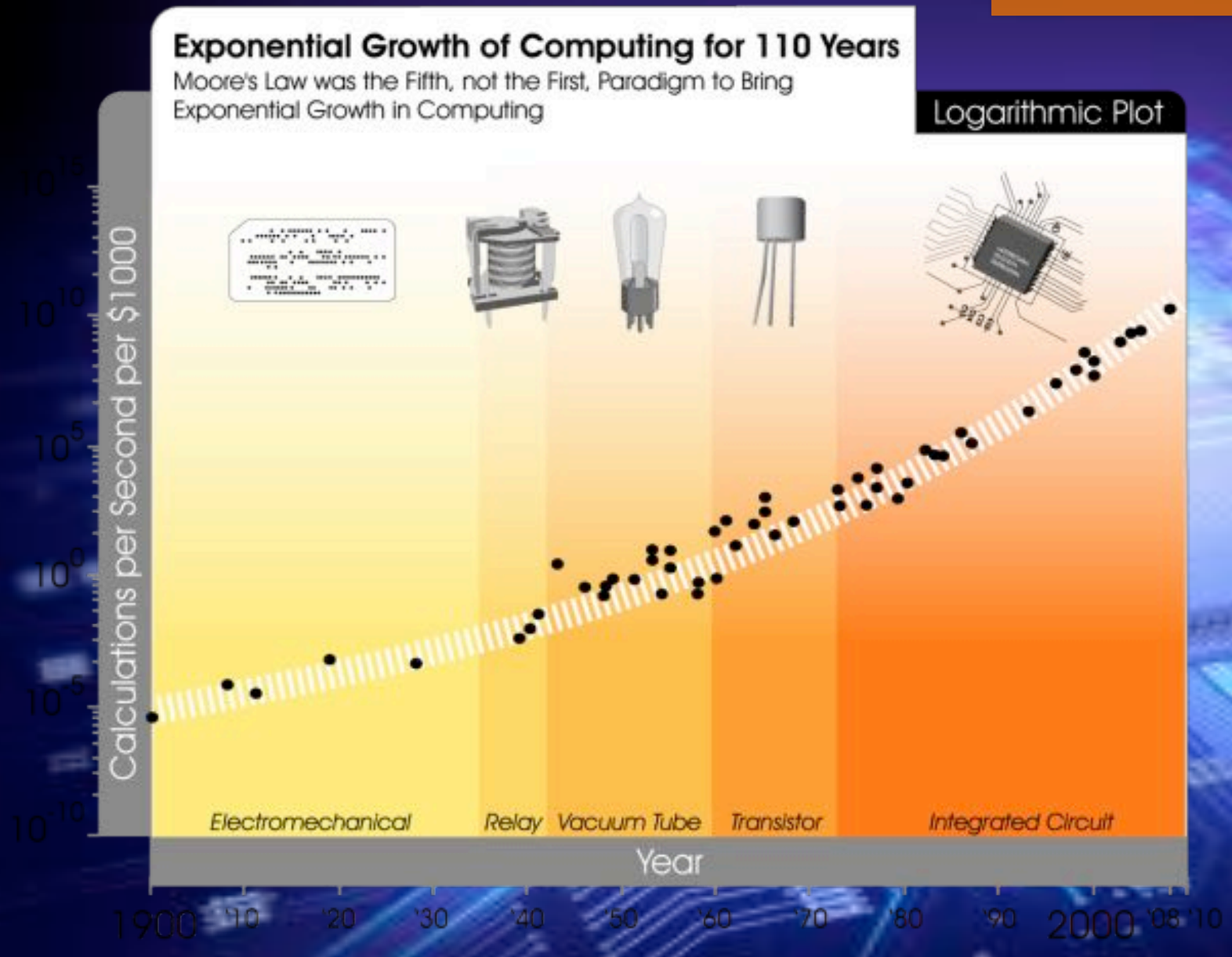








Powered by progress in computing



How many people are online?

2010
1.2
billion

2015
2.8
billion

2020
>6
billion

Google Loon

VP
DOOSAN

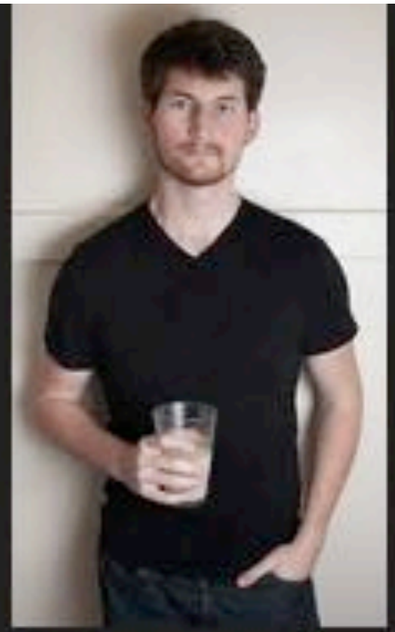
CBS
THIS
MORNING
SATURDAY
GOOGLE BALLOONS
THOUSANDS WILL BEAM THE INTERNET ACROSS THE GLOBE

SkyFi

60 nano satellites

1 gigabyte

Soylent



Try Soylent. It's actually good for you
Sign up to be a Tester
Discussion Board Now Up

Soylent
Soylent Life
Fight Hunger
Support On KICKSTARTER

100+ more

Soylent 1.4

[–] **dalebewan** 36 points 2 days ago

What are your personal feelings about the many soylent copies/clones/variants out there? Clearly you wouldn't have been so open about the whole thing if you were against them, but I'd like a more nuanced answer if possible.

permalink

[–] **Charlton_Question** [S] 101 points 2 days ago

Soylent is more than a product. It is a movement. People want to compete with us to feed the world? Awesome. I think we're on the same side. I'm not greedy. I just want the future to happen.

- Carbohydrates (400 g), in the form of oligosaccharides such as maltodextrin
- Protein (50 g), in a powdered form such as rice protein
- Fat (65 g), in the form of olive oil
- Sodium (2.4 g), from table salt
- Potassium (3.5 g), in the form of potassium gluconate
- Chloride (3.4 g), also from table salt
- Fiber (5 g)
- Calcium (1 g), in the form of calcium carbonate
- Iron (18 mg), from an iron chelate
- Phosphorus (1 g), from monosodium phosphate
- Iodine (150 µg)
- Magnesium (400 mg)
- Zinc (15 mg)
- Selenium (70 µg)
- Copper (2 mg)
- Manganese (2 mg)
- Chromium (120 µg)
- Molybdenum (75 µg)
- Vitamin A (5000 IU)
- Vitamin B6 (6 µg)
- Vitamin C (60 mg)
- Vitamin D (400 IU)
- Vitamin E (30 IU)
- Vitamin K (80 µg)
- Thiamin (1.5 mg)
- Riboflavin (1.7 mg)
- Niacin (20 mg)
- Folate (400 µg)
- Biotin (300 µg)
- Pantothenic acid (10 mg)

Extras not considered to be essential:

- Lycopene (500 µg)
- Omega-3 fatty acids (750 mg)
- Ginseng (50 µg)
- Ginkgo biloba (100 µg)
- Lutein (500 µg)
- alpha-Carotene (140 µg)
- Vanadium (100 µg)

Cholesterol 0mg	0%
Sodium 410mg	17%
Potassium 864mg	25%
Total Carbohydrate 51g	17%
Dietary Fiber 4g	16%
Sugars 11g	
Protein 21g	
Vitamin A	25%
Vitamin C	37%
Calcium	30%
Iron	25%
Vitamin D	25%
Vitamin E	25%
Vitamin K	25%
Thiamin	25%
Riboflavin	25%
Niacin	25%
Vitamin B6	25%
Folate	25%
Vitamin B12	25%
Biotin	25%
Pantothenic Acid	25%
Iodine	30%
Magnesium	25%
Zinc	25%
Selenium	25%
Copper	25%
Manganese	25%
Chromium	25%
Molybdenum	25%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500 mg	3,500 mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 Carbohydrate 4 Protein 4

...gh Oleic Sunflower Oil, Oat Flour, Isomaltulose, ...neral Blend [Potassium (as ...uconate), Calcium (as ...nate), Choline Bitartrate, Magnesium Oxide), Vitamin ...cid], Zinc (as Zinc Sulfate), ...as dl-alpha-Tocopheryl ...in B3 (as Niacinamide), Copper (as Copper Gluconate), Vitamin B5 (as Calcium d-Pantothenate), Manganese (as Manganese Sulfate), Vitamin B6 (as Pyridoxine HCl), Vitamin B2 (as Riboflavin), Vitamin B1 (as Thiamin HCl), Vitamin A (as Palmitate), Chromium (as Chromium Chloride), Folic Acid, Biotin, Iodine (as Potassium Iodide), Molybdenum (as Sodium Molybdate), Selenium (as Sodium Selenite), Vitamin K1 (as Phytonadione), Vitamin D2 (as Ergocalciferol), Vitamin B12 (as Cyanocobalamin)], Rice Starch, Modified Food Starch, Soy Lecithin, Cellulose, Salt, Flaxseed and Safflower Oil Powder, *life'sDHA™* Oil Powder (Docosahexaenoic Acid from Algal Oil), Xanthan Gum, Sucralose.

Contains: Soy.

Manufactured for Rosa Labs
P.O. Box 1751 Studio City, CA 91604

Soylent™ is a trademark of Rosa Labs
life'sDHA™ is a trademark of DSM

soylent™

Soylent Recall

Got a tip? Let us know.

Follow Us

News Video Events Crunchbase

Message Us Search

DISRUPT LONDON Prices Increase For Disrupt London In Just 5 Days Save £250 On Tickets Now

product recall
soylent
Food

Soylent pulls Powder as part of probe into customer sickness

Posted Oct 28, 2016 by Natasha Lomas (@riptari)

Next Story

Crunchbase

Soylent Corporation

FOUNDED
2013

OVERVIEW
Soylent™ was developed from a need for a simpler food source. Creator Robert Rhinehart and team developed Soylent after recognizing the

engadget

Gear Gaming Culture Entertainment Science Video Reviews Public A

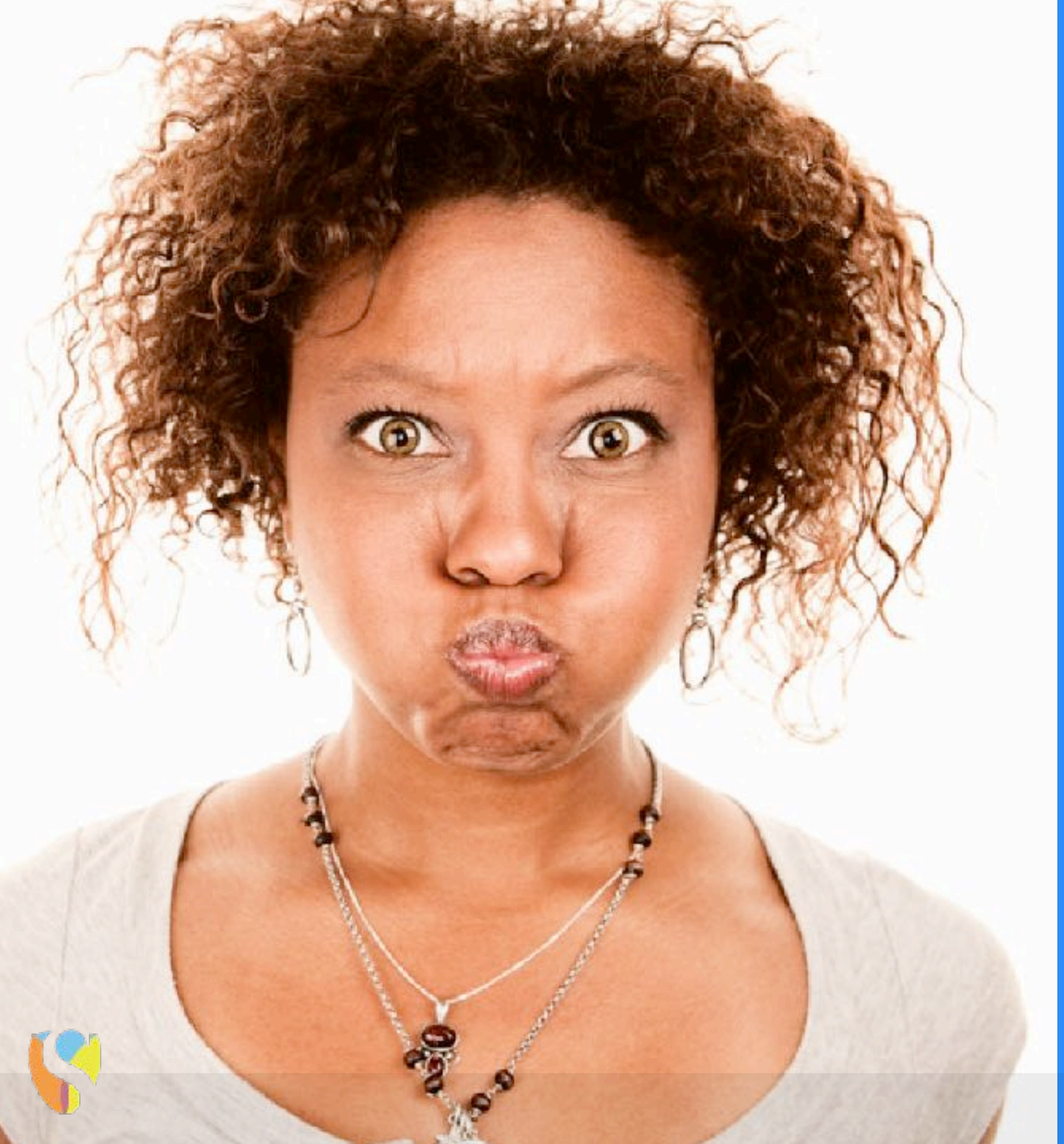
Soylent recalls its food bars after making some customers sick

'Maximum nutrition, minimum effort.' Except for the vomiting and the diarrhea.

Mat Smith , @thatmatsmith
10.13.16 in Food and Drink

16 Comments

638 Shares



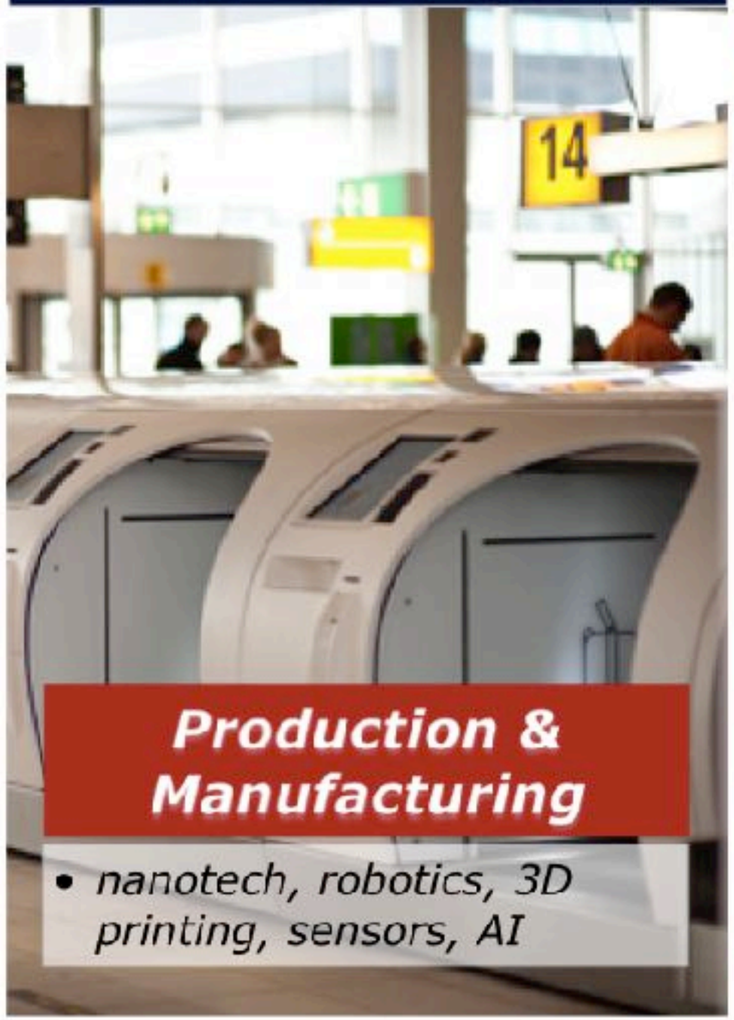
What’s Next?

Past

Marketing, sales & service

- social, mobile & online for front-end functions

Present



Production & Manufacturing

- nanotech, robotics, 3D printing, sensors, AI

Future

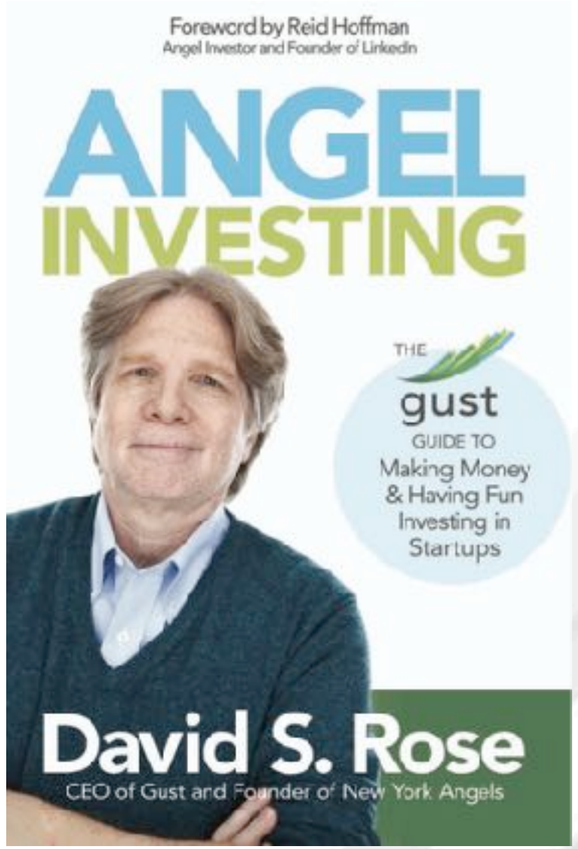
Innovation

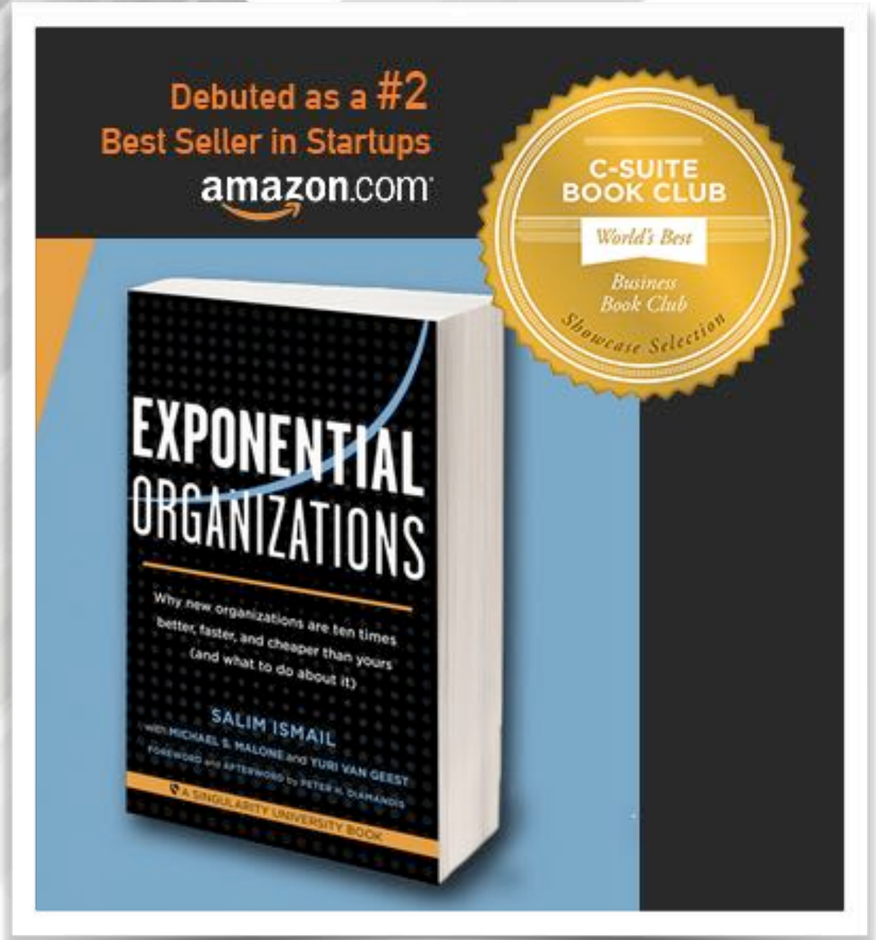
- Crowdsourcing (leveraging the crowd), DIY*, P2P**, Crowd companies, AI

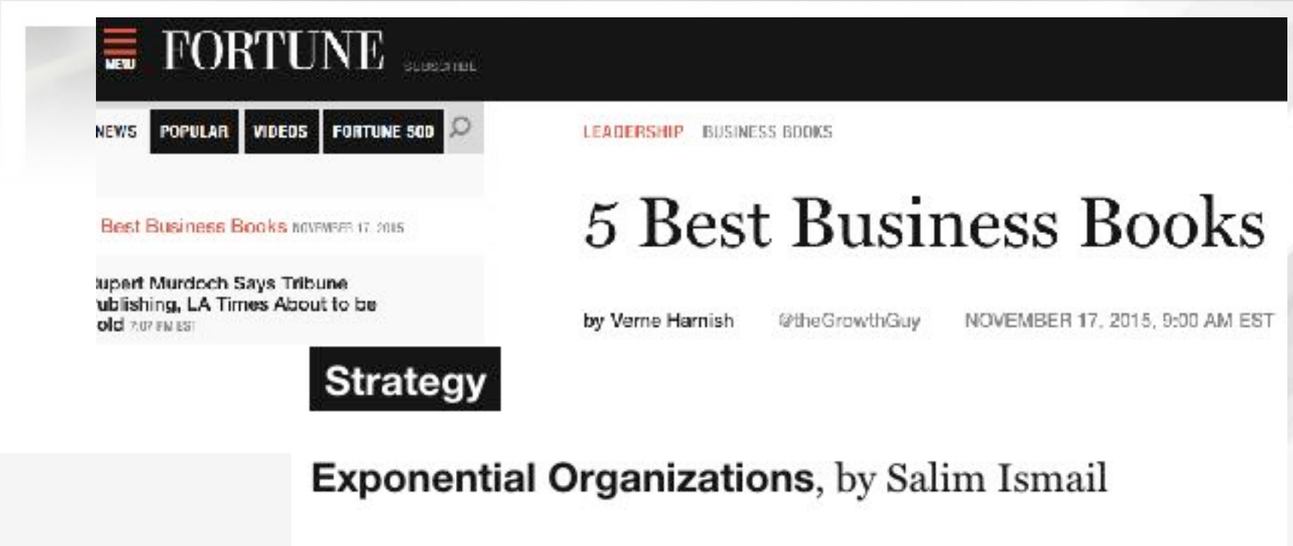
source: Yuri van Geest

David Rose - Gust

“Any company designed for success in the 20th century is doomed to failure in the 21st.”







Frost & Sullivan
2014 GIL Book of the Year
www.exponentialorgs.com

ExOs.. **10x** better performance

Airbnb Hotels	90x more listings per employee
GitHub Software	109x more repositories per employee
Local Motors Automotive	1000x cheaper to produce new car model, 5-22x faster process for a car to produce (depending on vehicle)
Quirky Consumer Goods	10x faster product development (29 days vs 300 days)
Google Ventures Investments	2.5x more investments in early stage startups, 10x faster through design process
Valve Gaming	30x more market cap per employee
Tesla Automotive	30x more market cap per employee
Tangerine (formerly ING Direct Canada) Banking	7x more customers per employee, 4x more deposits per customer

bitly.com/exotop100 - Secrets of Unicorns

Google

airbnb

TESLA

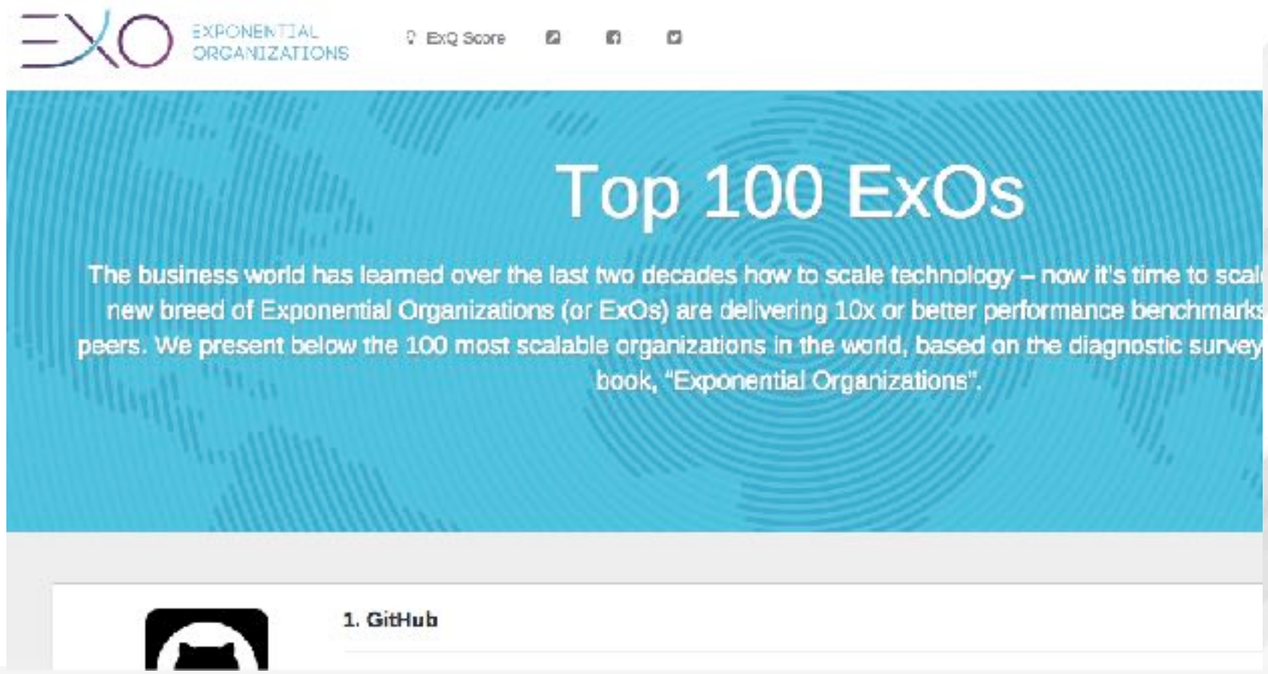
GitHub

VALVE

waze

UBER

NETFLIX



the ExO formula

ExO

=

MTP + SCALE + IDEAS

Massive Transformative Purpose (MTP)

"Radical breakthroughs for the benefits of humanity"

“Positively impact one billion people”

"Organize the world's information"

"Make invention accessible"

"Ideas worth spreading"

“Open Happiness”

Uniquely yours
Highly Aspirational
Neither narrow nor technology specific
Aimed at Heart & Mind
Declared with sincerity & confidence

S.C.A.L.E

External Attributes of an ExO

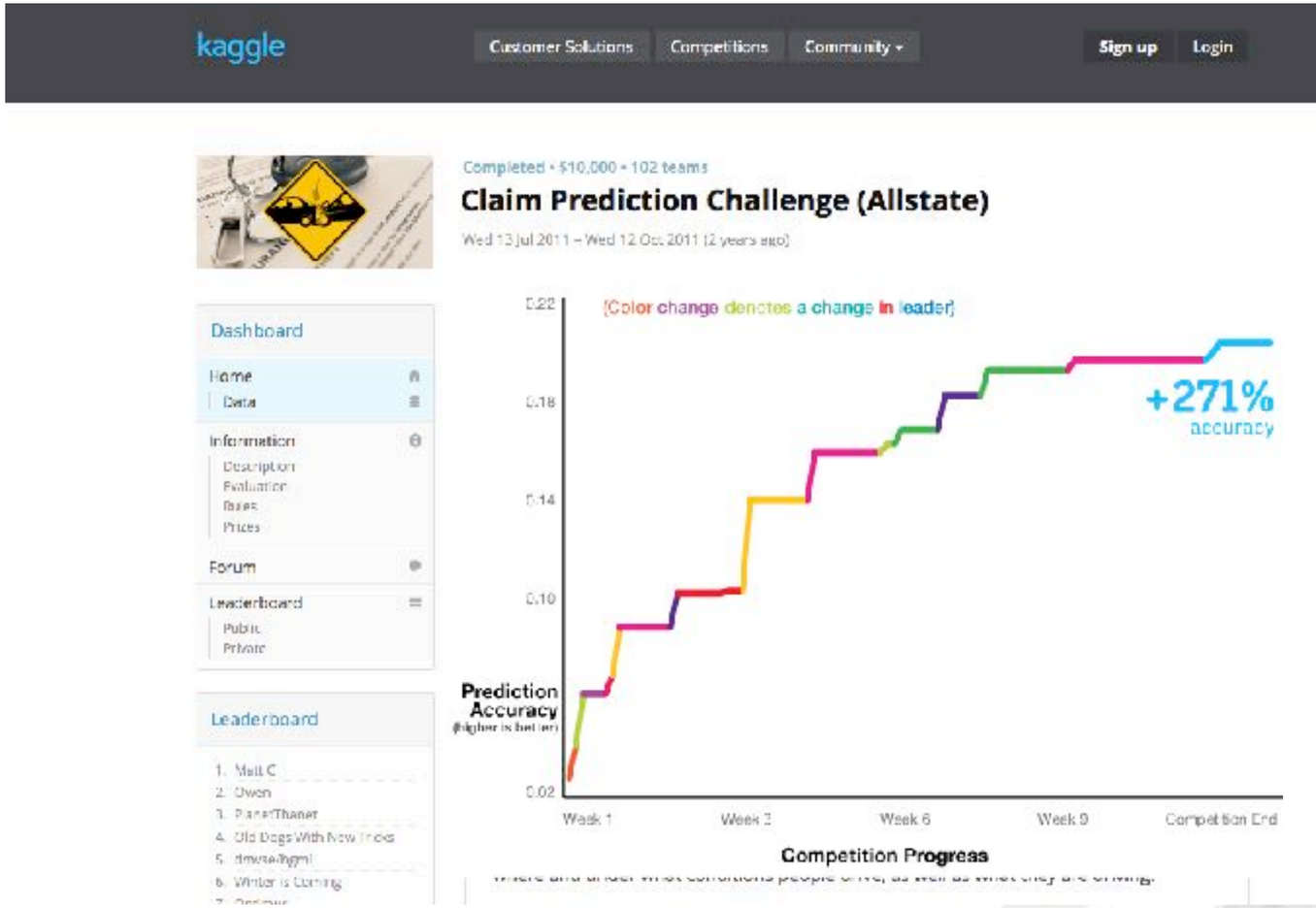
S – Staff on Demand

C – Community & Crowd

A – Algorithms

L – Leveraged Assets

E – Engagement



I.D.E.A.S

Internal Attributes of an ExO

I – Interface Processes

D – Dashboards

E – Experimentation

A – Autonomy

S – Social Technologies

4 out of 10 = ExO

MTP - Massive Transformative Purpose

S – Staff on Demand

C – Community & Crowd

A – Algorithms

L – Leveraged Assets

E – Engagement

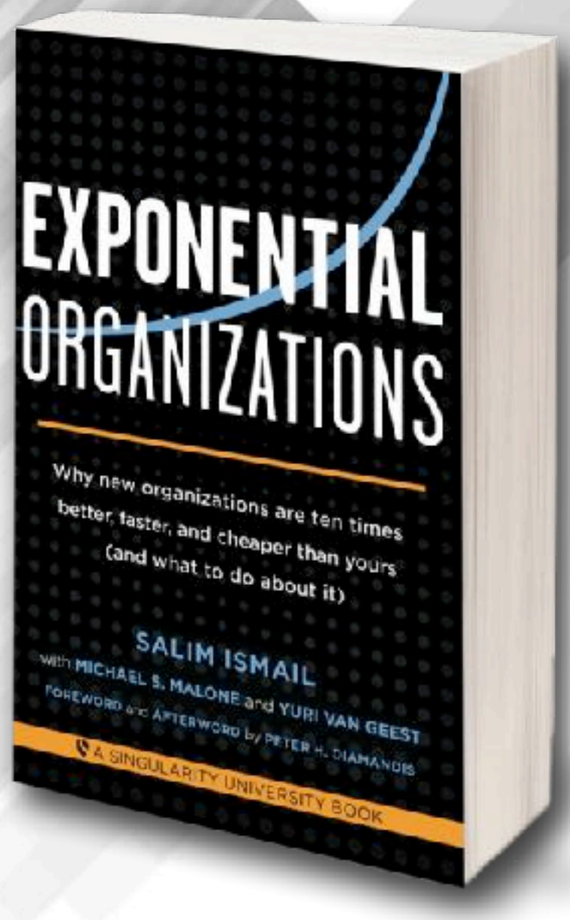
I – Interface Processes

D – Dashboards

E – Experimentation

A – Autonomy

S – Social Technologies



ExO Diagnostic Workshop

www.exponentialorgs.com/survey

1. To what extent do you use full time employees vs. on demand contractors? *

- We only use full time employees
- We use mostly full-time employees with some on-demand contractors in non-mission critical areas (e.g. IT, event production, etc.)
- We use some on-demand contractors to augment mission critical areas (e.g. operations, production, HR, etc.)
- We mostly use on-demand contractors in addition to a small full-time core team

Ranking the Fortune 100 by their ExO Score

f100.exponentialorgs.com

Yuri van Geest
Michiel Schuurman
ExO Experts

HULT International Business School

rokkarlabs
co-build amazing companies

Fortune 100 by ExQ - f100.exponentialorgs.com

F100 Company	ExQ
Google	72.9
Amazon	66.2
Apple	62.6
International Business Machines (IBM)	61.0
Verizon Communications	58.8
General Electric	56.6
Microsoft	55.9
Cisco Systems, Inc.	55.8
The Walt Disney Company	54.8
Oracle Corporation	54.0
The Coca-Cola Company	49.5
DIRECTV	49.0
McKesson	49.0
United Parcel Service (UPS)	49.0
AT&T	48.8
Humana Inc.	48.8
State Farm Insurance Cos.	48.4
The Allstate Corporation	47.3
Lockheed Martin Corporation	47.2
Comcast	47.0
American Express Company	46.8
Twenty-First Century Fox, Inc.	46.6
PepsiCo	46.5
Walgreen Co.	46.5
Anthem Inc. (Wellpoint)	46.4
Johnson Controls, Inc.	46.0
Mondelez International, Inc.	45.6
Merck & Co., Inc.	45.0
United Continental Holdings, Inc.	45.0
Ford Motor	43.2
Lowe's Companies	43.0
UnitedHealth Group	43.0
Home Depot	43.0

F100 Company	ExQ
Wal-Mart Stores	42.7
World Fuel Services Corporation	42.5
John Deere Company	42.4
Wells Fargo	42.4
General Motors	42.0
New York Life Insurance Company	42.0
Supervalu Inc.	42.0
The Goldman Sachs Group, Inc.	41.8
Archer Daniels Midland (ADM)	41.8
Prudential Financial, Inc.	41.4
Target	41.4
Sears Holdings Corporation	41.3
E.I. du Pont de Nemours and Company (DuPont)	41.3
CHS Inc.	41.0
FedEx Corporation	41.0
Kroger	41.0
United Technologies	41.0
Procter & Gamble	40.9
Cigna Corporation	40.7
Hewlett-Packard	40.7
TIAA-CREF	40.7
Boeing	40.3
CVS Caremark	40.0
Best Buy Co., Inc.	40.0
Intel Corporation	40.0
Liberty Mutual Holding Company Inc.	40.0
Pfizer	39.8
Citigroup	39.8
Johnson & Johnson	39.3
Honeywell International Inc.	39.3
Ingram Micro Inc.	39.3
Massachusetts Mutual Life Insurance Company	39.0
Delta Airlines, Inc.	39.0

F100 Company	ExQ
Delta Airlines, Inc.	39.0
American International Group (AIG)	38.3
Express Scripts Holding	38.0
Tyson Foods, Inc.	37.5
AmerisourceBergen	37.0
Exxon Mobil	37.0
Nationwide Mutual Insurance Co.	37.0
Safeway Inc.	36.3
Freddie Mac	36.3
MetLife	36.0
Sysco Corporation	36.0
Caterpillar	34.5
Chevron	34.5
ConocoPhillips	34.5
General Dynamics Corporation	34.5
Cardinal Health	34.0
Dow Chemical	34.0
Fannie Mae	34.0
Intl FCStone Inc.	34.0
Aetna Inc.	33.5
Morgan Stanley	33.5
Berkshire Hathaway	33.2
J.P. Morgan Chase & Co.	33.0
Bank of America	32.5
Marathon Petroleum	32.3
Costco Wholesale	32.0
Philip Morris International Inc.	31.6
Hess Corporation	31.3
HCA Holdings, Inc.	31.0
Phillips 66	30.7
Tesoro Corporation	30.0
Valero Energy	29.8
Plains GP Holdings, L.P.	27.5
Energy Transfer Equity, L.P.	26.5
Enterprise Products Partners L.P.	23.0

Hult Business School

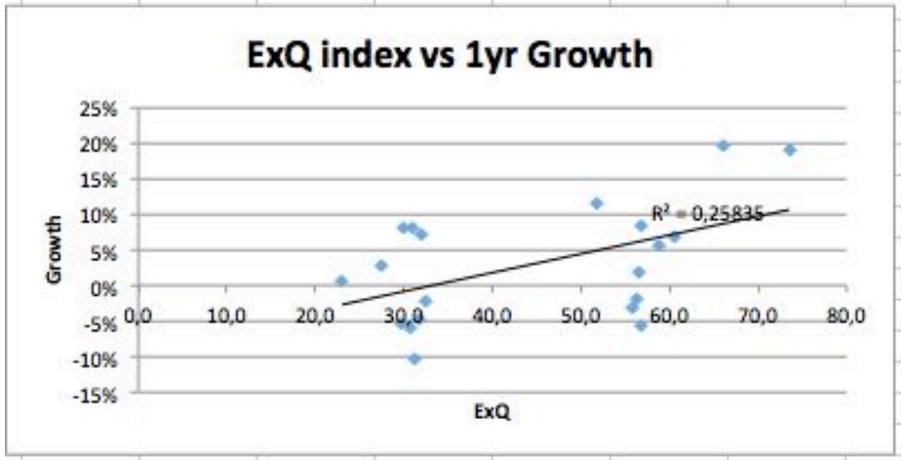
“ExQ Score correlates to stock performance”

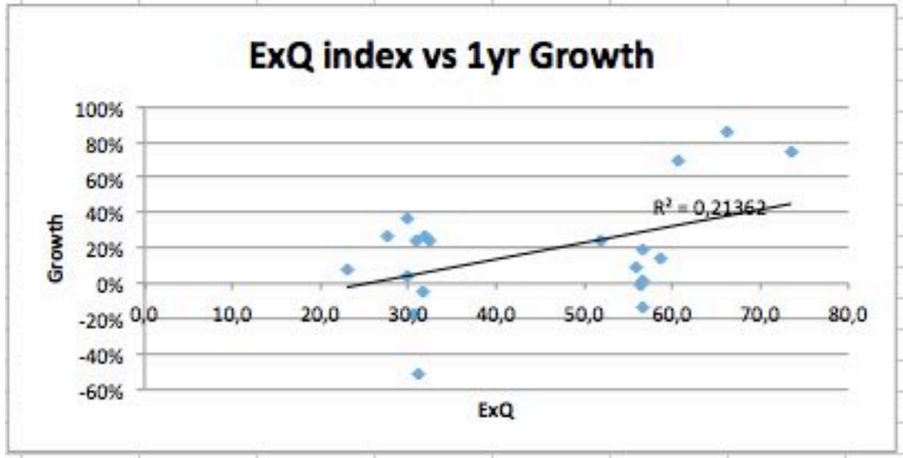
1 yr Growth

	Mean	Median	Min	Max	Top quartil	Bottom quartile
TOP 10	6%	6%	-6%	20%	11%	-1%
BOTTOM 1	0%	-1%	-10%	8%	6%	-5%

3 yr Growth

	Mean	Median	Min	Max	Top quartil	Bottom quartile
TOP 10	28%	17%	-13%	85%	58%	3%
BOTTOM 1	8%	16%	-51%	36%	26%	-2%





HULT International Business School

Advice to large companies

Transform Leadership

- Education
- Board Managment
- Diversity
- Leadership Skills

ExO Lite

Disrupt [x]

- Edge ExOs
- Black Ops
- Model Google [x]

Partner, Invest, Acquire ExOs

- Partner with
  - Incubators
  - Accelerators
  - Hackerspaces

Advice to large companies

- Transform leadership (mindset, education)
- Inspire ExOs at edges (via chg mkrs)
- Invest/Partner with adjacent ExOs
- Leverage or expose data
- Hire a ‘Black Ops’ team
- Set up a Google[X] equivalent

Education from outside sources

Board Management

Implement Diversity

Leadership Skills

Advice to large companies

- Transform leadership (mindset, education)
- Inspire ExOs at edges (via chg mkrs)
- Invest/Partner with adjacent ExOs
- Leverage or expose data
- Hire a ‘Black Ops’ team
- Set up a Google[X] equivalent

Advice to large companies

Transform Leadership

- Education
- Board Managment
- Diversity
- Leadership Skills

ExO Lite

Disrupt [x]

- Edge ExOs
- Black Ops
- Model Google [x]

Partner, Invest, Acquire ExOs

- Partner with
  - Incubators
  - Accelerators
  - Hackerspaces

Anecdotes..

amazon

Walmart

GE Digital

Y!™

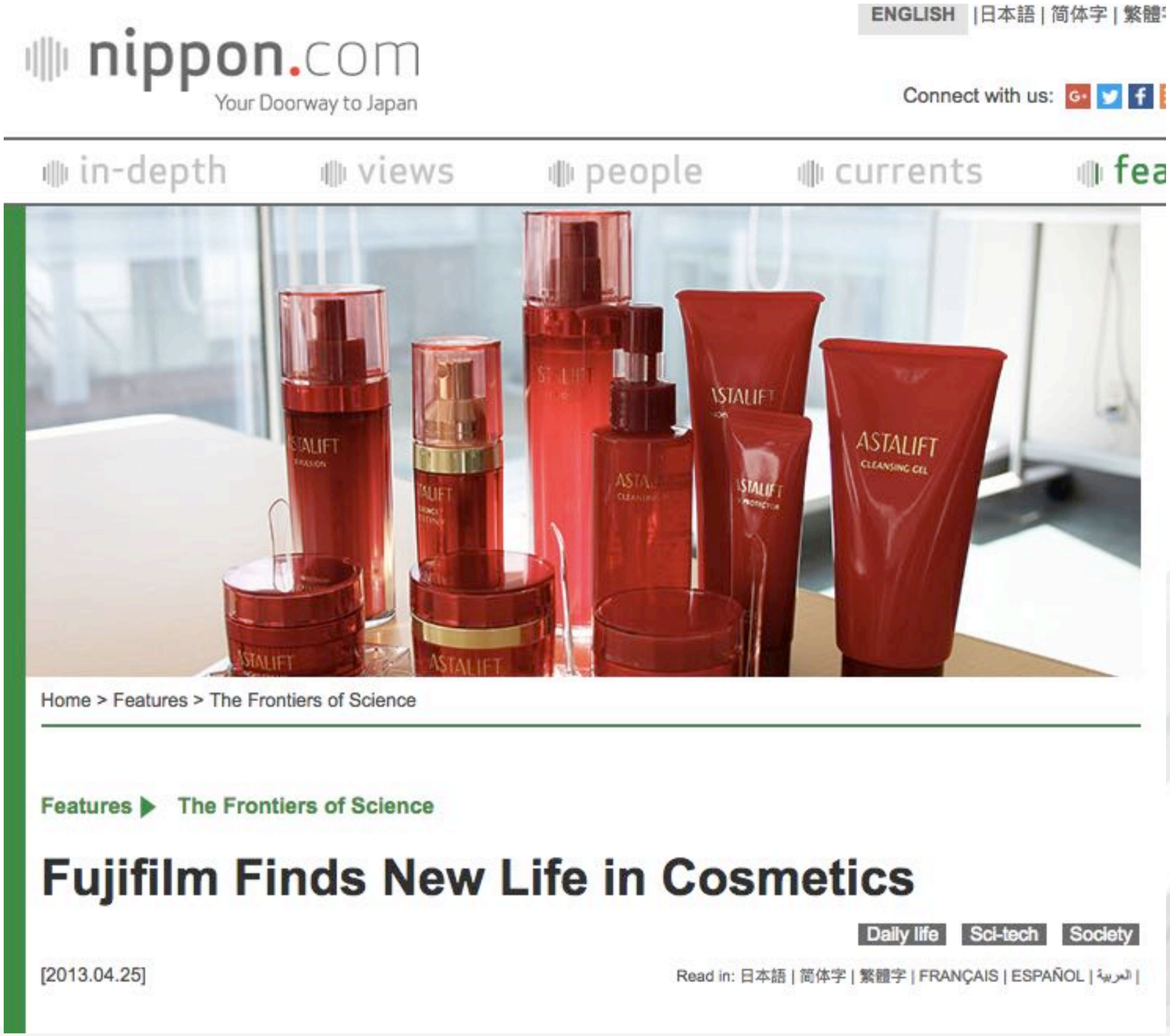
BLOCKBUSTER®

BMW

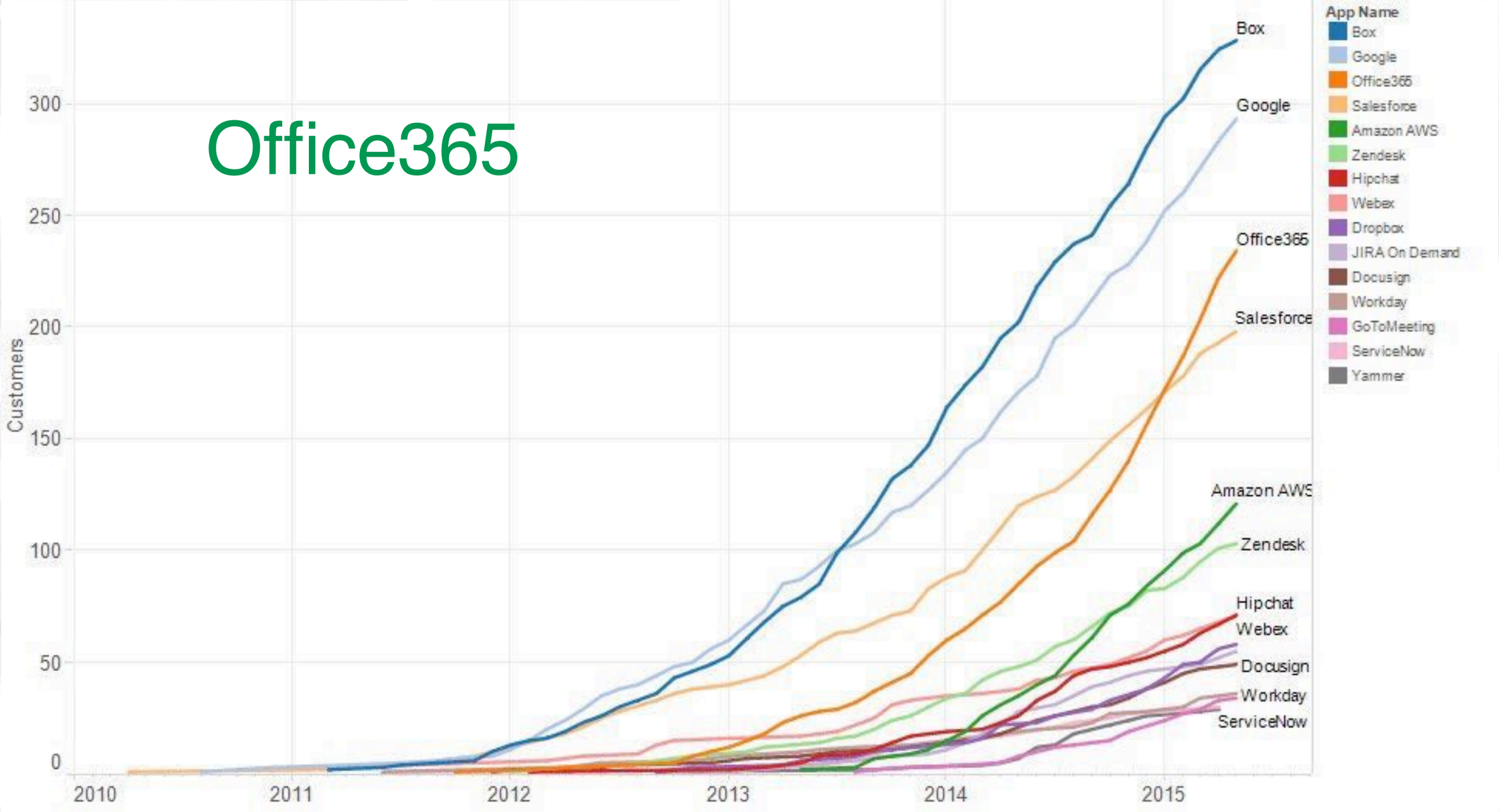
NESPRESSO®

Fujifilm

Leveraging adjacencies

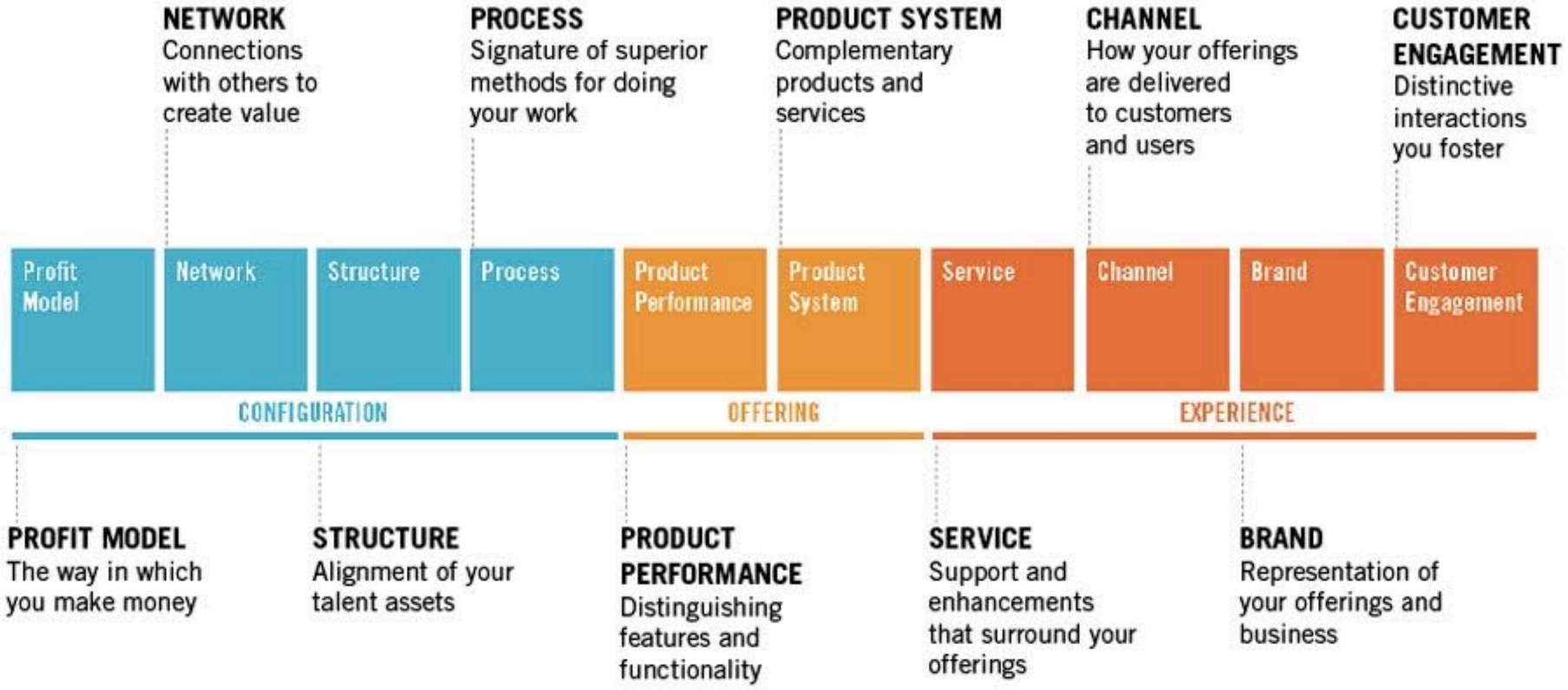


Office365


Customers
300
250
200
150
100
50
0
2010
2011
2012
2013
2014
2015
Box
Google
Office365
Salesforce
Amazon AWS
Zendesk
Hipchat
Webex
Docusign
Workday
ServiceNow
App Name
Box
Google
Office365
Salesforce
Amazon AWS
Zendesk
Hipchat
Webex
Dropbox
JIRA On Demand
Docusign
Workday
GoToMeeting
ServiceNow
Yammer

Doblin - Ten Types

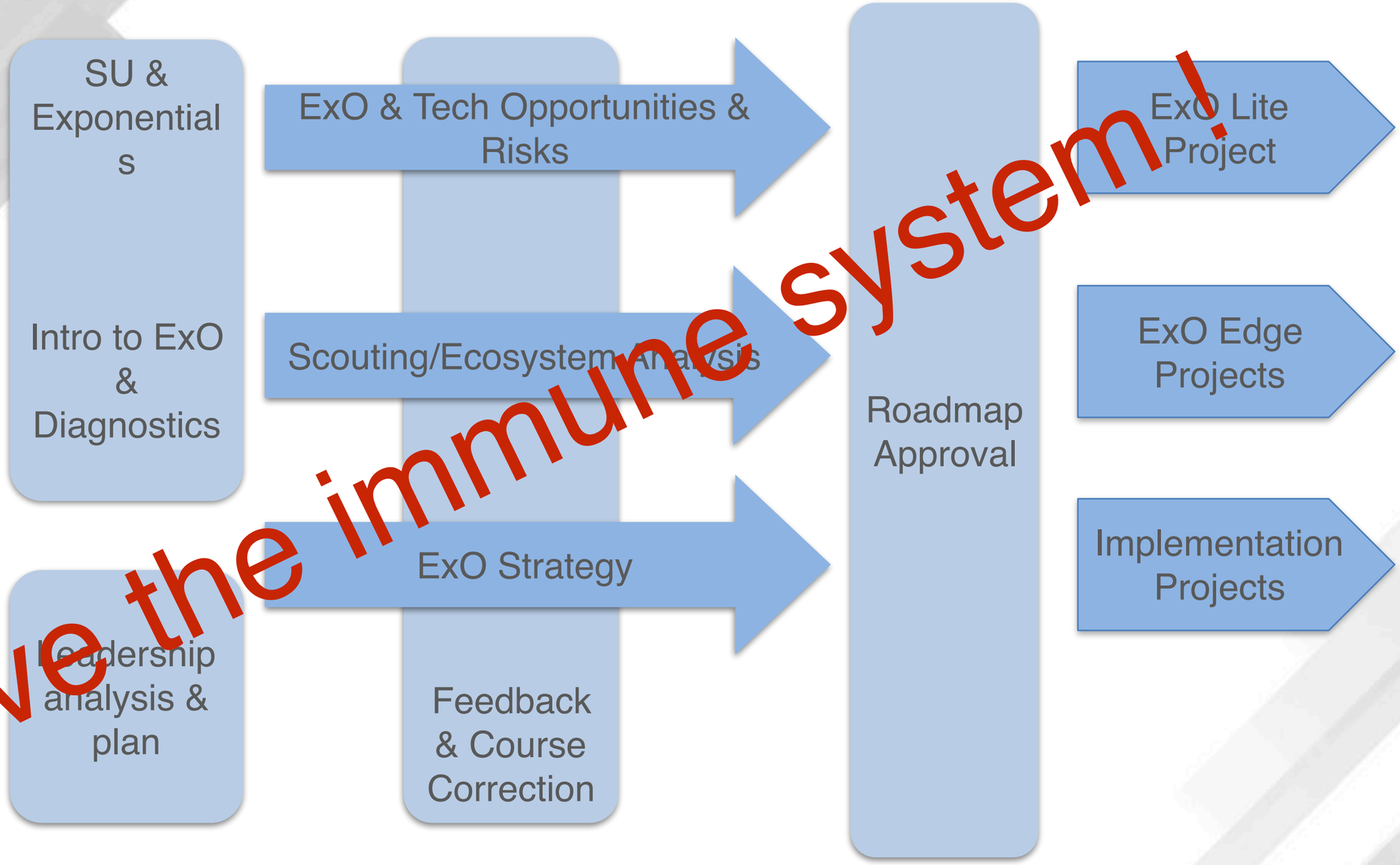
Figure 5. Ten Types of Innovation®



Source: Larry Keeley, Ryan Pikkel, Brian Quinn, and Helen Walters, *Ten Types of Innovation: The Discipline of Building Breakthroughs* (Hoboken, New Jersey: John Wiley & Sons, 2013).

Graphic: Doblin.com/TenTypes

ExO Sprint



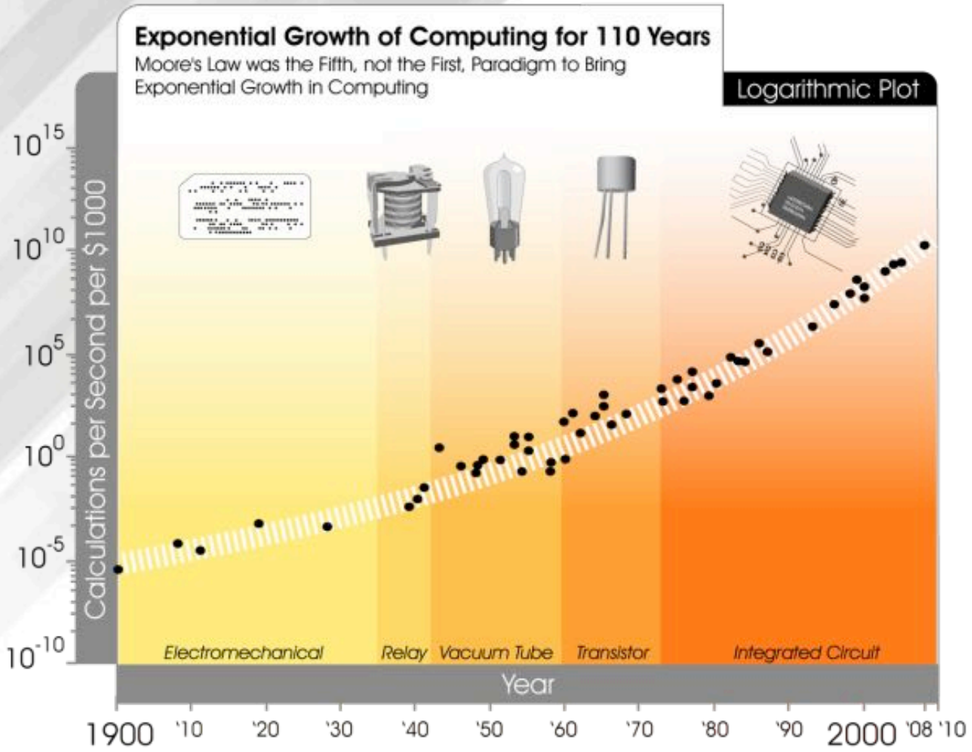
Solve the immune system!

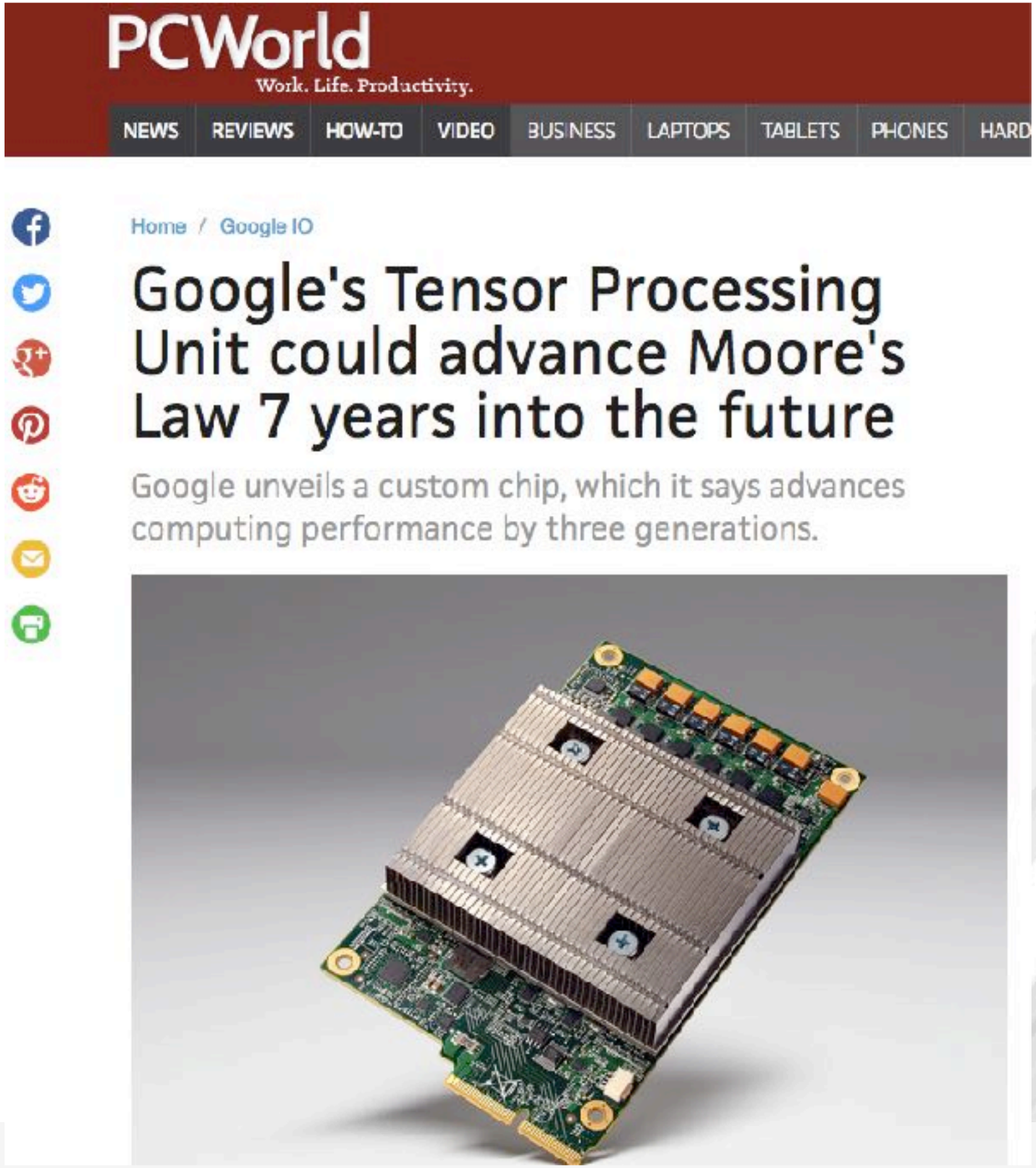
Weeks 1-2
Outcomes

Weeks 2-8

Weeks 8-10

Moore’s Law..


Exponential Growth of Computing for 110 Years
Moore's Law was the Fifth, not the First, Paradigm to Bring Exponential Growth in Computing
Logarithmic Plot
Calculations per Second per $1000
10^{15}
10^{10}
10^{5}
10^{0}
10^{-5}
10^{-10}
Electromechanical
Relay
Vacuum Tube
Transistor
Integrated Circuit
Year
1900
'10
'20
'30
'40
'50
'60
'70
'80
'90
2000
'08
'10


PCWorld
Work. Life. Productivity.
NEWS
REVIEWS
HOW-TO
VIDEO
BUSINESS
LAPTOPS
TABLETS
PHONES
HARD
Home / Google IO
Google's Tensor Processing Unit could advance Moore's Law 7 years into the future
Google unveils a custom chip, which it says advances computing performance by three generations.

Discussion Topics

Jobs

Environment

Healthcare

Industry

Education