

EXPONENTIAL DISRUPTION



SALIM ISMAIL

@salimismail

// Global Ambassador, Founding Executive Director
Singularity University

// Co-Founder
Angstro
Confabb
PubSub

// Vice President
Yahoo



Information Layers



Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs







Genentech

Autodesk

NOKIA

Google™

Ewing Marion
KAUFFMAN
Foundation

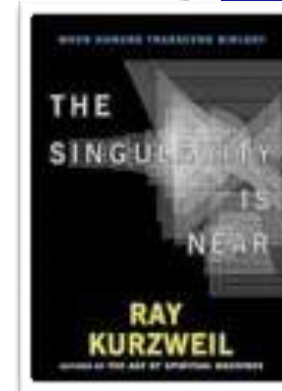
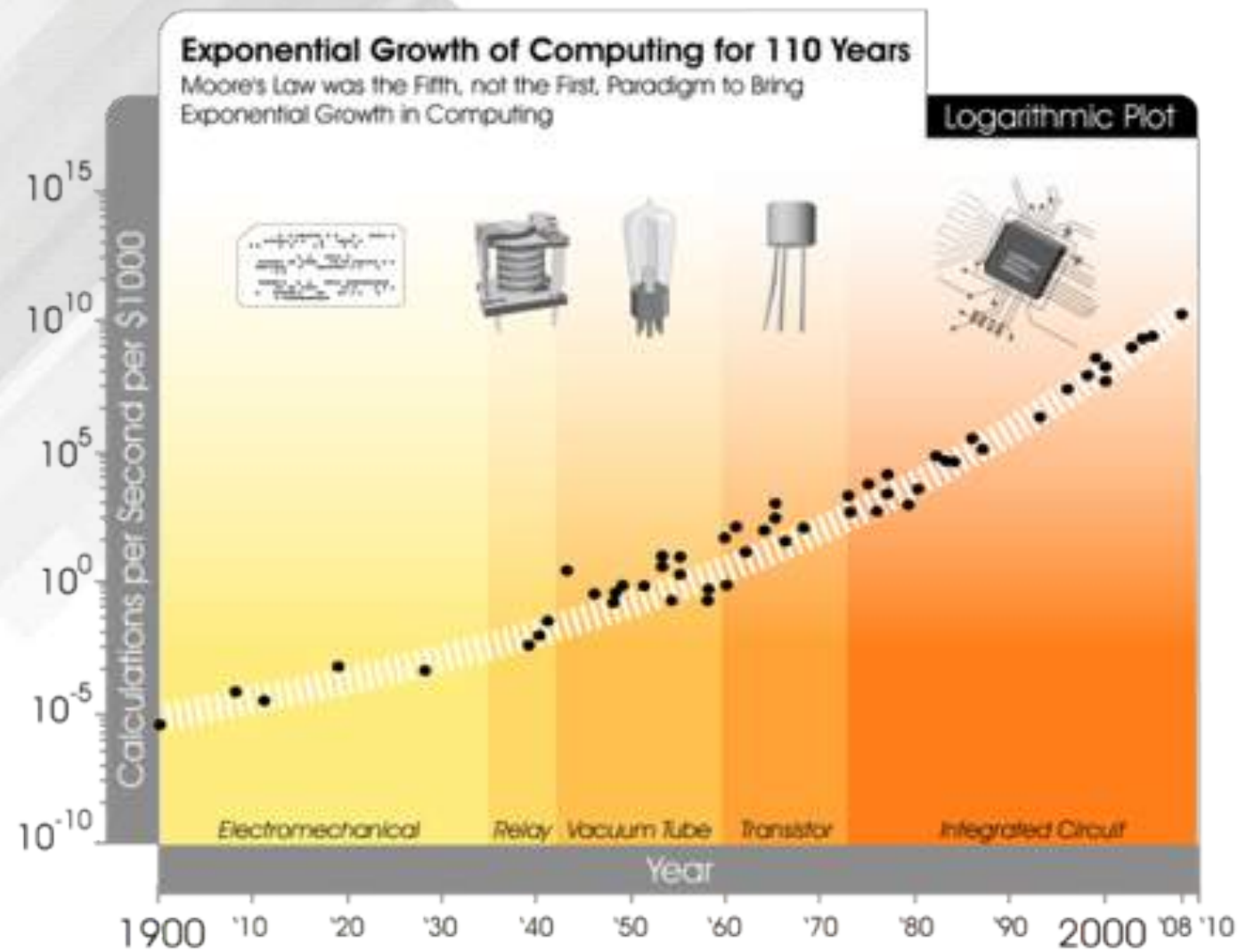


ePlanet Ventures

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





EXAMPLES OF ADVISORY FACULTY & SPEAKERS



Vint Cerf

Chief Internet Evangelist,
Google



Will Wright

Creator – SimCity, Spore;
Founder, Maxis (EA)



George Smoot, PhD

UC Berkeley; 2006 Nobel Prize
in Physics



Dean Kamen

Inventor,
Founder DEKA

Other Notable:

- **Sebastian Thrun**, Stanford AI, GoogleX; Founder – Udacity
- **Saul Griffith, PhD**, Eyeglasses, Squid Labs, Instructables.com, Makani Power
- **Dan Kammen, PhD** – Lead Author, 2007 Nobel Peace Prize-winning IPCC report; Faculty, UC Berkeley
- **Bob Metcalfe, PhD**, Founder, 3Com; co-inventor of Ethernet
- **Chris DiBona**, Open Source Program Manager, Google Inc.
- **Larry Smarr, PhD**, California Inst. for Telecom & IT
- **Chris deCharms, PhD**, Founder Omneruon
- **Tim Ferriss**, Author- 4-hour Workweek



Sonia Arrison

Senior Fellow, Pacific Research
Institute



Aubrey de Grey, PhD

Chairman & CSO, SENS
Foundation



Tina Seelig

Exec Dir Stanford Tech
Ventures



Justin Rattner

CTO, Intel Labs



Yvonne Cagel, M.D.

Astronaut, Colonel- USAF



Craig Venter

Founder, CEO Synthetic Genomics



“You’re not really a university, and you’re not really about the Singularity, so what are you?”

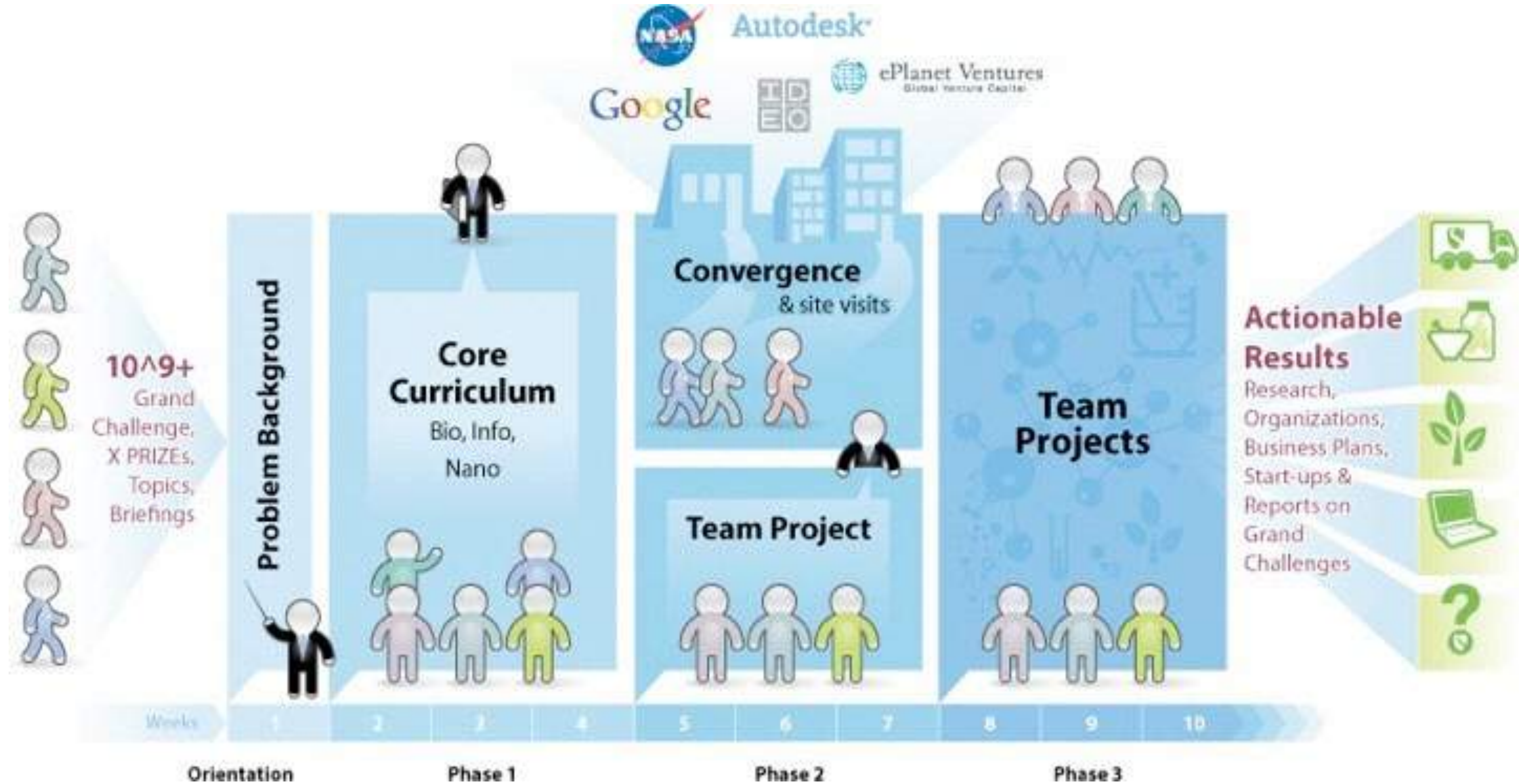
Garrett Lisi, Quantum Physicist





10 Week Program phases:

Innovation Engine



Grand Challenge

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





1 billion with no access to all-season roads

It will take Africa 50 years to catch up











Executive program overview

Executive Program Participants:

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





CURRENT PROGRAMS AND VISION

1. Education Forums

Graduate Studies Program
10 Weeks

Executive Programs
7 Days

FutureMed
5 Days

Future X
3-5 Days

Custom
1 -3 Days



2. Online Platform

Singularity Hub
Online Education
Community Tools



3. Singularity Labs

Incubator & Entrepreneurship
Innovation Hubs
SU Ventures



4. International

Innovation Hubs
Global Impact Competitions
Global Community





Before: 75% had little or zero awareness of breakthroughs

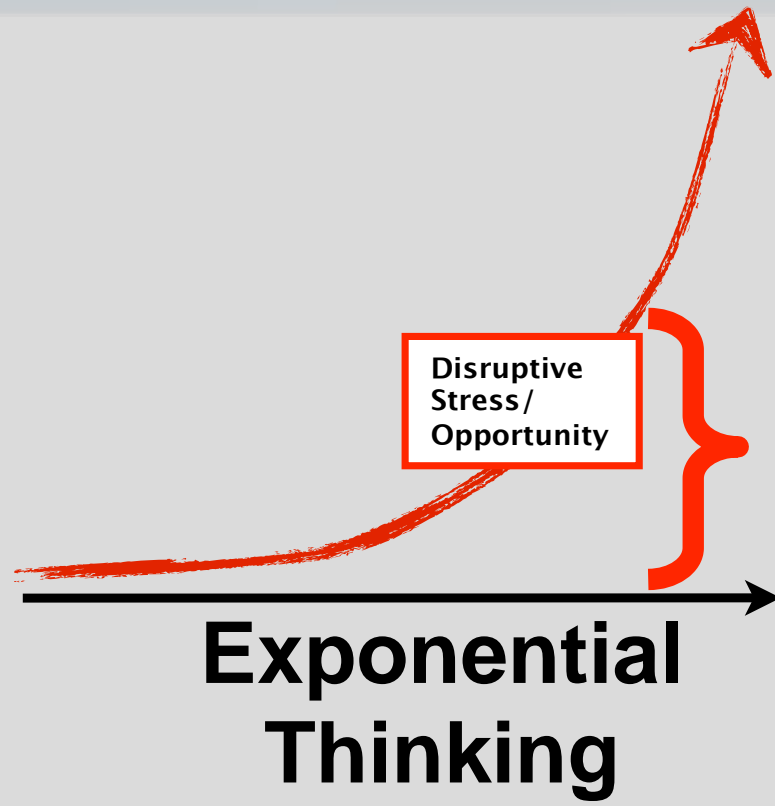




After:

Game-changing
impact (80% in 2
yrs, 100% in 5 yrs)

100% said they
had immediate
action items



10⁹+
Grand Challenges



**Incredible
People**





Curriculum Planning Meetings

Information Layers

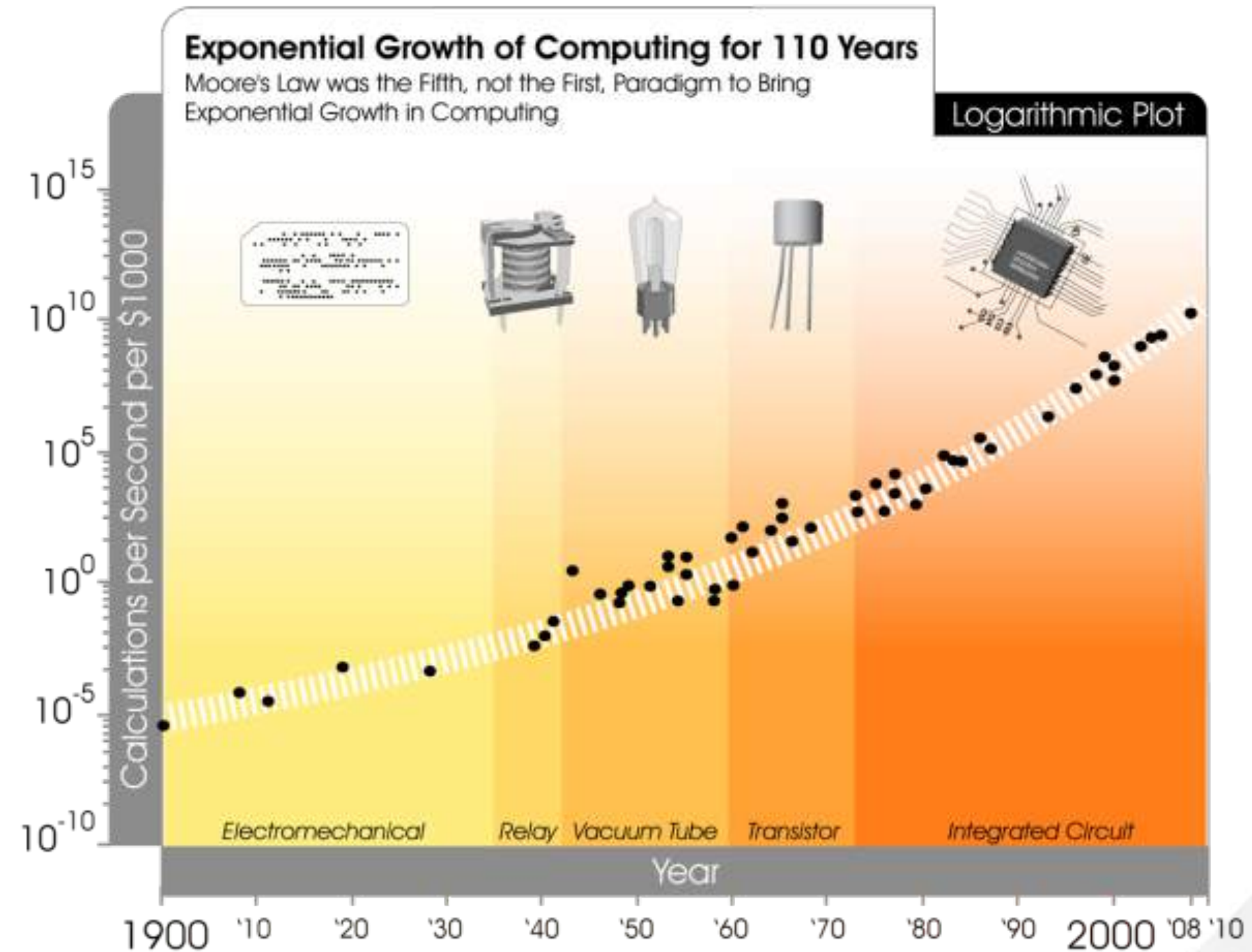


Digitize
Disrupt
Demonetize
Democratize

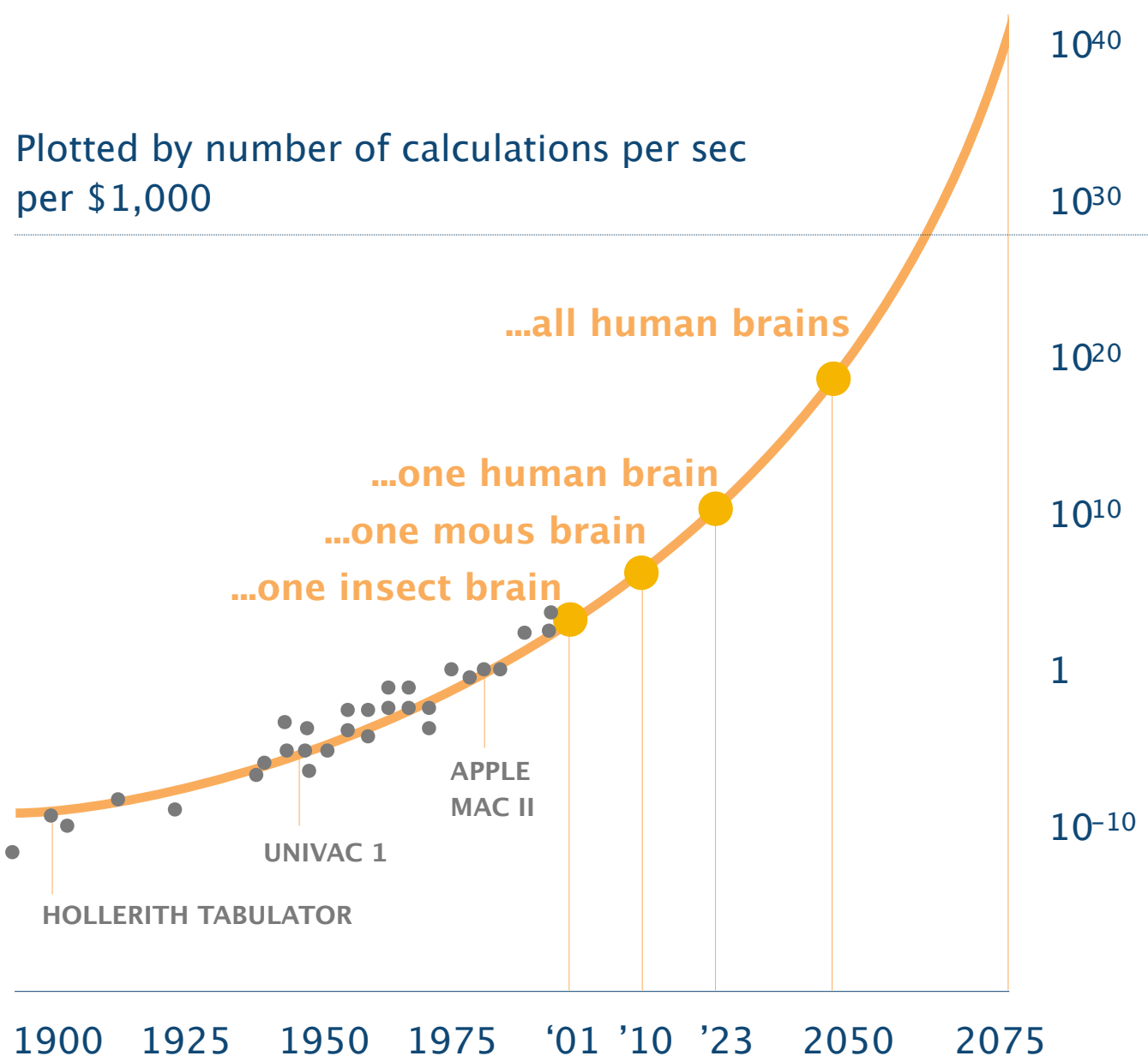
New
Breakthroughs



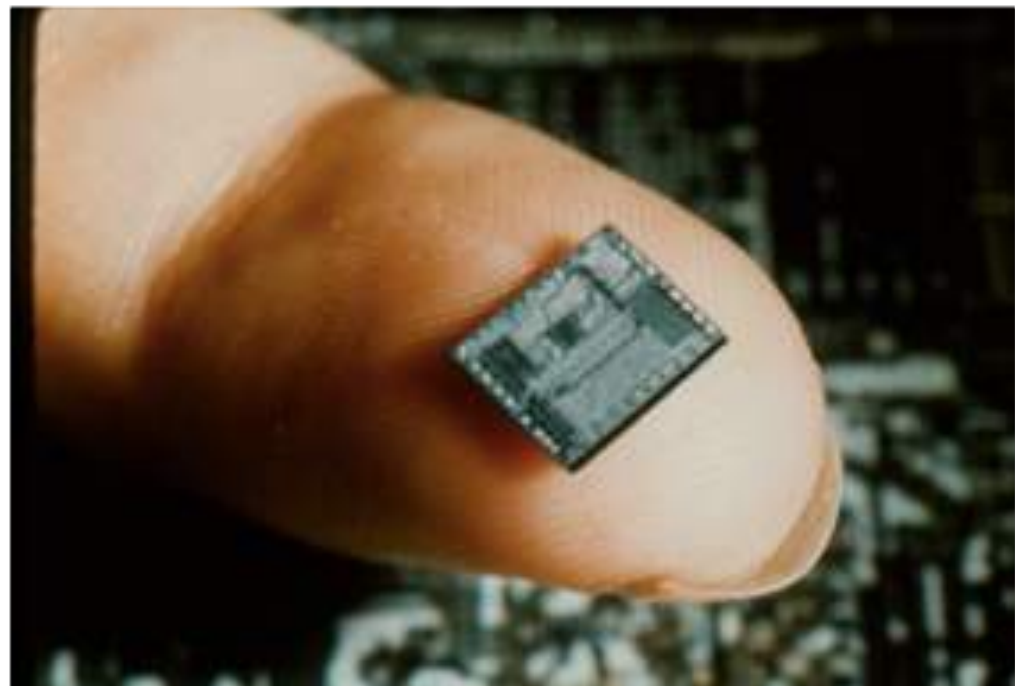
Rate of Change Increasing



Exponential computing



EXPONENTIALLY
FASTER
SMALLER
CHEAPER
BETTER



8008 Microprocessor Spec

CTC	CPU	PRIMARY	DESCRIPTION
<p>THE CPU IS AN 8 BIT PARALLEL CENTRAL PROCESSING UNIT FOR A COMPUTER SYSTEM. IT CAN BE INTERFACED WITH VARIOUS PERIPHERAL DEVICES CAPABLE UP TO 16K BYTES.</p> <p>THE PROCESSOR COMMUNICATES DATA BY 1 BIT DATA & ADDRESS BUS AND HAS 3 INPUT AND 3 OUTPUT LINES FOR CONTROL. TIME MULTIPLEXING OF THE DATA BUS ALLOWS CONTROL INFORMATION, 14 BIT ADDRESSES AND DATA TO BE TRANSMITTED BETWEEN THE CPU AND MEMORY.</p> <p>THE CPU CONTAINS <u>TEN</u> 8-BIT DATA REGISTERS AND A 14-BIT PROGRAM COUNTER. AN 8-BIT PARALLEL BINARY ADDER-SUBTRACTOR IMPLEMENTS ARITHMETIC & LOGICAL OPERATIONS. A MEMORY SPACE CONTAINING <u>SEVEN</u> 14-BIT WORDS IS INTERNALLY USED TO STORE PROGRAMS SUBROUTINE ADDRESSES.</p> <p>THE CPU CONTAINS LOGIC TO IMPLEMENT A VARIETY OF REGISTER TRANSFER, BRANCHING, CONTROL AND LOGICAL INSTRUCTIONS. SOME INSTRUCTIONS ARE CODED IN ONE BYTE (1 BIT), DATA TRANSFER INSTRUCTIONS ARE 2 BYTES, JUMP INSTRUCTIONS UTILIZE 3 BYTES. OPERATING BETWEEN 1 & 2 MICROSECOND CYCLE TIMES THE CPU EXECUTES LOW MEMORY REPRESENTING INSTRUCTIONS IN UP TO 10 MICROSECONDS.</p>			

Written @ Intel 1971

Design issues:

die size

power dissipation

package pin count

testability

Patented by TI

Large Printed Circuit Board (PCB)

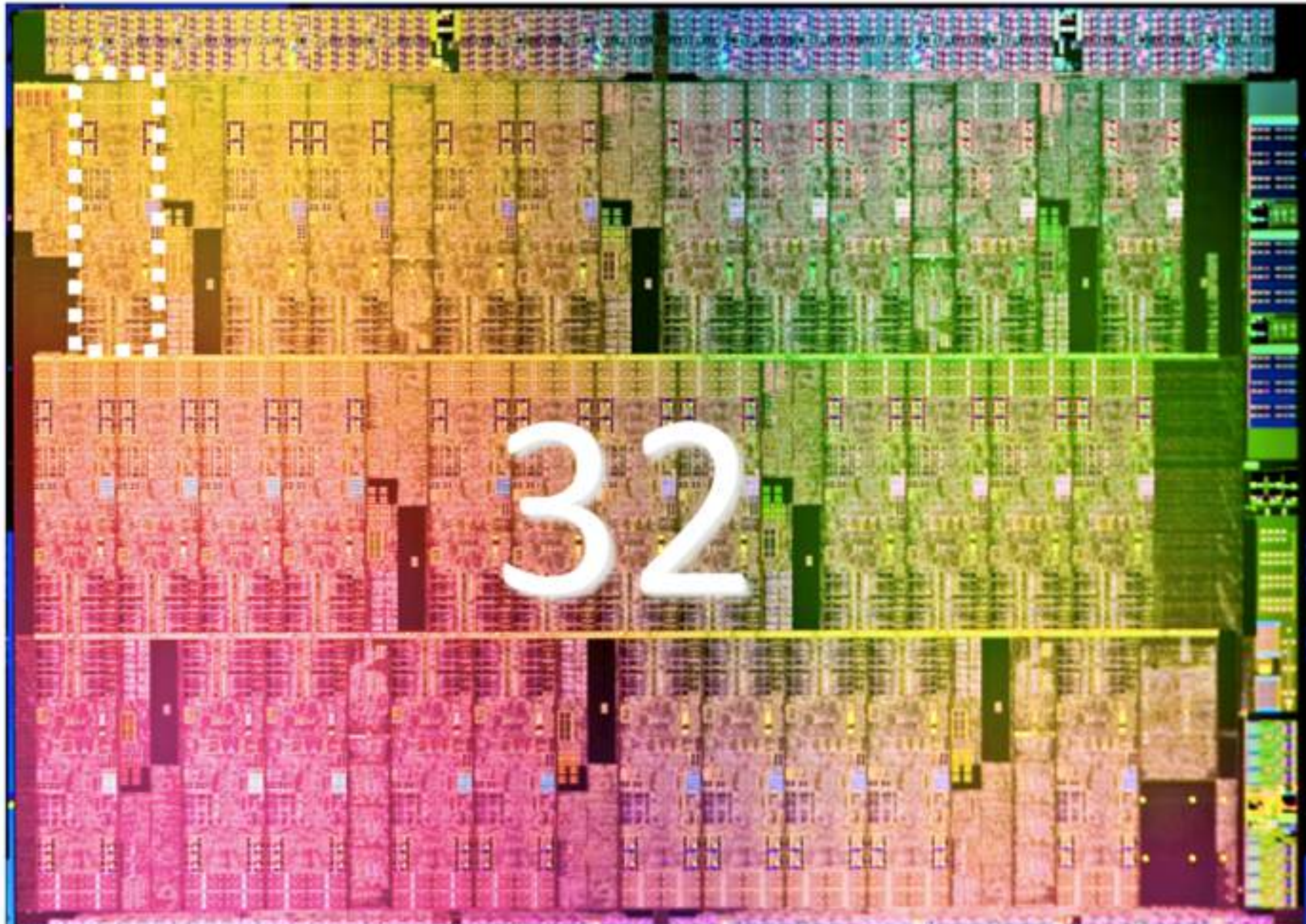


200 chips

"printed wires"

DIP (chip)

Dual Inline Pkg.



32 cores X 16-wide-vector \approx 1 TFLOPS peak

http://download.intel.com/pressroom/images/Aubrey_Isle_die.jpg



Controversial quantum computer aces entanglement tests

› 17:18 08 March 2013 by [Jacob Aron](#)

› For similar stories, visit the [Quantum World](#) Topic Guide

› [Read full article](#)

Continue reading page | 1 | 2



PRINT



SEND

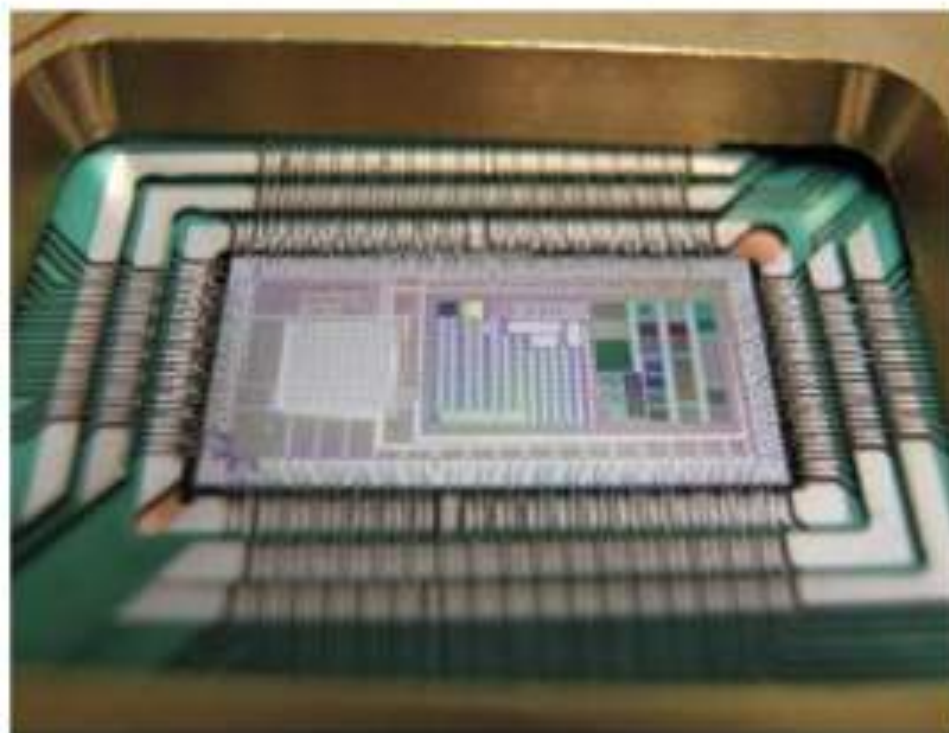


SHARE

A few days ago, I held a quantum computer in my hand – or did I?

The niobium wafers I saw are the guts of the only commercially available quantum computer, but whether their calculations truly harness the weird world of quantum mechanics has provoked heated debate. Now the chips, made by [D-Wave](#) of Burnaby, Canada, have passed two tests that suggest that the bits in their machines have the quantum property of entanglement. That doesn't end the controversy, but it strengthens D-Wave's claim that a revolution in computing is a lot closer than we thought.

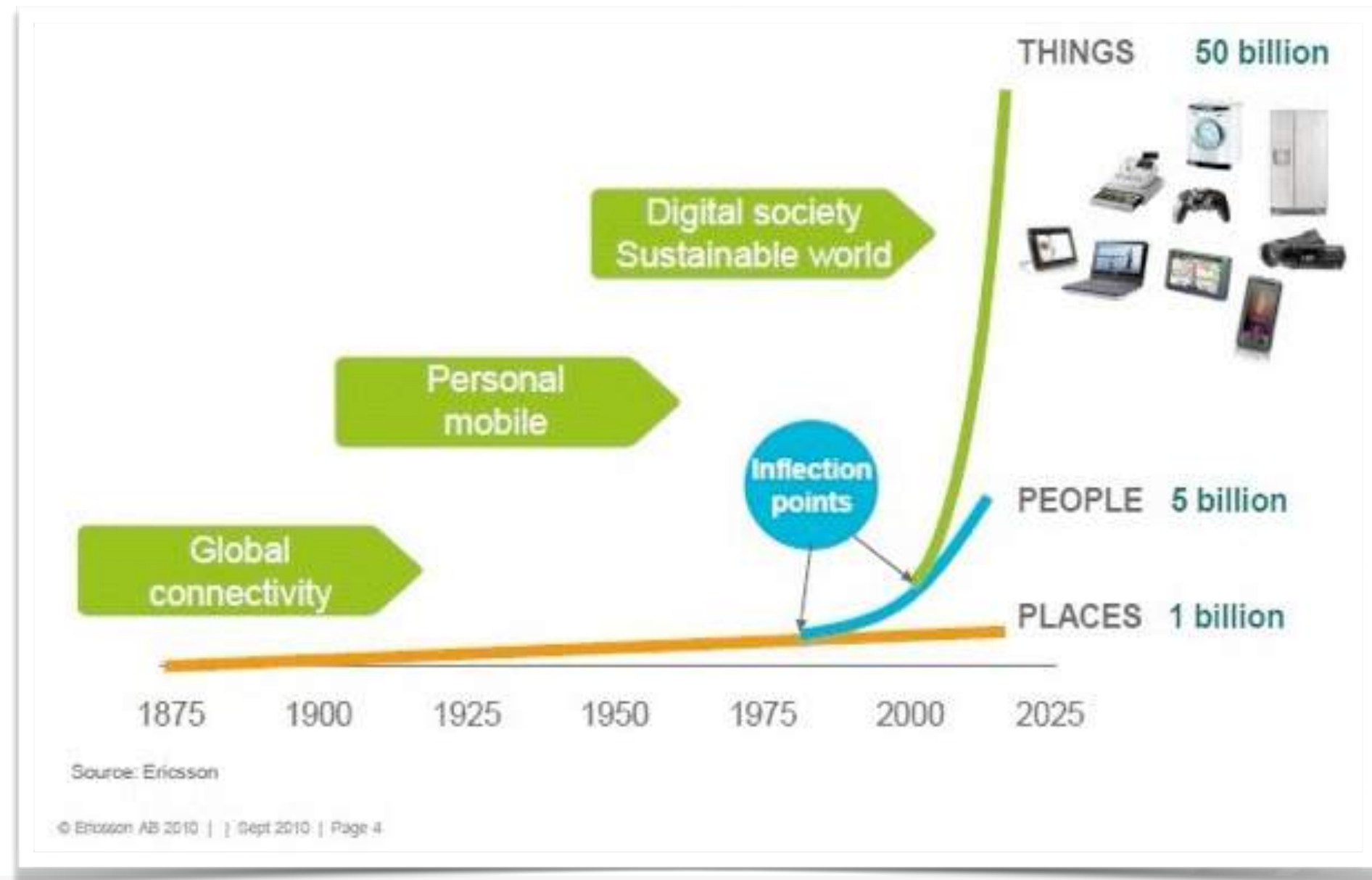
Though D-Wave has been [selling its chips \(see picture\)](#) since 2011, its quantum computing credentials have remained controversial. That's because the firm's devices go against the traditional model of quantum computing, which is based on quantum versions of the logic gates found in ordinary, or classical, computers.



Entangled and – so it's hoped – significantly speedier (Image: D-Wave)

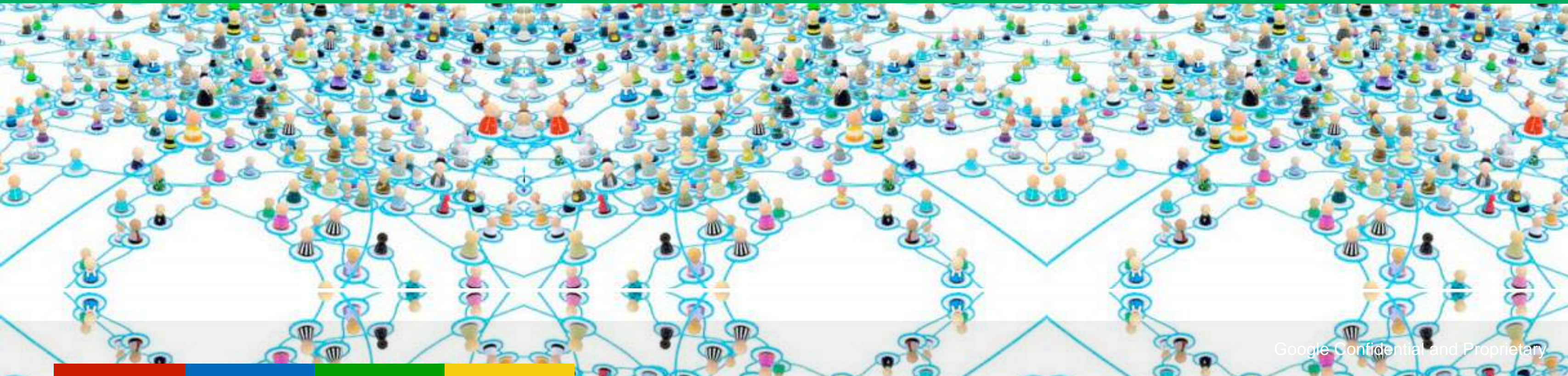
Internet of Things

50B devices by 2020



M2M communication will be
> 50%
of data traffic by 2030

1 trillion
connected devices
using low bandwidth



Oculus Rift

Google Glass



Decoding the human intonation *

* It's all in our head, really

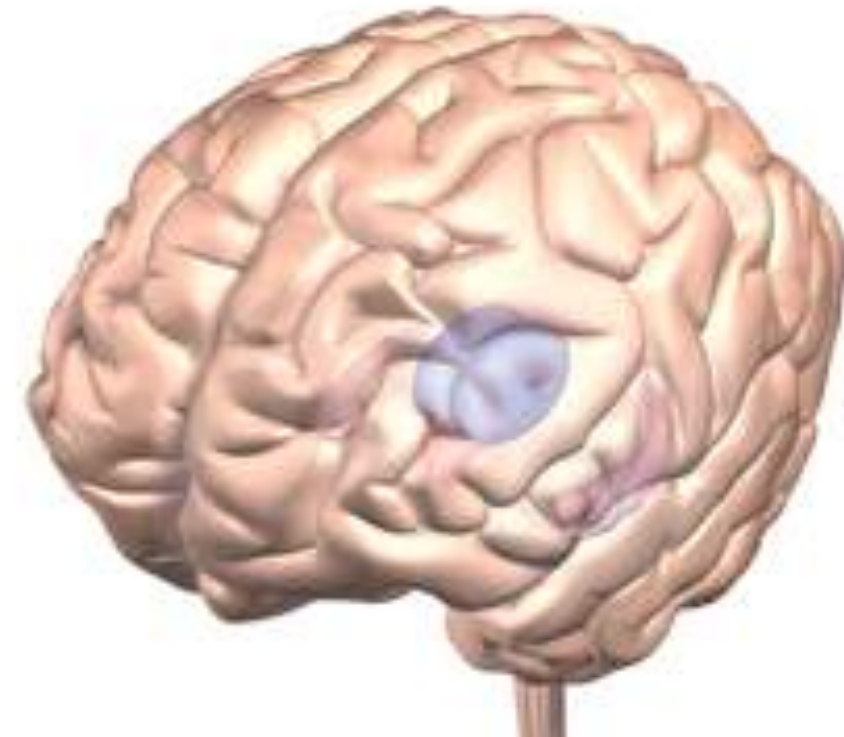
18 years of research

Over 60,000 subjects world-wide

4 active researches

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

Major awards



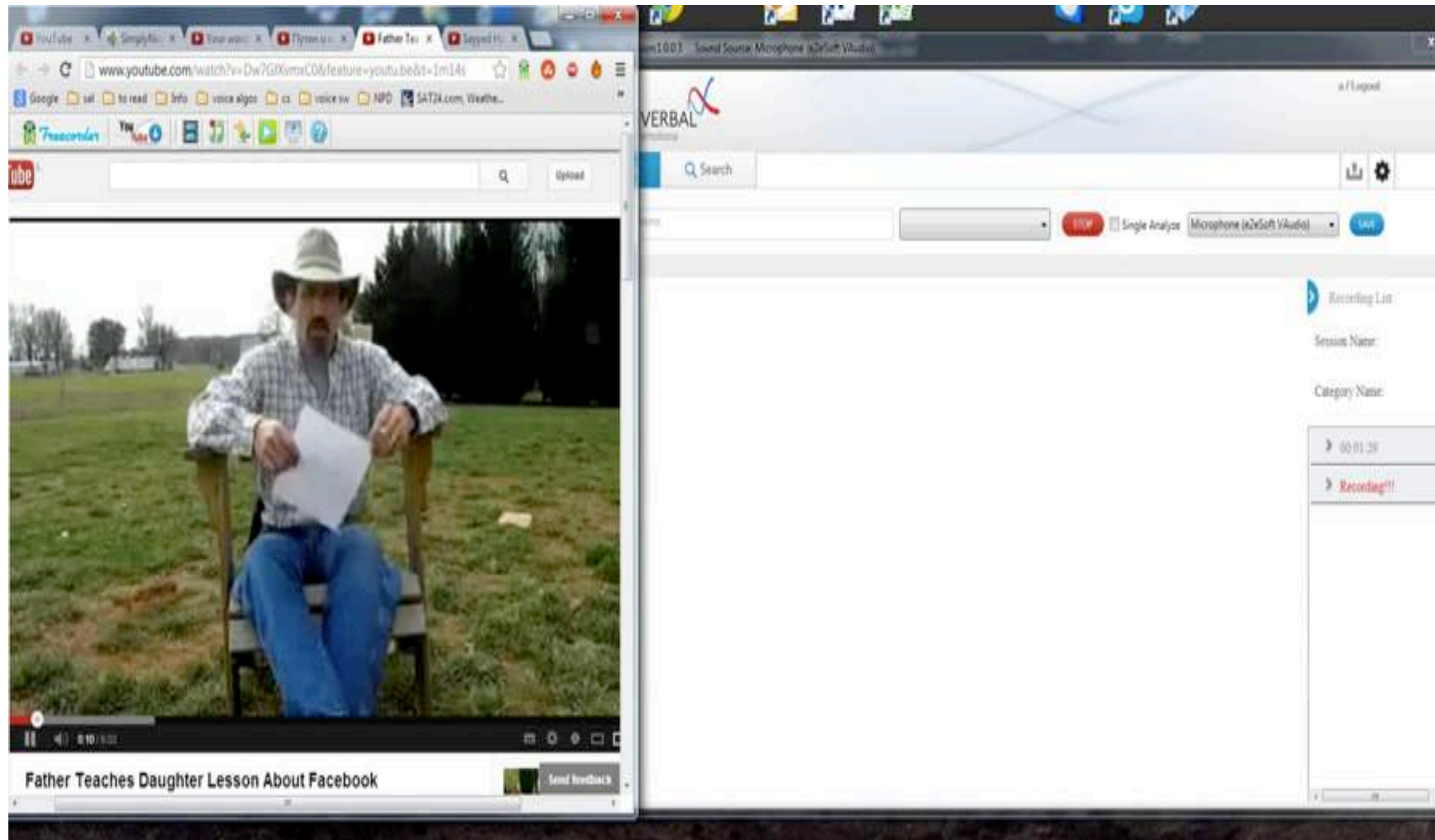
Dr. Yoram Levanon
Decision Making, Physics



Dr. Ian Lossos
Neuropsychology



Father teaches daughter a lesson



Moodies

iTunes Preview

Moodies Emotions Analytics

By Beyond Verbal

Open iTunes to buy and download apps.



View in iTunes

Free

Description

Your mood in 20 seconds. Just press a button and talk.

Intrigued by emotions?

[Moodies Emotions Analytics Support](#) ▶

What's New in Version 1.4

Improved user experience

Bug fixes



Information Layers

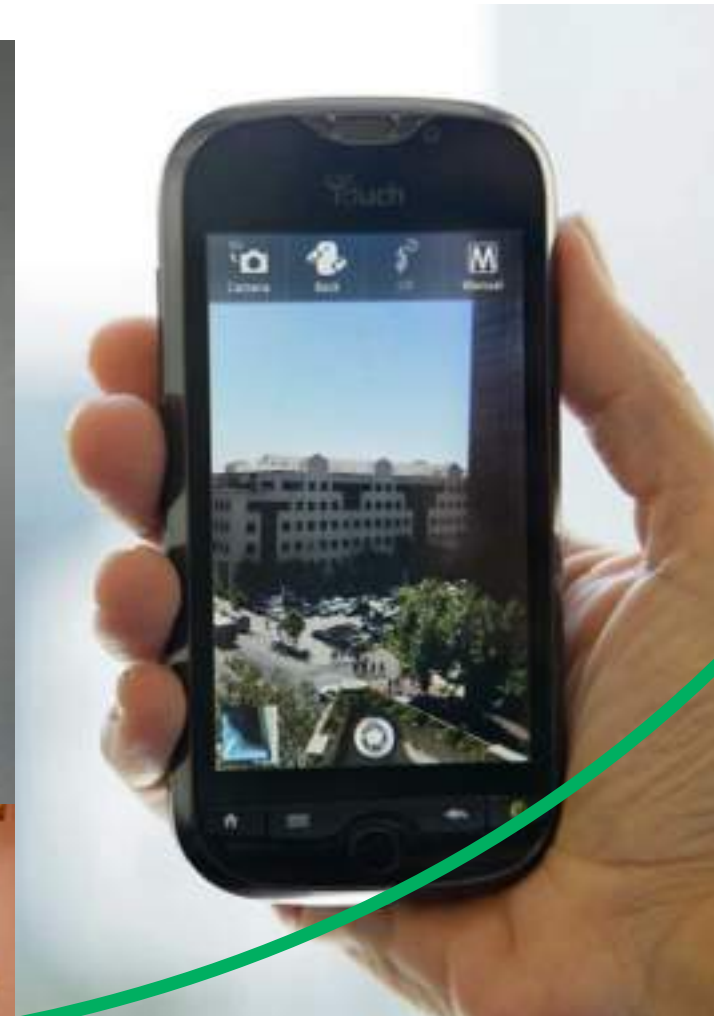


Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs



Why information » exponential



Why information » exponential

// zero friction to move/copy

// zero marginal cost

// apply computation

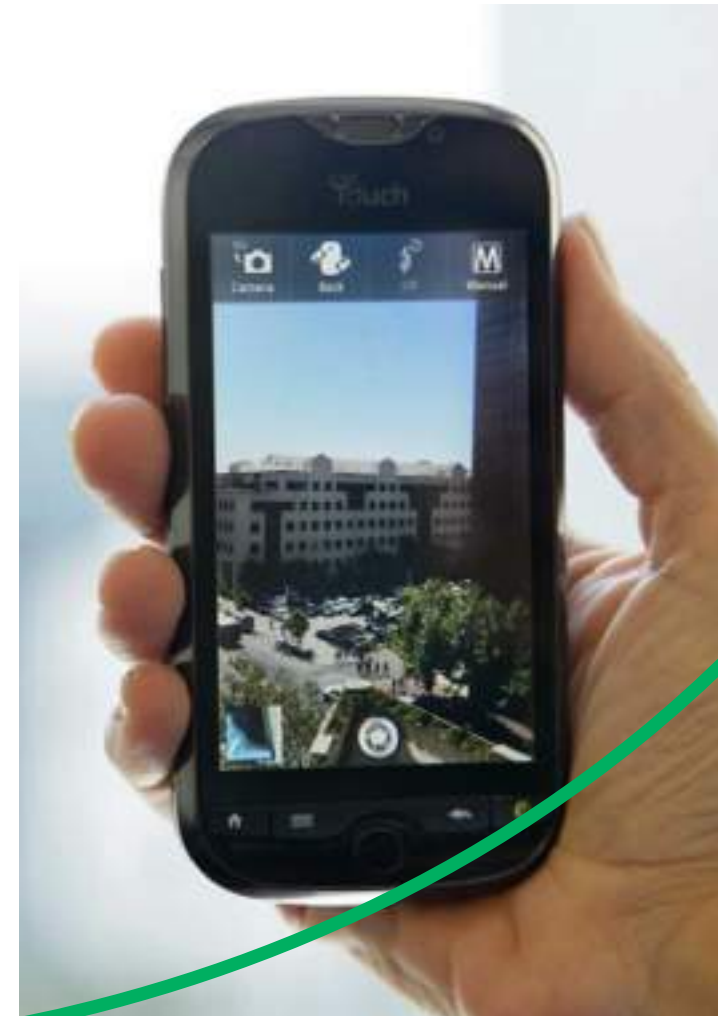
// data correlations

// machine learning

// modeling

// simulations

// **100%** democratization
of effort/innovation



3D printing / Digital fabrication





INDIEGOGO

[Sign up](#) | [Log in](#)

[EXPLORE](#) | [HOW IT WORKS](#) | [START YOUR CAMPAIGN](#)

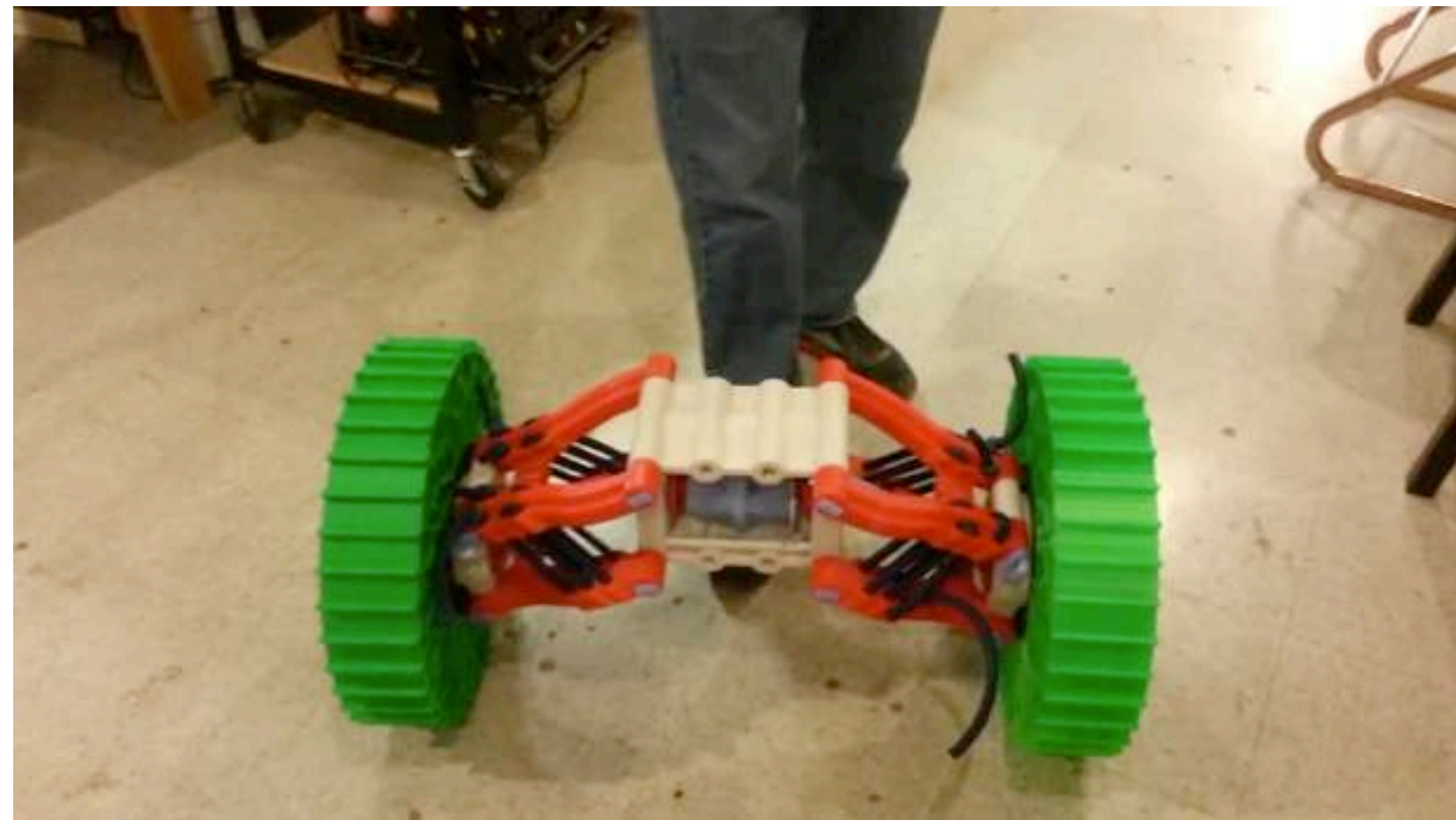


New Matter MOD-t: 3D printing for everyone

New Matter makes 3D printing way easy. Low price. Wireless connectivity. And an online store full of cool designs that you can buy, customize, print, and share.



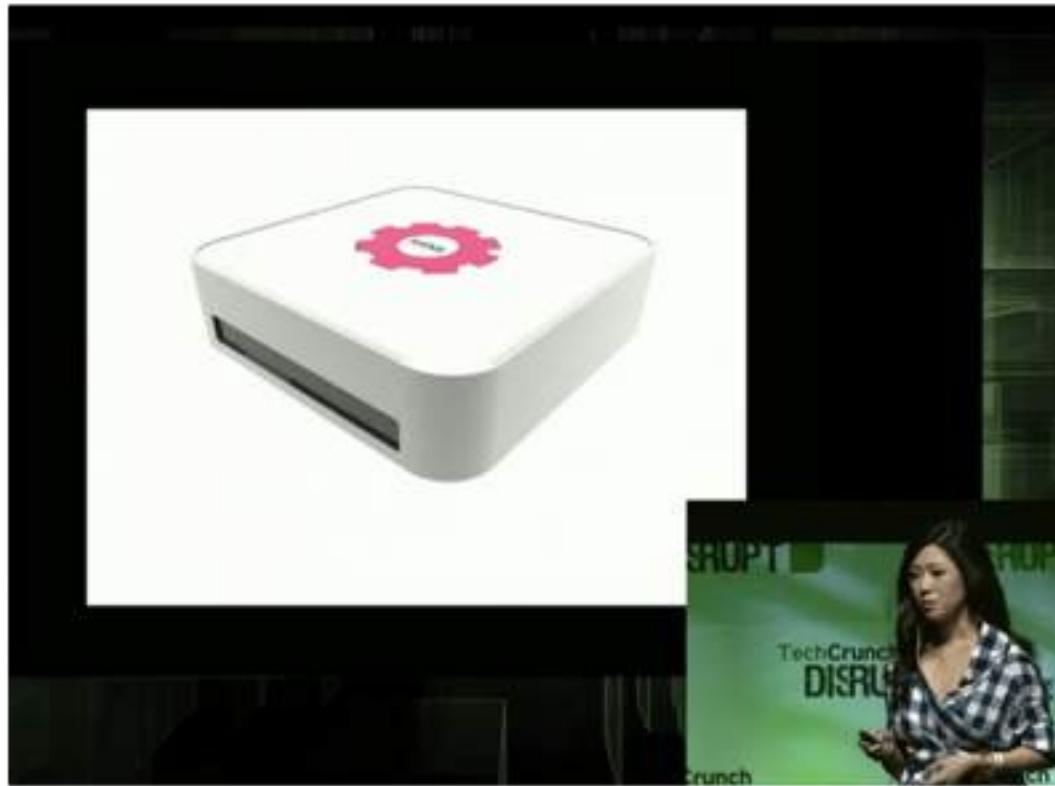


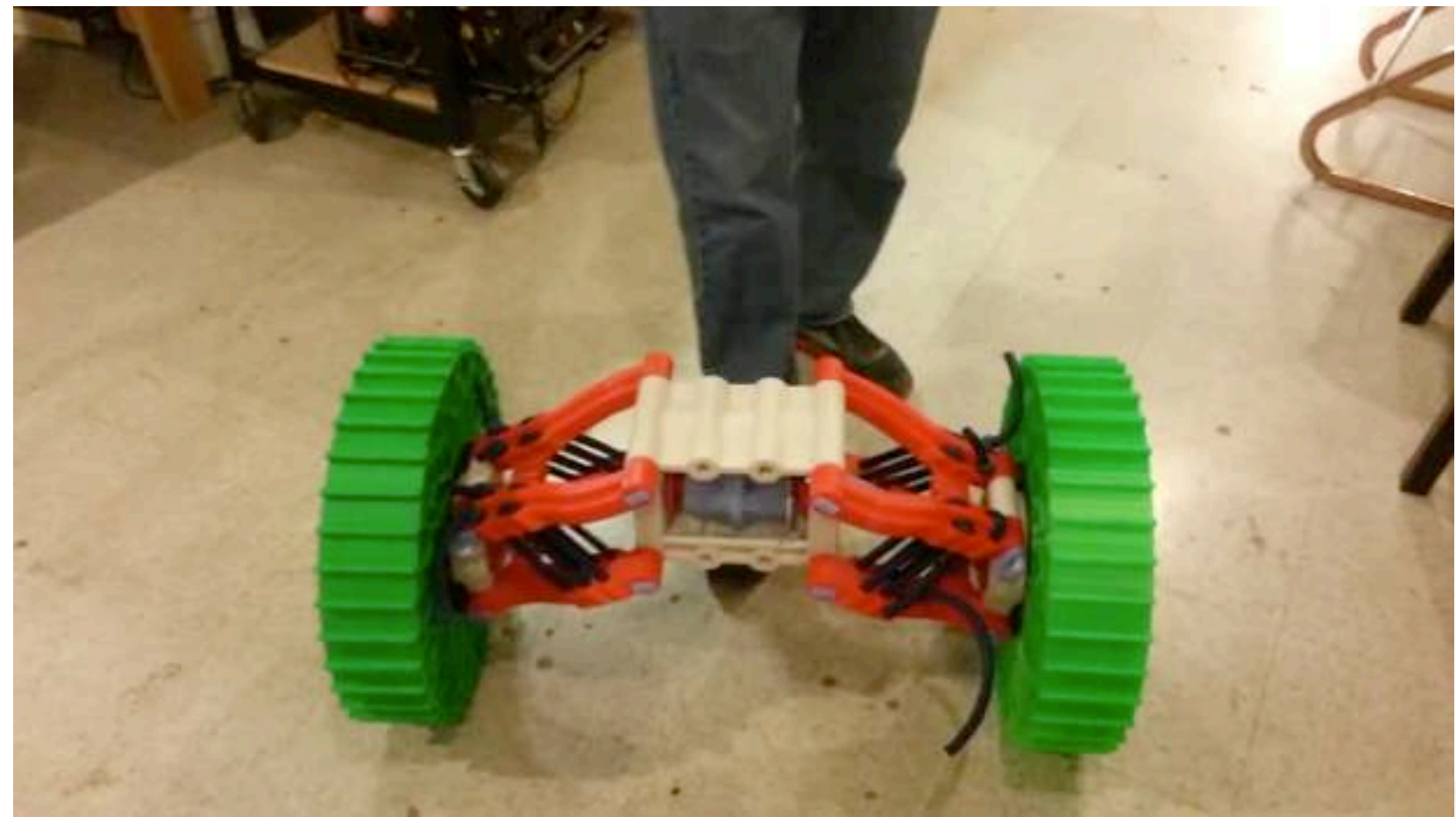


3d printed car

Michael Curry

3D printing – makeup





3d printed car

Michael Curry

AI & Robotics



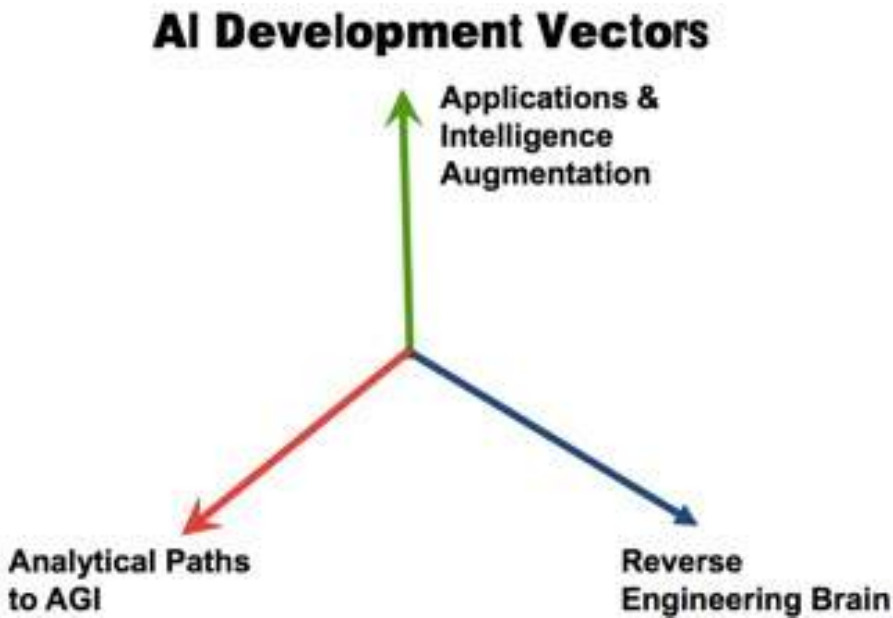
Dan Barry, MD

(Space, AI, Robotics)
NASA Astronaut

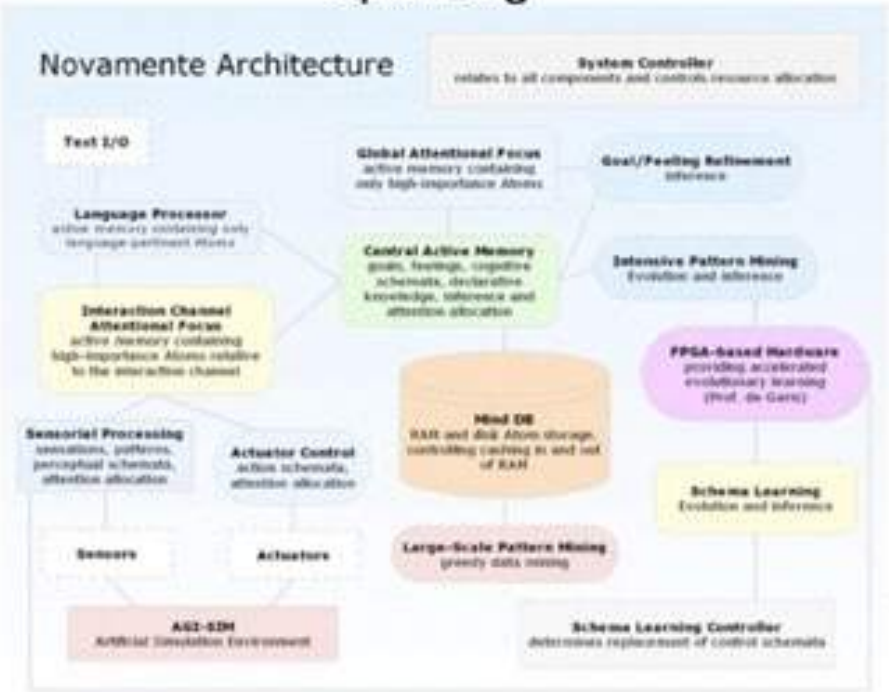


Neil Jacobstein

(AI, Robotics)
AI CEO, Visiting
Scholar
Stanford



OpenCog



http://opencog.org/wiki/The_Open_Cognition_Project

Last upgrade - 50k years

Ancient architecture

Torrents of data

Hardwired biases

Limited bandwidth

Technological amplification

Change accelerating

Global problems

Navigation requirements increasing



Biases & heuristics in human cognition

Anchoring bias – fixating on 1st impressions

Status quo bias – failure to consider alternatives to what is

Sunk-cost bias – protecting earlier bad choices

Confirming-evidence bias – selective data collection

Framing bias – posing the wrong question

Overconfidence bias – failure to challenge assumptions

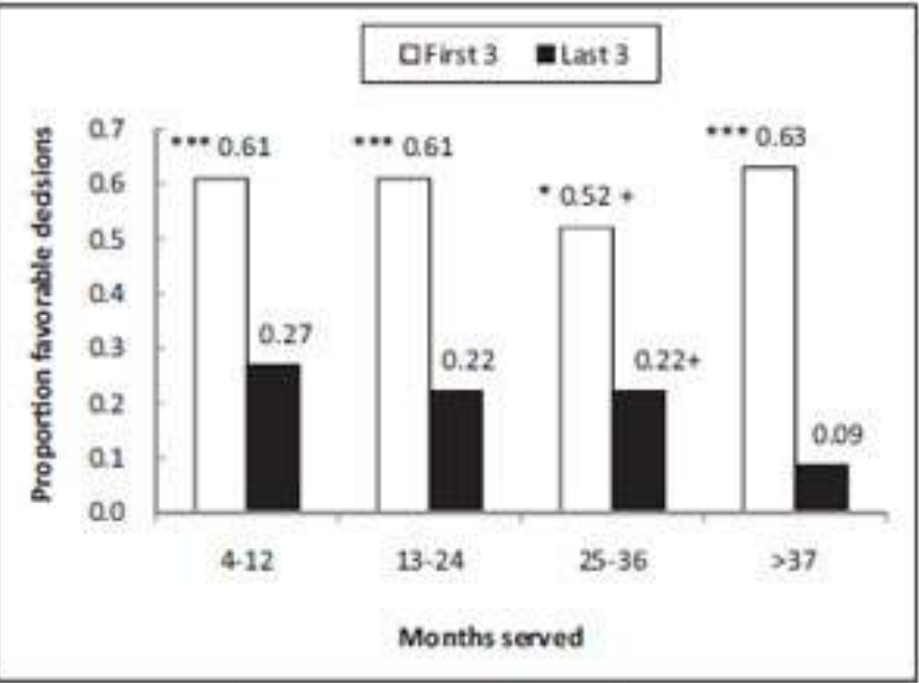
Saliency bias – focus on dramatic events vs whole picture

Base-rate bias – neglecting relevant baseline information

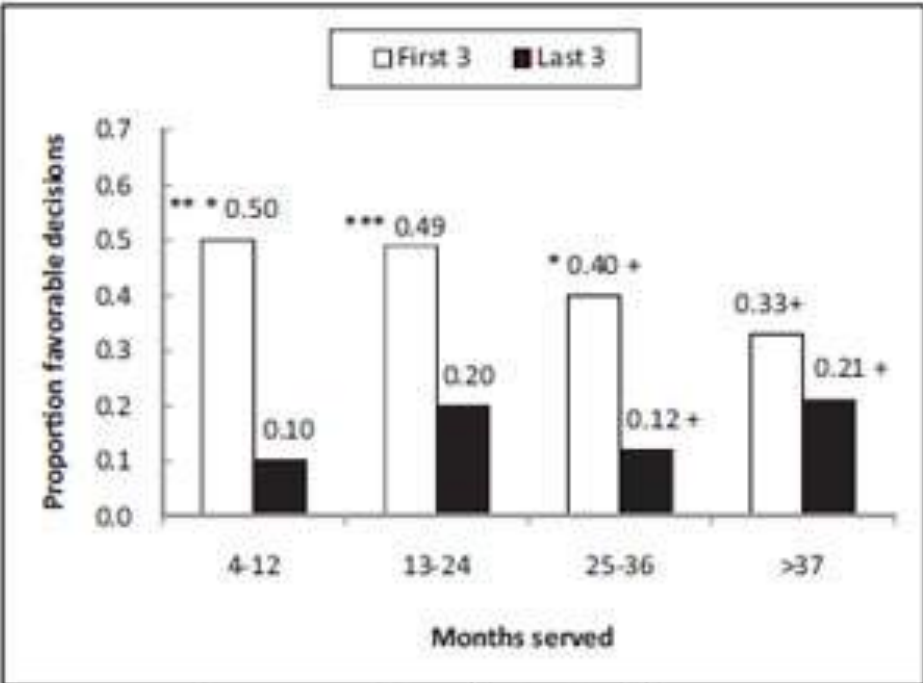
Pattern invention bias – imposing patterns on events

Prudence bias – slanting probabilities & estimates

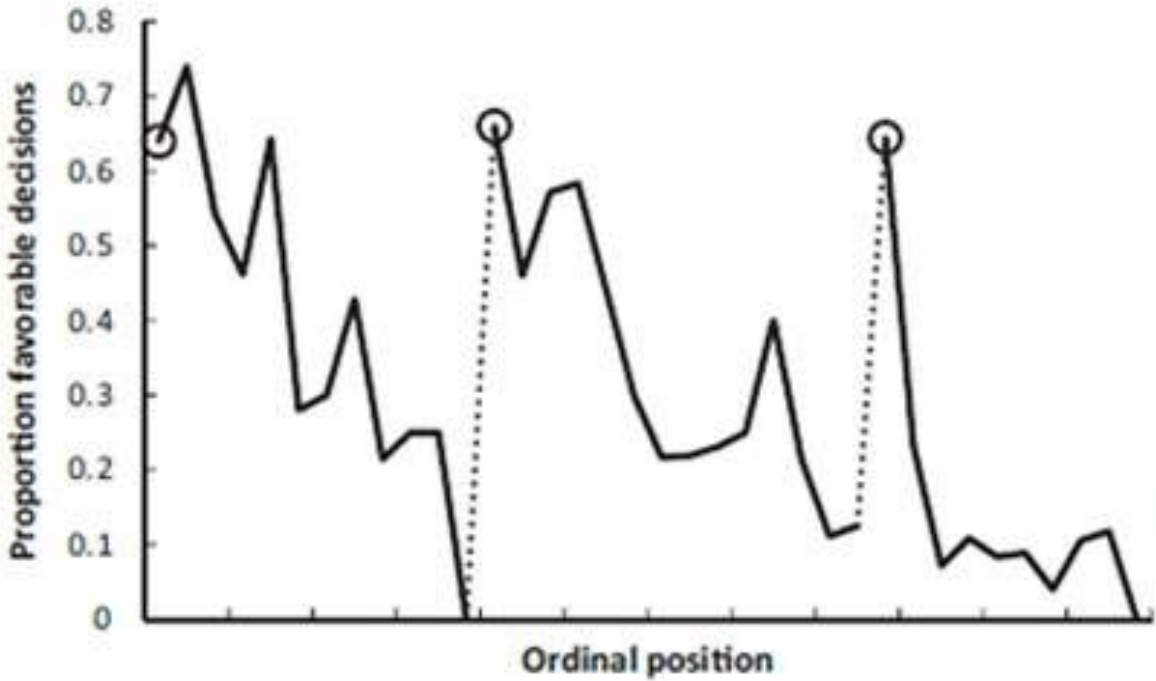
Shai Danziger – 1,112 parole hearings



No previous incarcerations



Some previous incarcerations



IBM Watson



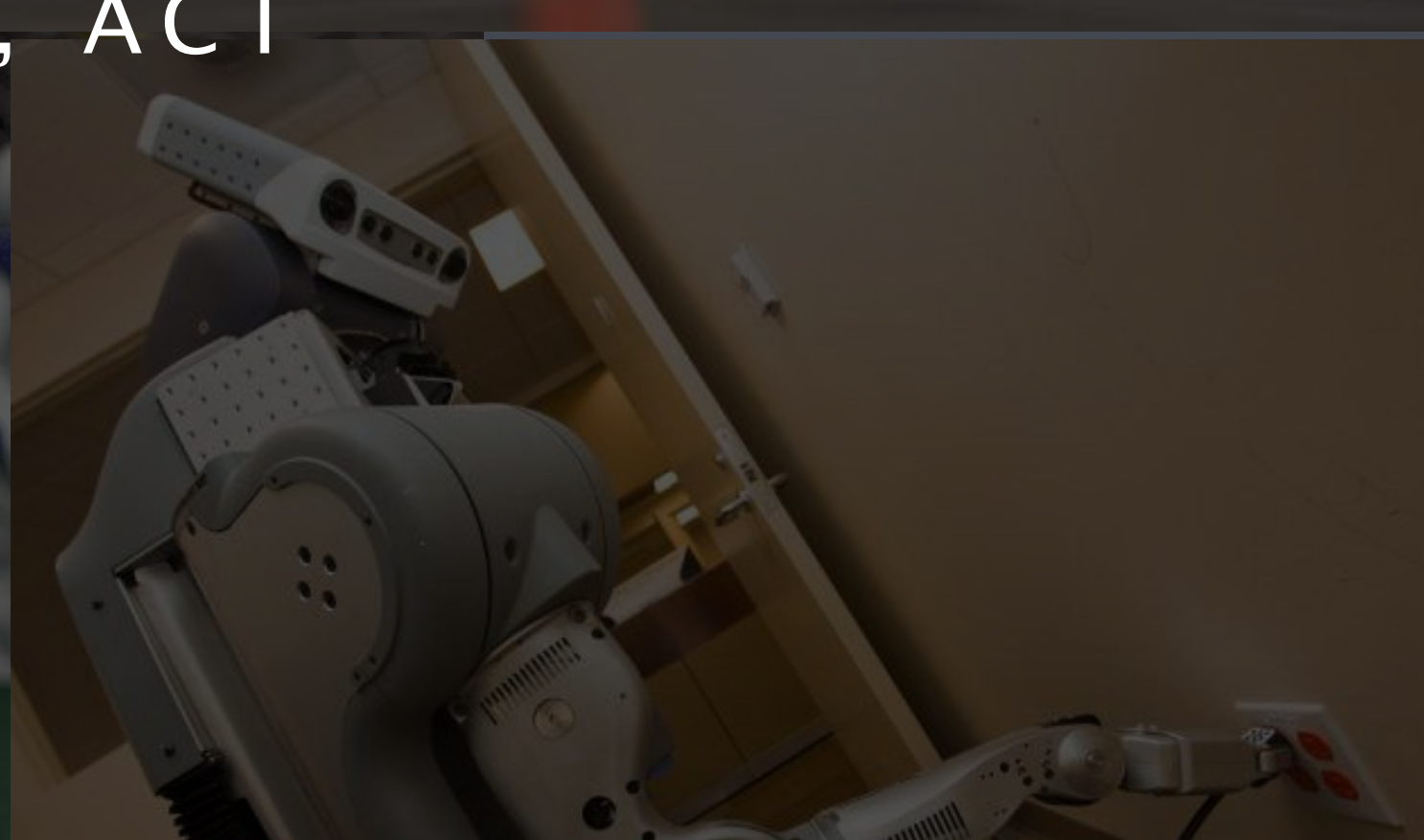
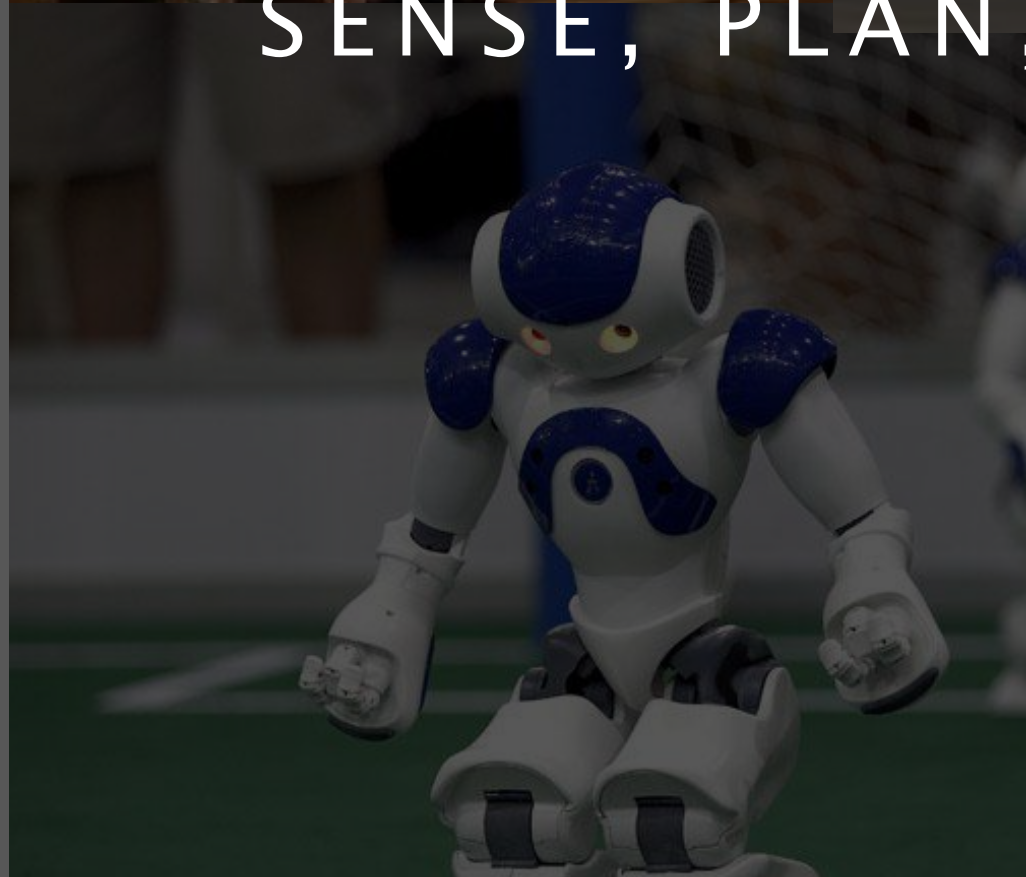
Other applications:

Healthcare
Education
Travel





EMBEDDED AI: SENSE, PLAN, ACT



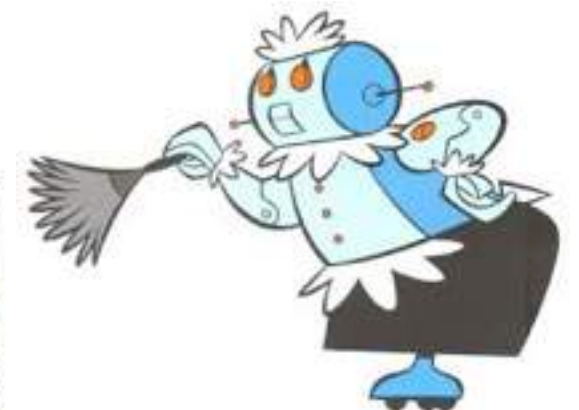


POPULAR ROBOTS

Reality



Expectation





AUTONOMY & PURPOSE

Fully Autonomous



Remote-control

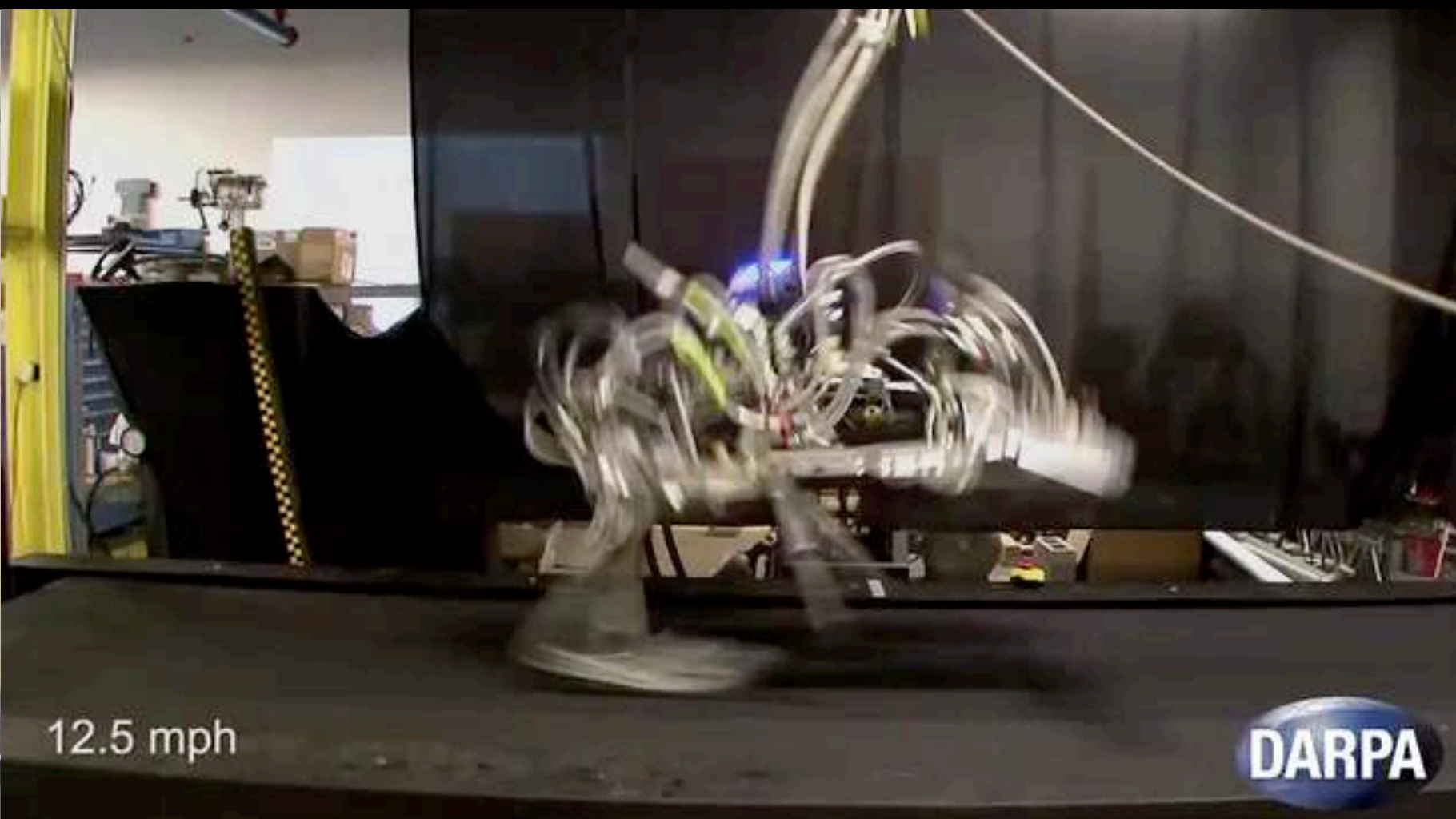
Narrow Purpose

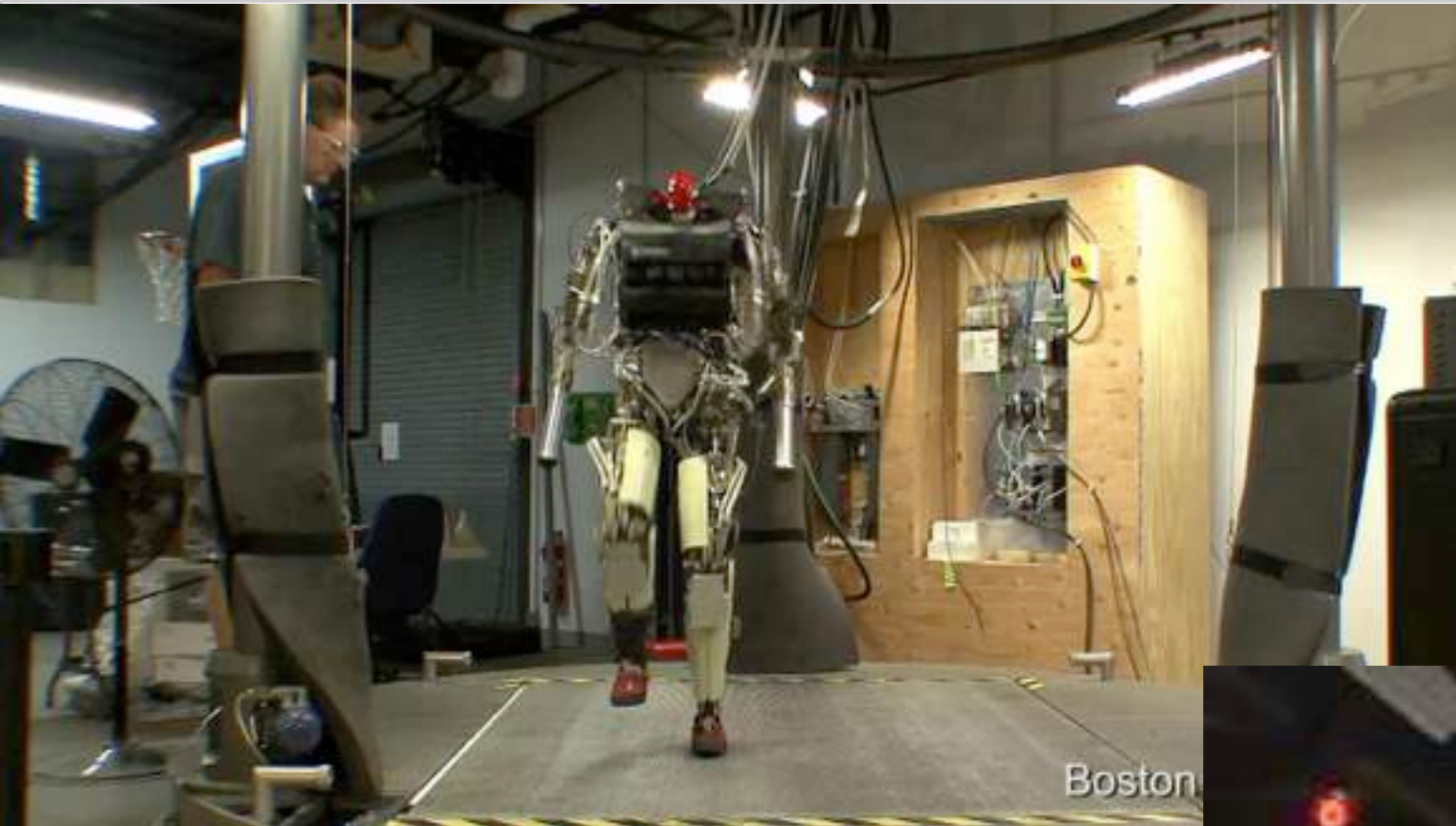


**Replacement
Enhancement
Health & Therapy
Research/Education
Transformative**

General Purpose







PetMan



Boston Dynamics

Boston Dynamics

Replacement/
Assistance

Atlas



Atlas Proto

<http://www.youtube.com/watch?v=SD6Okylclb8>



Was \$ 700

Today \$ 20





Father builds flying drone camera to follow his son on his way to school

- Images are beamed back to Paul Wallich's computer from on-board camera
- Follows his son using tracking device in the boy's bag

By DAILY MAIL REPORTER

PUBLISHED: 13:07 EST, 30 November 2012 | UPDATED: 16:25 EST, 30 November 2012

[Comments \(15\)](#) | [Share](#) | [+1](#) | [7](#) | [Tweet](#) | [29](#) | [Like](#) | [140](#)

A techy father has come up with a novel way of keeping an eye on his son as he walks to the school bus stop - a flying drone camera.

The 21st century solution to the time-honoured tradition of escorting children to the bus stop is the brainchild of Paul Wallich.

Called the Kid-Tracking Drone the hi-tech gadget uses a smart phone and chat software to record images from a lightweight 'quadcopter'.

[Scroll down for video](#)





GOOGLEX ROBOT FUTURE?



Andy Rubin, GoogleX



SCHAFT

meka

redwood  robotics

ipi

BOT & DOLLY

af

Holomni

BostonDynamics





Replacement/
Assistance

ASSISTANCE AT HOME



Roomba - iRobot



UBRI - Unbounded Robotics

PR2 - Willow Garage





Enhancement

ROBOTIC TELEPRESENCE

SUITABLE™
TECHNOLOGIES
beam



fellow
ROBOTS

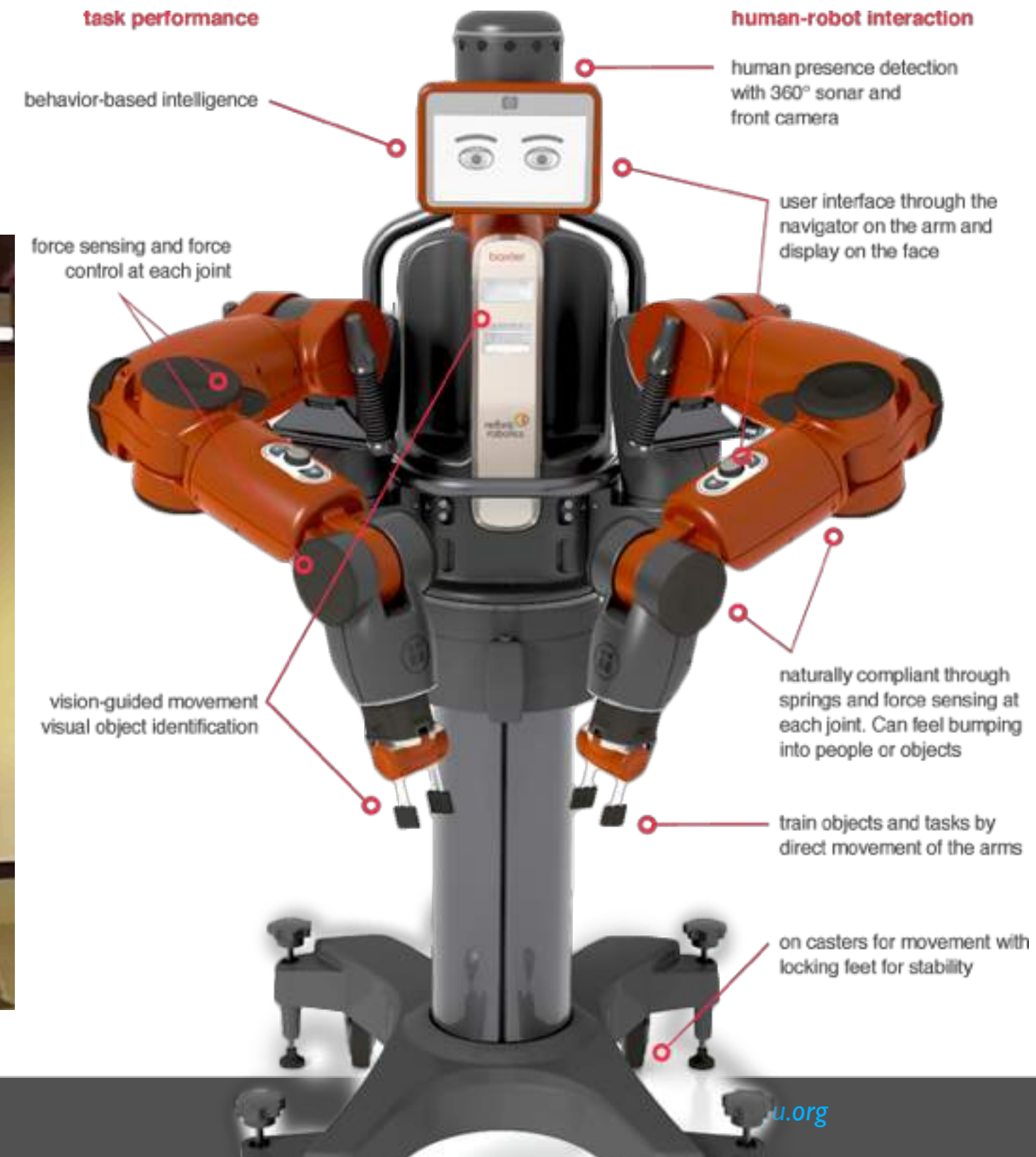
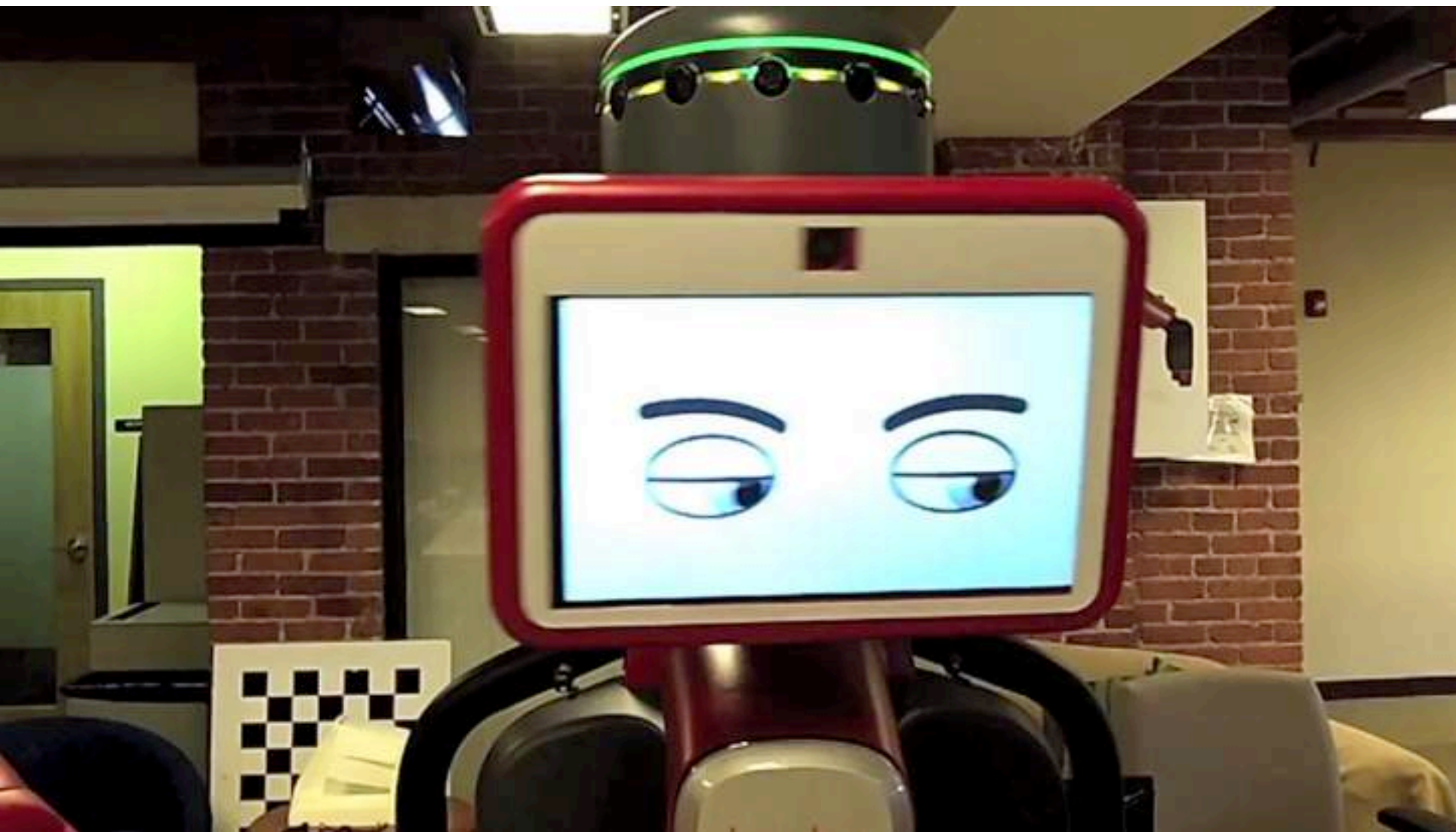




Replacement/
Assistance

NEW WAVE OF MFG ROBOTS - BAXTER

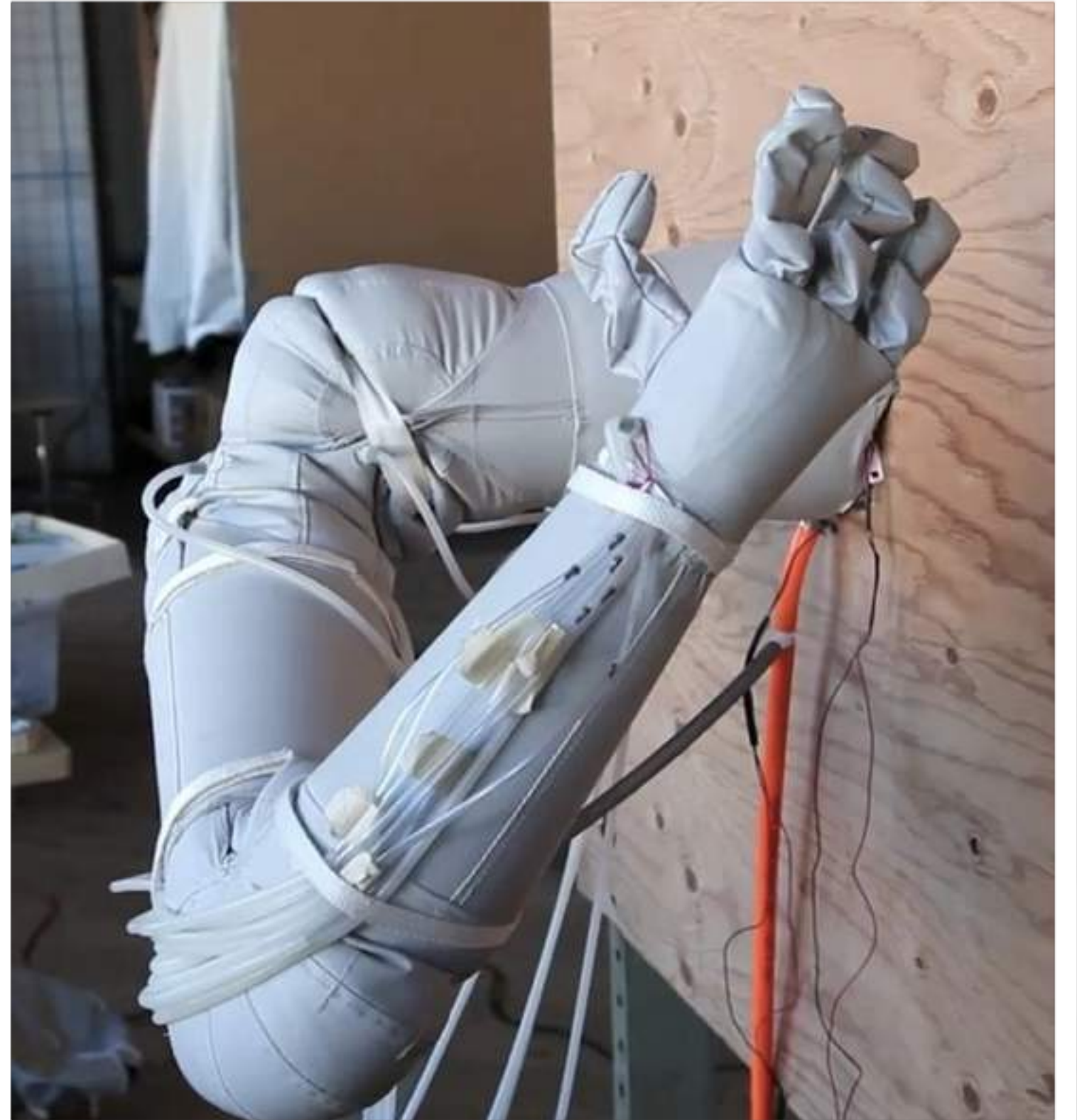
Baxter - ReThink Robotics
\$22,000



Baxter: 22,000 \$



Pneumatic Robotics



Migrant workers in China face competition from robots

July 20, 2012

The International Federation of Robotics tracked a 50 percent jump in purchases of advanced industrial robots by Chinese manufacturers in 2011, to 22,600 units, and now predicts that China will surpass Japan as the world's largest market in two years, [Technology Review](#) reports.

Foxconn, said last July that the Taiwan-based manufacturing giant would add up to one million industrial robots to its assembly lines inside of three years.

The aim: to automate assembly of electronic devices just as companies in Japan, South Korea, and the United States previously automated much of the production of automobiles.

But China's leaders see employment as essential to maintaining a harmonious society. The imperative of creating jobs often trumps that of efficiency.

Also, Foxconn can't replace human workers right away because automating assembly lines would require rejiggering its entire manufacturing process.

Topics: AI/Robotics | Social/Ethical/Legal

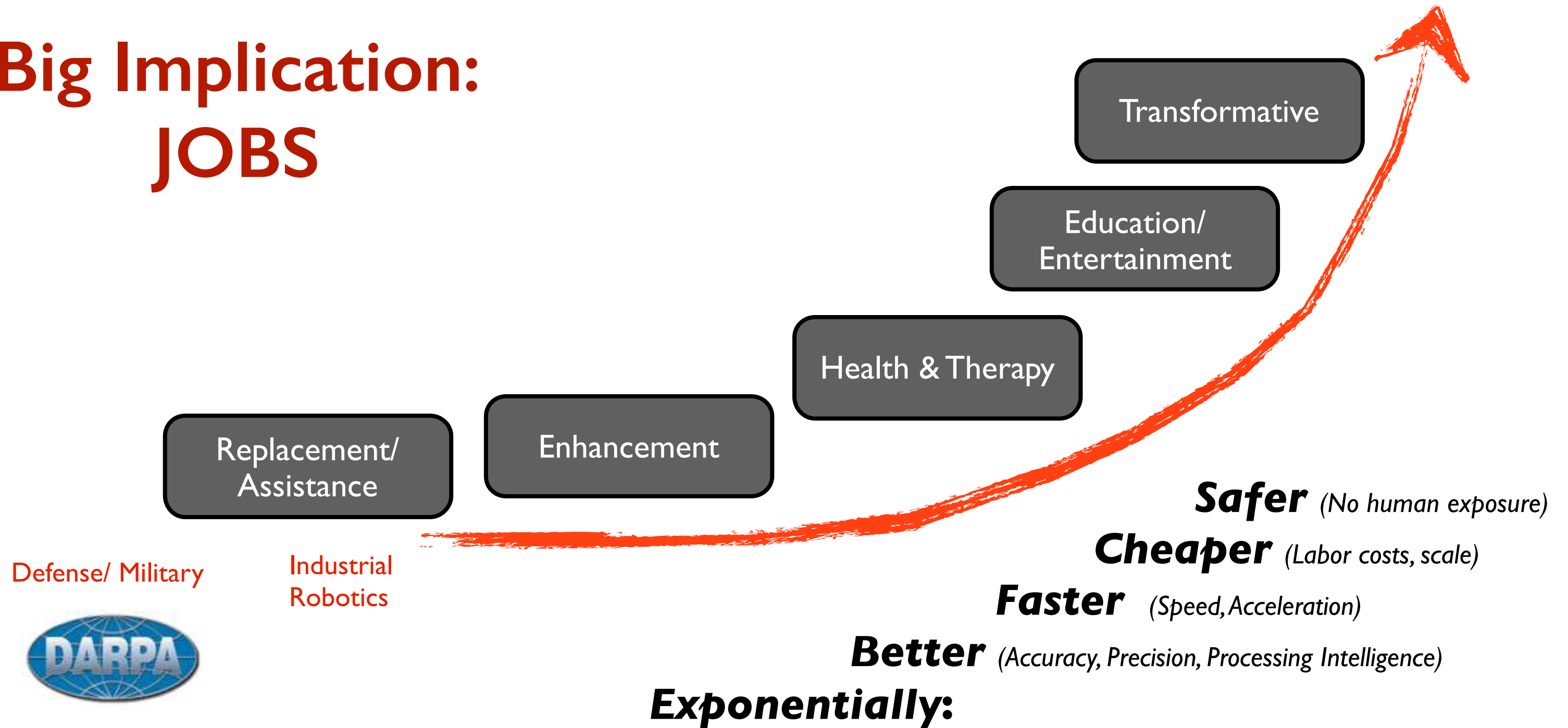


Chinese factory workers (credit: Robert Scoble/Wikimedia Commons)



RISE OF THE ROBOTS

Big Implication: JOBS





Education/
Entertainment

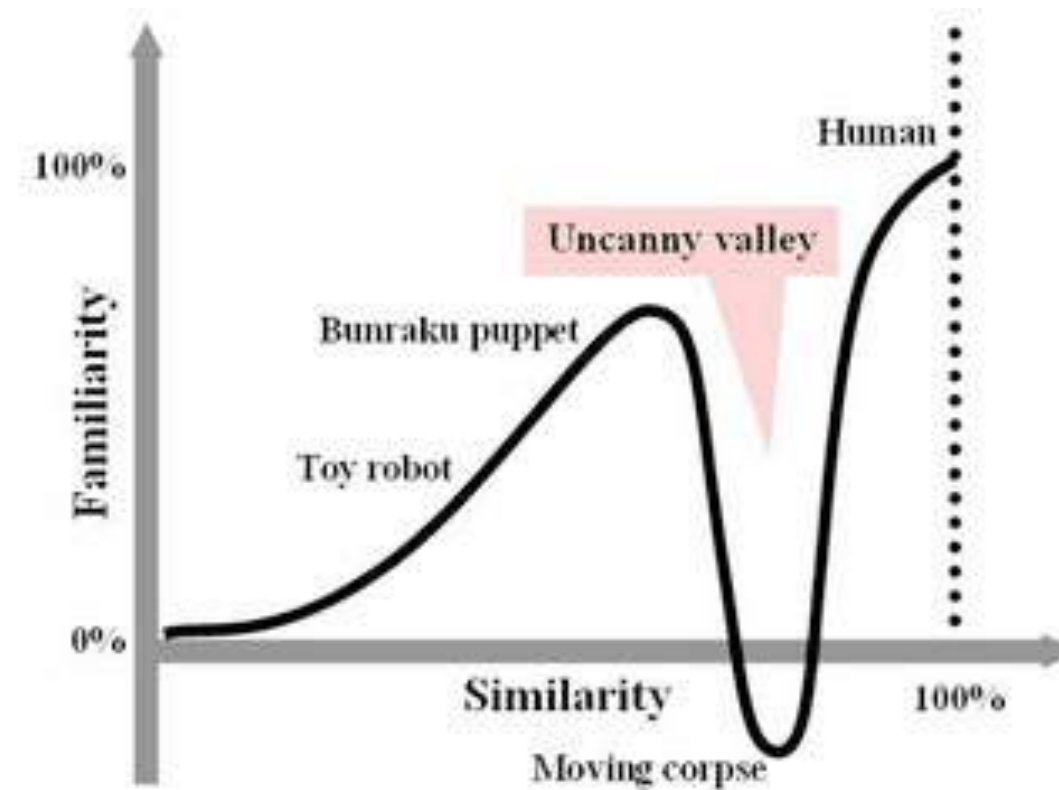
UNIVERSITY OF WASHINGTON - Rajesh Rao and Andrea Stocco August 28, 2013



On the horizon - Real Emotions & the “Uncanny Valley”



Hanson Robotics



MIT - MDS Robot



Education/
Entertainment

FESTO BionicOpter

April 2, 2013



iPhone control
Automated software processes
control wing flap frequency,
amplitude, and angle



“A model that can master more flight conditions than a helicopter, plane, and glider combined.”



Still on the horizon - General Object Recognition





Replacement/
Assistance

Enhancement

Health & Therapy

ROBOTIC SURGERY



DaVinci - Intuitive Surgical

- Augmented Reality
- Decision Support
- Remote Mentoring
- Scarless surgery
- Training



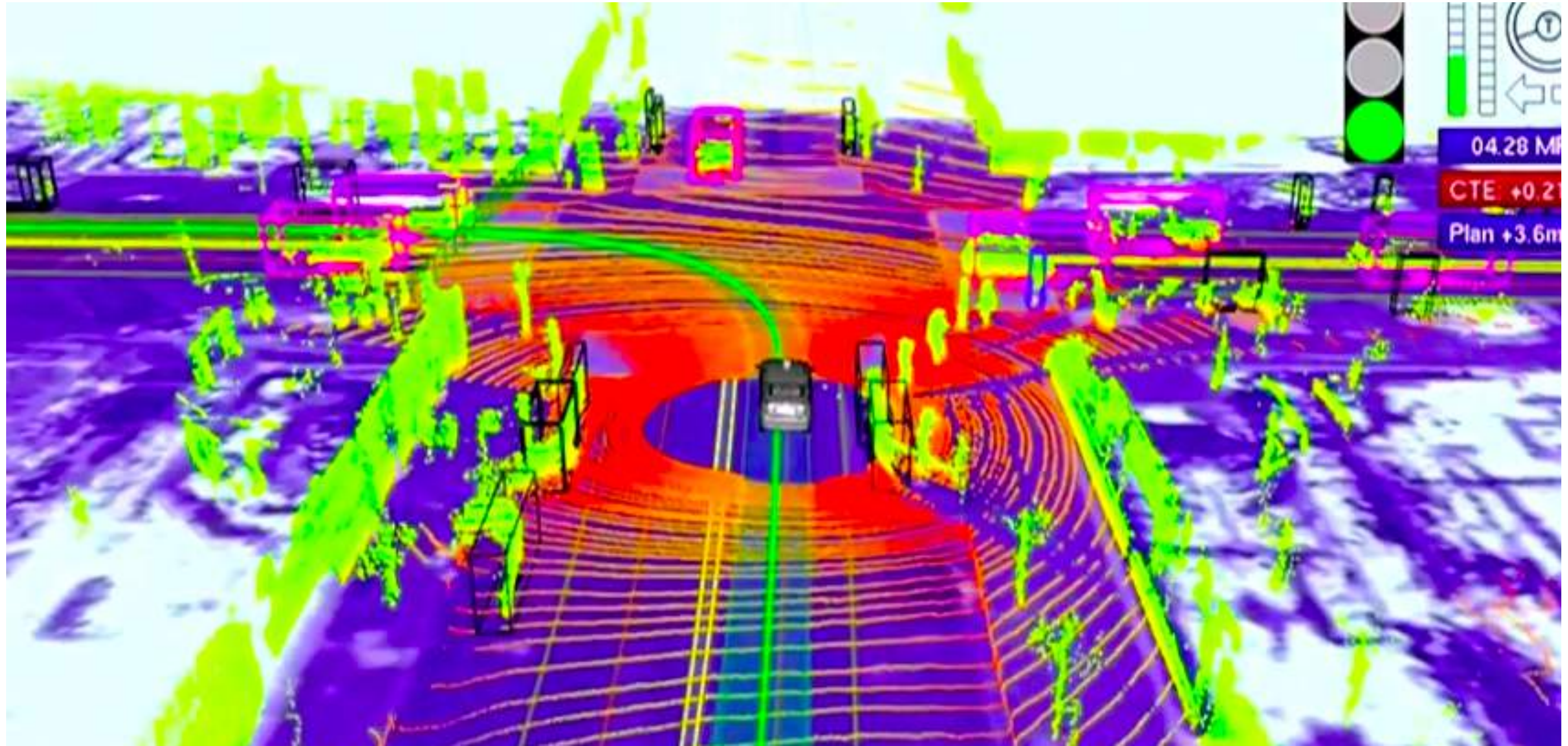
Google Car – www.robocars.com



Brad Templeton
(Computer & Networks)
Chairman EFF

Lidar

- 64 lines, 50m pavement, 120m cars
- 1.3m points/.sec
- 1cm accurate
- \$75K today, \$300 later





Paradigm Change: Robotic Vehicles



6 Prius

3 RX450h

>600,000 miles

Legal in:

- Nevada
- California
- Florida



photo: Paul Saffo

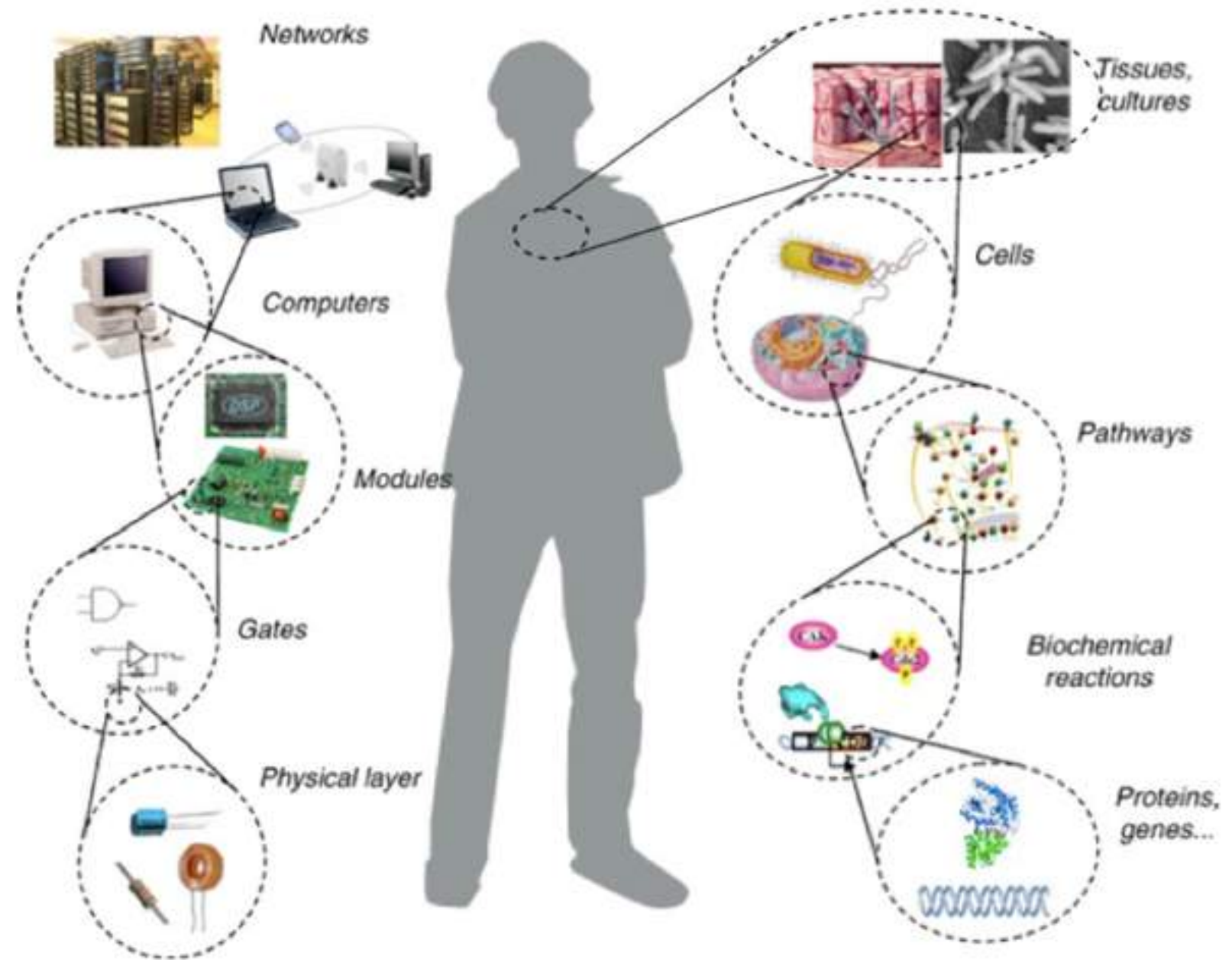


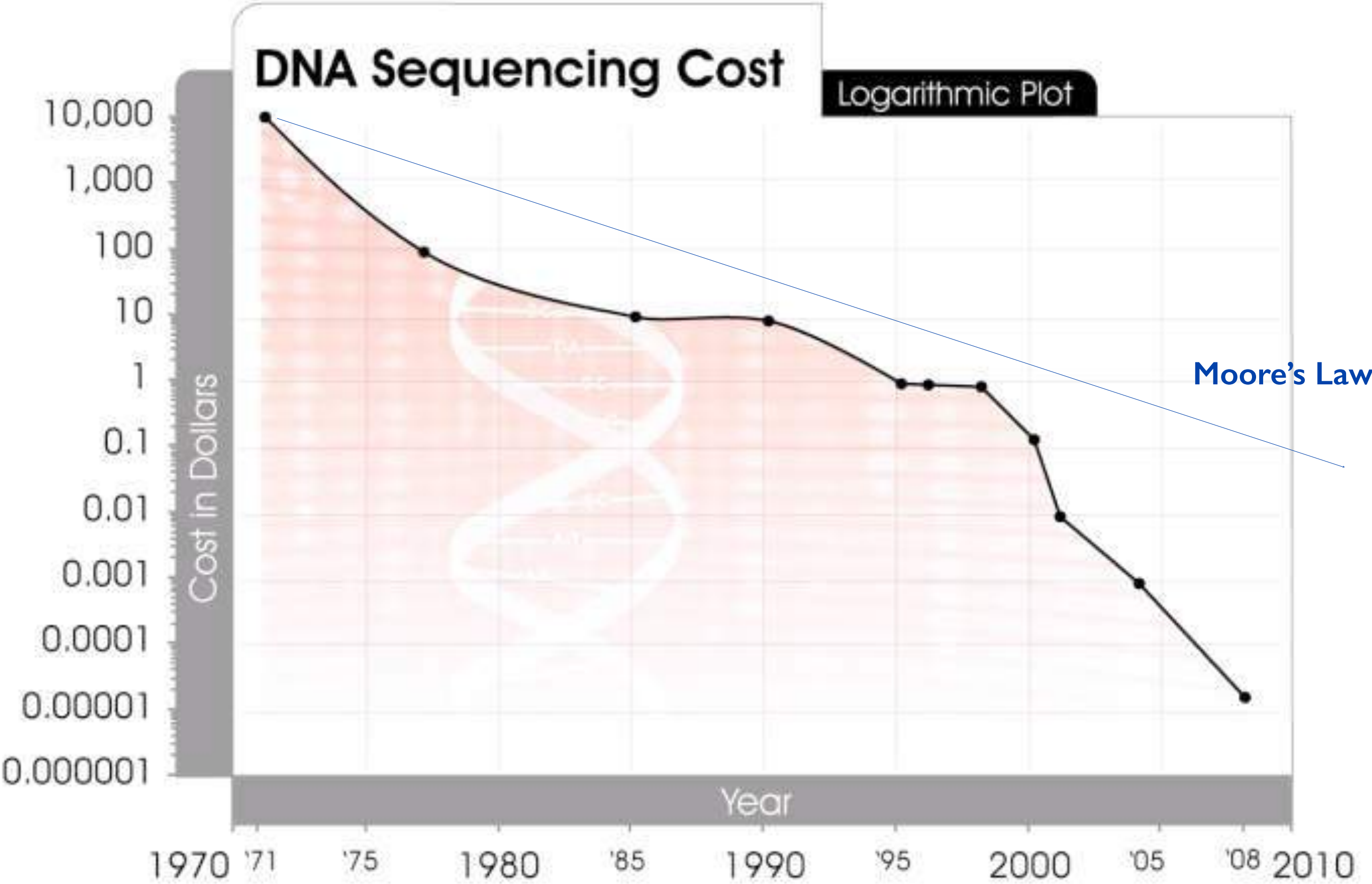
Biotech & Bioinformatics



Raymond McCauley

(Biotechnology)
CSO-Genomera;
Founder – BioCurious





PLAVIX
IN CASE OF
HEART ATTACK
HIGHER DOSE,
OR EFFIENT.
CYP2C19*1/*2
RS4244285
IS A/G



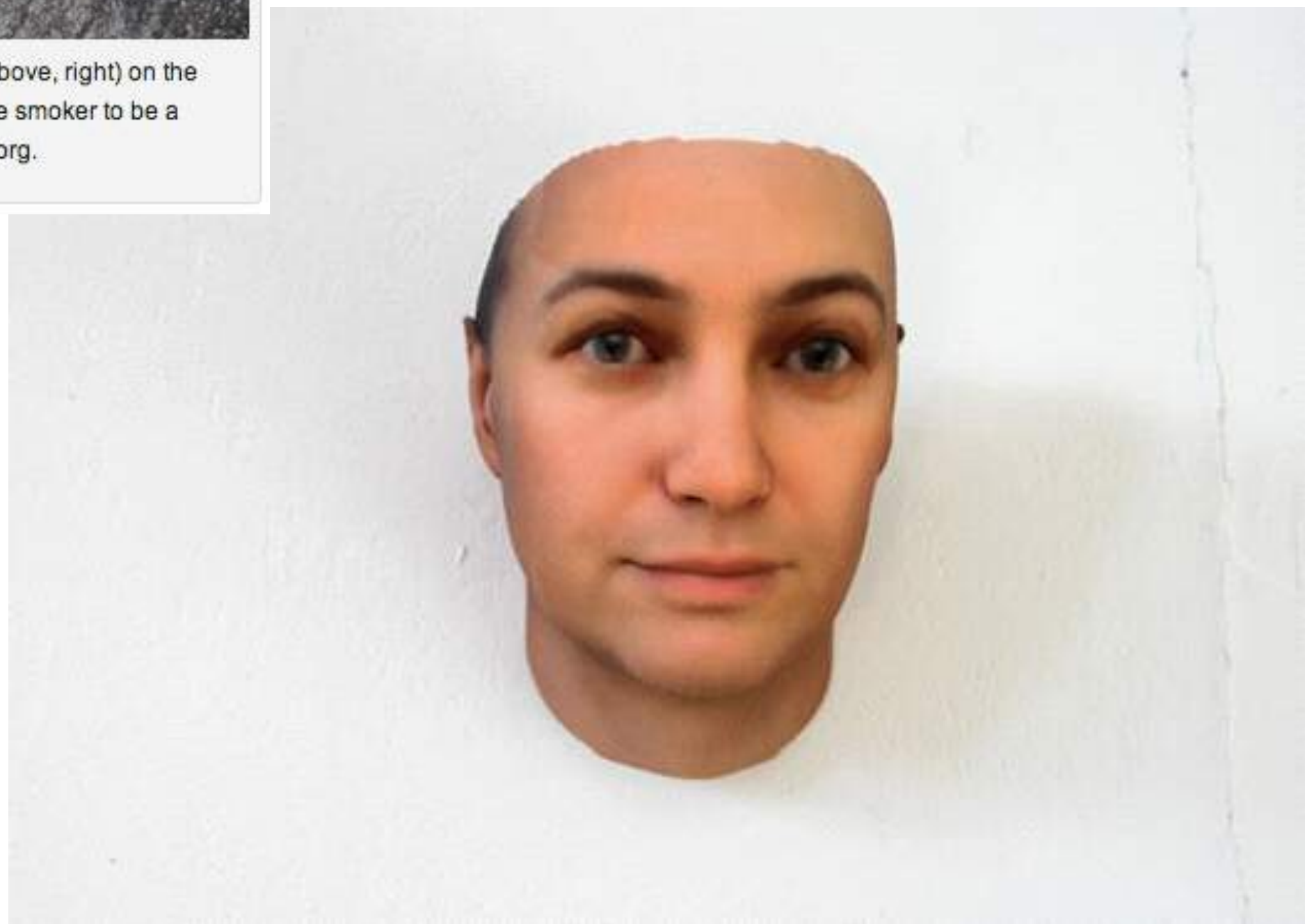








Also on January 6, 2013, but at 12:20pm, Dewey-Hagborg collected this cigarette but (above, right) on the corner of Myrtle Avenue and Himrod Street (above, left) in Brooklyn. Testing revealed the smoker to be a female of European descent with brown eyes. Photos courtesy of Heather Dewey-Hagborg.





Parabon Snapshot™ – Redefining the Field of DNA Forensics

By mining and modeling the human genome for associations with forensically relevant phenotypes, we produce descriptive profiles of individuals from raw DNA samples.

To date, using traditional [STR](#) methods, DNA has been used only as a biometric identifier, as though it contained no more information than a fingerprint. However, an individual's DNA contains an abundance of descriptive information — in fact, it contains the genetic blueprint that differentiates one person from another.

The **Parabon Snapshot™ DNA Phenotyping System** takes advantage of modern [SNP](#) technology, translating select biomarkers taken from a DNA sample into predictions about various physical traits of its source — a descriptive profile that contains eye color, hair color, skin color, height, handedness, etc., even face morphology.

The Snapshot DNA Phenotyping Service

Soon you will be able to send us a human DNA sample and, using Snapshot, we will produce a forensic profile containing predictions about the physical traits of its source.



How Snapshot Works

Recent advances in DNA sequencing technology have made it practical and affordable to read genetic content from DNA, which in turn has allowed the creation of datasets that include both *genotypic* (genetic content) and *phenotypic* (trait) data for each of thousands of subjects. With the diligent and repeated application of data mining and machine learning processes to such data, Parabon NanoLabs produces statistical models that translate the presence of specific genetic biomarkers into forensically relevant trait predictions.



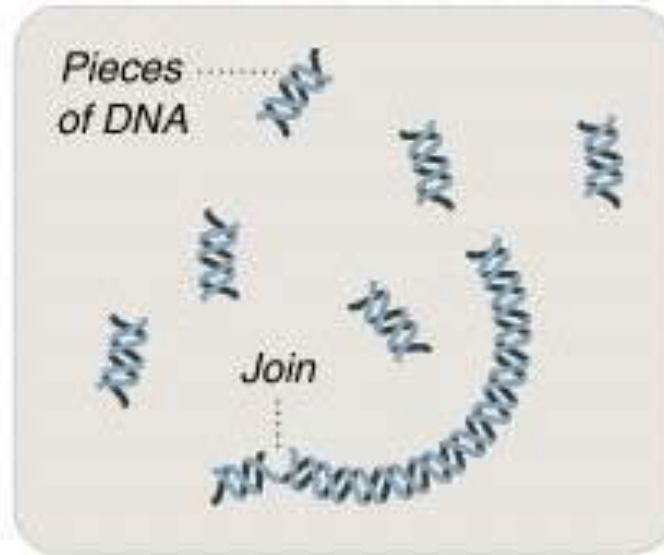
"This is the first self-replicating species that we've had on the planet whose parent is a computer,"

The New York Times

May 21, 2010

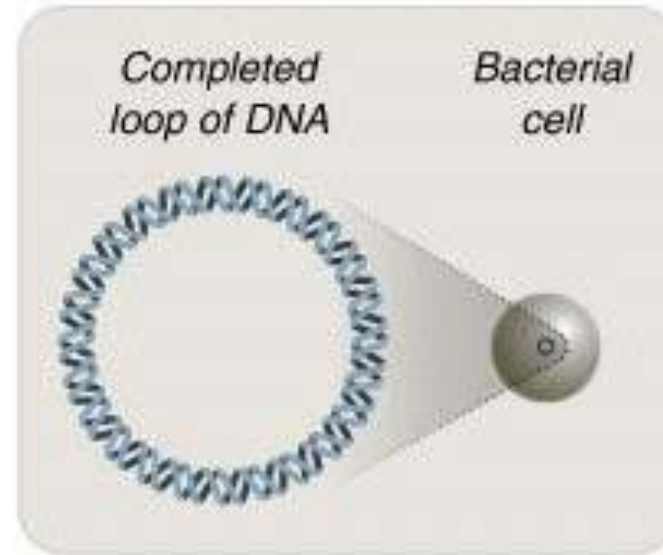
Synthesizing a Functional Genome

A team led by J. Craig Venter has succeeded in creating a synthetic bacterial genome and using it to control a cell.

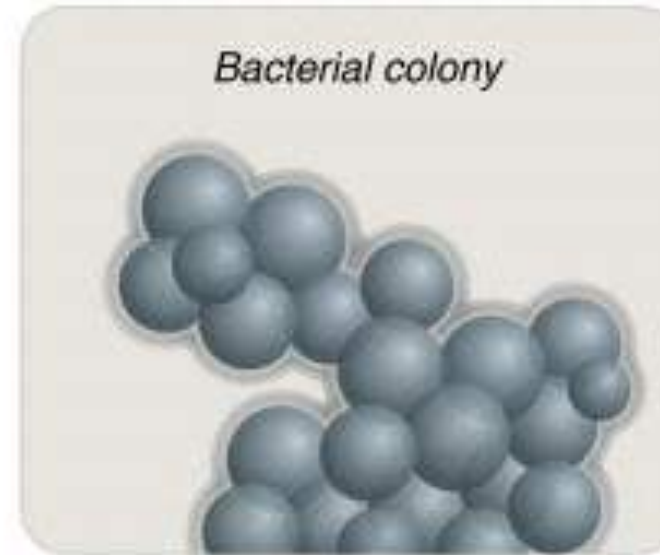


ASSEMBLY The team began with small pieces of laboratory-made DNA, then used a new technique to join them together into the largest piece of DNA synthesized so far, a loop one million units in length.

Source: Science



INSERTION The loop of DNA was designed to closely replicate the genetic sequence of a species of bacterium. To test the DNA, the team inserted it into an empty cell of a different species of bacterium.



SELF-REPLICATION The synthetic DNA proved accurate enough to take over the bacterial cell and substitute for the cell's own DNA. The "synthetic cell" then replicated itself to form a bacterial colony.

THE NEW YORK TIMES



Arctic Apple





GROWING MEAT



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

Copper 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

Copper 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**

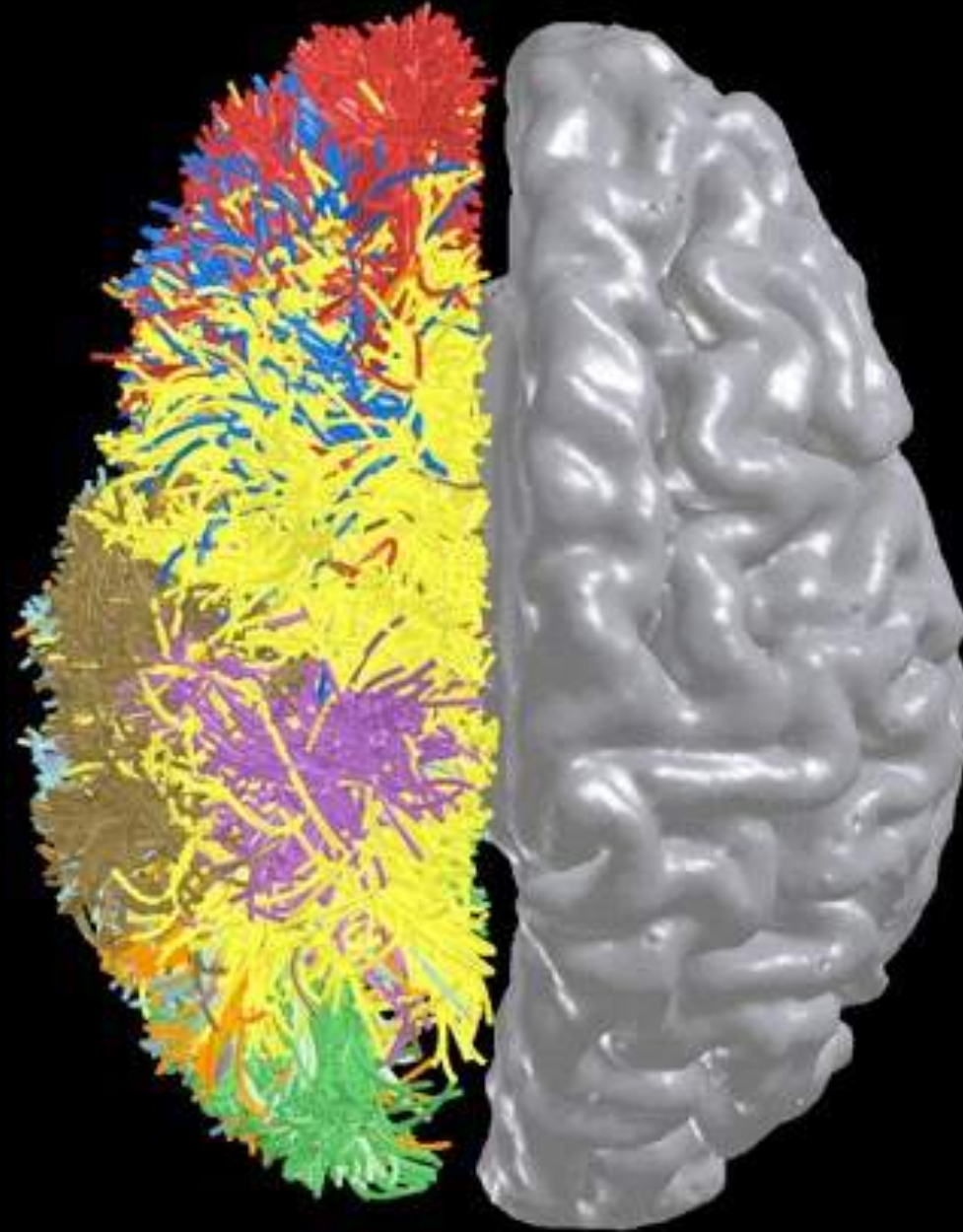
Copper et al, 2011

Neuroscience

- // Ancient architecture
- // Torrents of data
- // Hardwired biases
- // Limited bandwidth
- // Technological amplification
- // Change accelerating
- // Global problems
- // Navigation requirements increasing

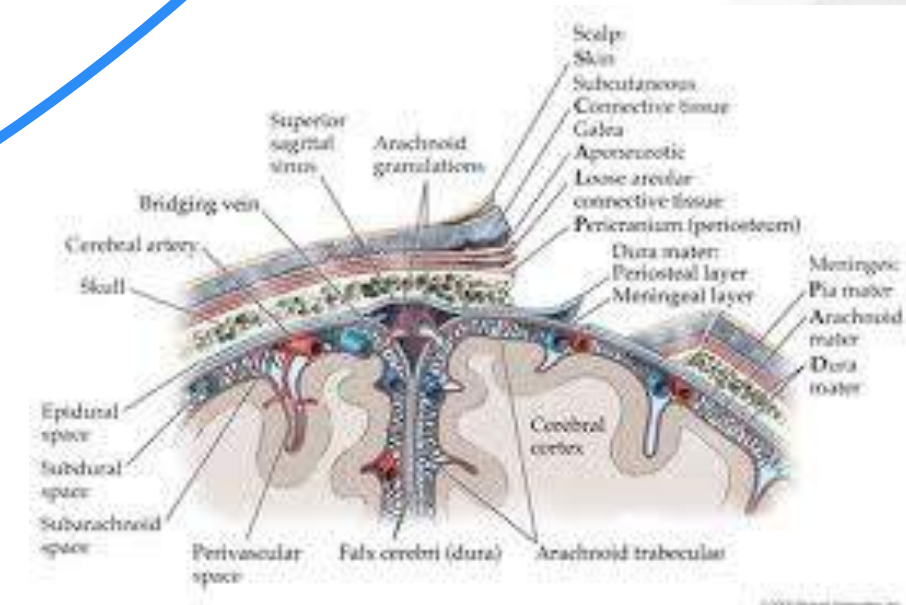
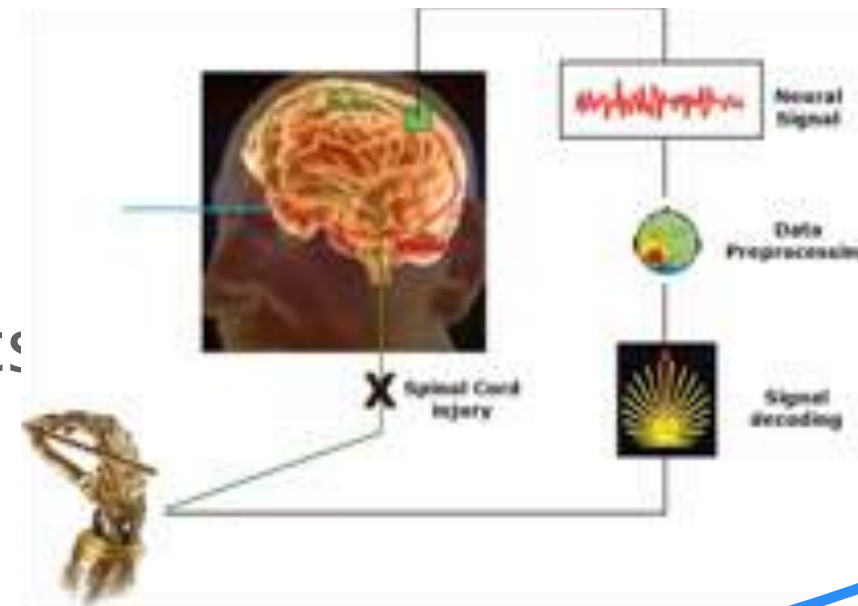
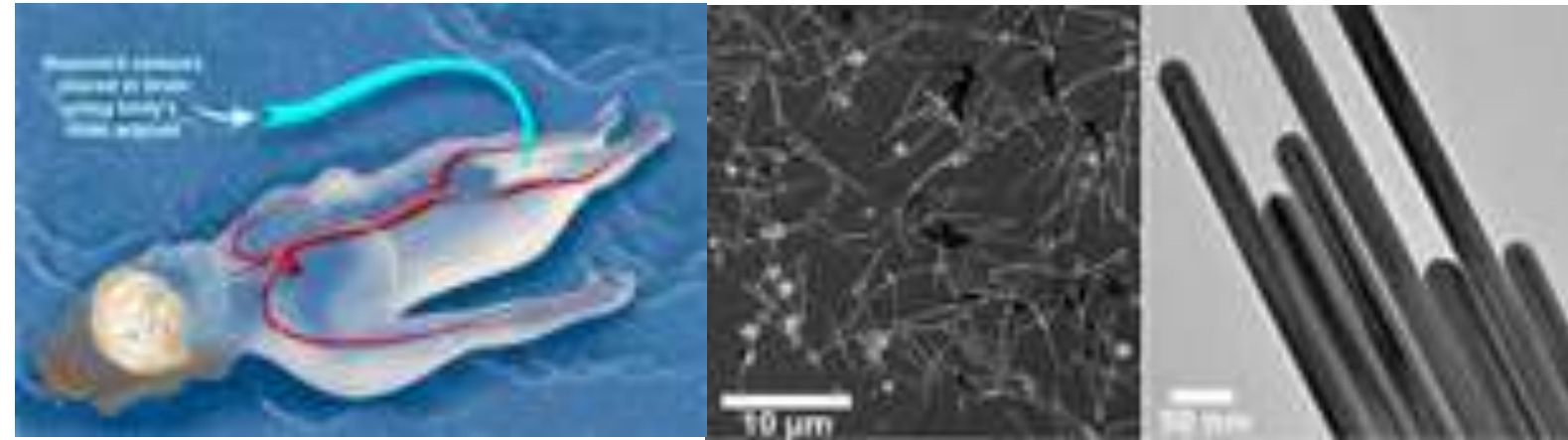


Neuroscience



Confluence of acceleration

// BCI & FMRI
// Optical technologies
// Cloud computing
// Sensors & IoT
// Artificial Intelligence
// Storage & big data
// Feedback loops
// Gaming/social dynamics
... nanowires!



Old EEG



Muse EEG

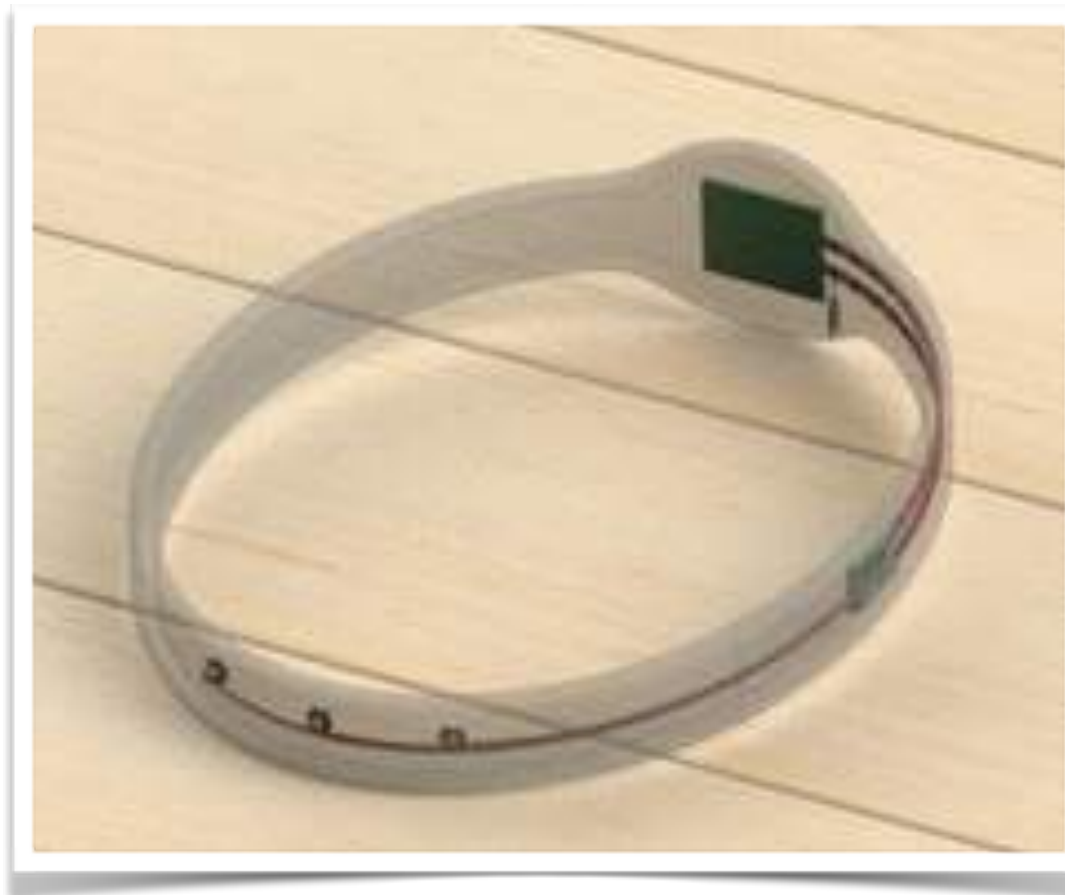


Interaxon

Brain Computing Interfaces (BCI)



NeuroSky
Mindwave



Axio Headband



NeuroVigil
iBrain



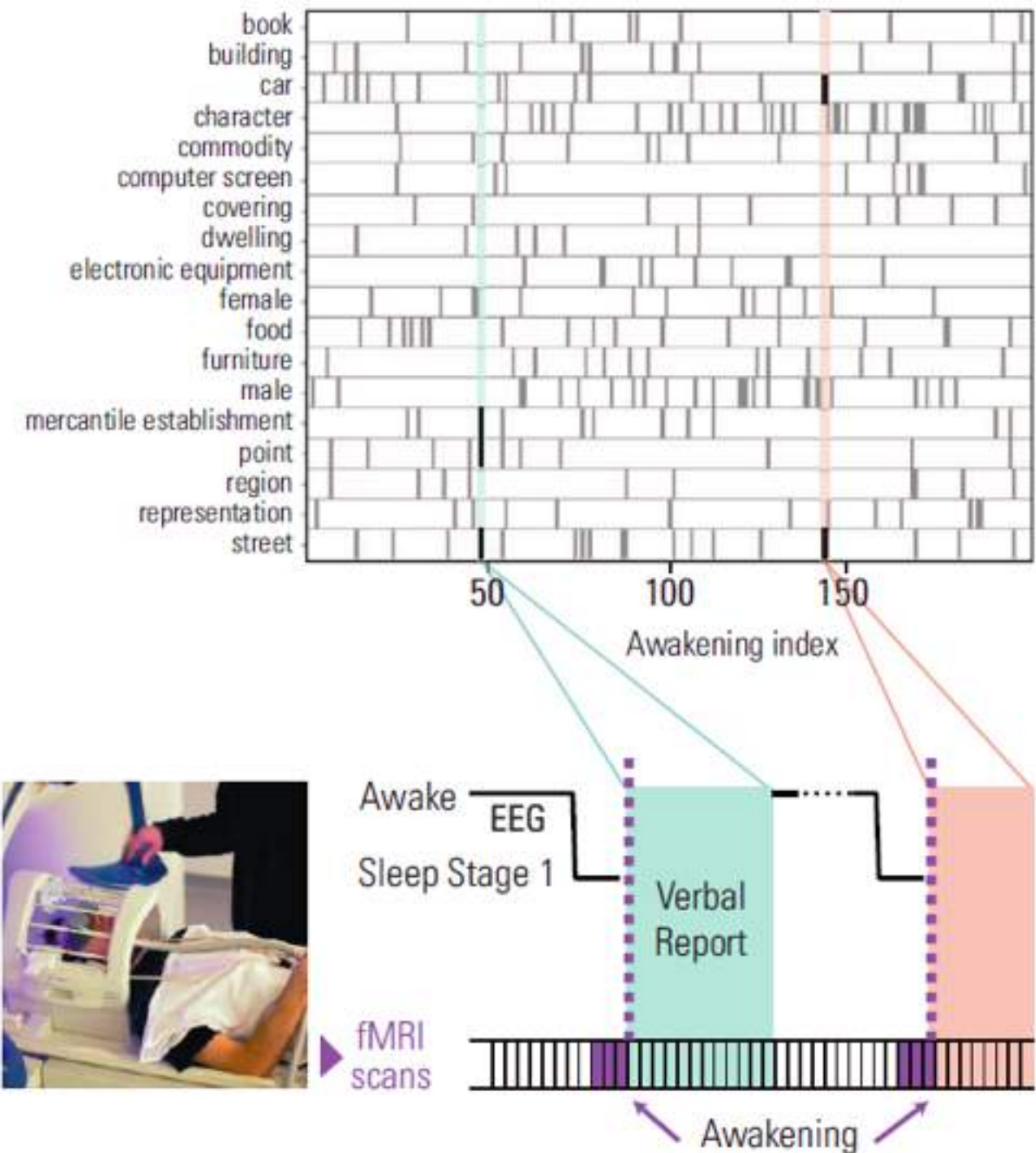
Storing dreams

// Dreamcatcher

// MRI machine

// Stores images

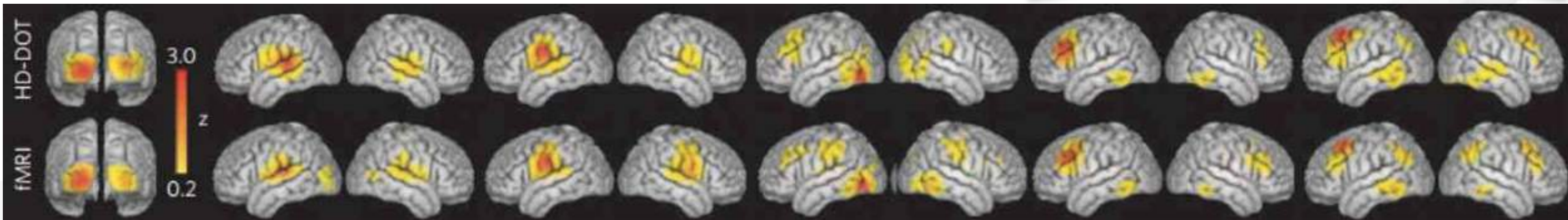
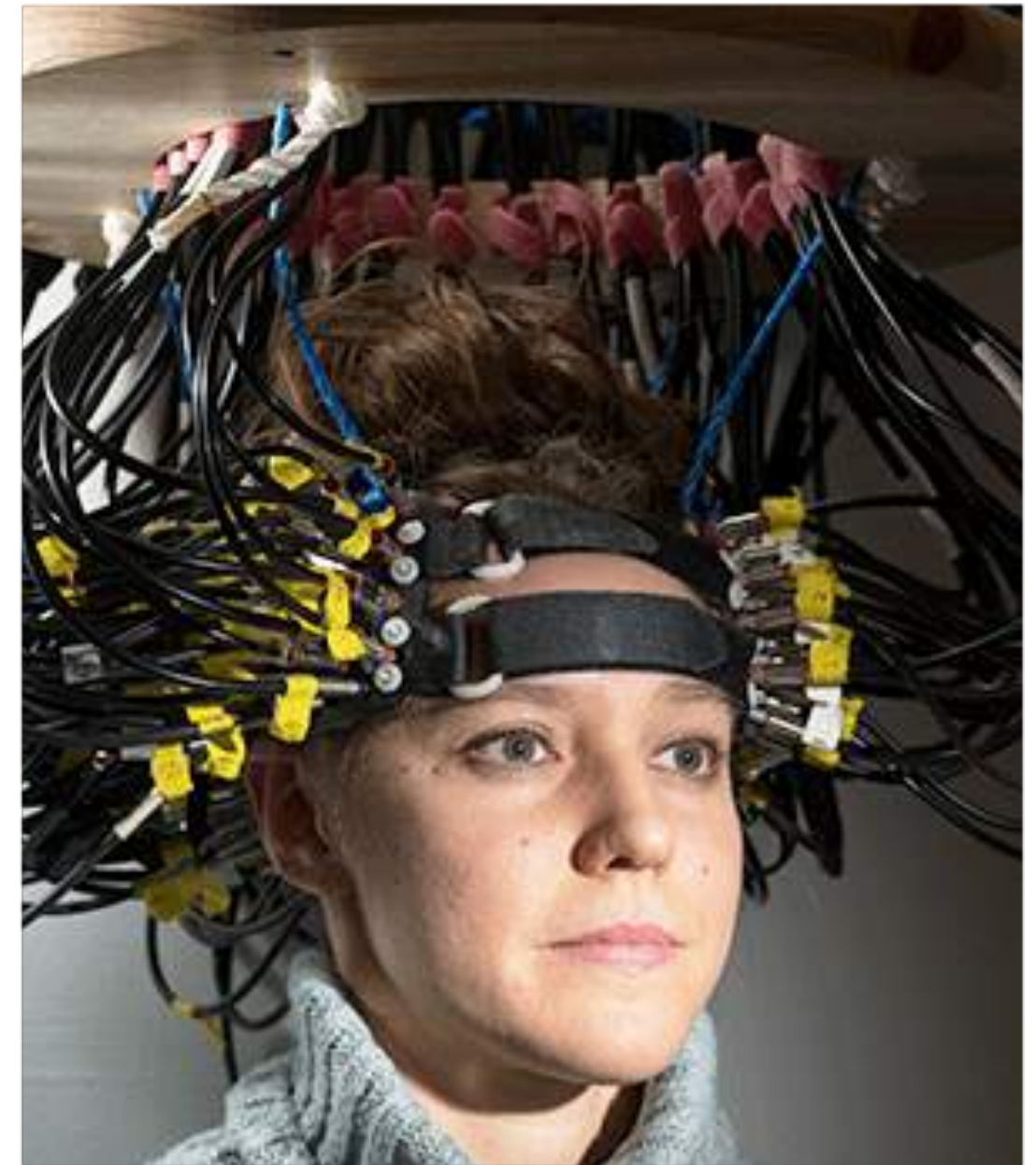
// Replays your dreams



Dream catcher. Researchers collected reports of dreamed images from people awoken after sleeping in an MRI machine.



Diffuse Optical Tomography (DOT)



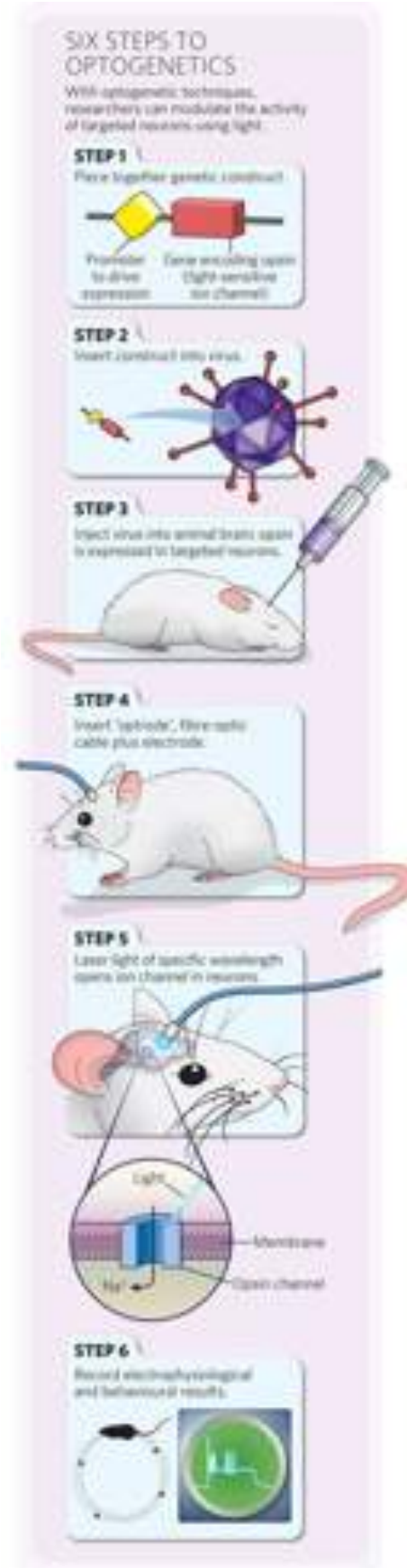
Optogenetics

Pioneered by Karl Diesseroth
& others

Intersection of genetics,
virology and optics

Saling quickly

Implications: priceless



Nature Oct/10





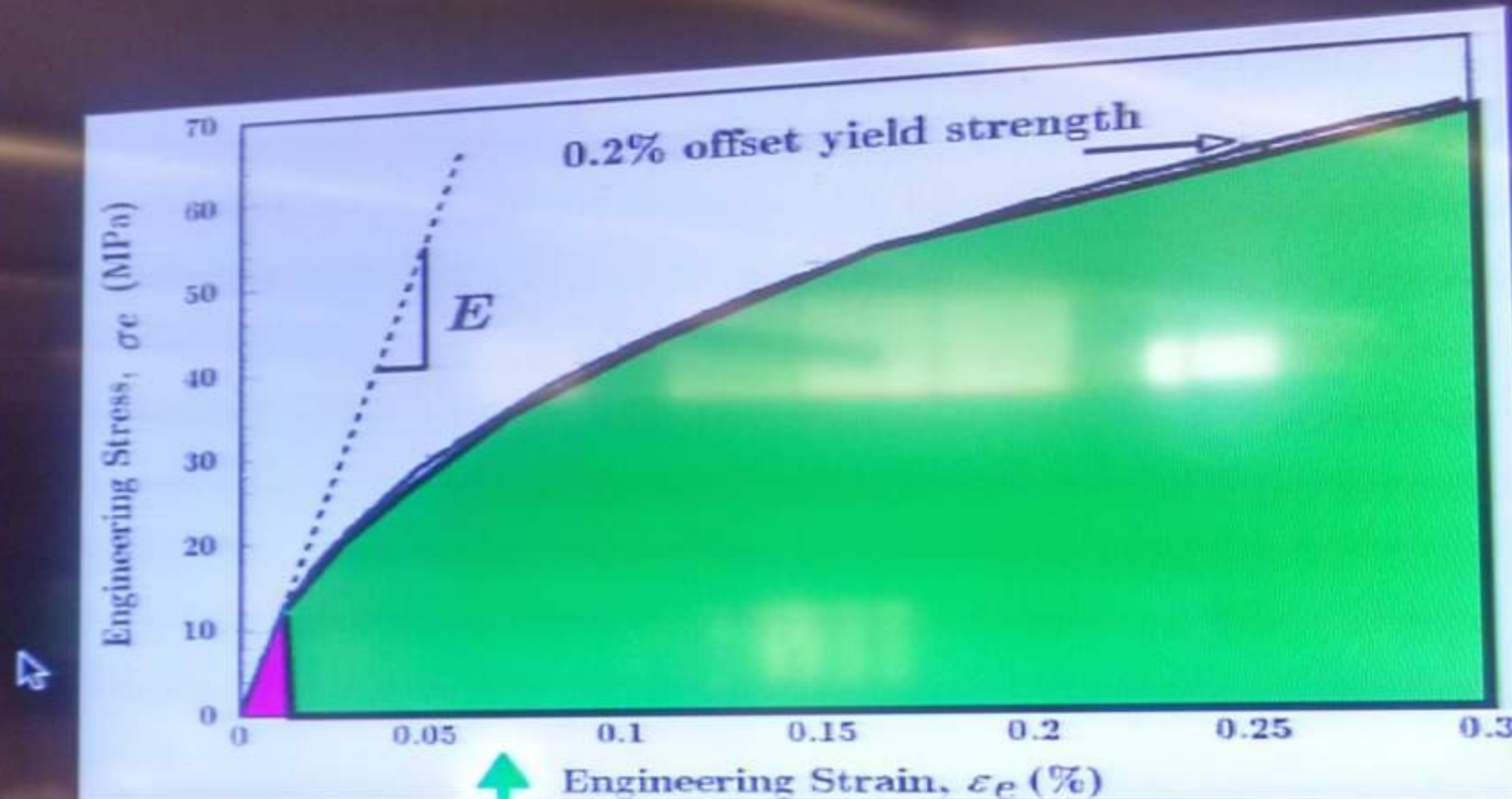
Education/
Entertainment

HARVARD UNIVERSITY - BRAIN TO BRAIN INTERFACE CONTROL - April 8, 2013

Mind Control Machine: Human wags rat's tail usi...


The image is a composite of three parts. The top left shows a person from behind, wearing a blue headband and a small device on their back, sitting at a desk with a computer monitor. The top right shows a rat on a table, with its tail being moved by a mechanical arm. The bottom part shows a computer screen displaying three horizontal tracks of data. The top track is a blue line graph showing fluctuations. The middle track is a green waveform showing amplitude over time. The bottom track is a red line graph showing fluctuations. A large black play button is centered over the image.

<http://www.youtube.com/watch?v=pL0FzHHrQv8>



**BECAUSE WE ARE SCARED
OF THIS BIT.**

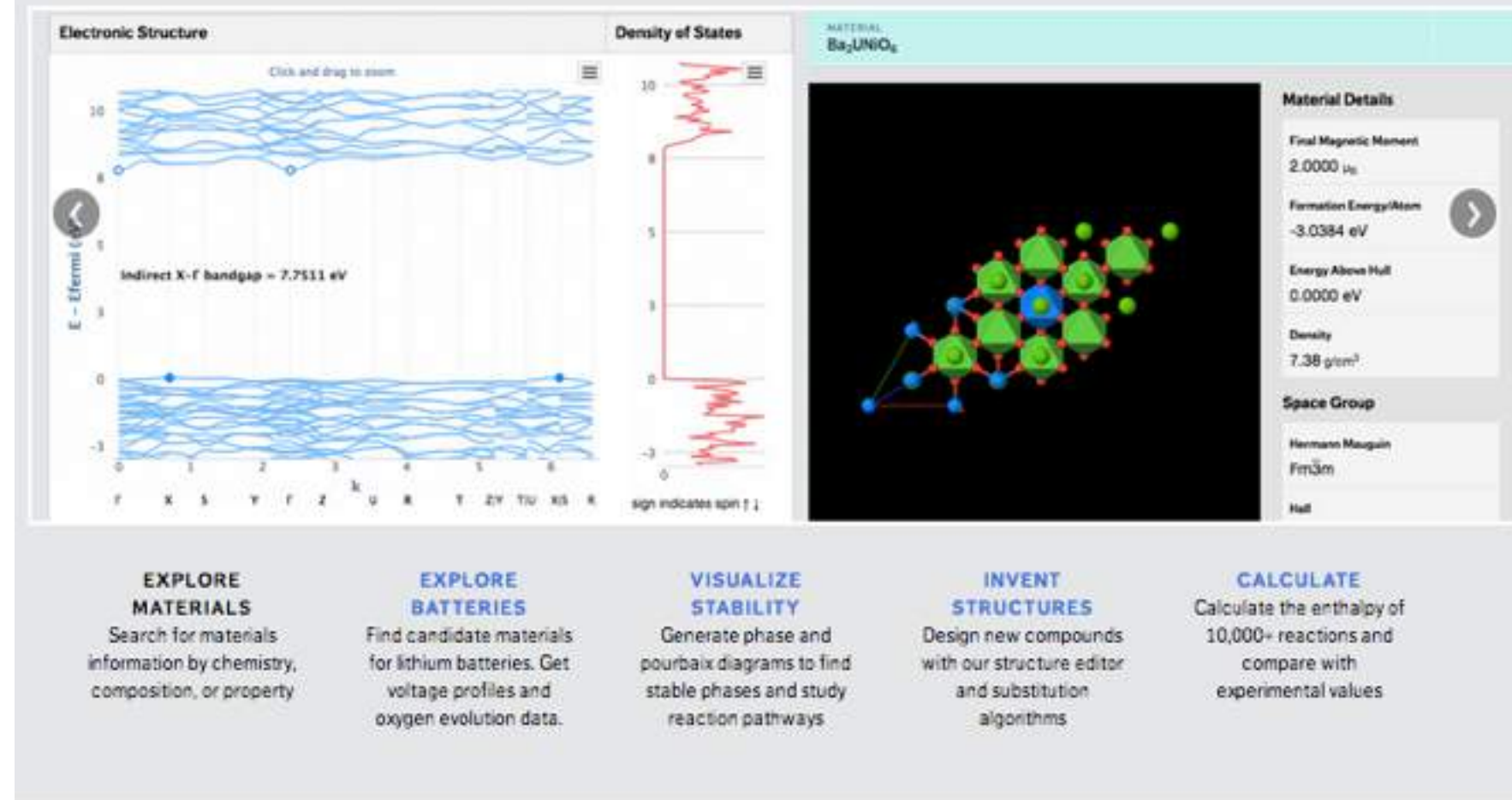
materials project



The Materials Project

Harnessing the power of supercomputing and state-of-the-art electronic structure methods, the Materials Project provides open web-based access to computed information on known and predicted materials as well as powerful analysis tools to inspire and design novel materials.

[Learn more](#) [Sign In or Register](#) to start using



Database Statistics

49244

COMPOUNDS

19364

BANDSTRUCTURES

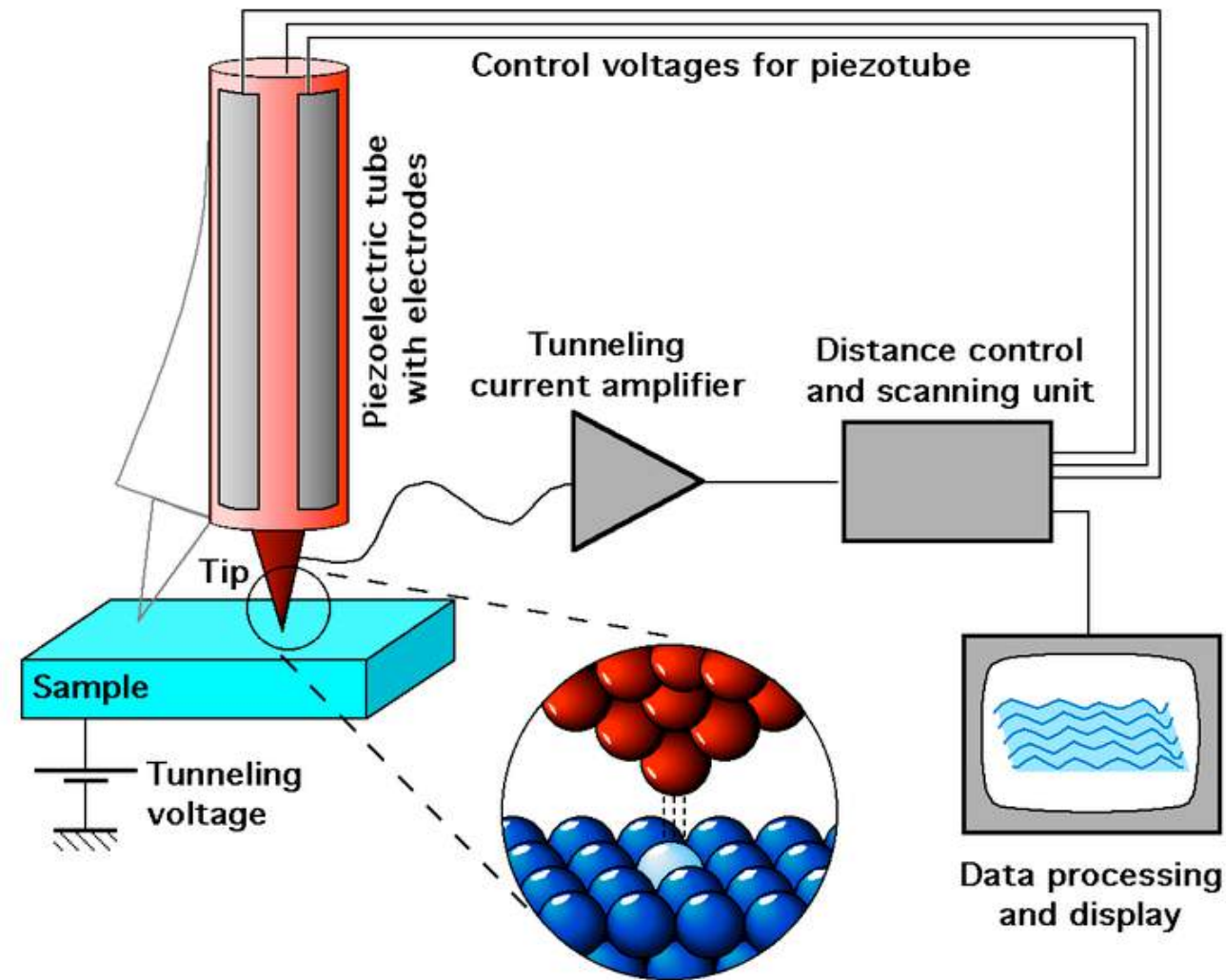
1416

LI INTERCALATION
ELECTRODES

16277

LI CONVERSION ELECTRODES

Positional Assembly



Scanning Tunneling Microscope

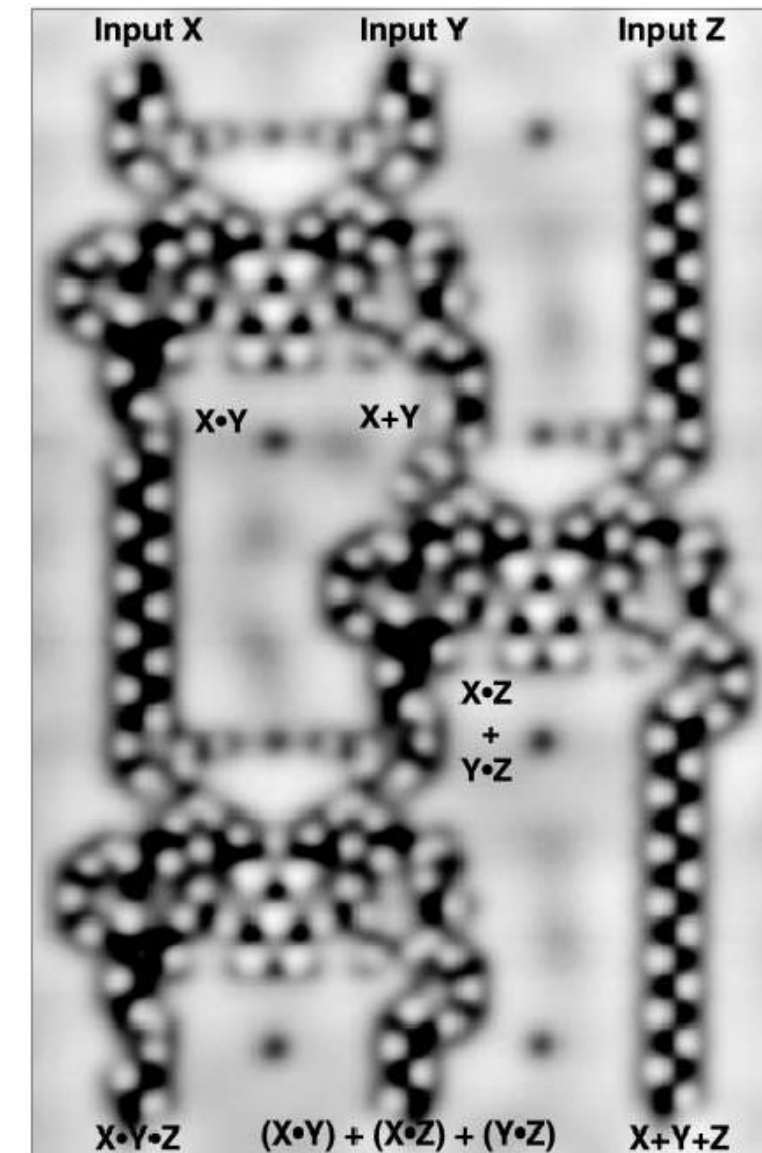


Experimental

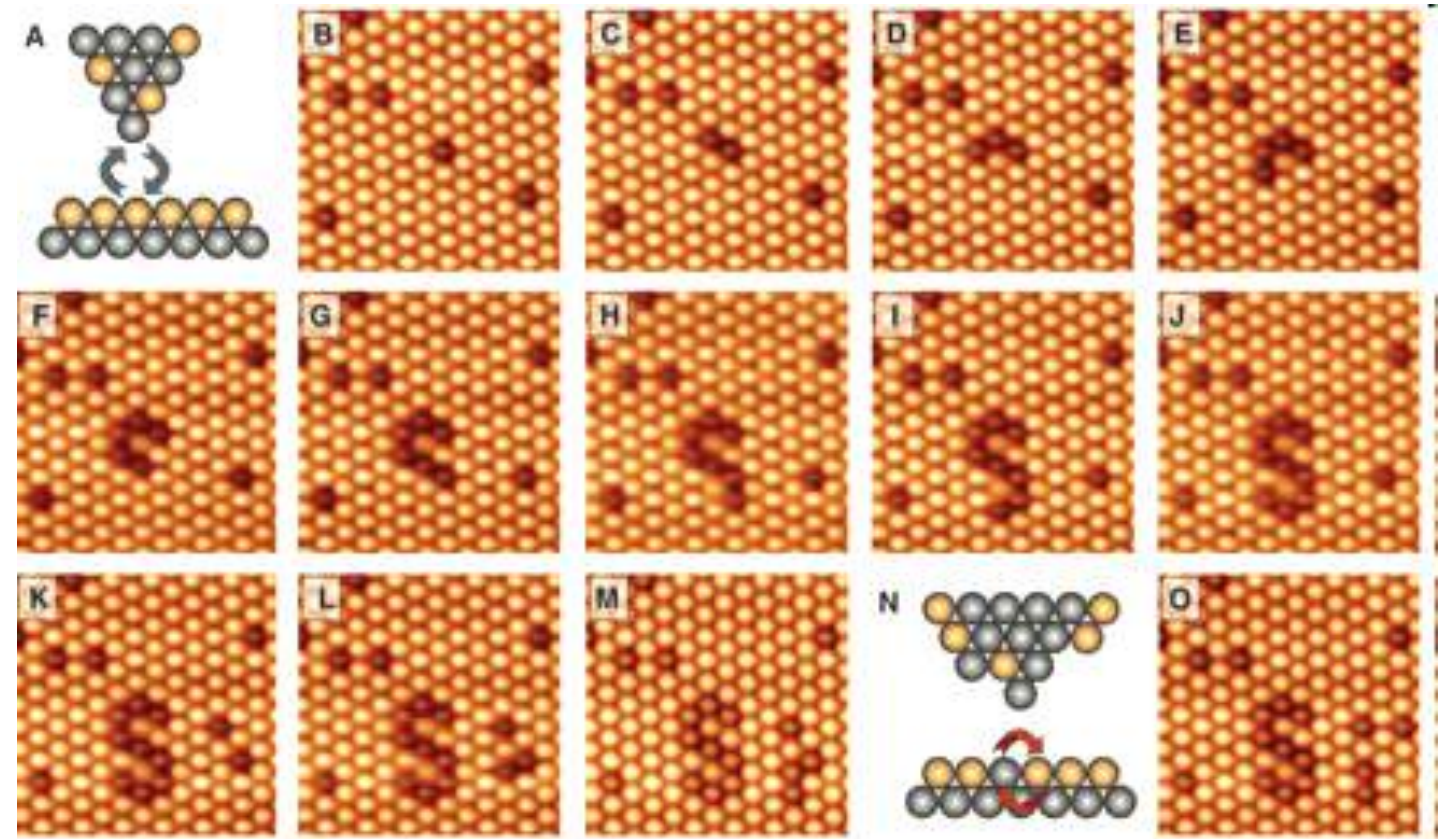
Molecule Cascades

A. J. Heinrich,^{*†} C. P. Lutz,^{*} J. A. Gupta, D. M. Eigler

Fig. 9. STM image (12 nm by 17 nm) of a three-input sorter in the initial setup ($I = 40$ pA; $V = 10$ mV). The symbol $+$ denotes logic OR, and \bullet denotes logic AND. Images with one or more inputs triggered are not shown.



Tin & Silicon



“...successive substitution of Sn atoms at the surface one atom at a time with Si atoms coming from the tip.”

Science 17 October 2008: vol. 322. no. 5900, pp. 413 – 417. Custance Nanomechanics Group.



The Goal

```
// Arrange any element
```

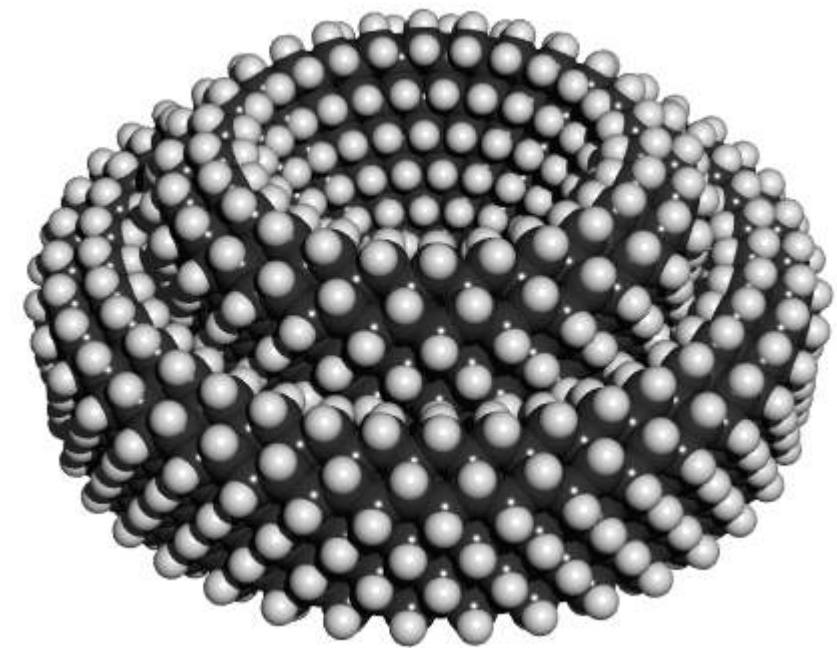
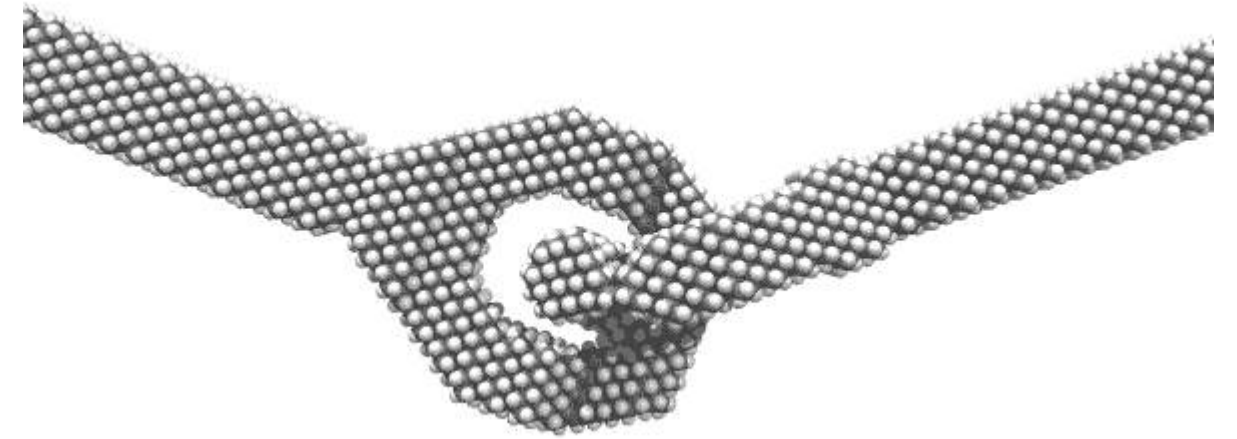
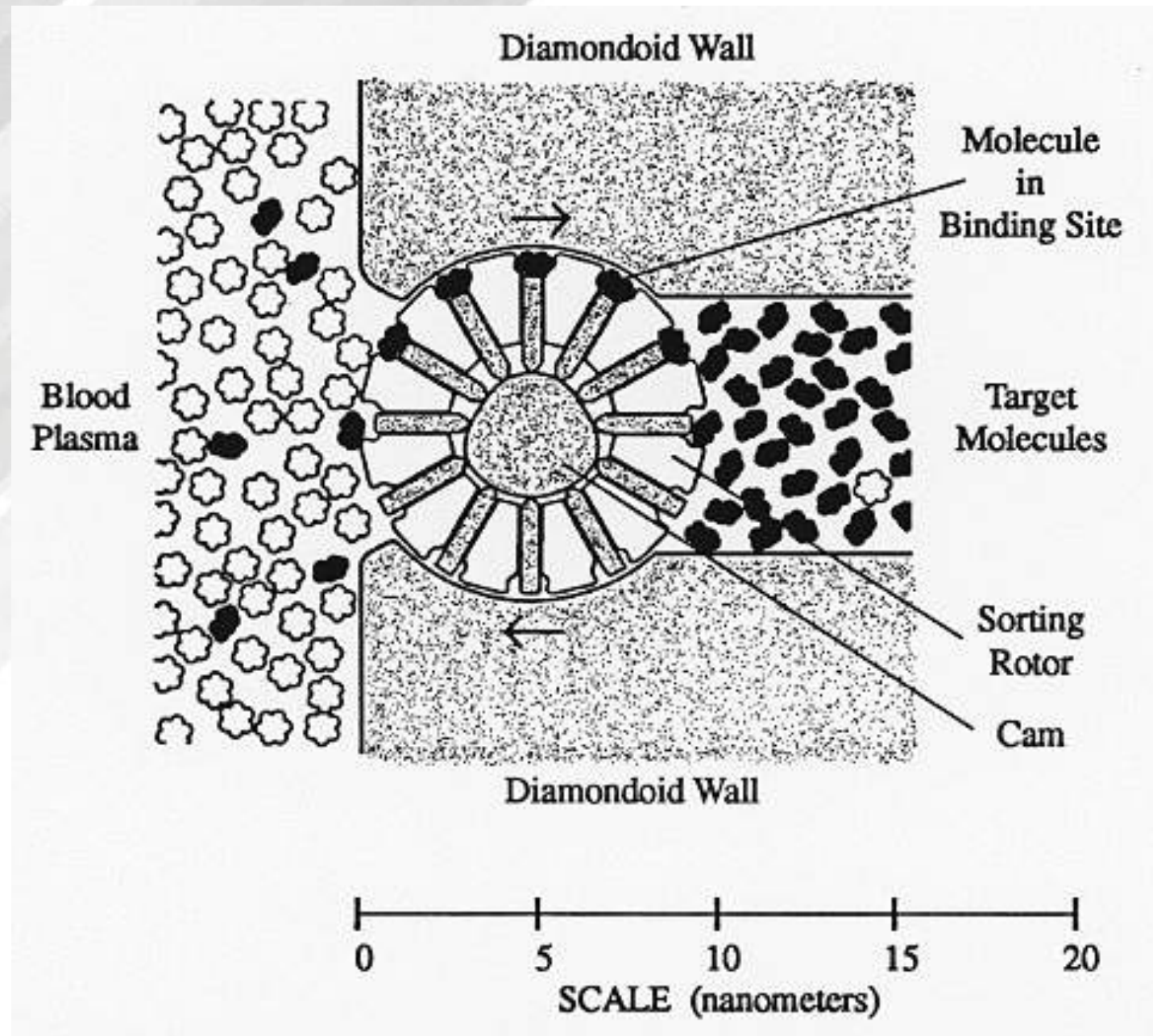
// Inexpensively

//Fewer elements: H and C can build almost any rigid structure (diamond, lonsdaleite, graphite and graphene, carbon nanotubes and fullerenes, polyynes, other hydrocarbons)

// Ge provides “just enough” synthetic flexibility

Periodic Table of the Elements																					
H ¹																He ²					
Li ³ Be ⁴		<div><div>hydrogen</div><div>alkali metals</div><div>alkali earth metals</div><div>transition metals</div></div>										<div><div>poor metals</div><div>nonmetals</div><div>noble gases</div><div>rare earth metals</div></div>								B ⁵ C ⁶ N ⁷ O ⁸ F ⁹ Ne ¹⁰	
Na ¹¹ Mg ¹²												Al ¹³ Si ¹⁴ P ¹⁵ S ¹⁶ Cl ¹⁷ Ar ¹⁸									
K ¹⁹ Ca ²⁰		Sc ²¹	Ti ²²	V ²³	Cr ²⁴	Mn ²⁵	Fe ²⁶	Co ²⁷	Ni ²⁸	Cu ²⁹	Zn ³⁰	Ga ³¹	Ge ³²	As ³³	Se ³⁴	Br ³⁵	Kr ³⁶				
Rb ³⁷ Sr ³⁸		Y ³⁹	Zr ⁴⁰	Nb ⁴¹	Mo ⁴²	Tc ⁴³	Ru ⁴⁴	Rh ⁴⁵	Pd ⁴⁶	Ag ⁴⁷	Cd ⁴⁸	In ⁴⁹	Sn ⁵⁰	Sb ⁵¹	Te ⁵²	I ⁵³	Xe ⁵⁴				
Cs ⁵⁵ Ba ⁵⁶		La ⁵⁷	Hf ⁷²	Ta ⁷³	W ⁷⁴	Re ⁷⁵	Os ⁷⁶	Ir ⁷⁷	Pt ⁷⁸	Au ⁷⁹	Hg ⁸⁰	Tl ⁸¹	Pb ⁸²	Bi ⁸³	Po ⁸⁴	At ⁸⁵	Rn ⁸⁶				
Fr ⁸⁷ Ra ⁸⁸		Ac ⁸⁹	Unq ¹⁰⁴	Unp ¹⁰⁵	Unh ¹⁰⁶	Uns ¹⁰⁷	Uno ¹⁰⁸	Une ¹⁰⁹	Unn ¹¹⁰												

Molecular Manufacturing



Accelerating Technologies

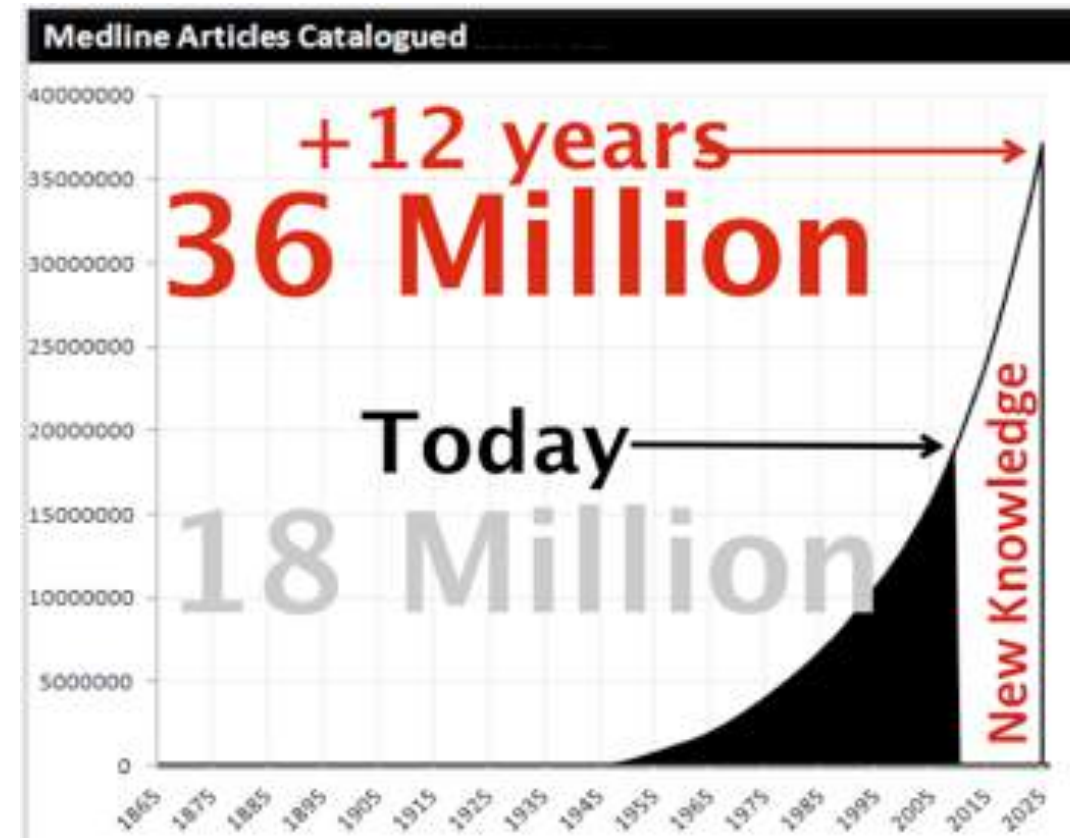
AI
Robotics
Biotech
Nanotech
Medicine
Neuroscience
Energy
Computing



Singularity
University



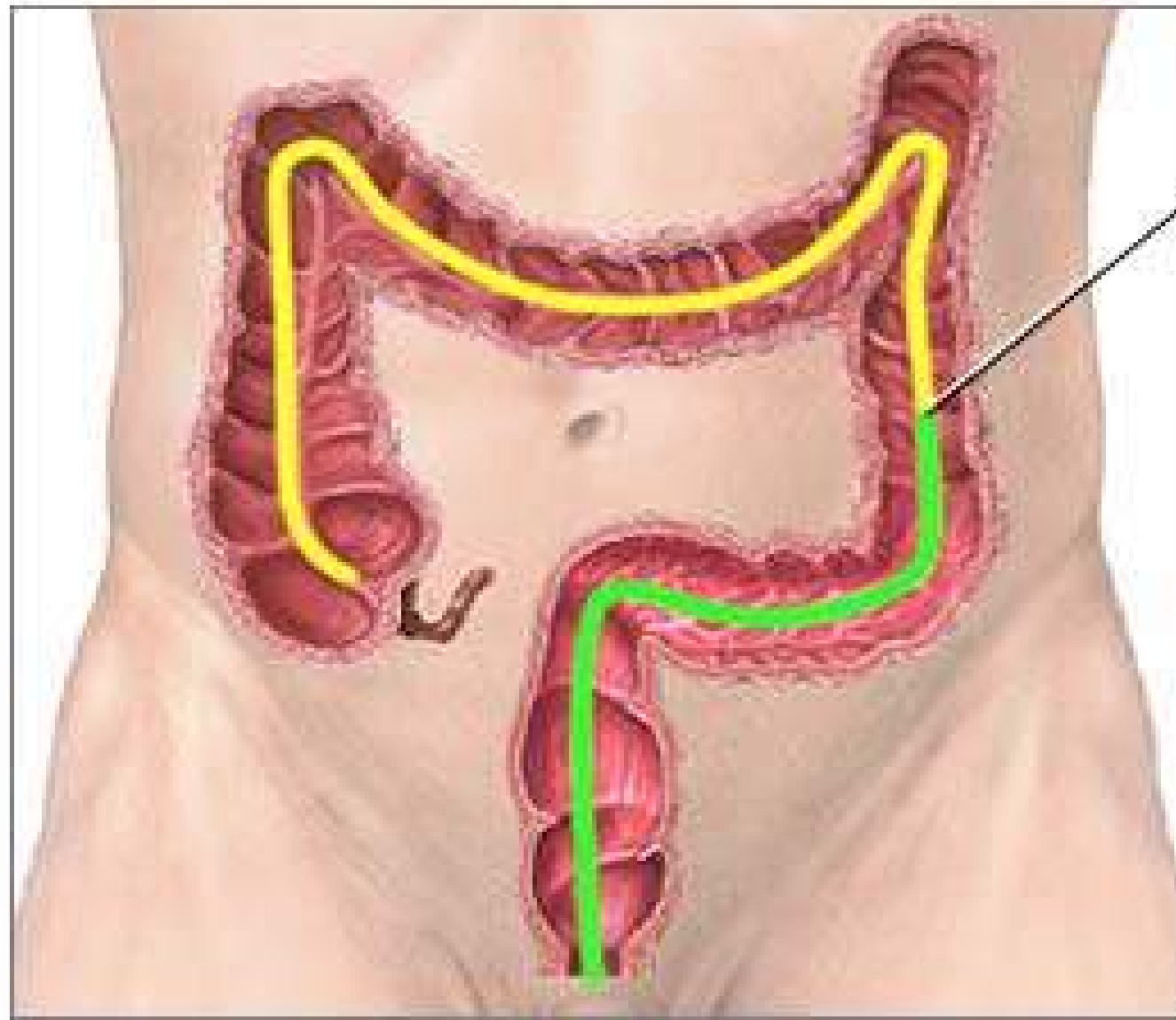
TMI: Too much information



Daniel Kraft, MD
(Medicine)
Stem cell Biology,
Stanford

“The complexity of modern American medicine exceeds the capacity of the unaided human mind.” David Eddy, MD





End of
sigmoidoscopy

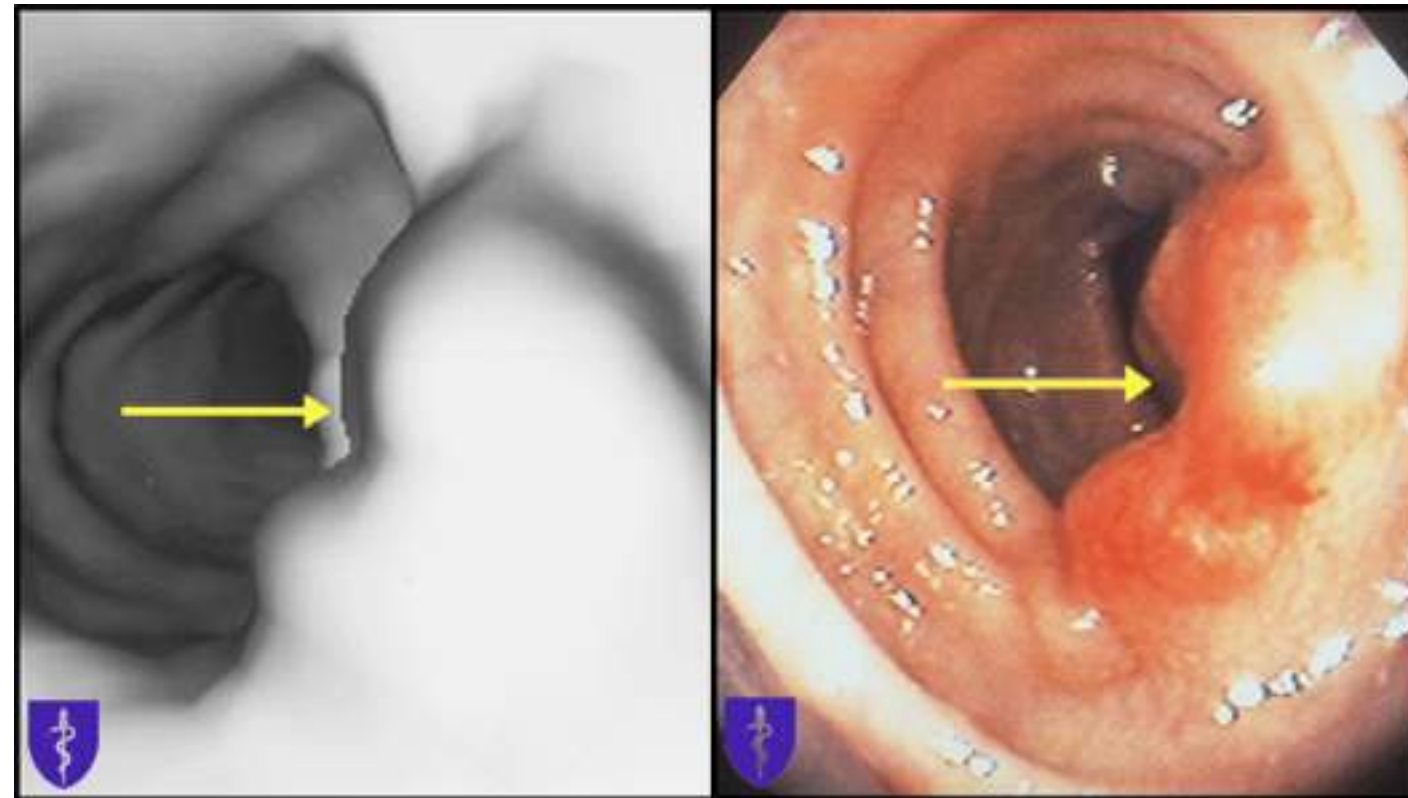


Colonoscopy examines the entire length of the colon; sigmoidoscopy examines only the lower third

VIRTUAL COLONOSCOPY

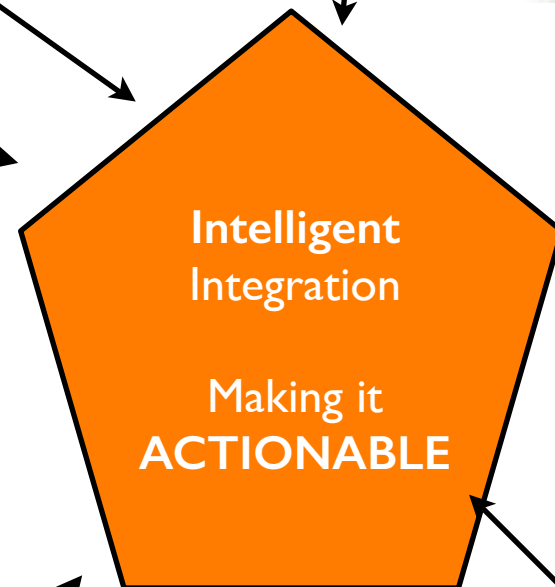


VS



Virtual colonoscopy

Traditional



Your goal: 60 min cardio

3x week

Your time: 2 months

Your Tomorrow™

Improved
Still Time

LEADER
2000



Artificial Intelligence Physician





Eye Handbook
Education
Updated Nov 02, 2011
FREE ▼



EyetubeOD
Medical
Updated Jul 06, 2012
+ **FREE** ▼



EyeDock
Medical
Updated Mar 23, 2011
FREE ▼



ODwire.org
Social Networking
Updated May 24, 2012
+ **FREE** ▼



cataractMobile
Medical
Updated Aug 07, 2012
FREE ▼



Red Eye Clinic
Medical
Updated Jun 19, 2012
FREE ▼



Visual Acuity Remote
Medical
Updated Sep 27, 2011
+ **FREE** ▼



Vision Simulator for OPTOMETRY...
Medical
Released Aug 20, 2012
FREE ▼



Spectangle HD
Utilities
Released Jul 23, 2012
\$399.99 **BUY** ▼



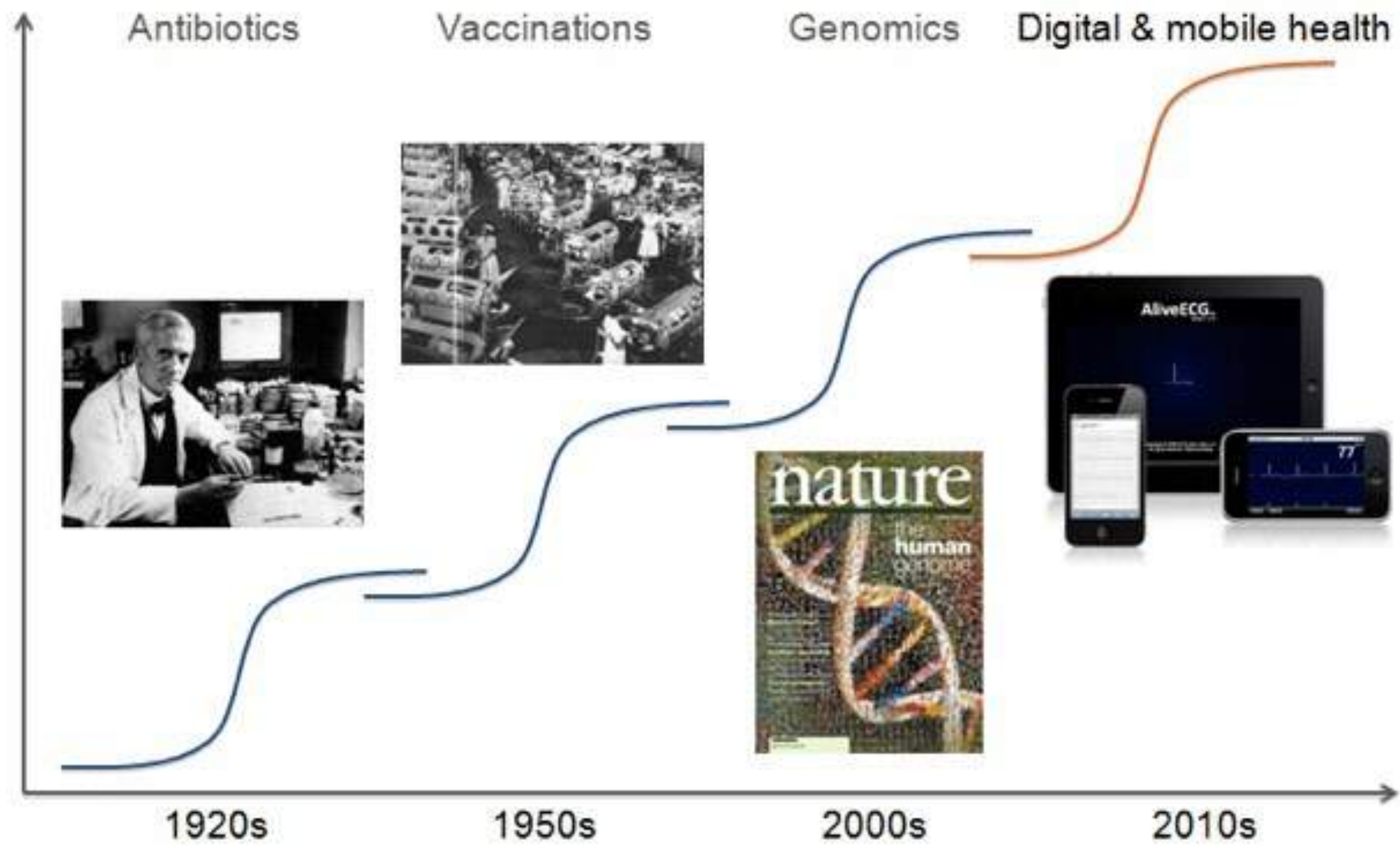
iScale Optometry Pro
Medical
Released Apr 06, 2012
\$119.99 **BUY** ▼



Clinical Ophthalmology: A Synopsis
Medical
Updated Feb 22, 2012
+ \$84.99 **BUY** ▼



Visual Acuity XL
Medical
Updated Mar 28, 2012
\$49.99 **BUY** ▼



Scanadu



Vinod Khosla: Technology Will Replace 80 Percent of Docs

 48 Responses

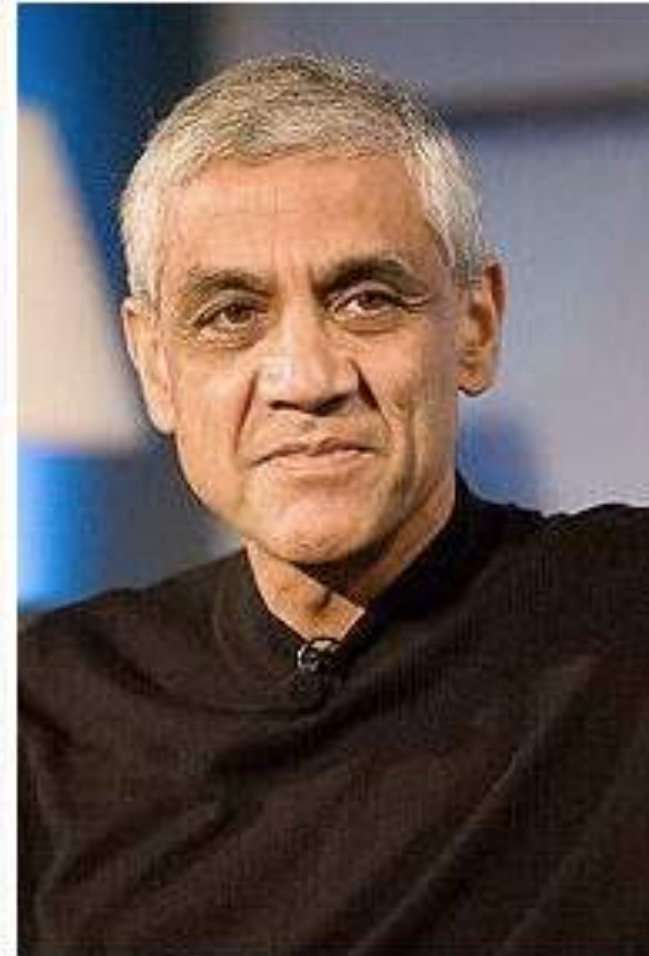
By DAVIS LIU, MD

I recently viewed health care through the lenses of a technology entrepreneur by attending the Health Innovation Summit hosted by Rock Health in San Francisco. As a practicing primary care doctor, I was inspired to hear from Andy Grove, former CEO of Intel, listen to Thomas Goetz, executive editor of Wired magazine, and Dr. Tom Lee, founder of One Medical Group as well as ePocrates.

Not surprising, the most fascinating person, was the keynote speaker, Vinod Khosla, co-founder of Sun Microsystems as well as a partner in a couple venture capital firms.

"Health care is like witchcraft and just based on tradition."

Entrepreneurs need to develop technology that would stop doctors from practicing like "voodoo doctors" and be more like scientists.



ON THCB

[What Next After Implementation Challenges For Informatics Co \(Tech\)](#)

[Nationwide Health Information Net of Age \(Tech\)](#)
By BRIAN AHI

[Burnout](#)
By ROB LAMB

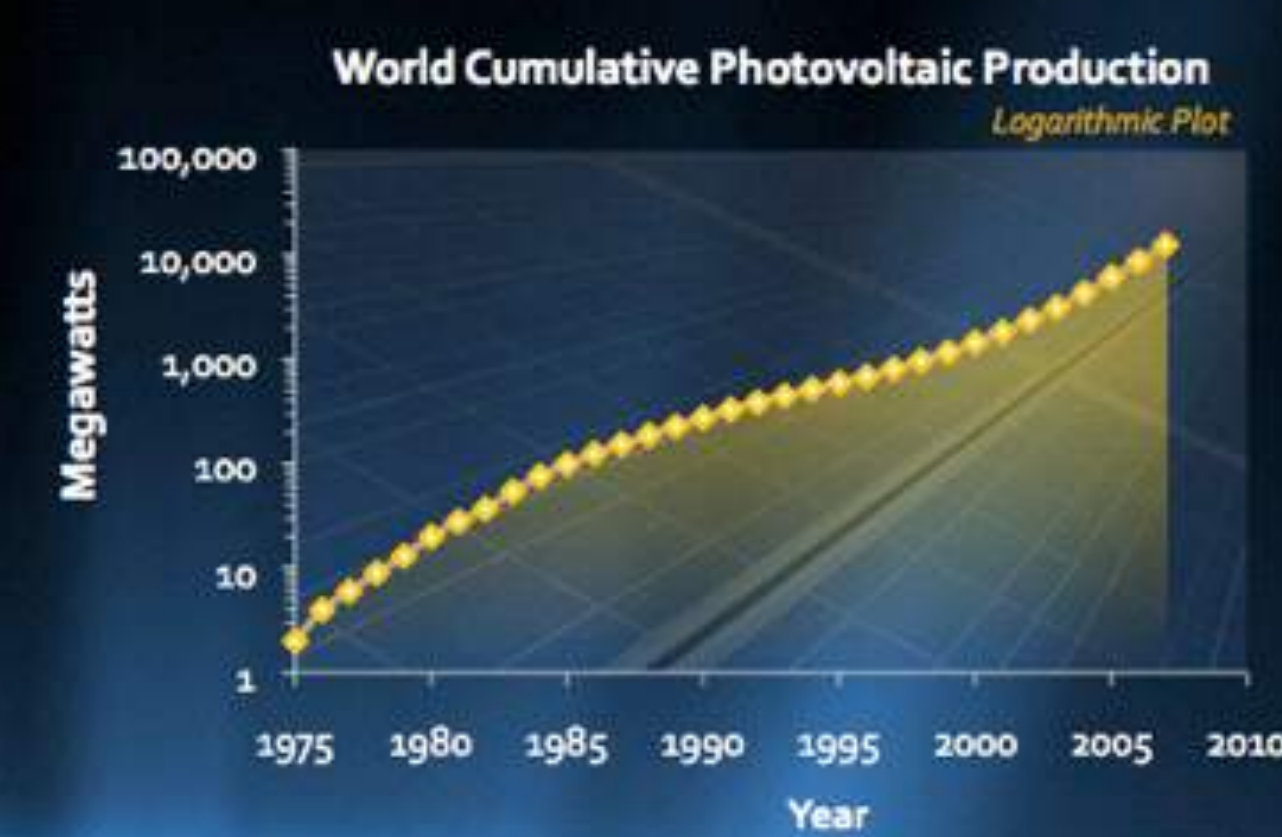
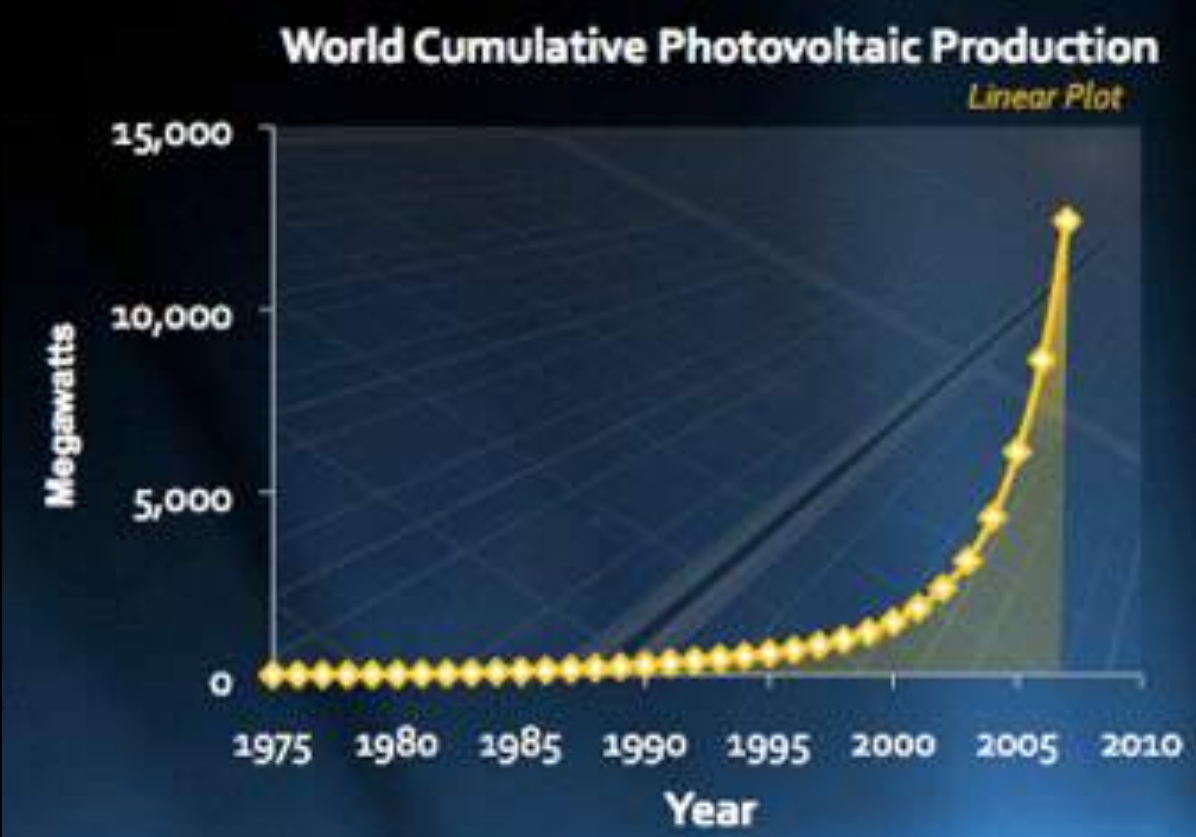
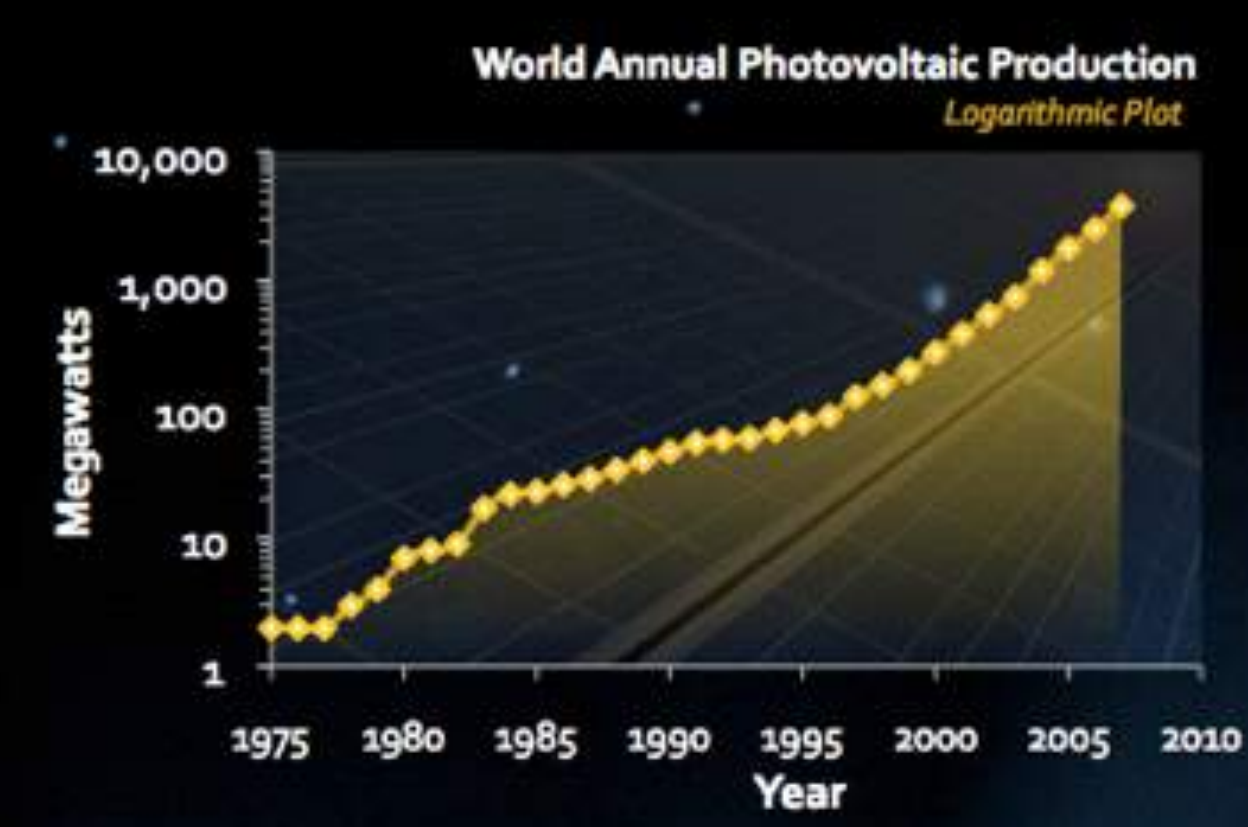
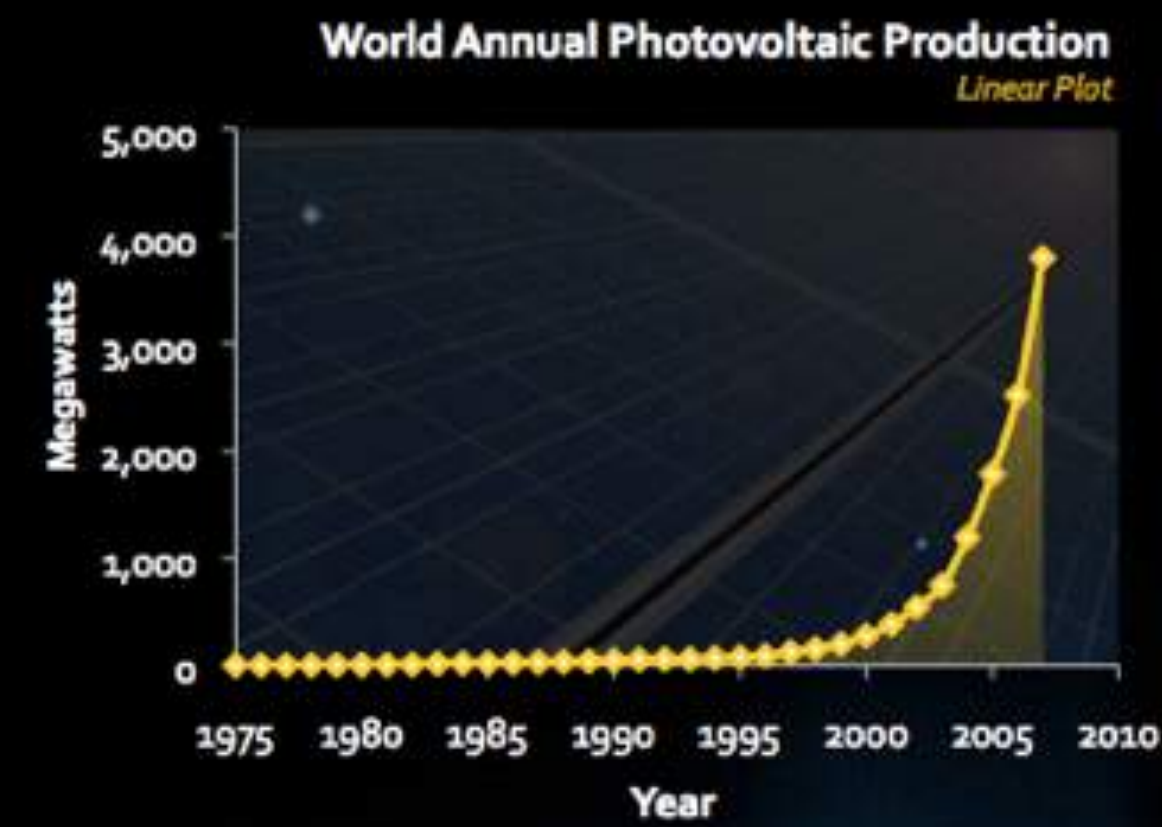
[Building a Medical Does Government Hinder? \(Physi\)](#)
By DAVID M. M
MD

[Demo: Healthlin BodyMaps for \(Matthew Holt\)](#)
By MATTHEW



Courtesy: Shutterstock

Solar



Information Layers

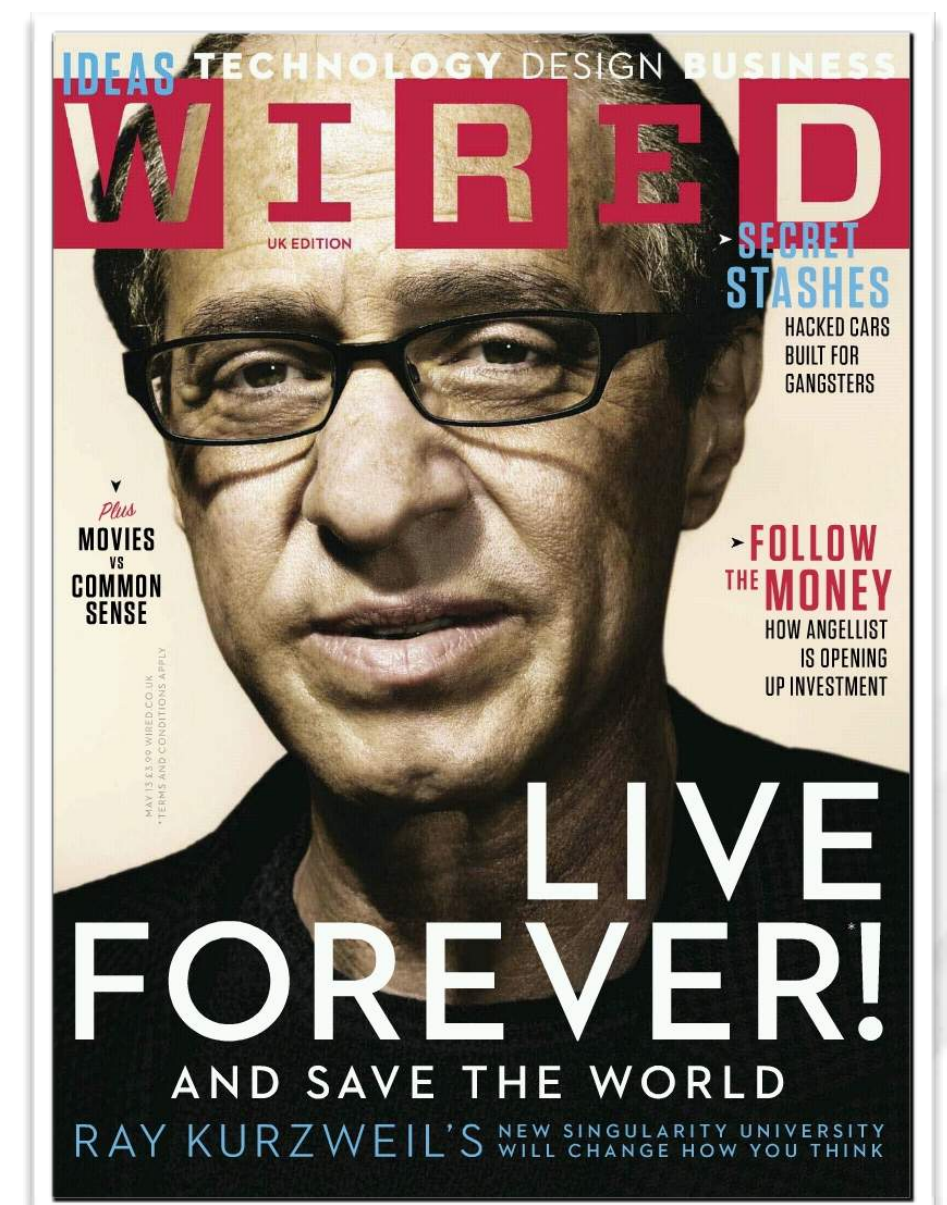


Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs



Recent News



Society is not ready..



LIFE
Local & linear



LIFE
Exponential & global







“ Social media is a menace to society ”

Erdogan
Turkey Prime Minister – National Post



"Information is power.
But like all power,
there are those who
want to keep it
for themselves."

-Aaron Swartz
1986 - 2013



EDWARD SNOWDEN



ENEMY OF THE STATE

RevolutionCarBadges.com



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

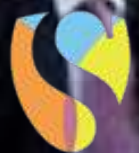
// Surveillance

– Retrospective

– Prospective



Curriculum Planning Meetings





Information Layers



**Accelerating
Technologies**

**AI
Robotics
Biotech
Nanotech
Medicine
Neuroscience
Energy
Computing**

Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs



B I L L I O N \$ C O M P A N I E S

A billion dollar opportunity

Used to take 20 years to create

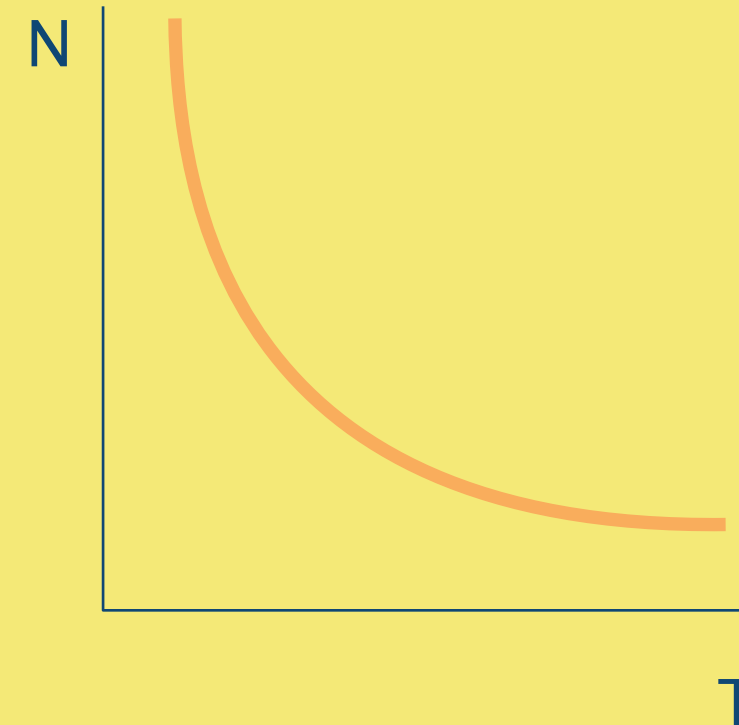
Google – 8 years

Facebook – 5 years

Groupon – 18 months

**Metabolism of the economy
increasing**

Barriers to entry dropping

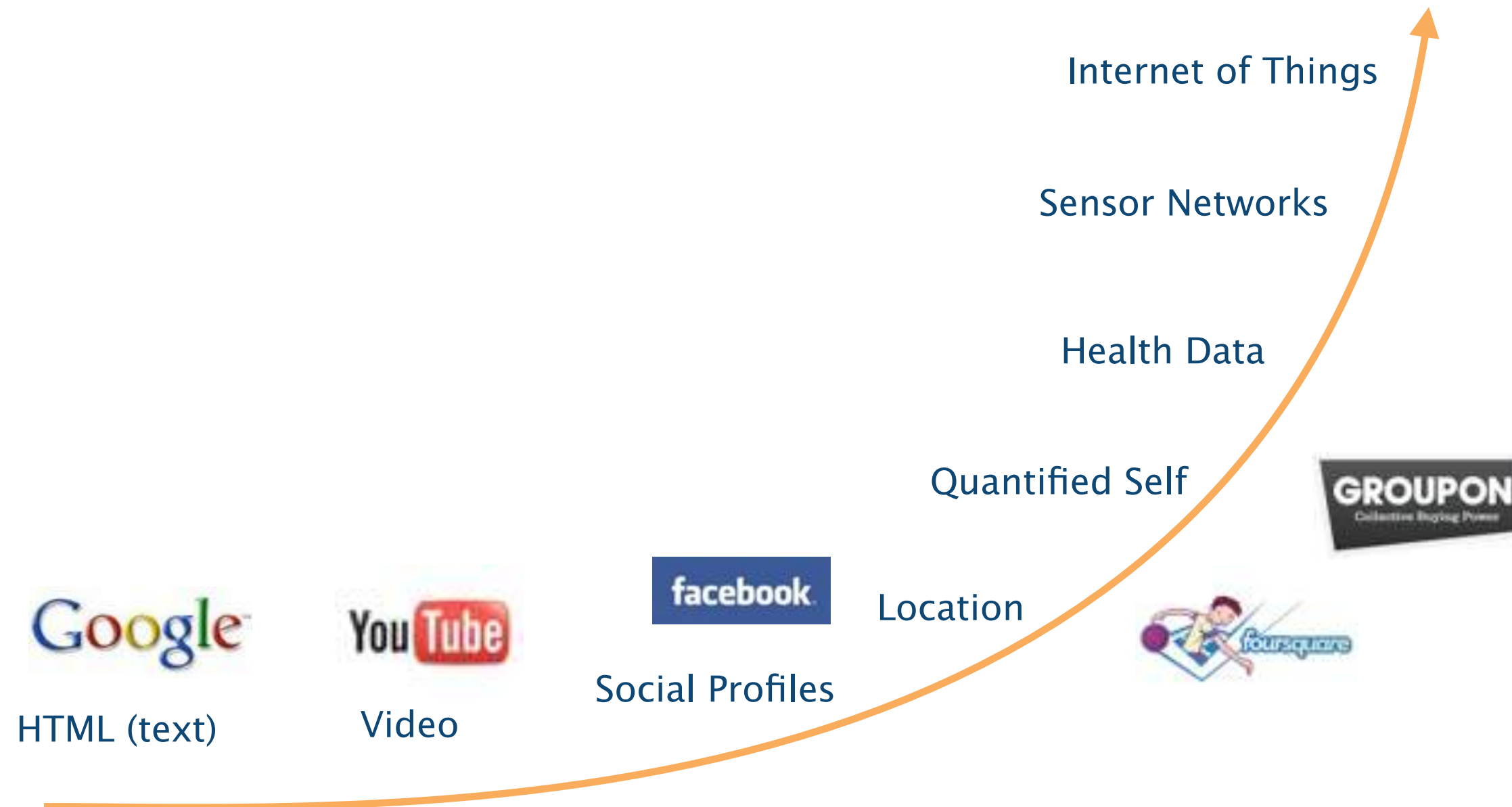




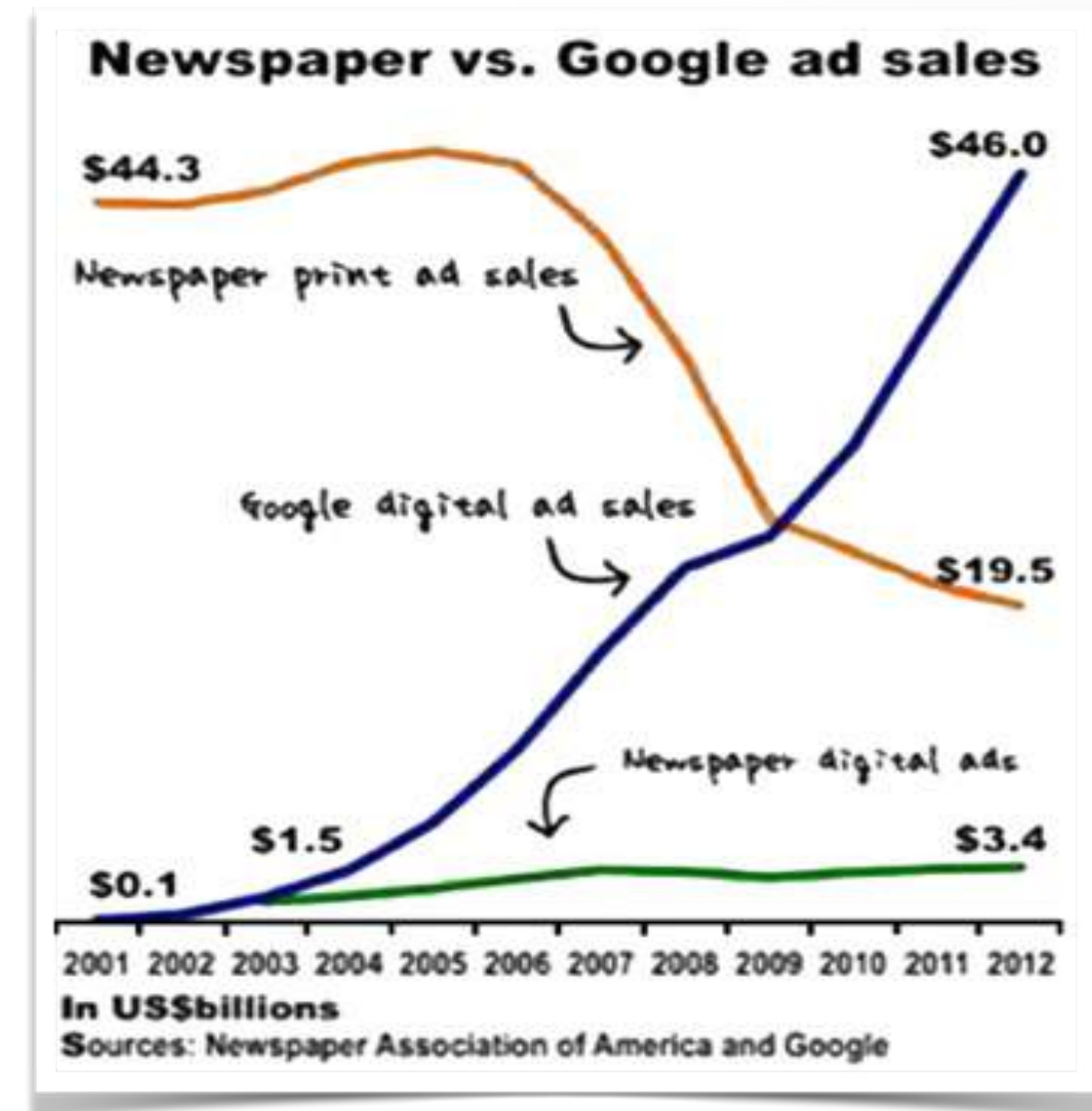
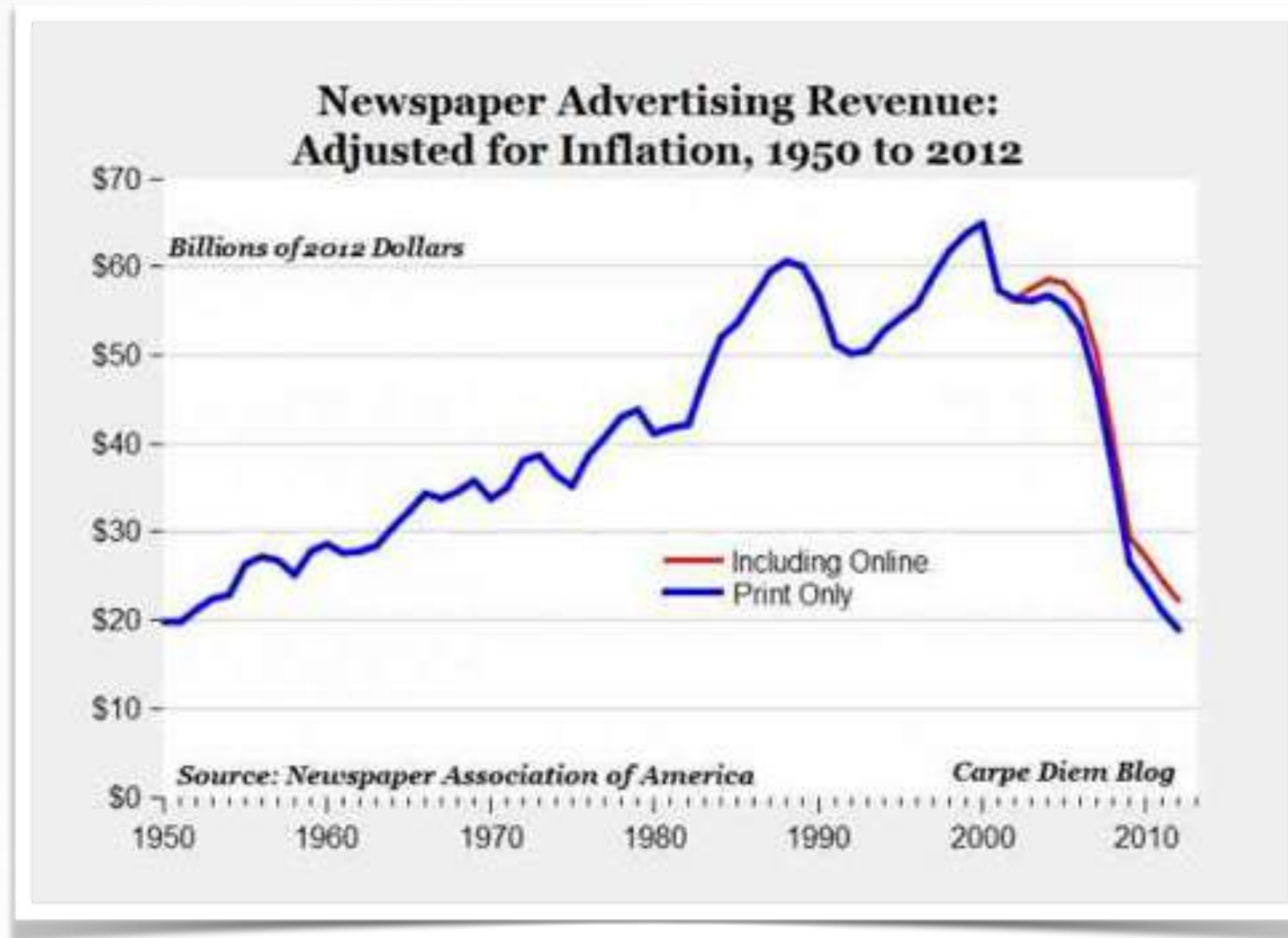
\$ 800M SALES IN 24 HRS
> \$1B IN 72 HRS



NEW INFORMATION LAYERS



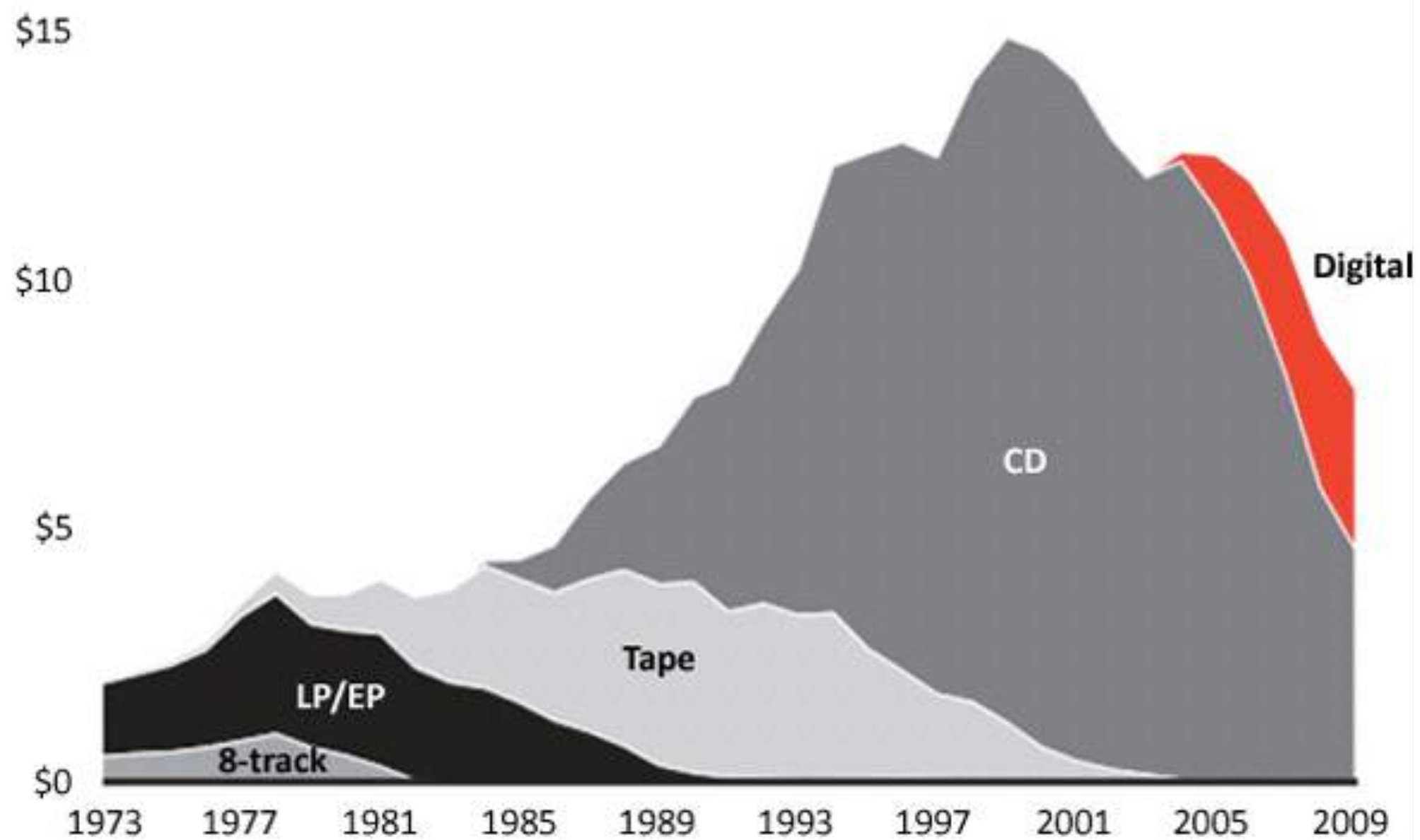
Newspapers



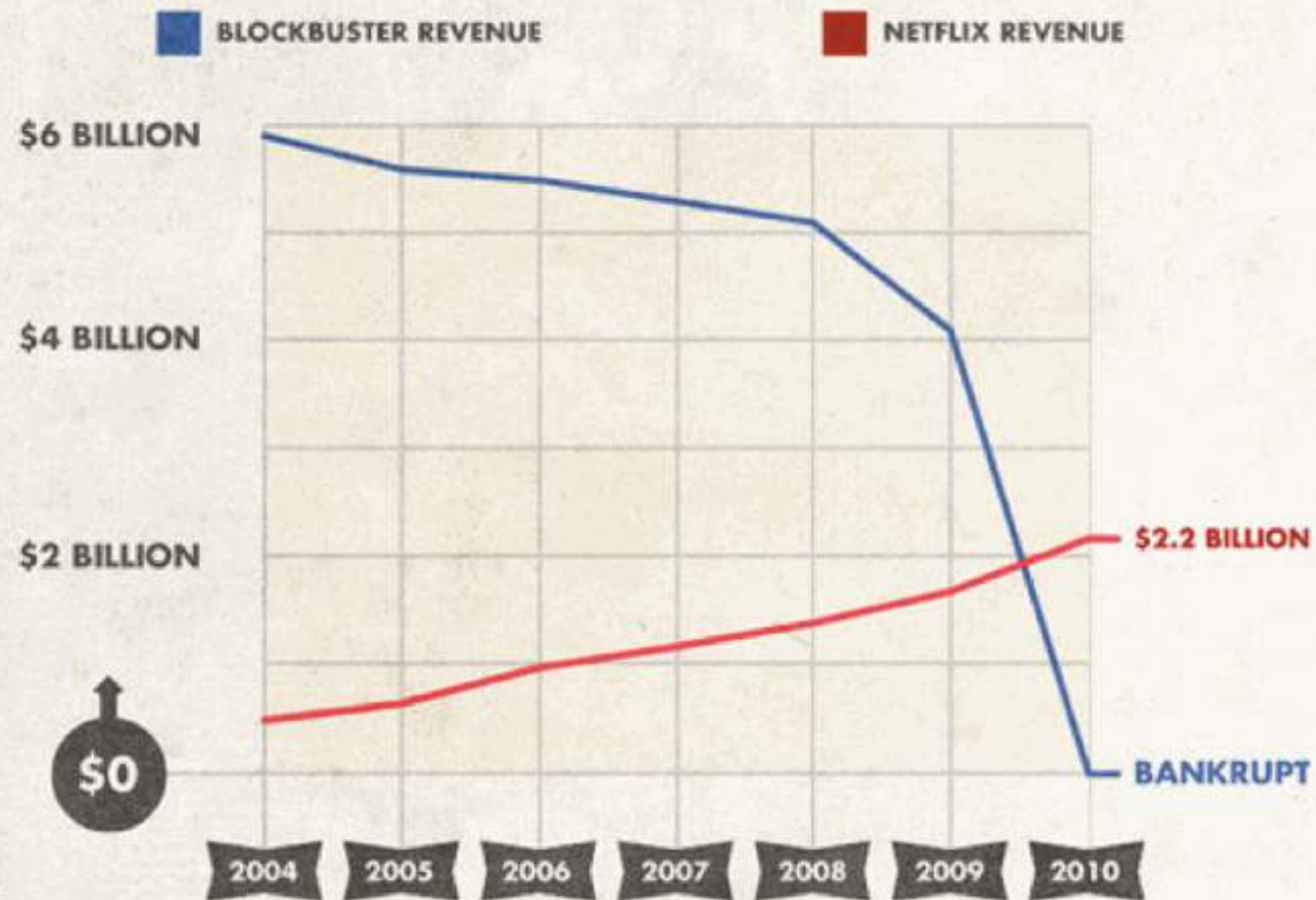
Global Music Industry Turnover (1973-2009)

In Billions

Source: RIAA year-end shipment statistics; Bain analysis



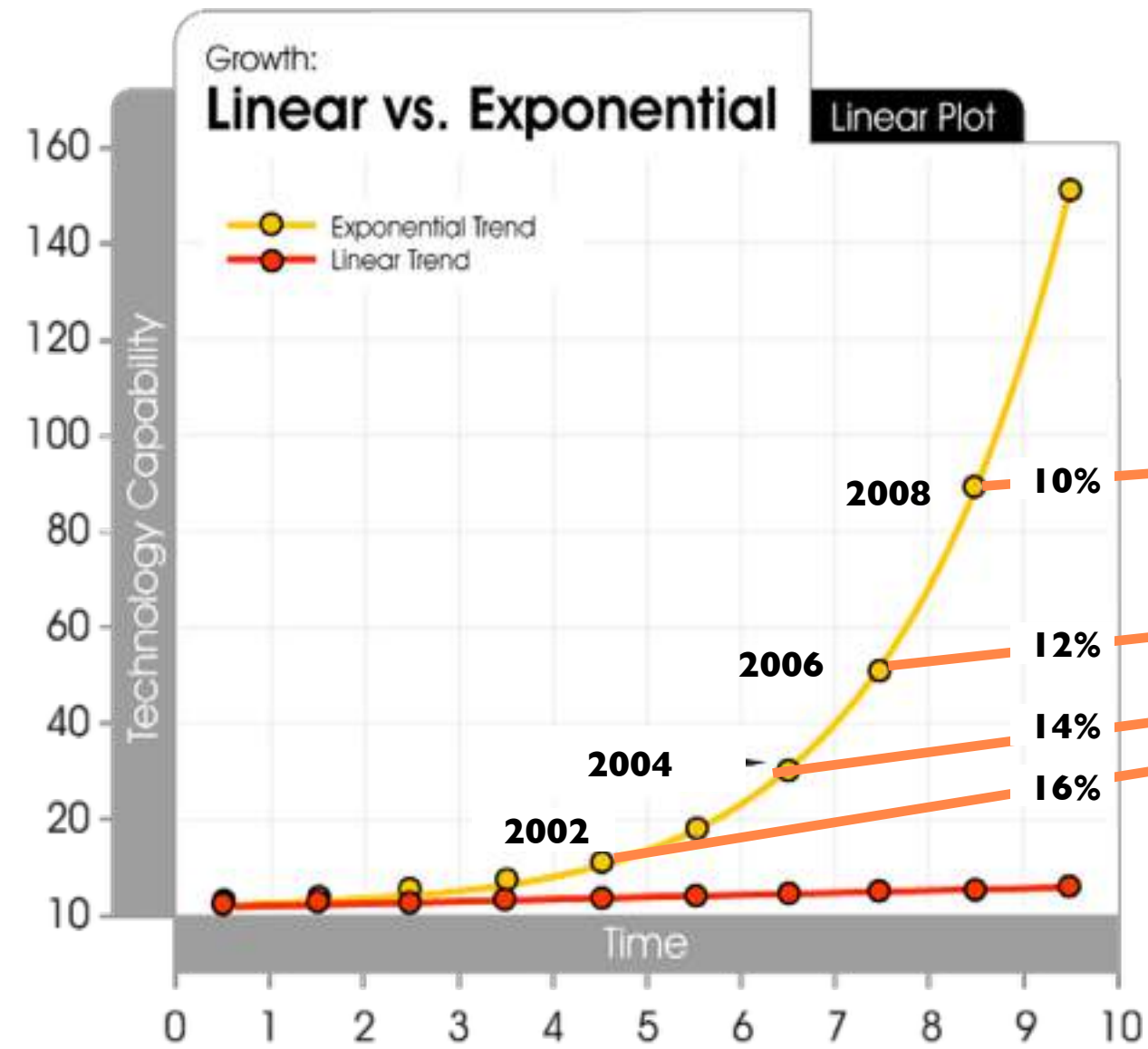
NETFLIX VS. BLOCKBUSTER (2004-2010)



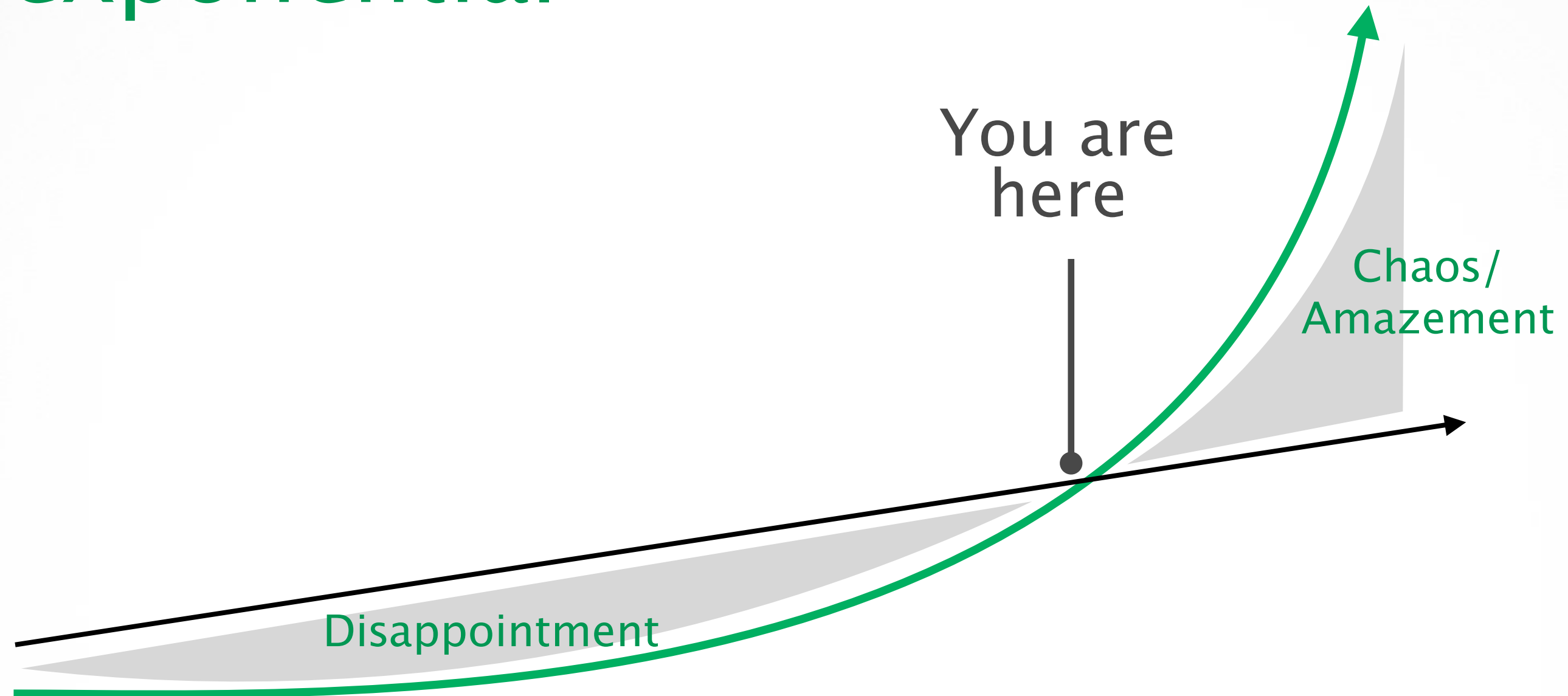
Netflix
4 billion
hours in Q1 2013

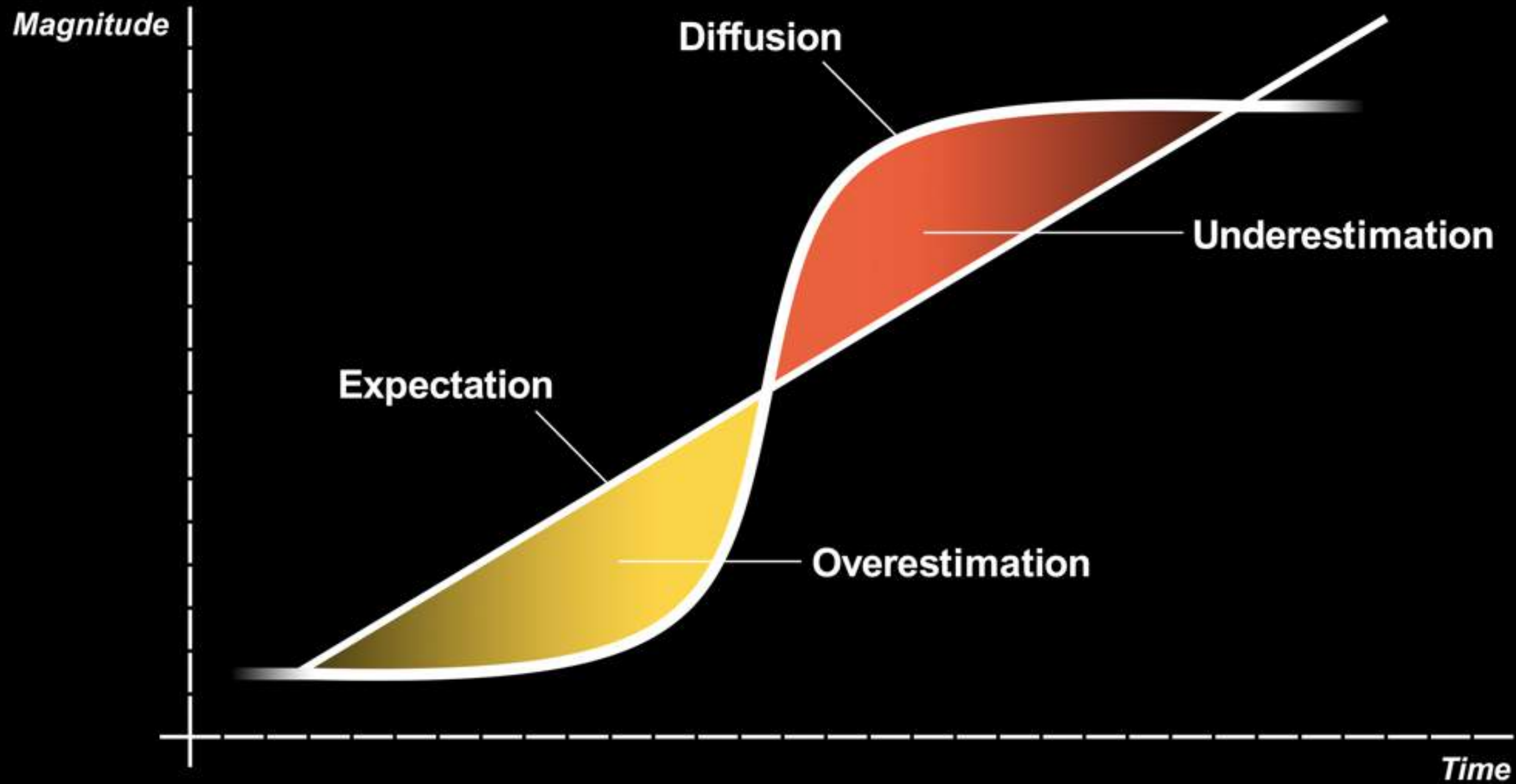


Vinod Khosla // The rise of mobile phones



Deception of linear vs exponential





Information Layers



Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs





Ethiopian kids hack OLPCs in 5 months with zero instruction

Evan Ackerman Tuesday, October 30, 2012 - 1:57pm



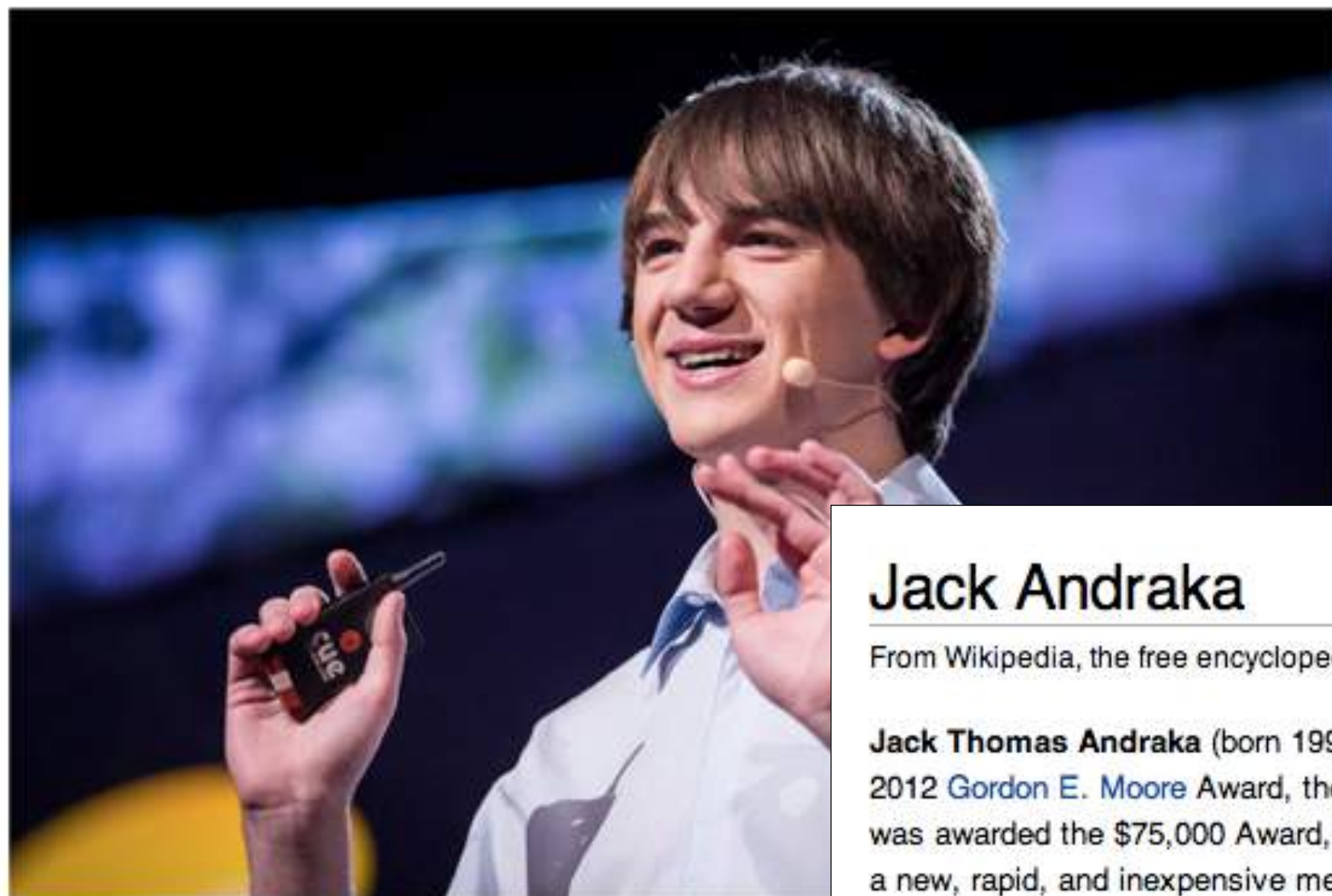
LIVE FROM TED2013

An early detection test for pancreatic cancer: Jack Andraka at TED2013



Posted by: [Kate Torgovnick](#)

February 27, 2013 at 5:03 pm EDT



Photos: James Duncan Davidson

Featured topic: TED on Culture

5 great stories with double lives as allegories

April 3, 2013

How we can make elections about the people, not just funders: An excerpt of Lawrence Lessig's new TED Book, "Lesterland"

April 3, 2013

Angela Patton holds second father-daughter dance in prison, sets sights on a documentary

April 1, 2013

TEDWeekends thinks you should rethink your sanity

March 30, 2013

[View more posts for Culture »](#)

Follow TED

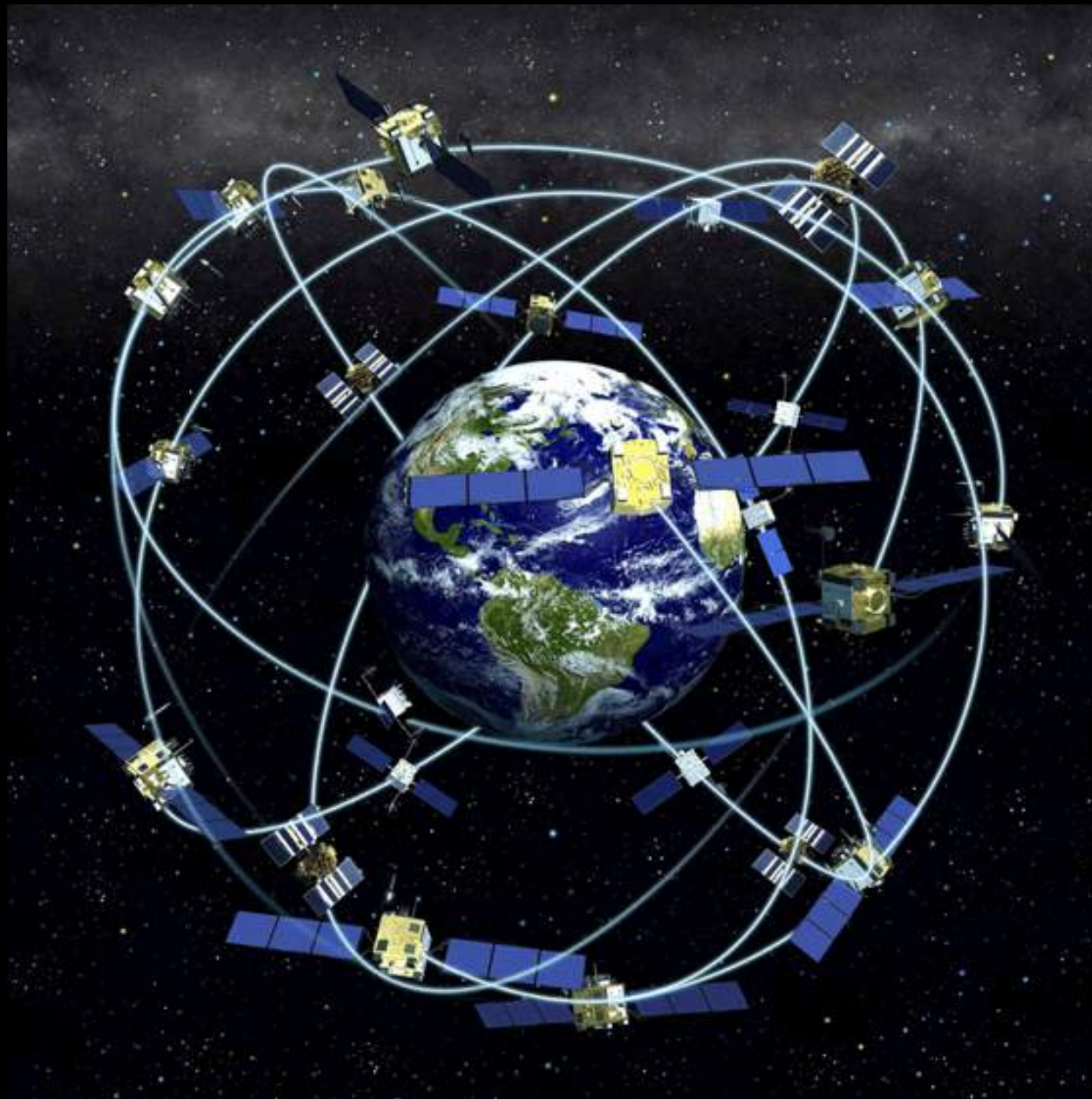


Jack Andraka

From Wikipedia, the free encyclopedia

Jack Thomas Andraka (born 1997) is an [inventor](#), [scientist](#) and [cancer researcher](#). He is the recipient of the 2012 [Gordon E. Moore Award](#), the grand prize of the [Intel International Science and Engineering Fair](#). Andraka was awarded the \$75,000 Award, named in honor of the co-founder of [Intel Corporation](#), for his work in developing a new, rapid, and inexpensive method to detect an increase of a protein that indicates the presence of pancreatic, ovarian, and lung cancer during early stages when there is a higher likelihood of a cure.^[1] In addition to the

☒ Daily ☐ Weekly



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 alumni launches his second nanosatellite.. RT @earkman: Manolito, aka @Cubebug2 is in orbit.



Quotient technology platform:
standing on the shoulders of giants

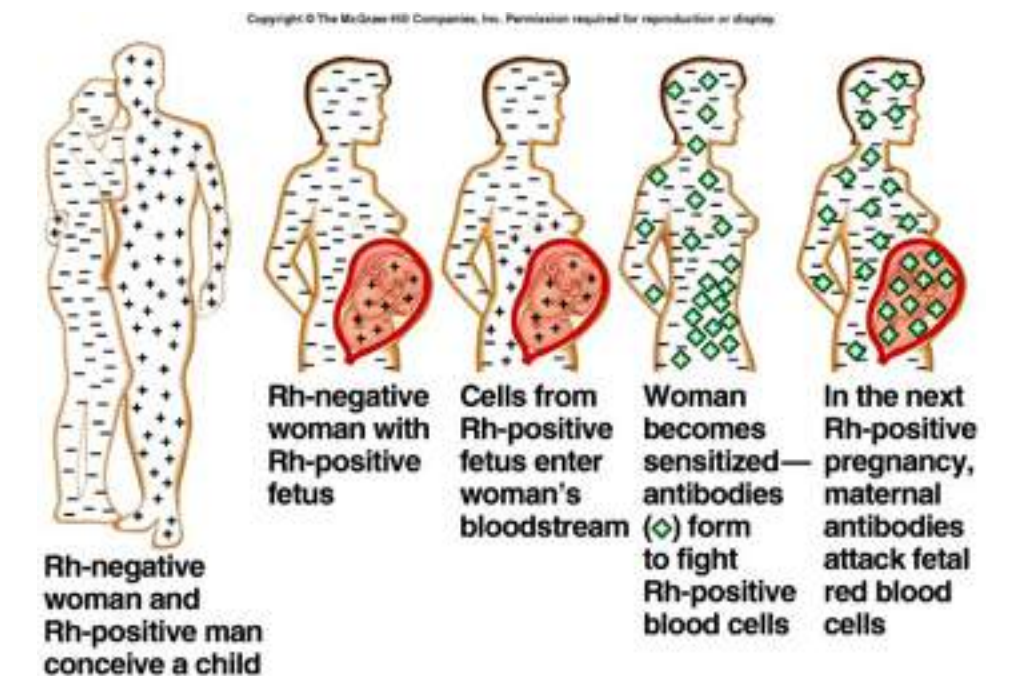
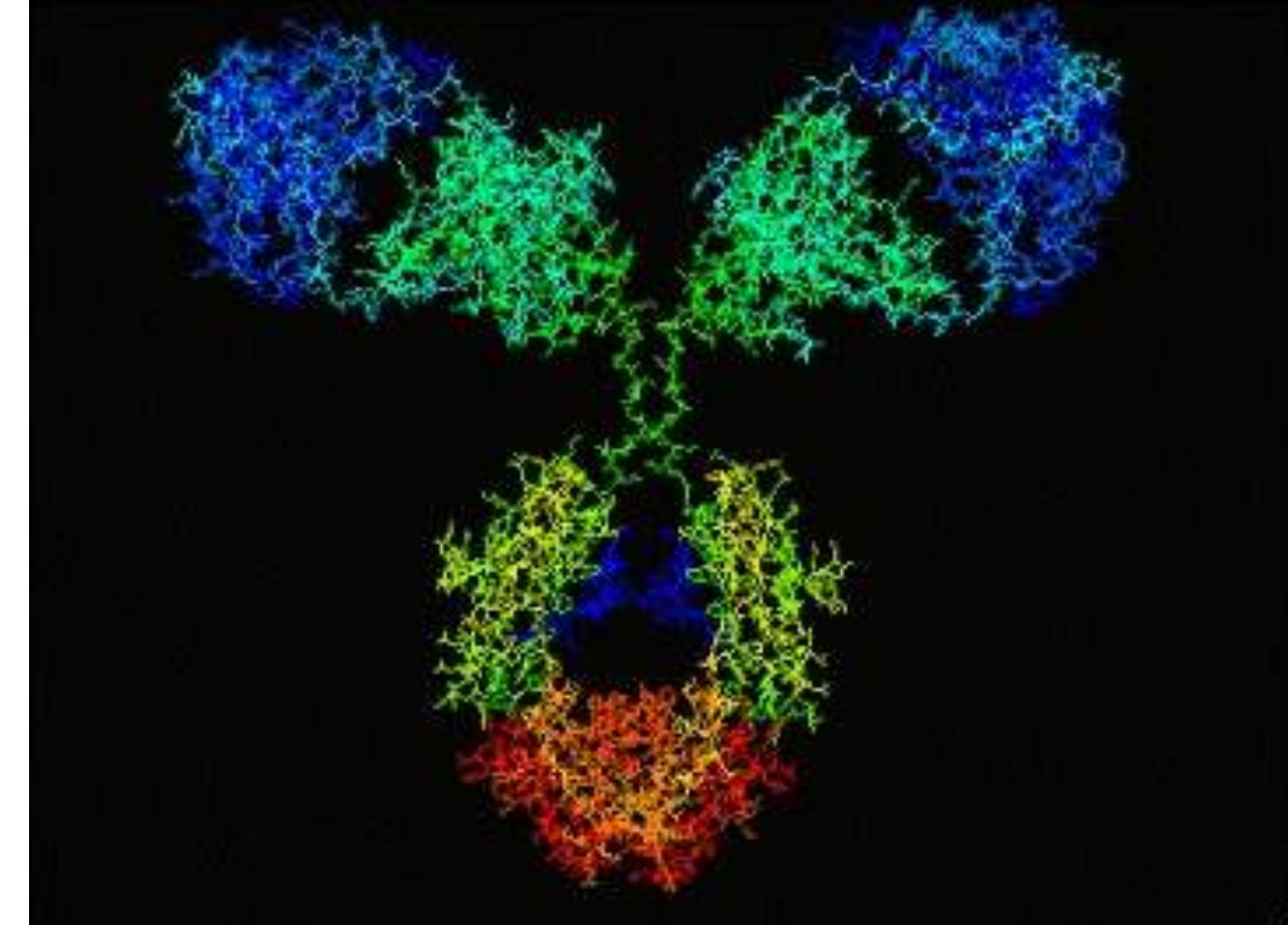
Historic event in human-antibody therapy:

Dr. William Pollack – eminent immunologist,
foremost authority on human antibodies

Inventor of RhoGam® – one of the most
successful women's health products ever produced

Tens of millions of babies saved
Eradicated RH disease

Further invented first vaccine against Hepatitis B –
human antibody based



Eric Migicovsky – Pebble

Seed round: \$100k

20 investors

Raised: \$ 0

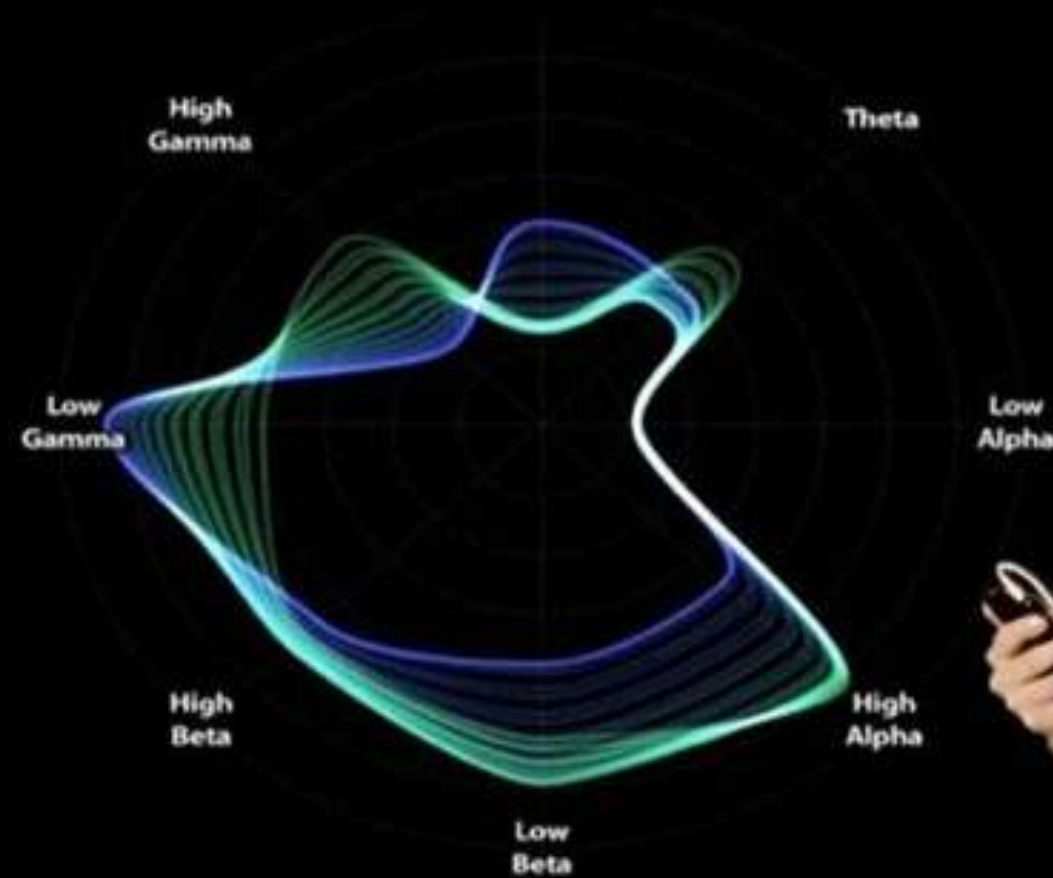


Crowdfunding – Kickstarter



Brain interface (Neuro)

NeuroSky Mindwave





ADVANCED

VIEW HEADSET

MARKER

EXIT

Gain

Buffer

alpha
7-13 Hz

Gain

Buffer



Gain

Buffer

beta
13-30 Hz

Gain

Buffer



- BETA
- DELTA
- THETA

3DEPOC VIEW

mouse

ORBIT: DRAG WITH LEFT MOUSE BUTTON

ZOOM: ROLL MIDDLE MOUSE WHEEL

hot keys

- T — TOP
- L — LEFT
- R — RIGHT
- F — FRONT
- B — BACK
- P — PERSPECTIVE
- W — FOCUS



lenovo

www.focusatwill.com



focus@will



salim@s

Alpha Chill

Classical

Focus Spa

Up Tempo

Alpha Chill

Acoustical

Cinematic

Ambient

Music Energy Level



Low

Med

High

Bitcoin Network

Economy

Total BTC	12,569,550 BTC
Market Cap based on latest prices	6,511,026,900 USD or 5,027,945,696 EUR or 20,526,075,150 PLN or 4,173,090,600 GBP
Transactions last 24h	70,980
Transactions avg. per hour	2957.50
Bitcoins sent last 24h	780,489.04 BTC
Bitcoins sent avg. per hour	32,520.38 BTC

Blocks

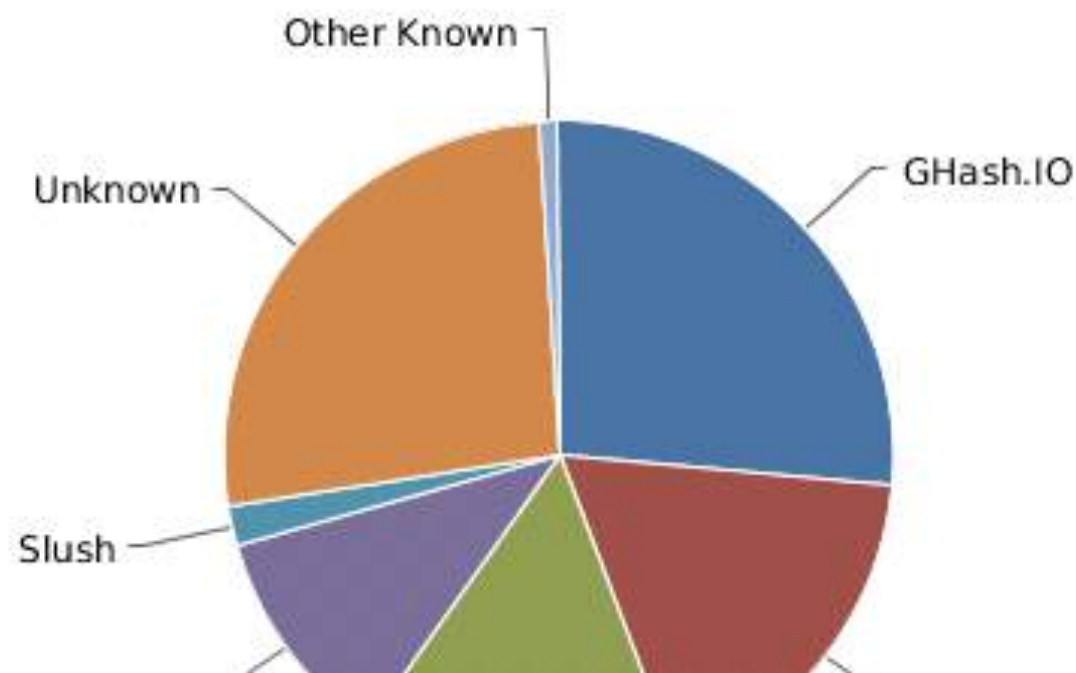
Count	292,781
Blocks last 24h	163
Blocks avg. per hour	6.79
Difficulty	5,006,860,589
Next Difficulty in 1555 blocks	5,246,869,694
Network Hashrate Terahashes/s	37558.56
Network Hashrate PetaFLOPS	476993.66

Network Hashrate



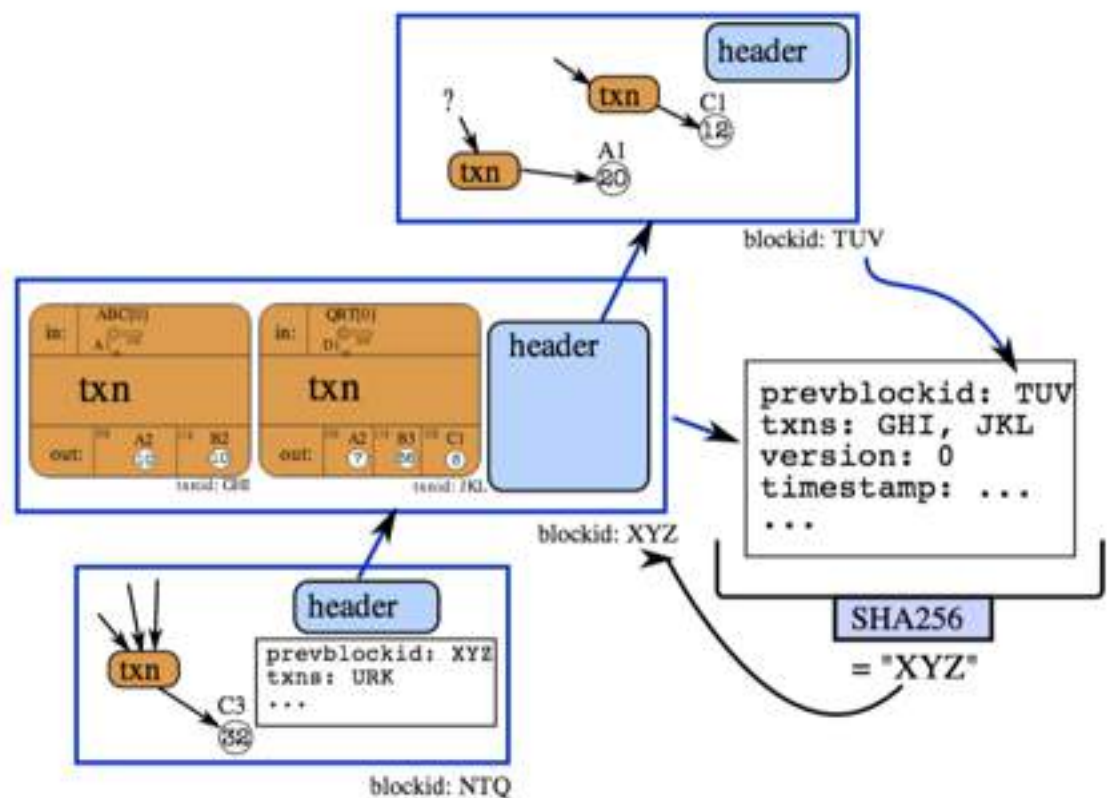
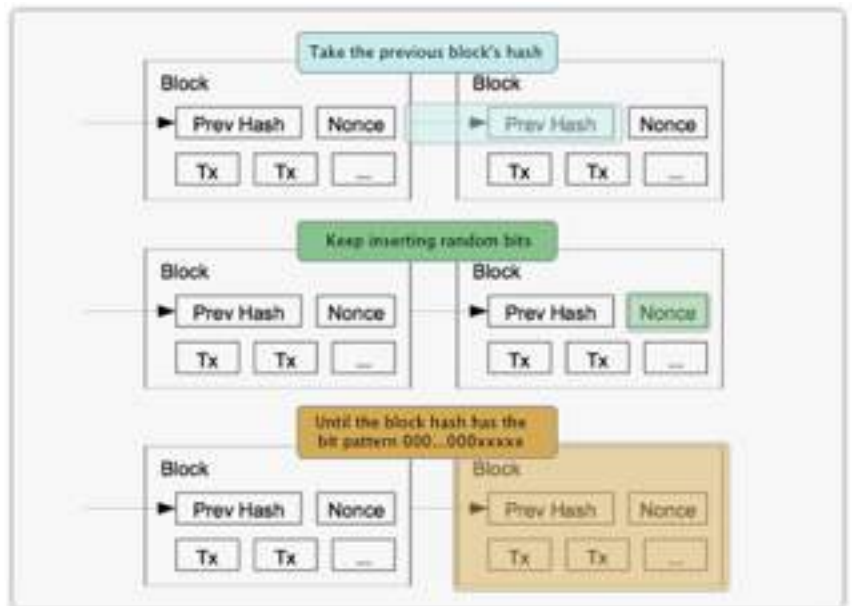
Source: <http://bitcoin.sipa.be/>

Hashrate Distribution

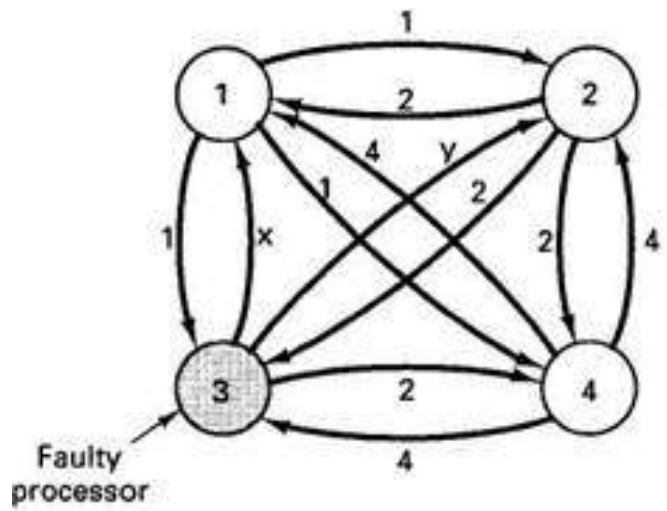
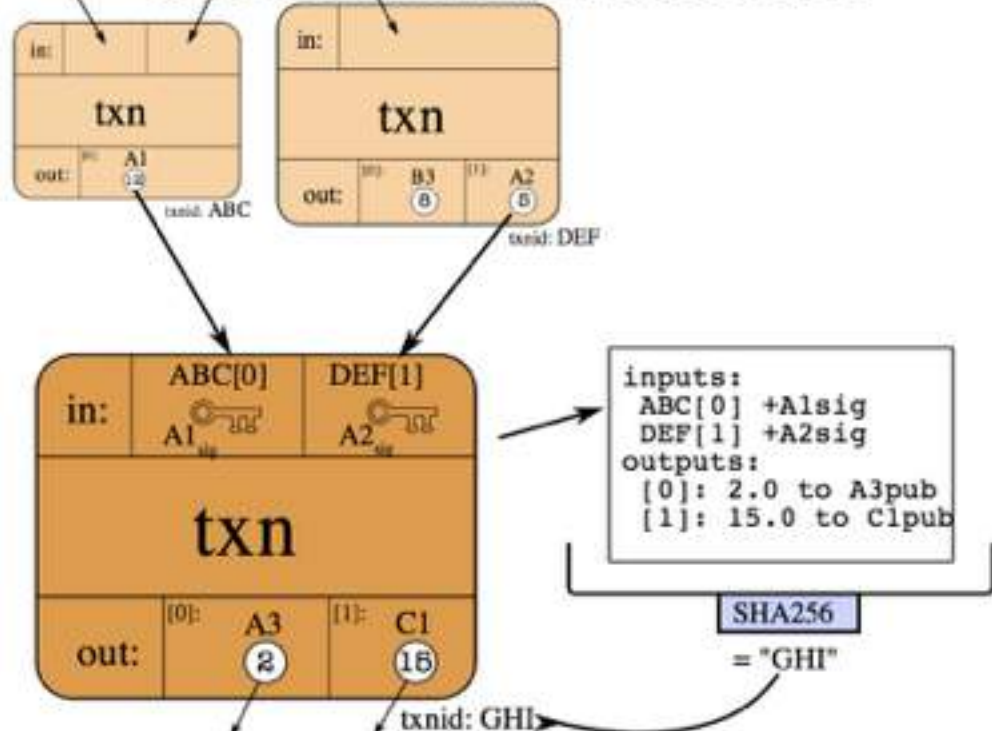


The Bitcoin Block Chain

The Block Chain



Serialized Transactions



1 Got	2 Got	3 Got
(1, 2, x, 4)	(1, 2, x, 4)	(1, 2, x, 4)
(1, 2, y, 4)	(1, 2, y, 4)	(1, 2, y, 4)
(a, b, c, d)	(e, f, g, h)	(i, j, k, l)

Bitcoin Protocol – other uses

International payments

Contracts

Transaction logs

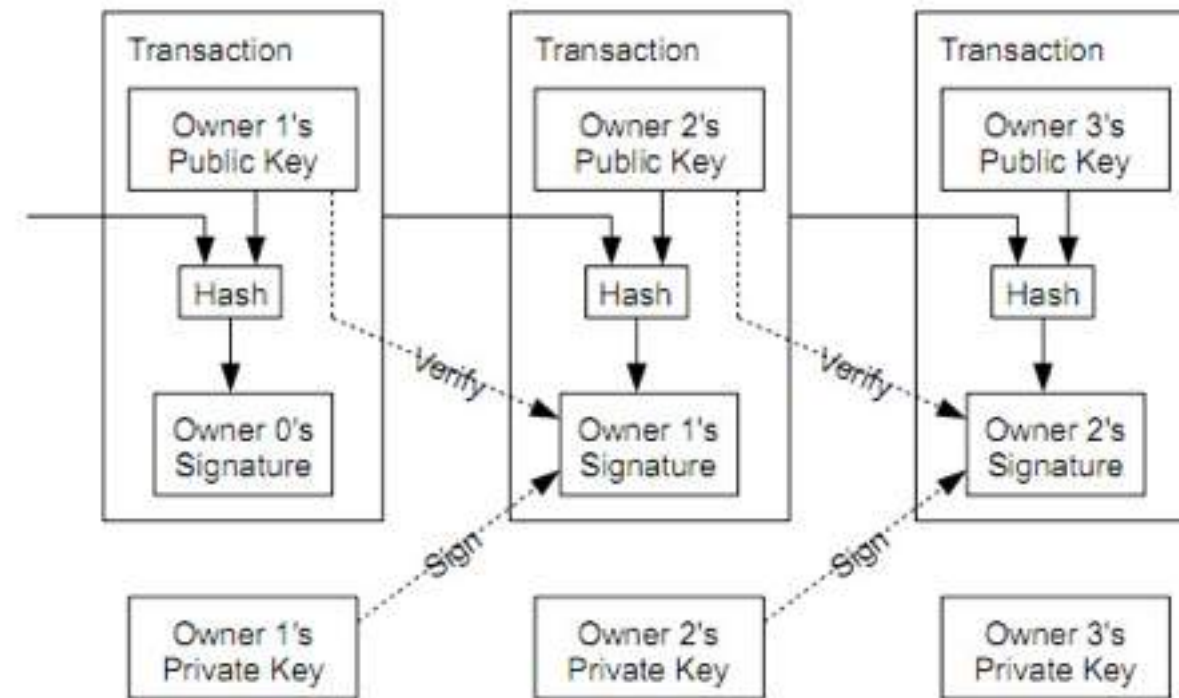
Voting systems

Micro-transactions

Registries

Multi-signatory contracts (joint savings, forex, trust funds)

DACs (Distributed Autonomous Corporations – Ethereum)

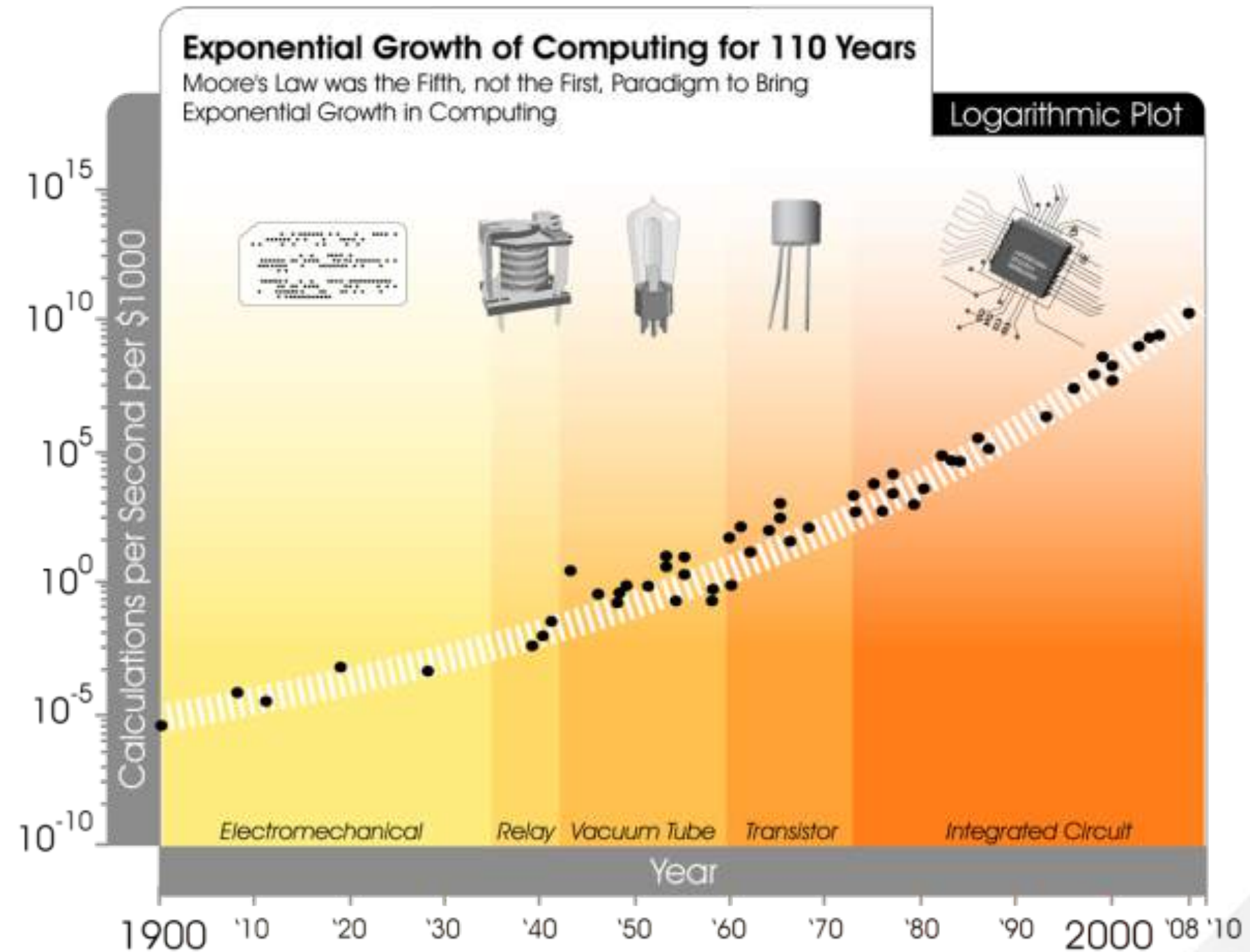




What's Next?



Rate of Change Increasing



How many people are online?

2010
1.2
billion

2020
5.0
billion
> 50%





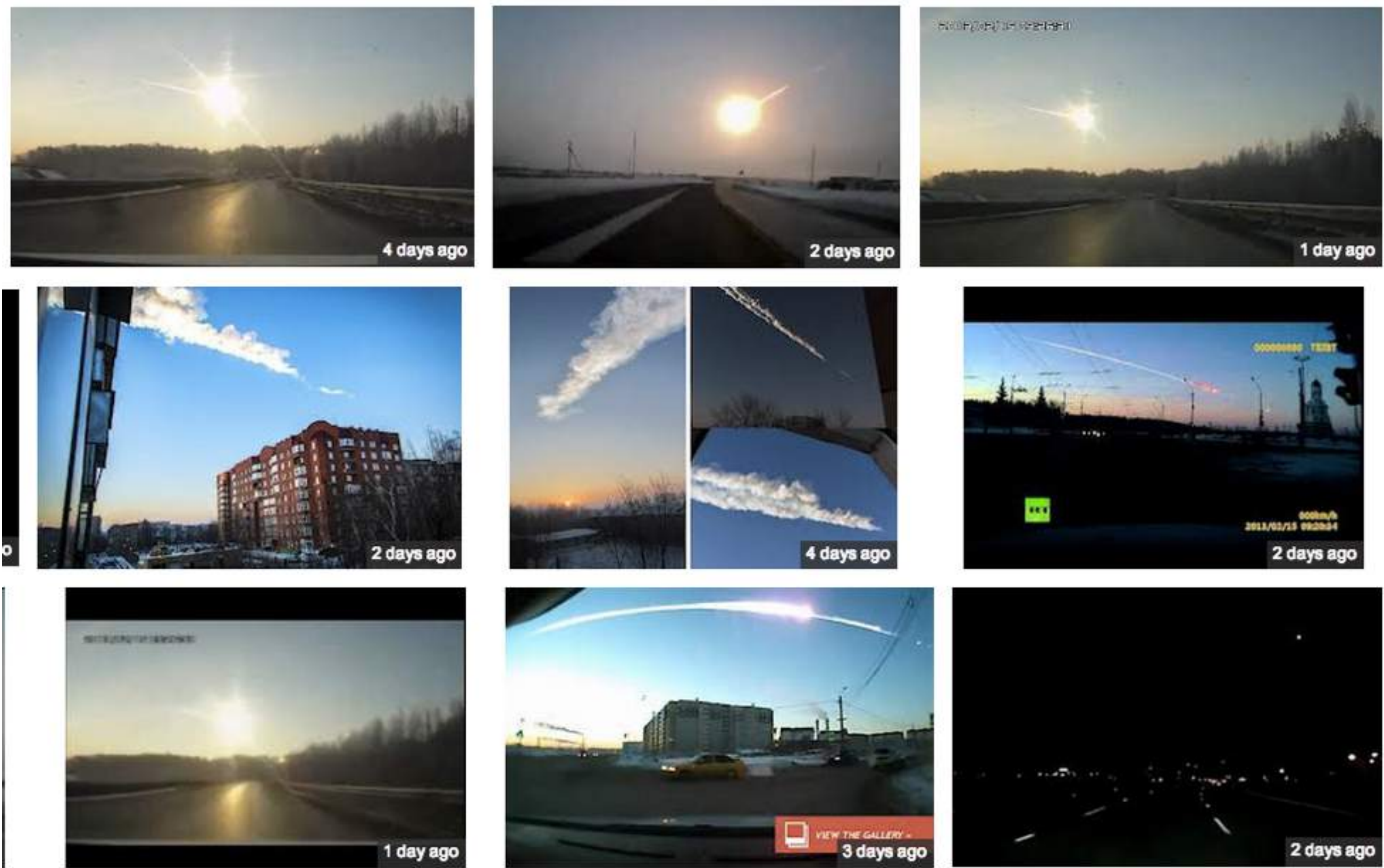
CBS
THIS
MORNING
SATURDAY

GOOGLE BALLOONS

THOUSANDS WILL BEAM THE INTERNET ACROSS THE GLOBE



Sousveillance





Yara Shaban @yarashaban

7h

An era can be considered over when its basic illusions have been exhausted. Arthur Miller

THANK YOU



Discussion topics

Jobs

Environment

Healthcare

Finance



Information Layers



Digitize
Disrupt
Demonetize
Democratize

New
Breakthroughs





Crazy Entrepreneurs !



Entrepreneurship

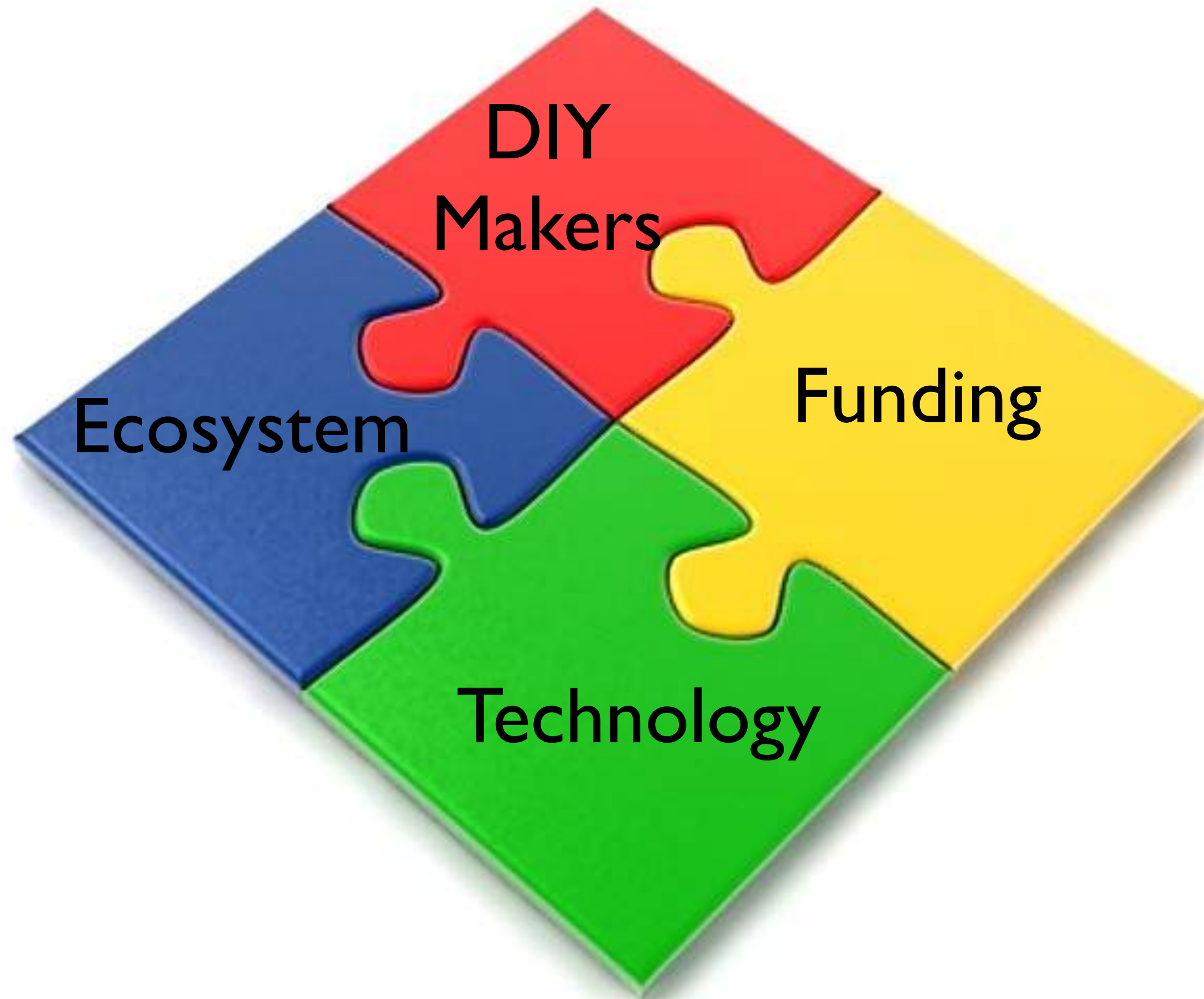
**Use technology and passion
to solve a problem
.. and be crazy**



EU – Entrepreneurship

SOME DEFINITIONS

- The entrepreneur recognizes opportunities and takes action to seize them. He or she is someone who is able to take advantage of the imperfections in the market (**Kirzner, 1973**).
- Entrepreneurship includes the study of the sources of opportunities, the processes of discovery, evaluation and exploitation of those opportunities, and the people involved in this discovery, evaluation and exploitation. Entrepreneurship does not necessarily require, but may include, the creation of new organizations. (**Shane & Venkataraman, 2000**).
- Entrepreneurship is the attitude and the process involved in creating and carrying out an economic activity, combining risk-taking, creativity and/or innovation with solid management, either in a new organization or within an existing one. Entrepreneurship is more than anything a way of thinking or a mindset. It includes motivation and individual ability, whether from an independent source or from someone inside an organization, to identify an opportunity and make a great effort to seize it and thus produce new value or economic success. (**European Commission, 2003**).
- Entrepreneurship includes the ability to make changes in oneself, the capacity to accept and support innovation brought about by external factors, openness to change and taking responsibility for one's own actions, whether positive or negative, all of this in order to finish what one starts, to know which direction one is headed in, to set goals and meet them and to be motivated to succeed. (**European Commission, 2004**).





Sponsor or partner with a local fablab or co-working space and create an environment where new business ideas are spawned



Eric Migicovsky – Pebble

Seed round: \$100k

20 investors

Raised: \$ 0



Crowdfunding – Kickstarter

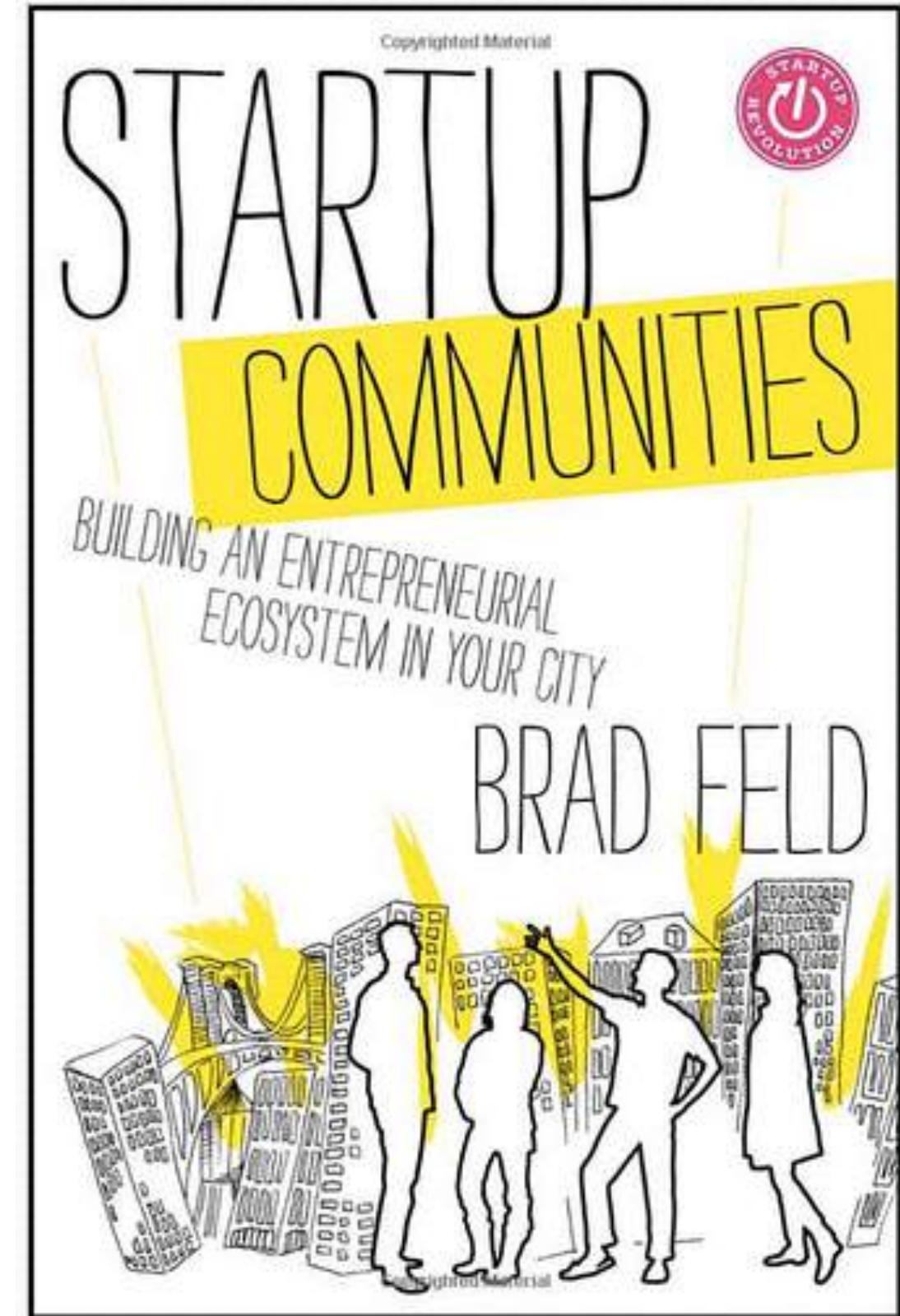




SQUARE

An electronic payment system created by Jack Dorsey, one of the co-founders of Twitter, Square hopes to revolutionize person-to-person transactions. A small adapter, shown in the attached image, allows individuals to accept credit cards on their mobile devices. The company recently secured \$10 million in capital investment.

Startup Ecosystems



Passion... !





Education – from Push to Pull



Push to Pull – Khan Academy

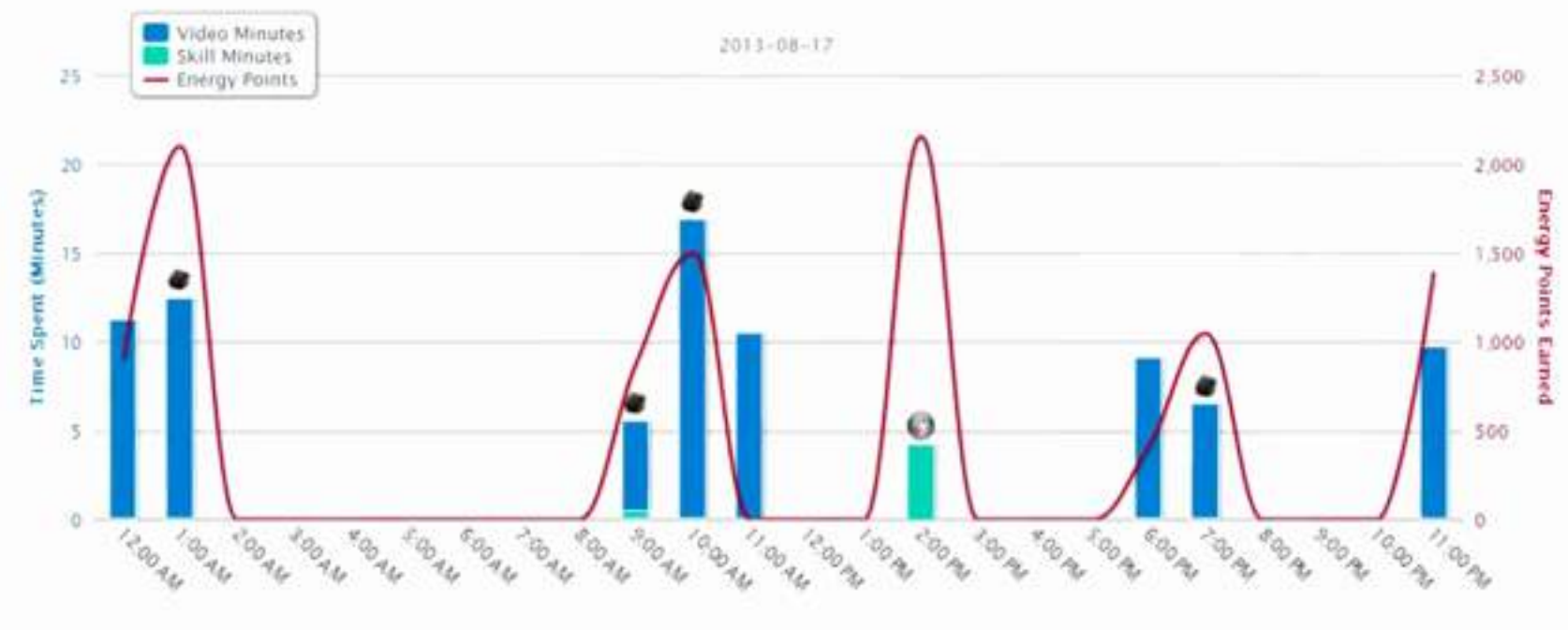


Ben Eater

Ben Eater » Activity

Shows how much work you're doing each day

August 17 2013 - August 17 2013



khanacademy.org



Search for a video or playlist

Watch Videos Go Exercises Join Us

10/2018 80/80 803/803

Vital Statistics

Shows how much work you're doing each day

Total 1 lesson 1 hour 1 min 1 sec

- Focus
- Examined Progress
- Exercise Progress Over Time



Achievements

Challenge Badges x 1

Brain Power Badges

Star Badges x 1

Earth Badges x 6

Moon Badges x 21

Mars Badges x 10

Recent Activity

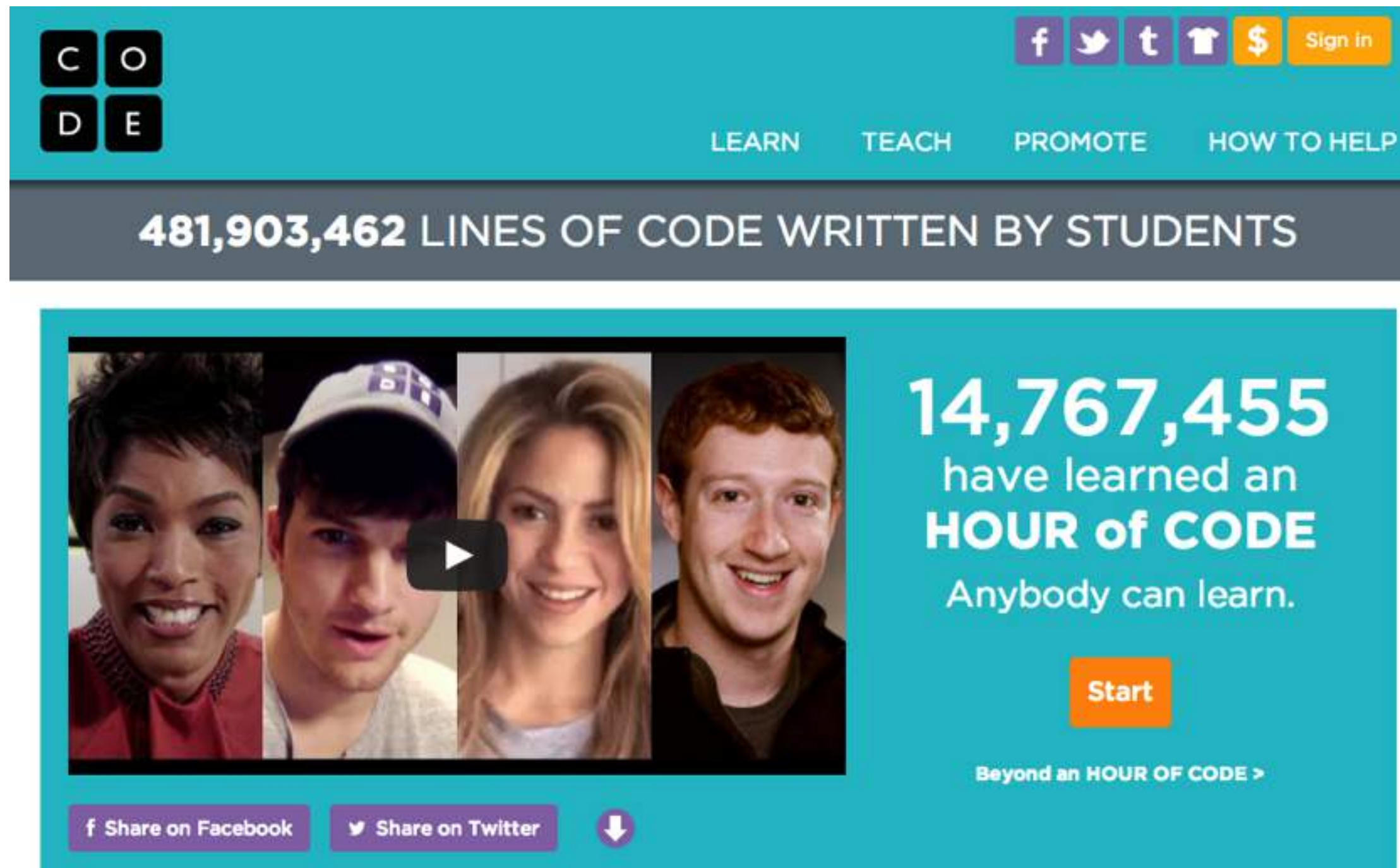
- Answered 2 problems in Average word problems 2 hours, 40 minutes ago
- Earned Magellan 2 hours, 30 minutes ago
- Answered 21 problems to achieve proficiency in Chain rule 1 2 hours, 30 minutes ago
- Earned Picking Up Steam for Chain rule 1 2 hours, 30 minutes ago
- Earned Persistence for Chain rule 1 2 hours, 30 minutes ago
- Answered 16 problems in Average word problems 2 hours, 30 minutes ago
- Watched 9 minutes of Integer sums 2 hours, 30 minutes ago
- Watched 1 minute of Averages 2 hours, 30 minutes ago
- Answered 16 problems in Average word problems 2 hours, 30 minutes ago

21st Century Skills
Education >> Learning



Teaching >> Mentoring

The Hour of Code



The screenshot shows the top section of the Hour of Code website. At the top left is the 'CODE' logo, with 'C' and 'O' in the top row and 'D' and 'E' in the bottom row. To the right are social media icons for Facebook, Twitter, Tumblr, and a donation icon, followed by a 'Sign in' button. Below these are navigation links: 'LEARN', 'TEACH', 'PROMOTE', and 'HOW TO HELP'. A dark grey banner displays '481,903,462 LINES OF CODE WRITTEN BY STUDENTS'. The main banner features a video player with four portraits of diverse students and a play button. To the right of the video, it says '14,767,455 have learned an HOUR of CODE Anybody can learn.' with a 'Start' button and a link 'Beyond an HOUR OF CODE >'. At the bottom are buttons for 'Share on Facebook', 'Share on Twitter', and a download icon.

C O
D E

f t \$ Sign in

LEARN TEACH PROMOTE HOW TO HELP

481,903,462 LINES OF CODE WRITTEN BY STUDENTS

14,767,455
have learned an
HOUR of CODE
Anybody can learn.

Start

Beyond an HOUR OF CODE >

f Share on Facebook t Share on Twitter ↓

Hour of Code reached twice as many U.S. students as have ever taken a computer science class



Reinventing Education
strategically, collaboratively, and sustainably

[E-MAIL SIGNUP](#)[Youth](#)[Parents](#)[Educators](#)[School Leaders](#)[Community Leaders and Organizations](#)[Unions, Foundations, and Policymakers](#)[Media](#)[Blog](#)[About Us](#)[What We Do](#)[Give to IDEA](#)

We've gathered
our learning so far.

Read now

**2013 SUMMER
of Movement**



ORGANIZING

SCHOOL ASSESSMENT

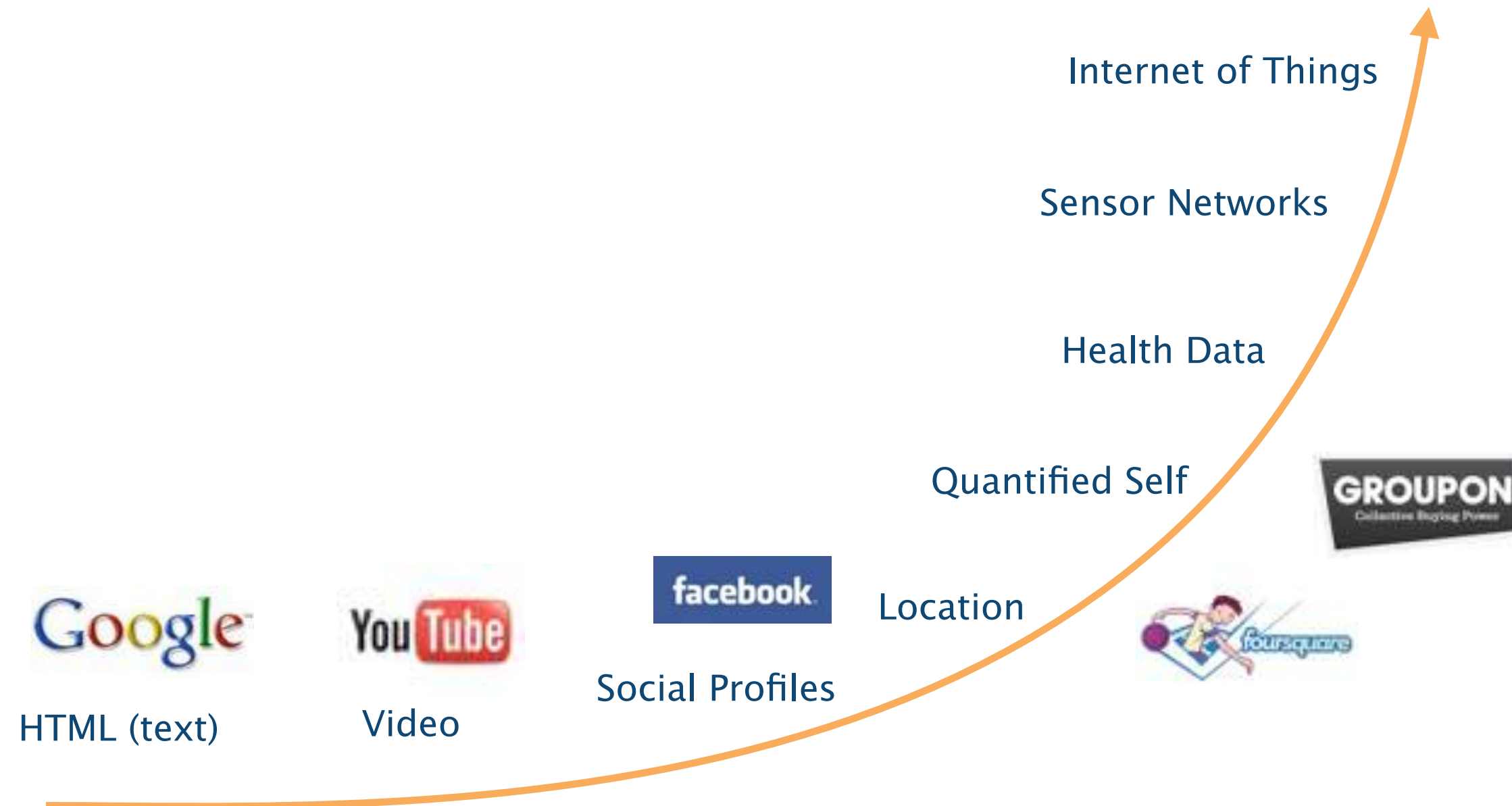
MEMBERSHIP

IDEA LIBRARY

INNOVATION TOURS



NEW INFORMATION LAYERS





Mark Andreessen
founder of Netscape,
renowned Venture Capitalist

“ Software will eat the world, in all sectors. Companies need to adapt or they will become extinct. In the future every company will become a software company ”

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

The Six Kinds of Free!



Freemium



Advertising



Cross subsidies



Zero marginal cost

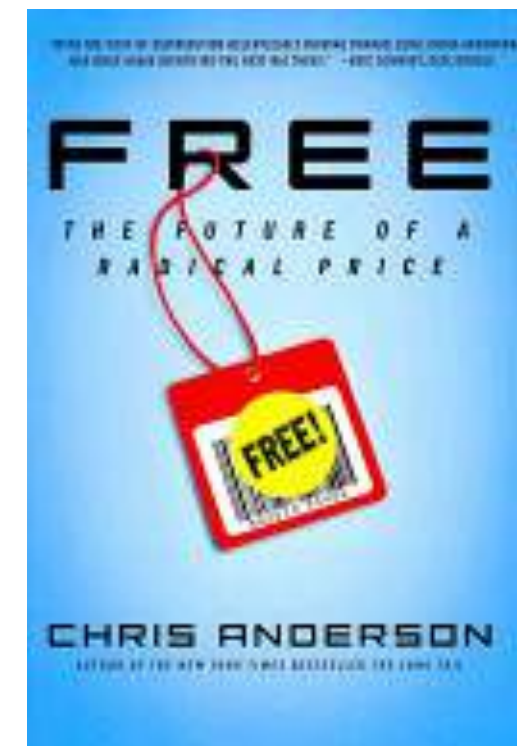


Labor exchange



Gift economy

Slide presented by: Corrado, Inc. <http://www.corrado.com>
Data credit: Wired Magazine. <http://www.wired.com/tech/magazine/10-03/Free>
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Gift: <http://www.flickr.com/photos/signature/2049575110/>



Immediacy
Personalization
Interpretation
Authenticity
Accessibility
Embodiment
Patronage
Findability

KK*

LIFESTREAM ★
THE TECHNIUM ★
COOL TOOLS ★
TRUE FILMS ★
SCREEN PUB ★
QUANTIFIED SELF ★
NEW RULES ★
STREET USE ★
ASIA GRACE ★

FEEDS

Search

Most Popular Postings

Tech Shopping Rules of Thumb
The Art of Endless Upgrades
1,000 True Fans
The (Unspeakable) Ultimate Machine
Born Digital

ARCHIVES

We Are Stardust
A Whole Lot of Nothing
Making Holes in Our Heart
Sourced Quotes, 12
What the Public Commons Is Missing
Beyond the Uncanny Valley
Superout Genre
Sourced Quotes, 11
On the Origin of Technological Species
Steam-Engine-Time
Hangout With the Technium
Irreproducible Results
Asia Grace Time Machine App
Plateau of Progress
The 7 Stages of Robot Replacement
The Technology of Global Unrest
You Are a Robot
Culturpemics
What You Don't Have to Do
The Paperback Option
Found Quotes, 10
The Art of Burning Man

THE TECHNIUM

Better Than Free

< previous next >

[Translations: Belarusian, Chinese, French, German, Italian, Japanese, Portuguese, Russian, Spanish, Turkish]

The internet is a copy machine. At its most foundational level, it copies every action, every character, every thought we make while we ride upon it. In order to send a message from one corner of the internet to another, the protocols of communication demand that the whole message be copied along the way several times. IT companies make a lot of money selling equipment that facilitates this ceaseless copying. Every bit of data ever produced on any computer is copied somewhere. The digital economy is thus run on a river of copies. Unlike the mass-produced reproductions of the machine age, these copies are not just cheap, they are free.

Our digital communication network has been engineered so that copies flow with as little friction as possible. Indeed, copies flow so freely we could think of the internet as a super-distribution system, where once a copy is introduced it will continue to flow through the network forever, much like electricity in a superconductive wire. We see evidence of this in real life. Once anything that can be copied is brought into contact with internet, it will be copied, and those copies never leave. Even a dog knows you can't erase something once it's flowed on the internet.



Collaborative Consumption

dilawar

Disruption. rt @dkberman: Peter Thiel to invest in #Airbnb, valuing at \$2.5B or 40% of all of Hyatt Hotels. <http://on.wsj.com/R8zZv0>

10/19/12 11:43 AM

- [Bartering](#)
- [Bike sharing](#)
- [Boats](#)
- [Book swapping](#)
- [Carpool/Ride sharing](#)
- [Car sharing](#)
- [Clothes swapping](#)
- [Collaborative workspace](#)
- [Co-housing](#)
- [Coworking](#)
- [Crowd funding](#)
- [Garden sharing](#)
- [Fractional ownership](#)
- [Peer-to-peer lending](#)
- [Peer-to-peer renting](#)
- [Product service system](#)
- [Seed swap](#)
- [Share taxi](#)
- [Time banks](#)
- [LETS](#)
- [Virtual currency](#)





lessons from brickhouse

The immune system of the company will always attack
– must view it from a biological p.o.v

Very few large organizations can innovate
– most are sales organizations that acquire technology

Important to do, but must report directly to CEO
and be kept stealth

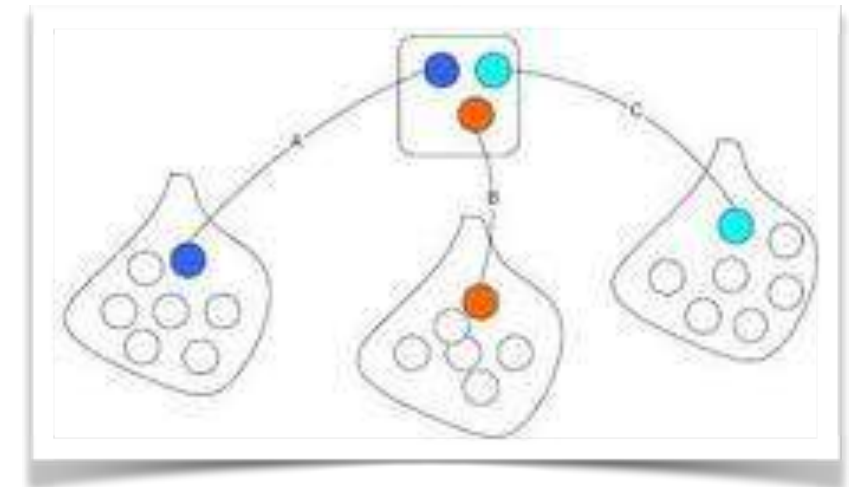


exponential orgs

A new breed of organizational structure emerging

Examples

- TED
- DonorsChoose
- Xprize
- Singularity University



In each case, a small footprint of people/resources is achieving a global impact



SMU

SINGAPORE MANAGEMENT
UNIVERSITY

ExOs.. 10x better performance



[TOPCODER][®]



quirky[™]



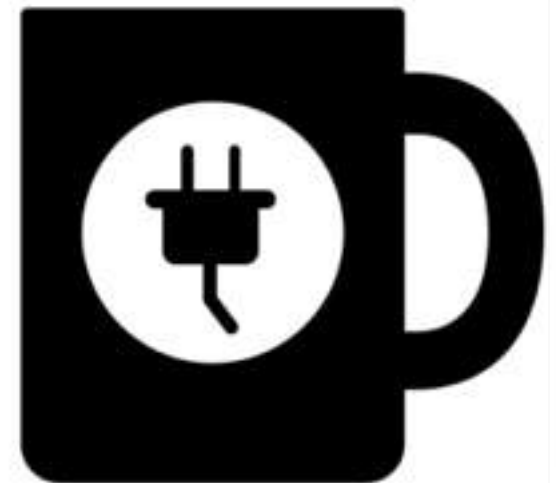
CrowdFlower



LOCAL MOTORS[™]



kaggle



Singularity U

Founding conference to launch - 10 months

GSP09

160 speakers

300 hrs of lectures, workshops, etc

Core team - 5 people

Global footprint

2000 alumni

85 countries

local impact



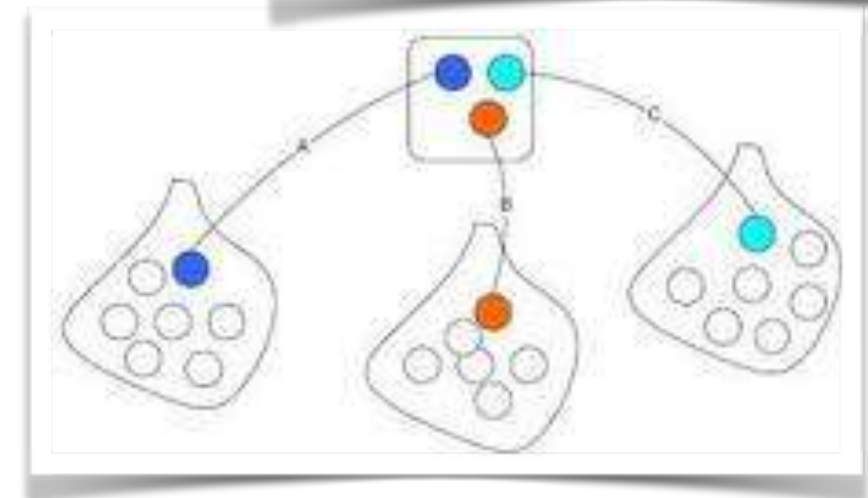
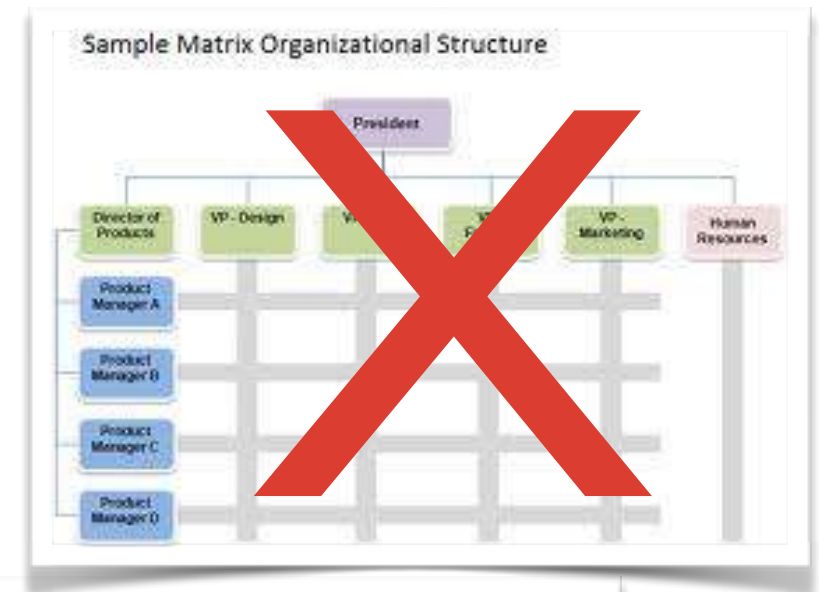
ted

- // Started off as 'just' a conference
- // Several thousand passionate attendees
- // Exposed TED Talks on the web
 - over a billion views
- // Created TEDx events
 - over 1200 in just a year
- // Scaling the community



attributes of ExOs

- // collaborative technologies
- // leveraging accelerating technologies
- // multi-skilled team – p2p
- // fast iterations with f/b loops
- // massive, transformative purpose
- // scalable (fractal) processes
- // extreme distributed authority
- // self-regulating, radical process re-engineering
- // leverage the crowd (community)



the ExO formula

$$\begin{array}{c} \text{ExO} \\ = \\ \text{MTP} + \text{SCALE} + \text{IDEAS} \end{array}$$

the mtp

MTP
=

Massive, Transformative, Purpose

strong MTPs

"Radical breakthroughs for the benefits of humanity"

"Organize the world's information"

"Ideas worth spreading"

"Make invention accessible"

"Positively impact one billion people"

"Open Happiness"

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

a weak purpose

Mission

“Shape the future of the Internet by creating unprecedented value and opportunity for our customers, employees, investors, and ecosystem partners.”

Who? Cisco
“Connect everyone and everything, everywhere, always.”

why an MTP?

- // Power of Pull – So Aspirational that a community forms
- // Helps attract and retain talent
- // Changes the organizational focus from internal politics to external impact
- // Helps organize and keep focus during rapid growth

S.C.A.L.E

External Attributes of an ExO

S – Staff on Demand

C – Community & Crowd

A – Algorithms

L – Leased Assets

E – Engagement

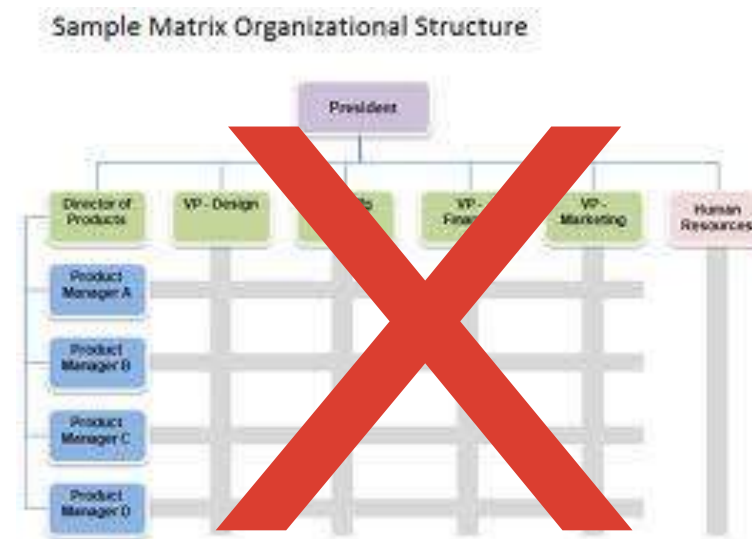
I.D.E.A.S

Internal Attributes of an ExO

- I** – Interface Processes
- D** – Dashboards
- E** – Experimentation
- A** – Autonomy
- S** – Social Technologies

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



Before: 75% had little or zero awareness of breakthroughs



IPP | INNOVATION
PARTNERSHIP
PROGRAM

Current IPP Partners



HARMAN

NOKIA



QUALCOMM®



AUTODESK



XPRIZE



PRESENTED BY
Deloitte.



IPP

INNOVATION
PARTNERSHIP
PROGRAM

After:

Game-changing impact (80%
in 2 yrs, 100% in 5 yrs)

100% said they had immediate
action items

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Todd Greene, Media Temple.
Bring An End To Common Sense
Deficit Disorder



Dan Gilmor, The Guardian. In
Our Digital World We License,
Not Own

GET THE PSFK DAILY EMAIL

YOUR EMAIL ADDRESS

Subscribe



**GE PARTNERS WITH ONLINE
DESIGN COMMUNITY FOR
CROWDSOURCED INNOVATION**

The partnership with Quirky
focuses on the development of
co-branded products based on
thousands of patents being
opened up.



Like

0



Emma Hutchings on April 11, 2013.

Advice to large companies

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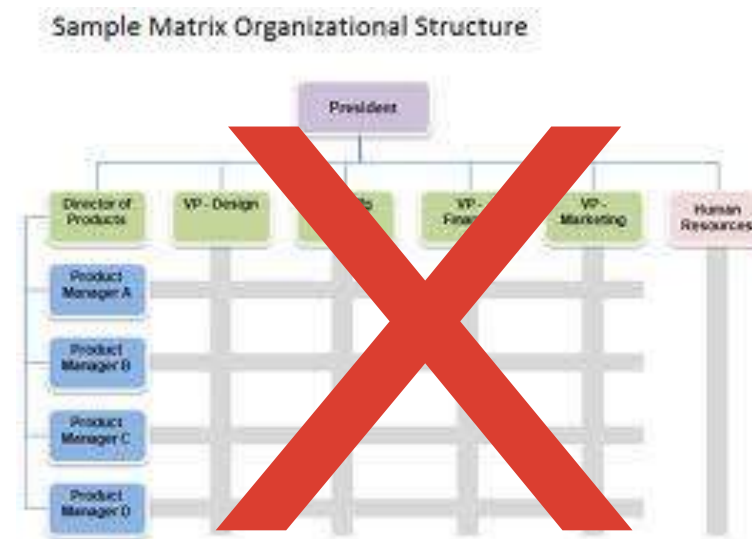
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Big Companies

Starting to Catch Up

The Valve logo, featuring the word "VALVE" in a bold, black, sans-serif font, enclosed within a black rectangular border. A small registered trademark symbol (®) is located at the top right of the border.The Amazon.com logo, featuring the text "amazon.com" in a black, sans-serif font. A curved orange arrow is positioned below the text, pointing from the letter 'a' to the letter 'z'.The Hershey's logo, featuring the word "HERSHEY'S" in a bold, white, sans-serif font, set against a dark brown rectangular background. Below this, the text "The Hershey Company" is written in a smaller, black, sans-serif font. To the right of the text is a small, detailed illustration of a Hershey's Kiss.The ING DIRECT logo, featuring the text "ING DIRECT" in a blue, sans-serif font. A small orange lion head icon is positioned between the words "ING" and "DIRECT". Below the text is the tagline "forward banking™" in a smaller, blue, sans-serif font. To the right of the text is an orange square icon containing a white right-pointing arrow.The Adobe logo, featuring a stylized red "A" icon composed of two overlapping shapes. Below the icon, the word "Adobe" is written in a black, sans-serif font.The Google logo, featuring the word "Google" in its characteristic multi-colored, sans-serif font.

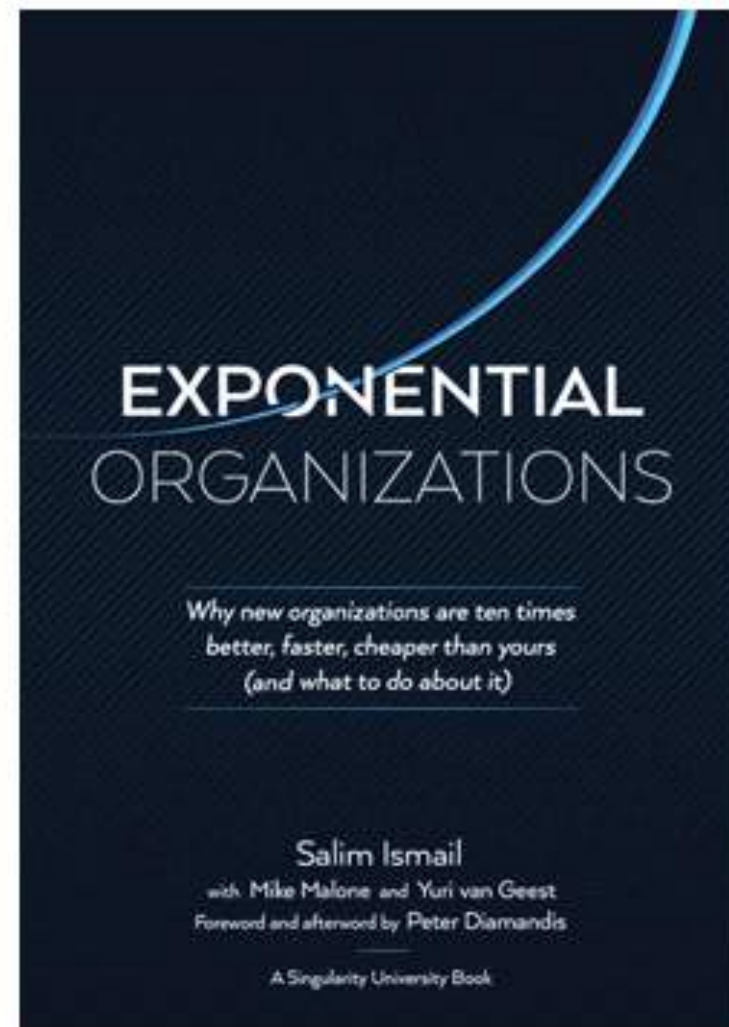
PRE-ORDER YOUR COPY OF EXPONENTIAL ORGANIZATIONS

PRE-ORDER NOW

- Pre-Order now to get the first few chapters early
- Release date October 14th 2014



Salim Ismail is the lead author of Exponential Organizations and has created/spearheaded this effort to document and distribute a new paradigm in organizational design.

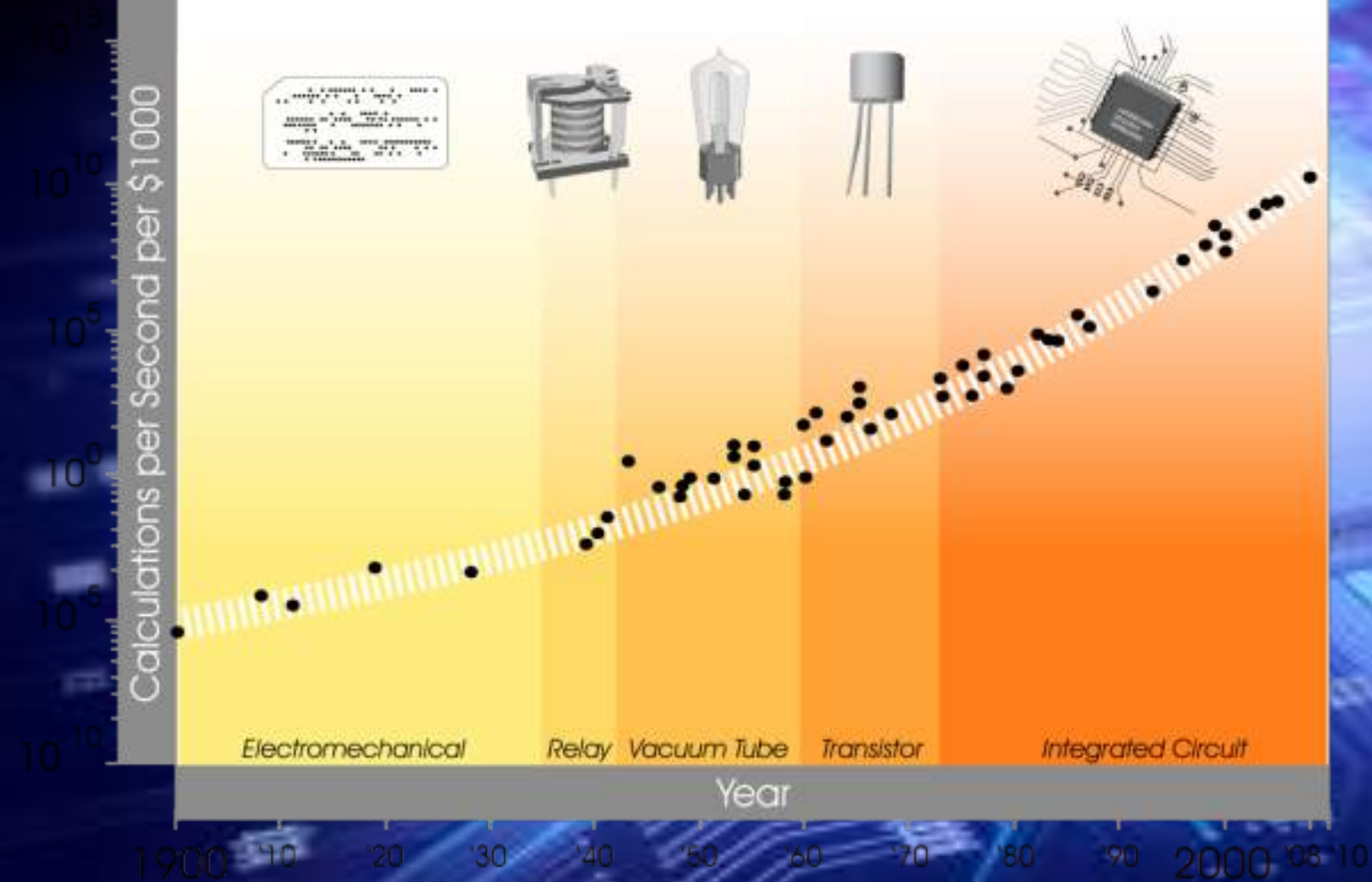


Powered by progress in computing

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



NOVEMBER 2012 ATLANTIC MAGAZINE

+ SHARE   

 EMAIL  PRINT

Hacking the President's DNA

The U.S. government is surreptitiously collecting the DNA of world leaders, and is reportedly protecting that of Barack Obama. Decoded, these genetic blueprints could provide compromising information. In the not-too-distant future, they may provide something more as well—the basis for the creation of personalized bioweapons that could take down a president and leave no trace.


By ANDREW HESSEL, MARC GOODMAN and STEVEN KOTLER

 +1

77

 Share

68

 Recommend

2k



Malaria – status quo..



A lab technician at Mulago Hospital in Kampala, Uganda, looks under a microscope for malaria parasites. If parasites are found, the counter and calculator on the left are used to determine how serious the infection is by the number of parasites on the the slide.
(Photo: Jill Braden Balderas)



Crédits : Marcel Hommel

Double-compteur manuel souvent utilisé pour le comptage du pourcentage de globules rouges infectés sur une lame. Le nombre de GR sa



Dr. Miguel Luengo-Oroz

SO FAR WE HAVE HUNTED **222358** PARASITES

Why you should play:



Worldwide, there are more than 600.000 malaria cases per day. One child dies every minute because of malaria



Malaria is caused by a parasite, transmitted by mosquito bites. Once in the human body, parasites infect the red blood cells.



A single diagnosis can take up to 30 min. of a specialist time, as they manually look for parasites in the blood with a microscope.



A global network of virtual "malaria hunters" could help with the routine job of diagnosing malaria everywhere.

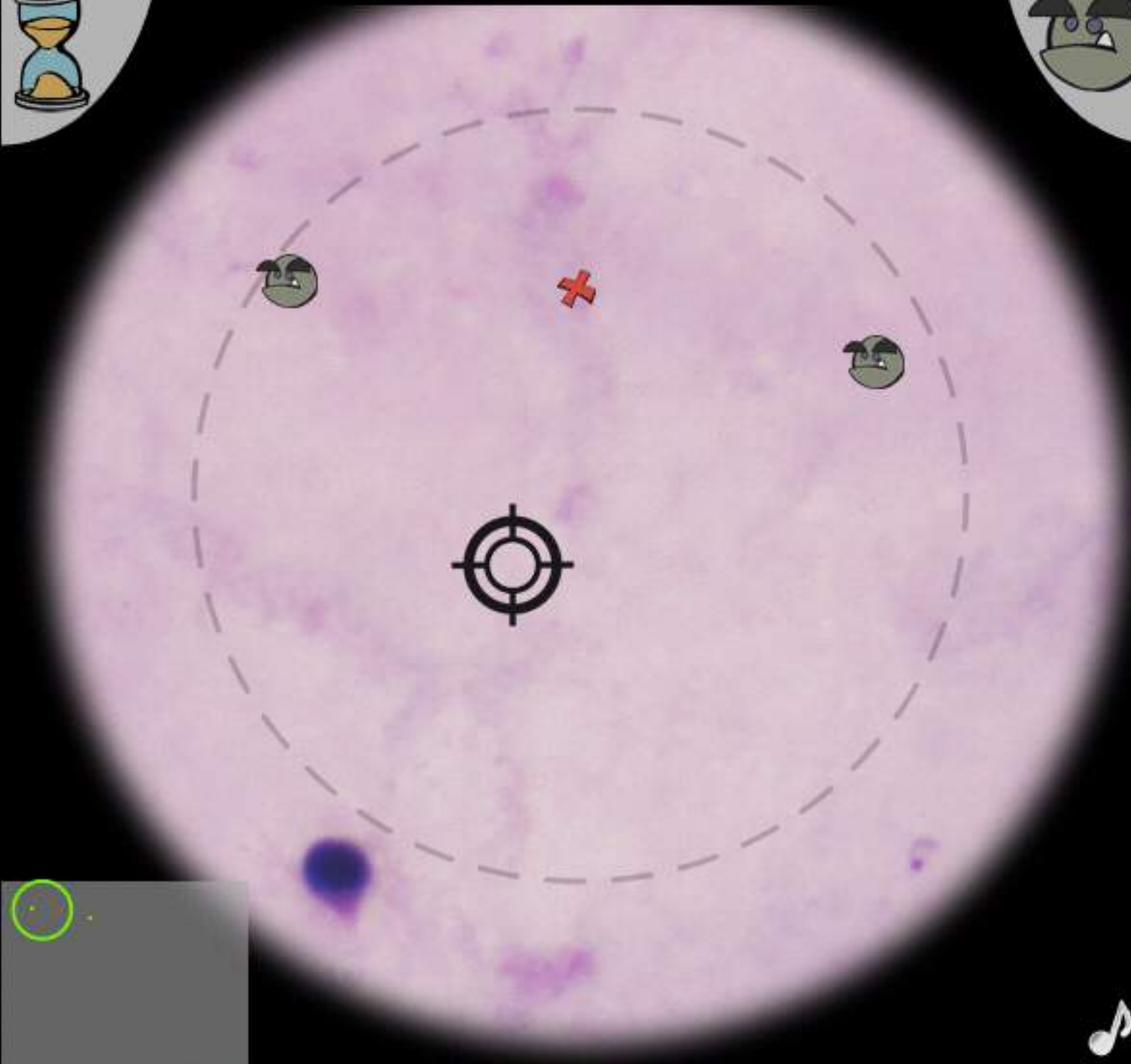


CLICK HERE TO PLAY 

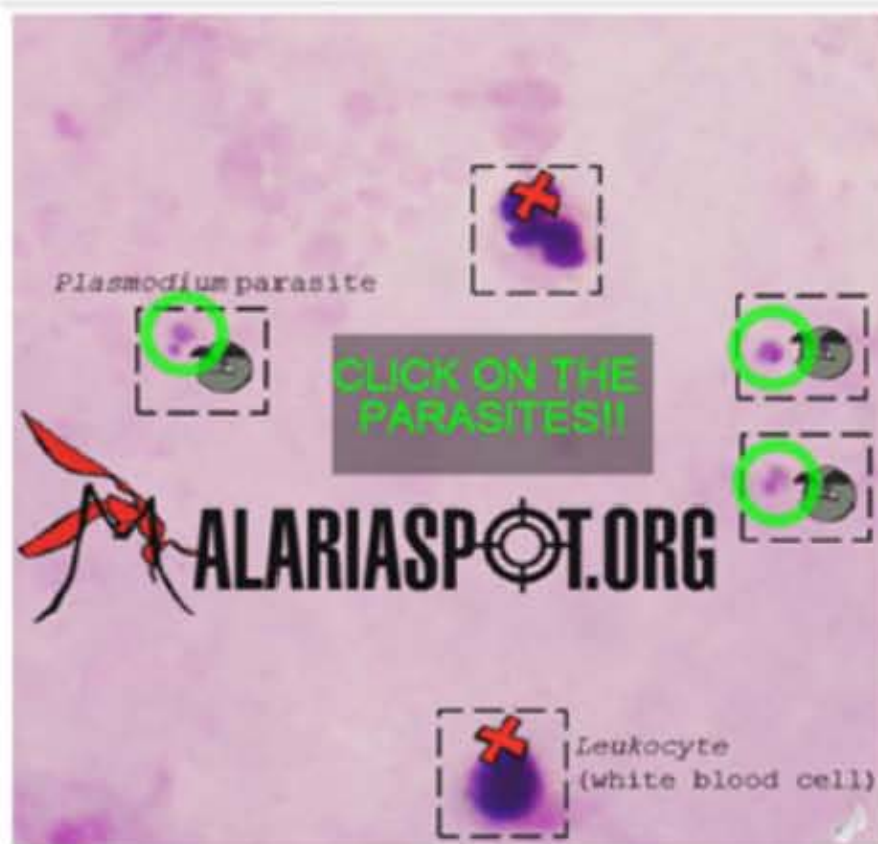
1 minute game against malaria



[Click to see the top scoring Malaria Hunters so far!](#)

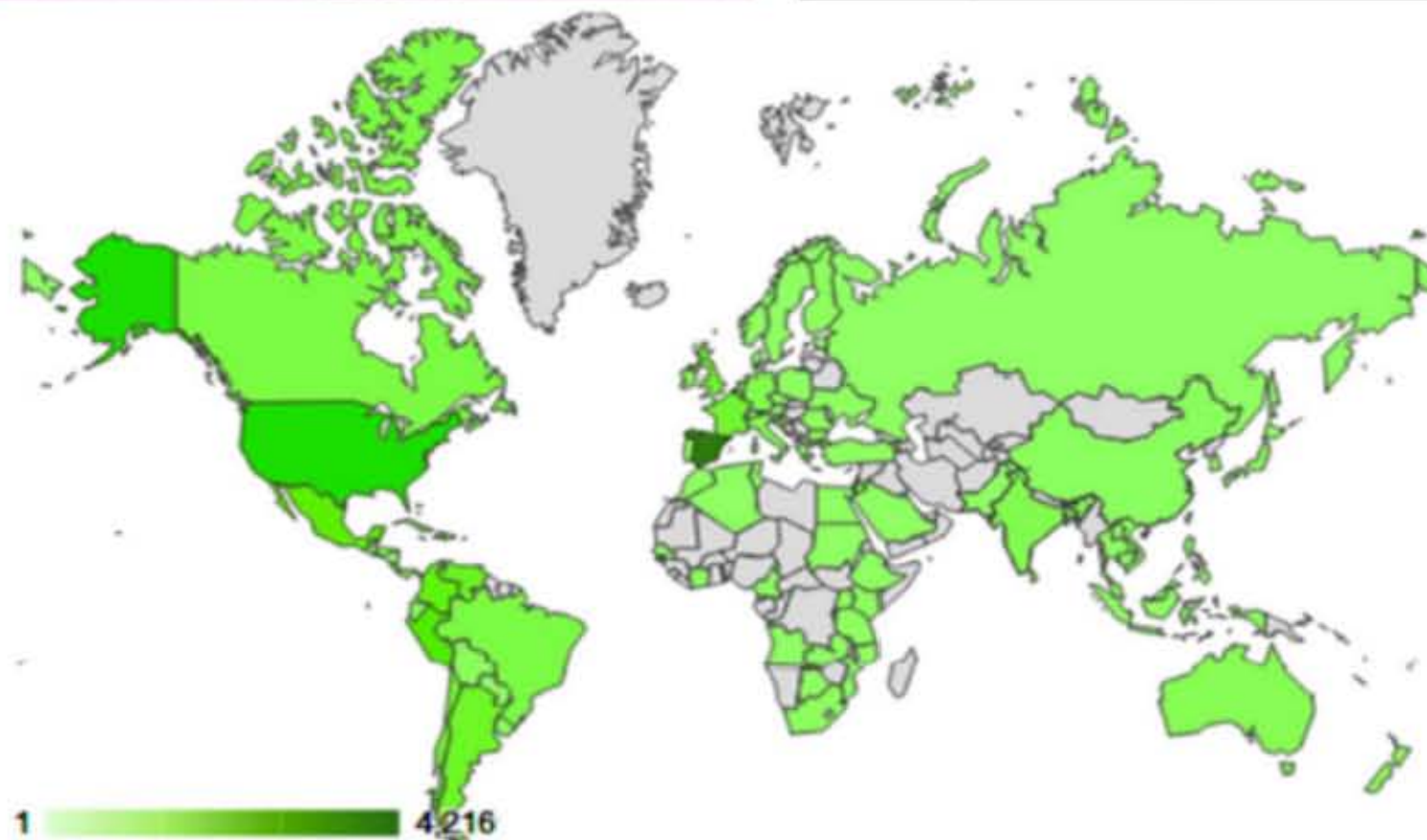


Click to see the **TOP 20 SCORING MALARIA HUNTER** so far!




Launched on the 25st April 2012
“World Malaria Day”

In 1 month:
+7000 players
95 countries
+20 000 images
+270 000 tags

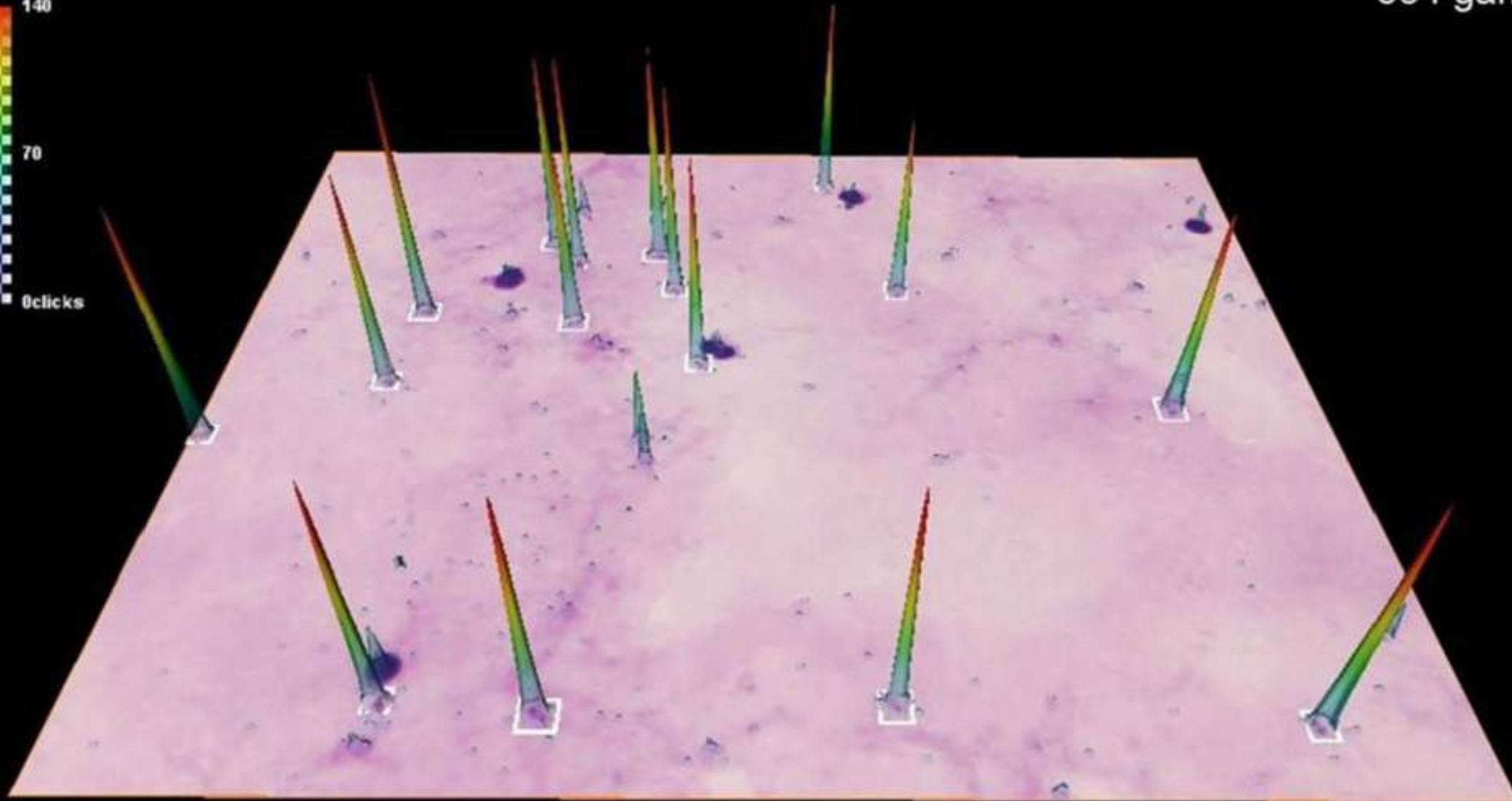




**D. Tseng, O. Mudanyali, C. Oztoprak,
S.O. Isikman, I. Sencan, O. Yaglidere
and A. Ozcan, “Lensfree Microscopy on
a Cell-phone,” Lab Chip (2010)**

 true parasites

3928 clicks
334 games



Information layers



New Breakthroughs

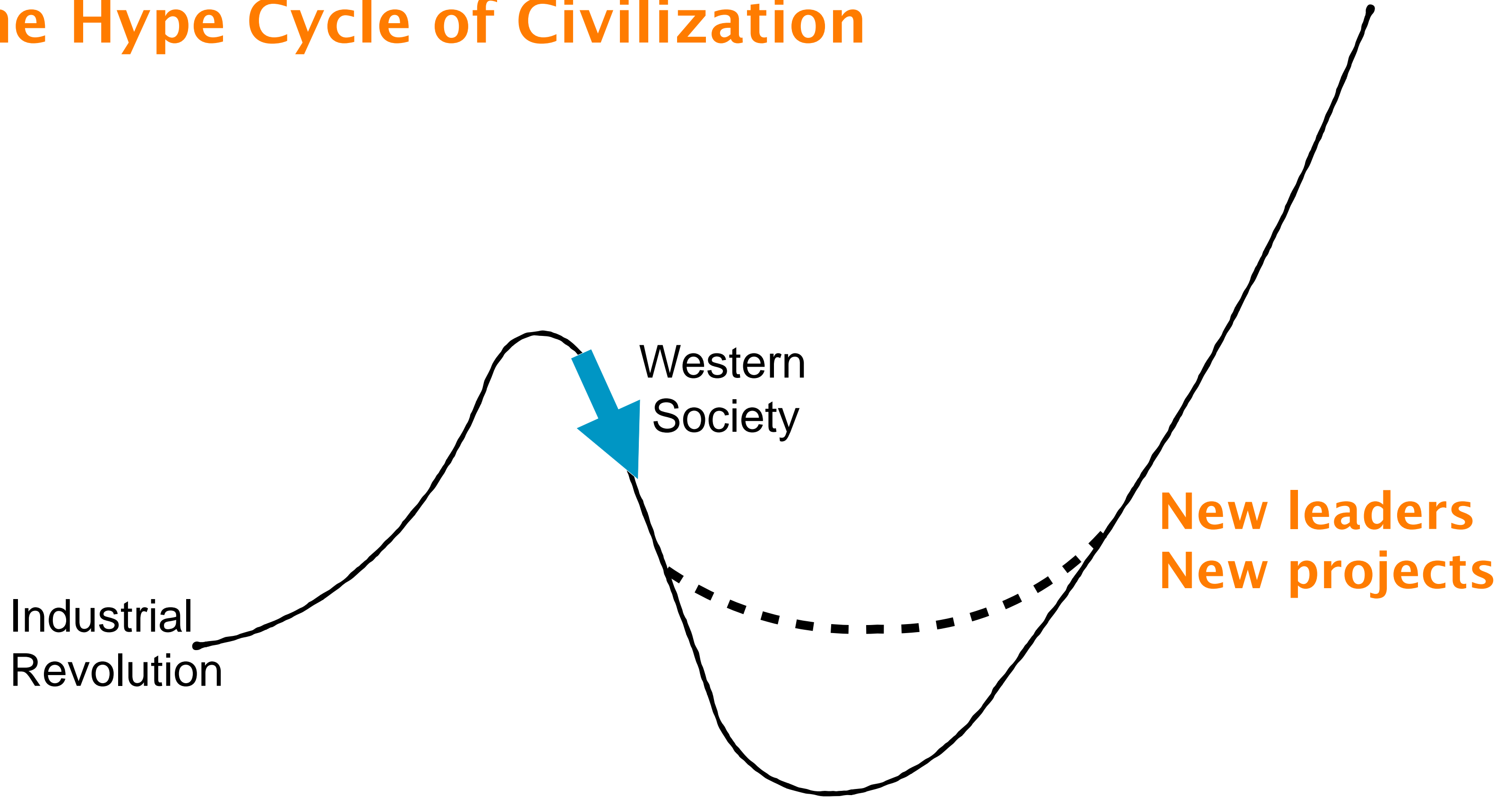
DIGITIZE
DEMATERIALIZER
DEMOCRATIZE
DEFLATE

SOCIETAL DISRUPTION

- Political
- Financial
- Social

ABUNDANCE

The Hype Cycle of Civilization





October 31, 2000

Thermodynamics & Information

@salimismail

collaborator:

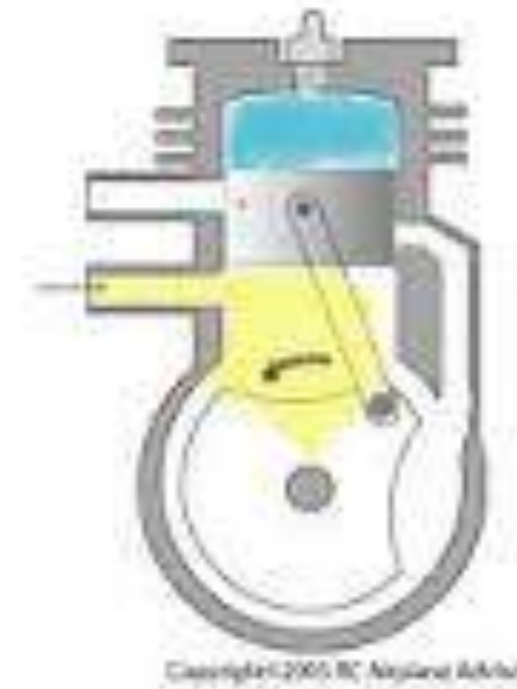
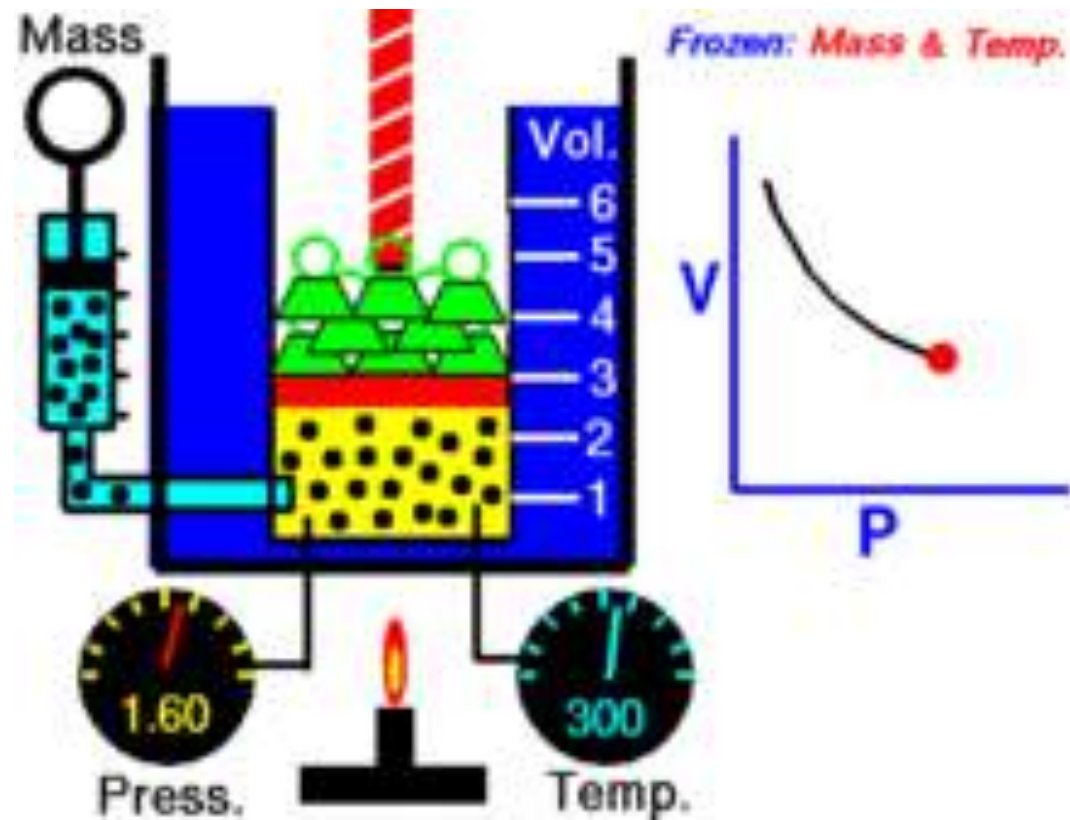
Malcolm Pollack

- kung fu master
- Grammy award nominee
- software developer
- philosopher & thinker
- www.malcolmpollack.com



Thermodynamics & Gas Laws

$$PV = nRT$$



Steam

Gas

No structure
Full expansion
Very fast, very hot
Hard to recapture



Water

Liquid

Limited structure
Expands to boundary
Medium fast/‘hot’



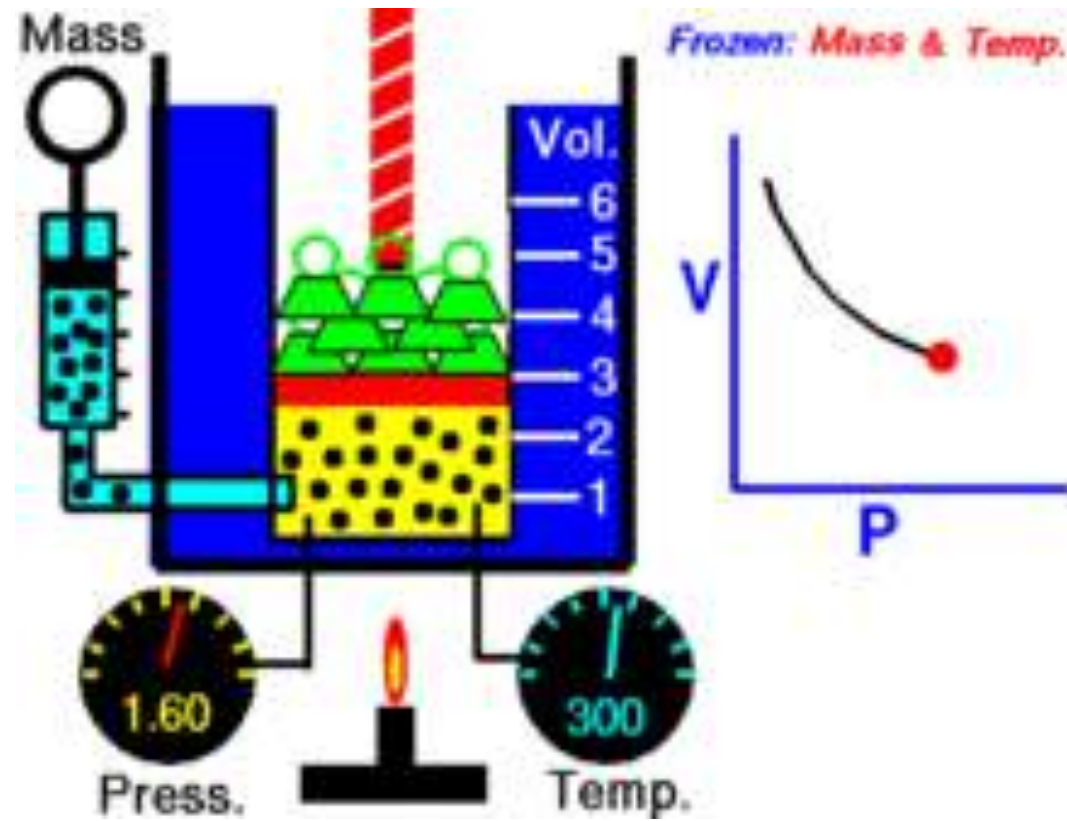
Ice

Solid

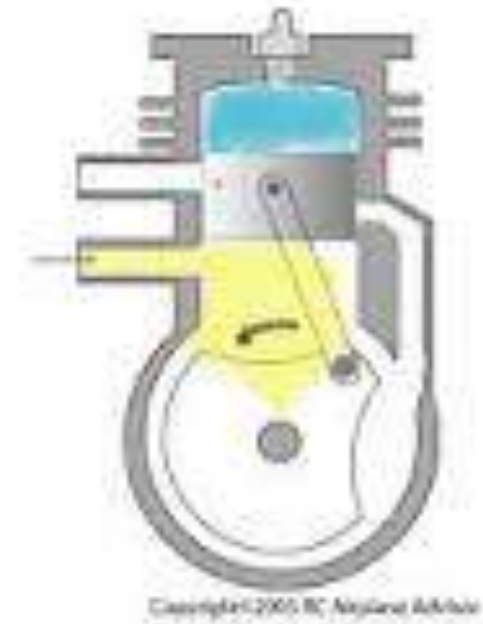
Very structured
Limited expansion
Slow, cold



Information Technology



$$PV = nRT$$

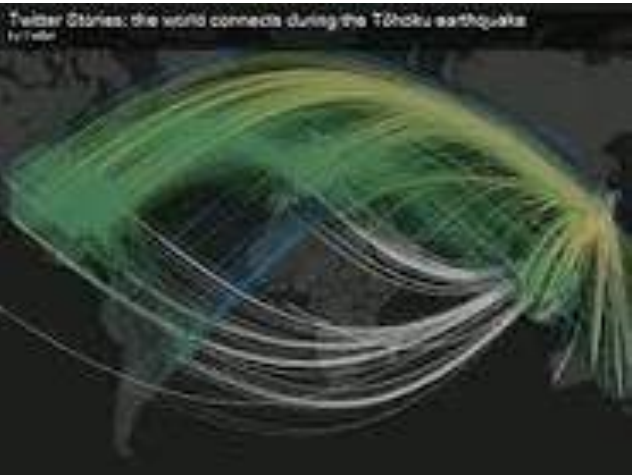


Technology is heating up our world and vaporizing it..

Steam

Water

Ice

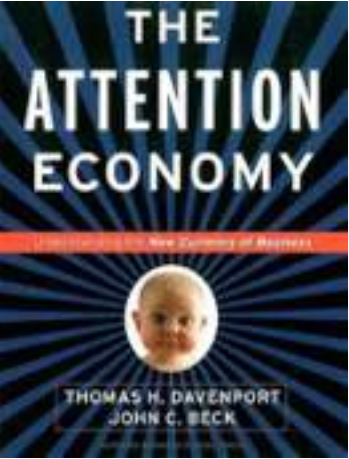


Messaging

Steam

Water

Ice



Steam

Water

Ice



Computing

Steam



Water

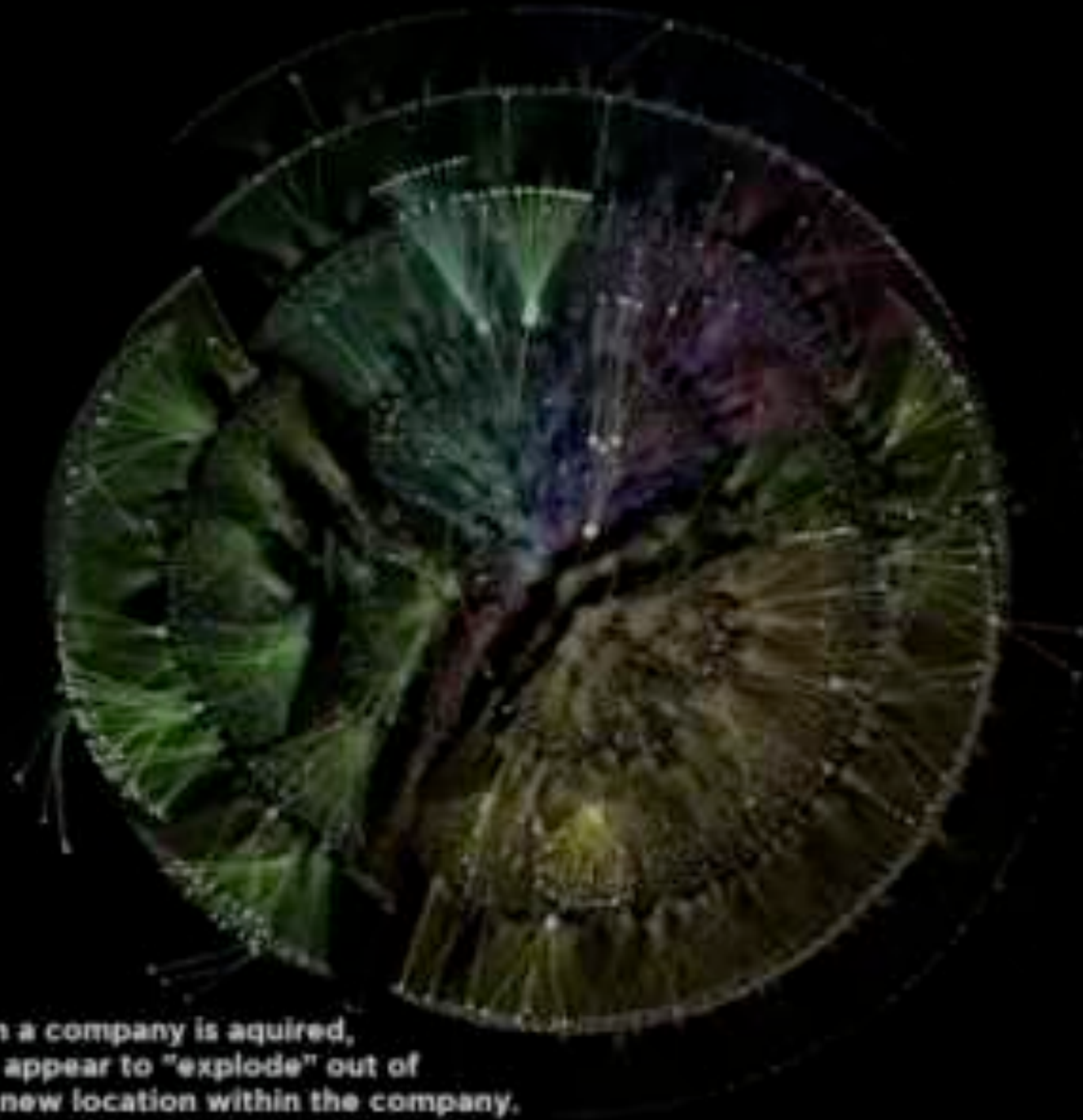


Ice



Industries

May 13, 2008



When a company is aquired,
they appear to "explode" out of
their new location within the company.

www.alexander.com

2007

2008

2009

2010

2011

	Ice	(cold) Water	(hot)	Steam
Money	Goats	Paper Money	Digital Money	Virtual Currency
Commerce	Physical goods	Information goods	ideas	Attention
Comms	Snail mail	Email	IM & social feeds	direct B2B
IT	Hardware	Software	Internet	Cloud Computing
Biology	Inorganic	Organic	Complex lifeforms	Synthetic life
Music	Local performer	Recorded Music	CDs	Internet stream
Society	Clans or tribes	Nation states	MNC, FTZ	Facebook or online grps



Gas
No structure, granular
Full expansion into space
Very fast & hot
Hard to recapture

Breaks, dissolves
other substances

Technology causing heat to rise

Communications reducing space between molecules

Everything colliding with everything else

We're all high energy molecules

Domain after domain being vaporized

Virtual Currency
Attention
direct B2B
Cloud Computing
Synthetic life
Internet stream
Facebook

Need to be Goldilocks

But.. stable structures cannot form in steam

Need a lot of water
Some ice, some steam

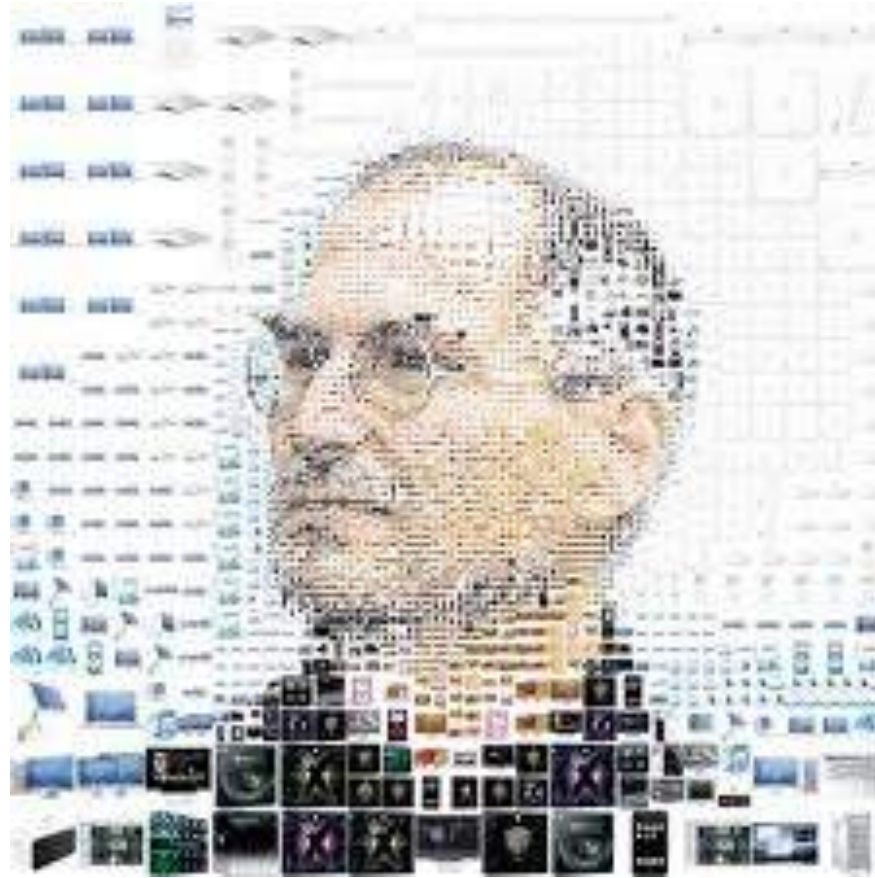
- OWS
- Arab spring
- Tea Party



Steam

Water

Ice



iCloud

iWork







What's next?

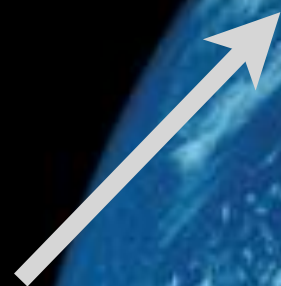


$$PV = nRT$$



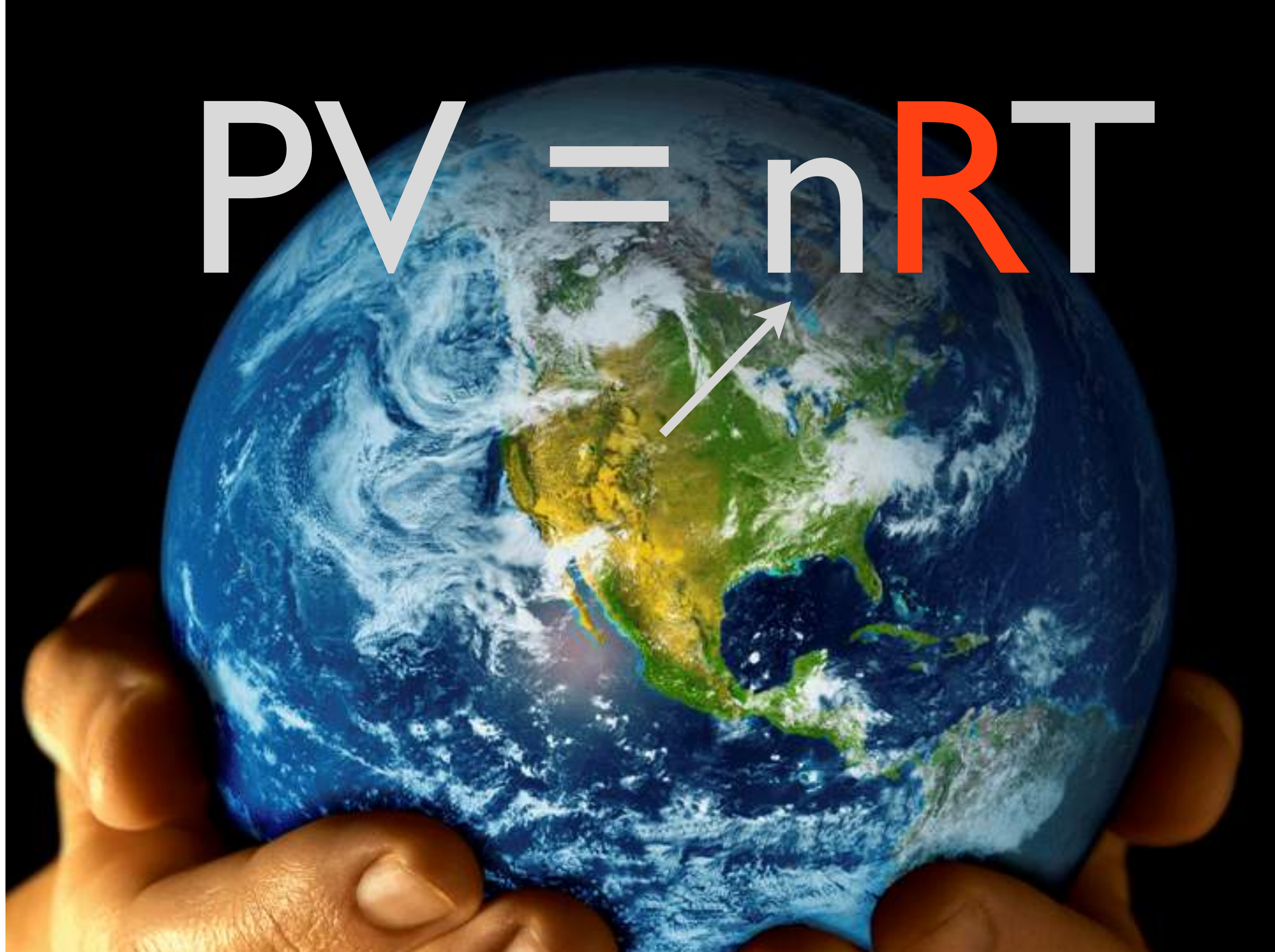


$$PV = nRT$$





$$PV = nRT$$





Expand



October 31, 2000





May 25, 2012