



XPRIZE

Good Bye Linear Thinking...
Hello Exponentials.

Peter H. Diamandis, MD

Live Tweeting? I'm @PeterDiamandis

Human development over 150,000+ years...

LOCAL + LINEAR

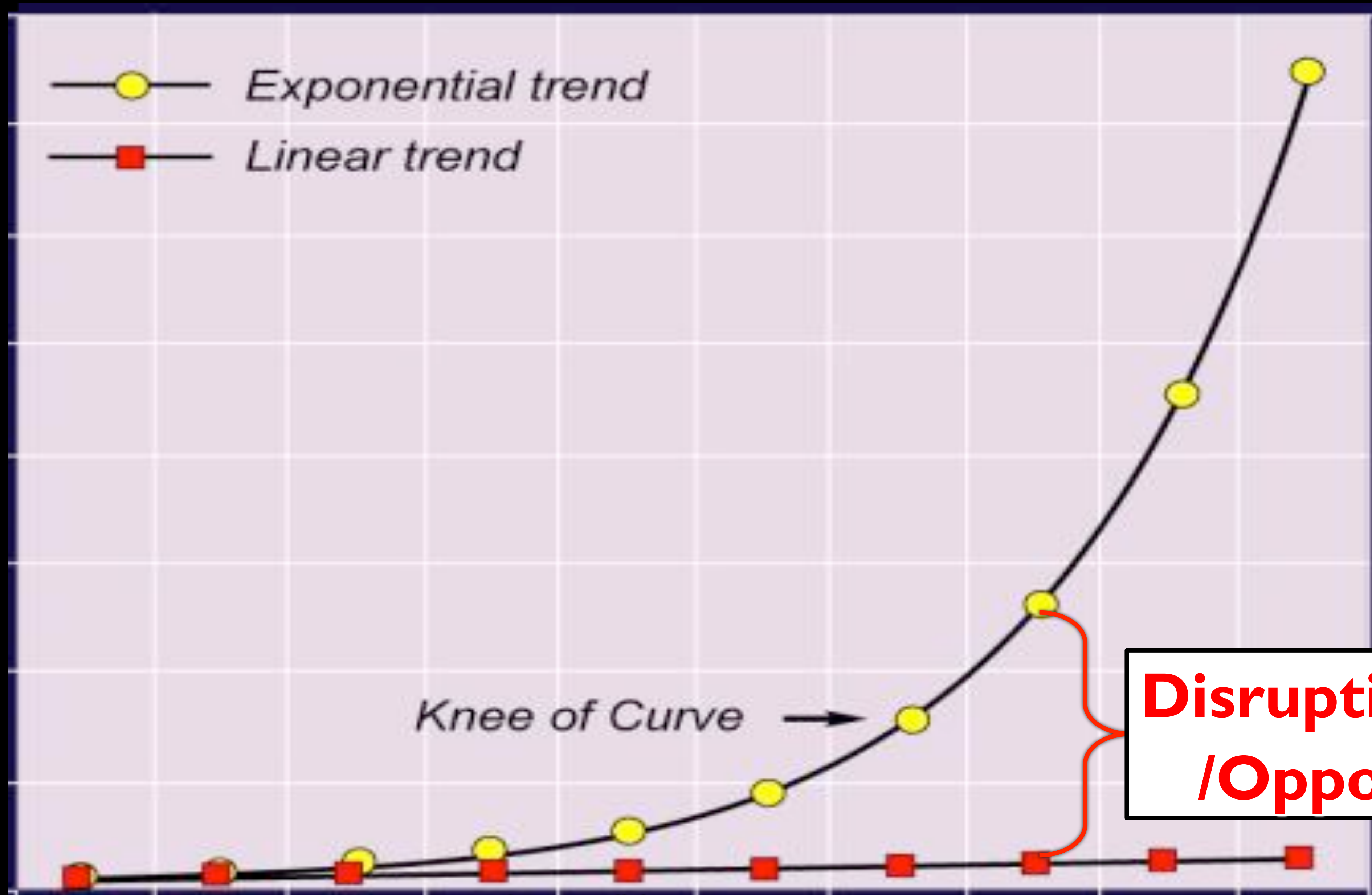
Human development over 150,000+ years...



EXPONENTIAL + GLOBAL

facebook

December 2010



**Disruptive Stress
/Opportunity**

LINEAR



EXPONENTIAL



1996

MarketCap: \$28B

Employees: 140,000



2012

Bankrupt

Employees: 17,000



April 2012

MarketCap: \$1B

Employees: 13

"The New Kodak Moment"

LINEAR → EXPONENTIAL

USA TODAY
11.07.13
A GANNETT COMPANY

Howard tired of Lakers
'reunion' talk, **IC**

Dwight Howard
happy to
play for
Houston.

USA TODAY SPORTS

OPEN
PRICE TAG SET: \$26. STORY, 1B
SHOULD YOU BUY? 2B



Twitter, Inc.
Common Stock

g of shares of common stock of Twi
is been no public market for the cor
ing price per share will be between
the lowest and the most recent

BLOOMBERG

**All eyes on NYSE
for Twitter IPO**

CLOSED



USA TODAY

**Blockbuster to
shutter U.S. stores**

Linear to Exponential Disruption

January 21, 2015

Will Google Slash Allstate's Revenue?

by Peter Cohan

INSURANCE
THOUGHT
LEADERSHIP.COM

Summary:

In 2013 in the U.S., agent commissions on auto, home and commercial insurance totaled \$50 billion, and that could go to zero.



Allstate
You're in good hands.

The New York Times

By CONOR DOUGHERTY JAN. 18, 2015

Its Google Compare [auto insurance](#) site (basically a search engine for [auto insurance](#) prices) has been operating in Britain for two years, and Google is working on something similar for the United States. Google is licensed to sell insurance in about half of the states, according to research by Ms. Carney.

“A lot of people are waking up to the fact that it’s a massive industry, it’s old-fashioned, but it’s still a massive industry.”

In 10 years, it's predicted that
40% of the Future 500 Companies
will no longer exist.

* Babson Olin School of Business, Fast Company April 2011, page 121.

The average lifespan of a company listed in the S&P 500 has significantly decreased:

- **In the 1920's = 67 years**
- **Today = 15 years**

- Richard Foster, Yale University

“I’ve got an Idea!”

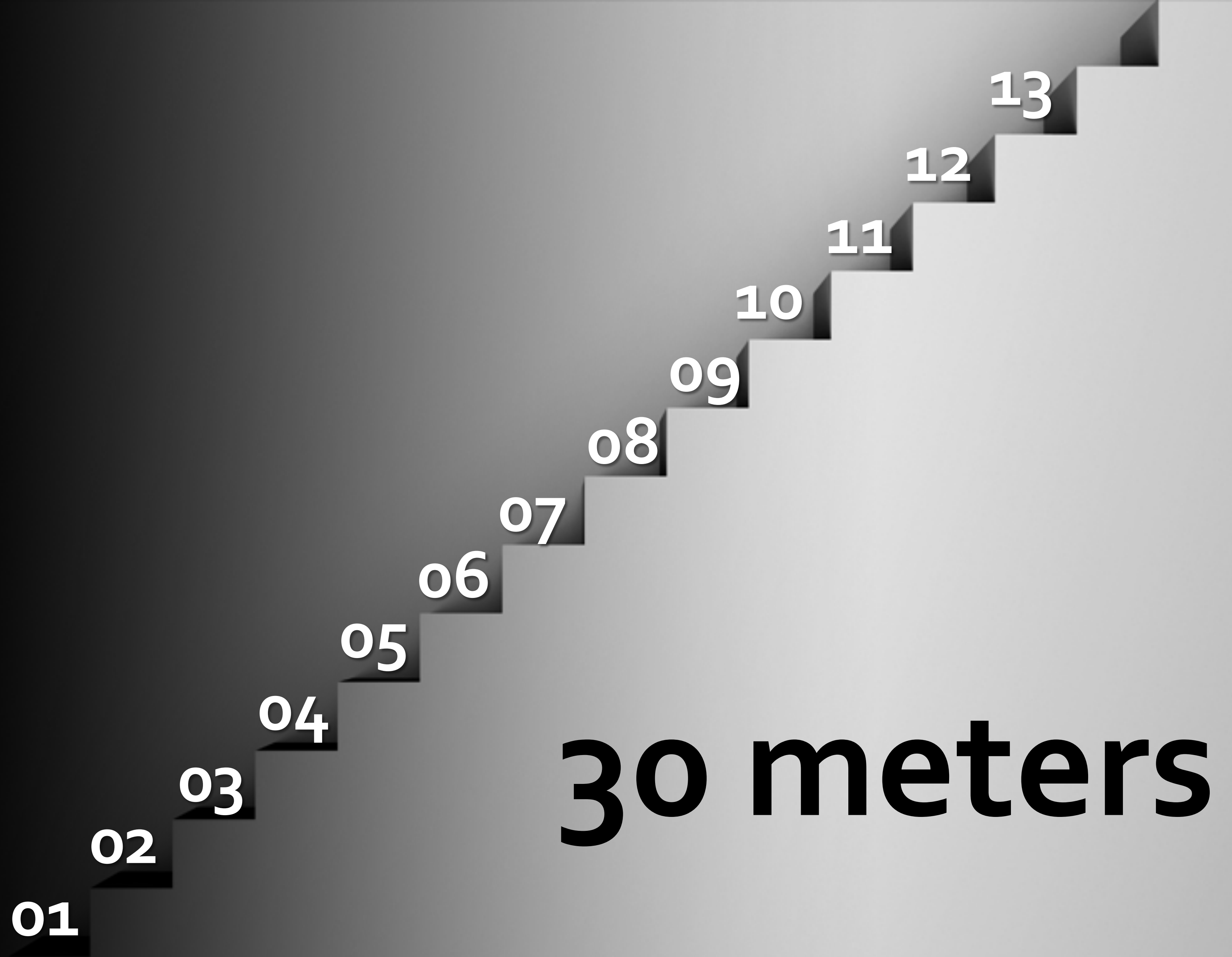
→ “I run a \$Billion company.”

- ***Youtube***
- ***Instagram***
- ***Dropbox***
- ***Uber***
- ***Oculus VR***
- ***Whatsapp***
- ***Snapchat***
- ***AirBnb***

What does **EXPONENTIAL**
growth feel like?



Take 30
LINEAR
paces...



Take 30

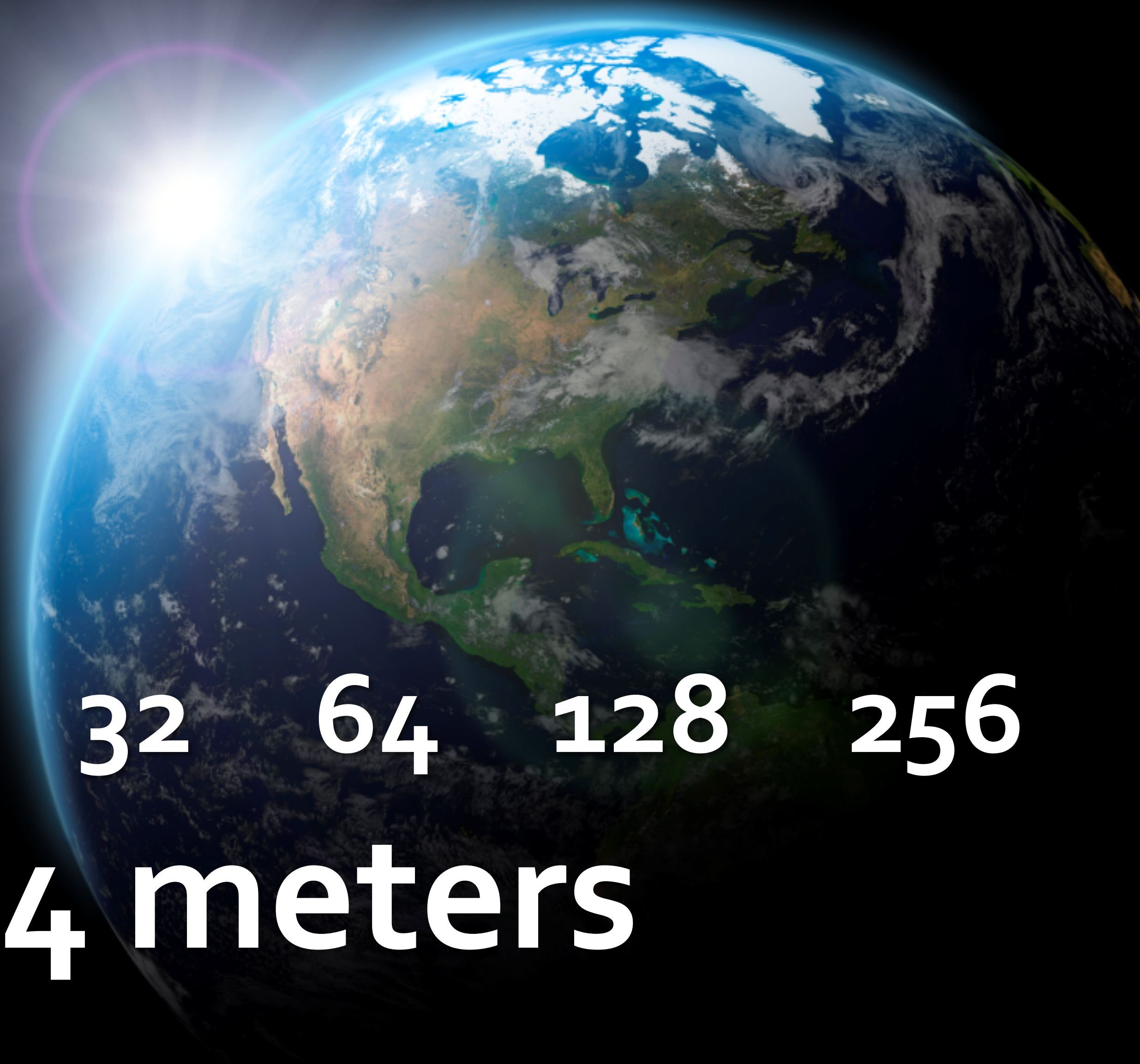
EXPONENTIAL

steps...

26X
around
the Earth!

01 02 04 08 16 32 64 128 256

... 1,073,741,824 meters





Singularity University

NASA – AUTODESK – GENENTECH – GOOGLE – CISCO – NOKIA

GSP

10⁹+

EP

Executive
Program

IPP

Fortune-200
C-Suite
Executives

www.SingularityU.org
Mountain View, California

What is driving this? Moore's Law



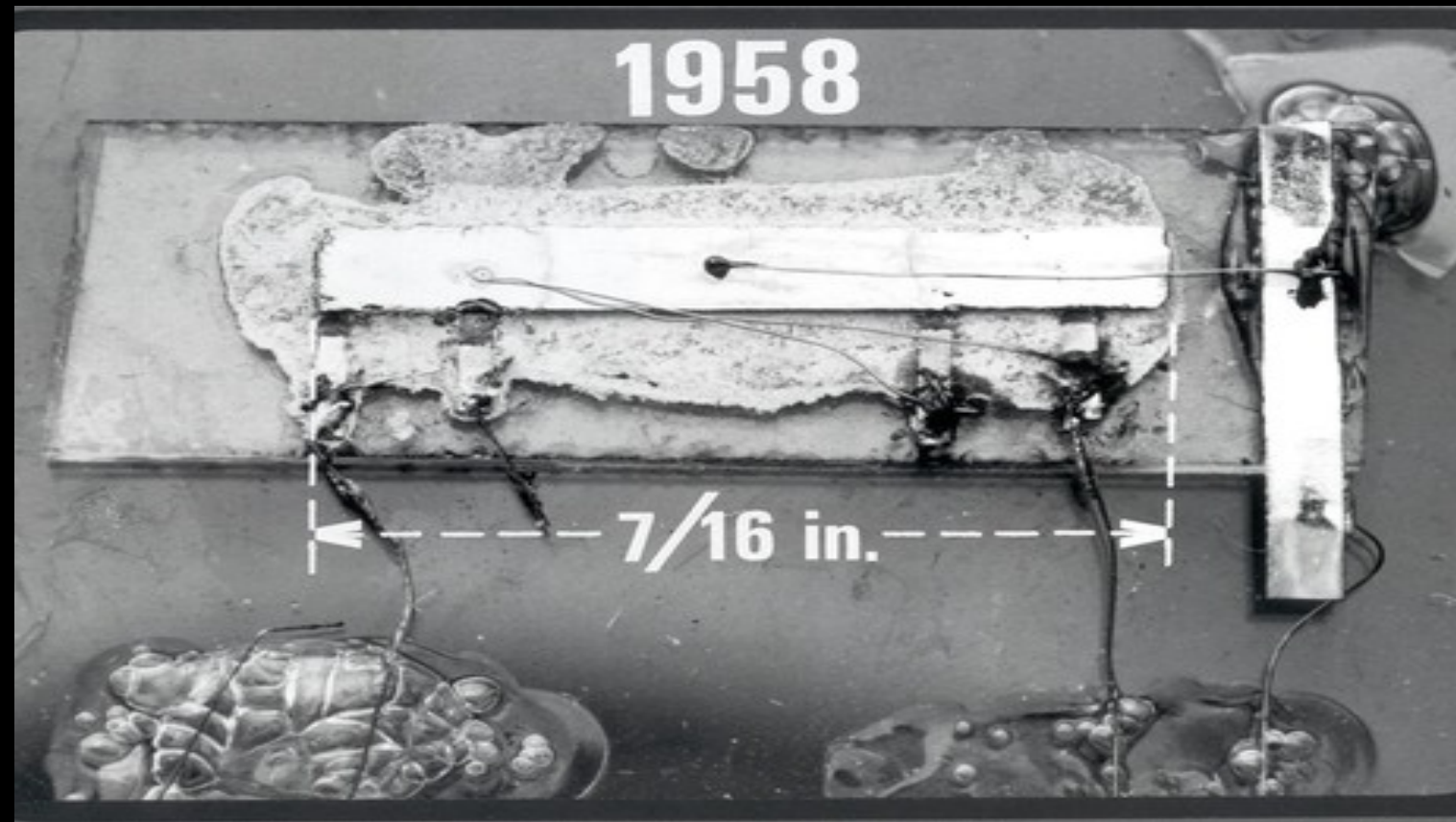
1965 Publication:

**“# of transistors
doubled every year
from between 1958
until 1965.”**

Moore's Law today: “Integrated Chip (“I.C.”) price-performance doubles every 18 – 24 months.”

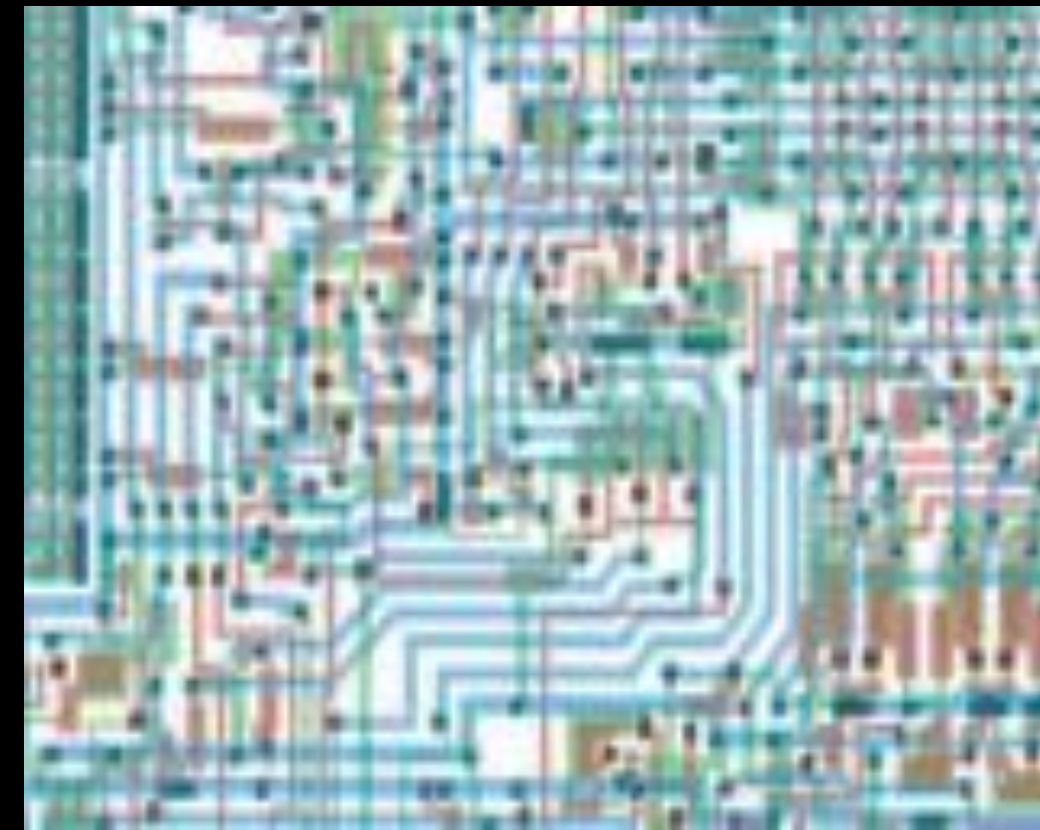
Integrated Circuits

1958: 2 transistors



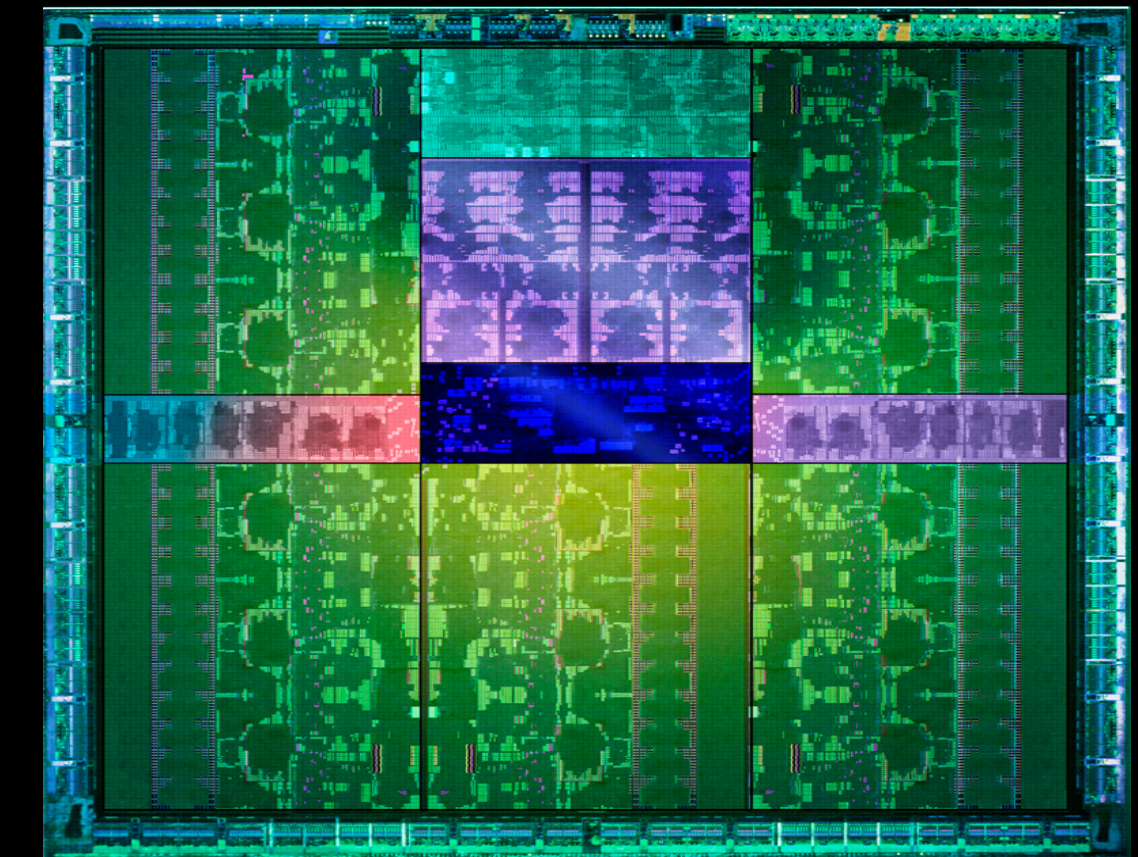
Transistor Count: 2
Gate process length: 1/2 inch
Speed:
Cost of a transistor:

1971: Intel 4004



2,300 transistors
10,000 nanometers
740 KHz (.00074 GHz)
~ \$1 (1968)

2012: Nvidia's GPU

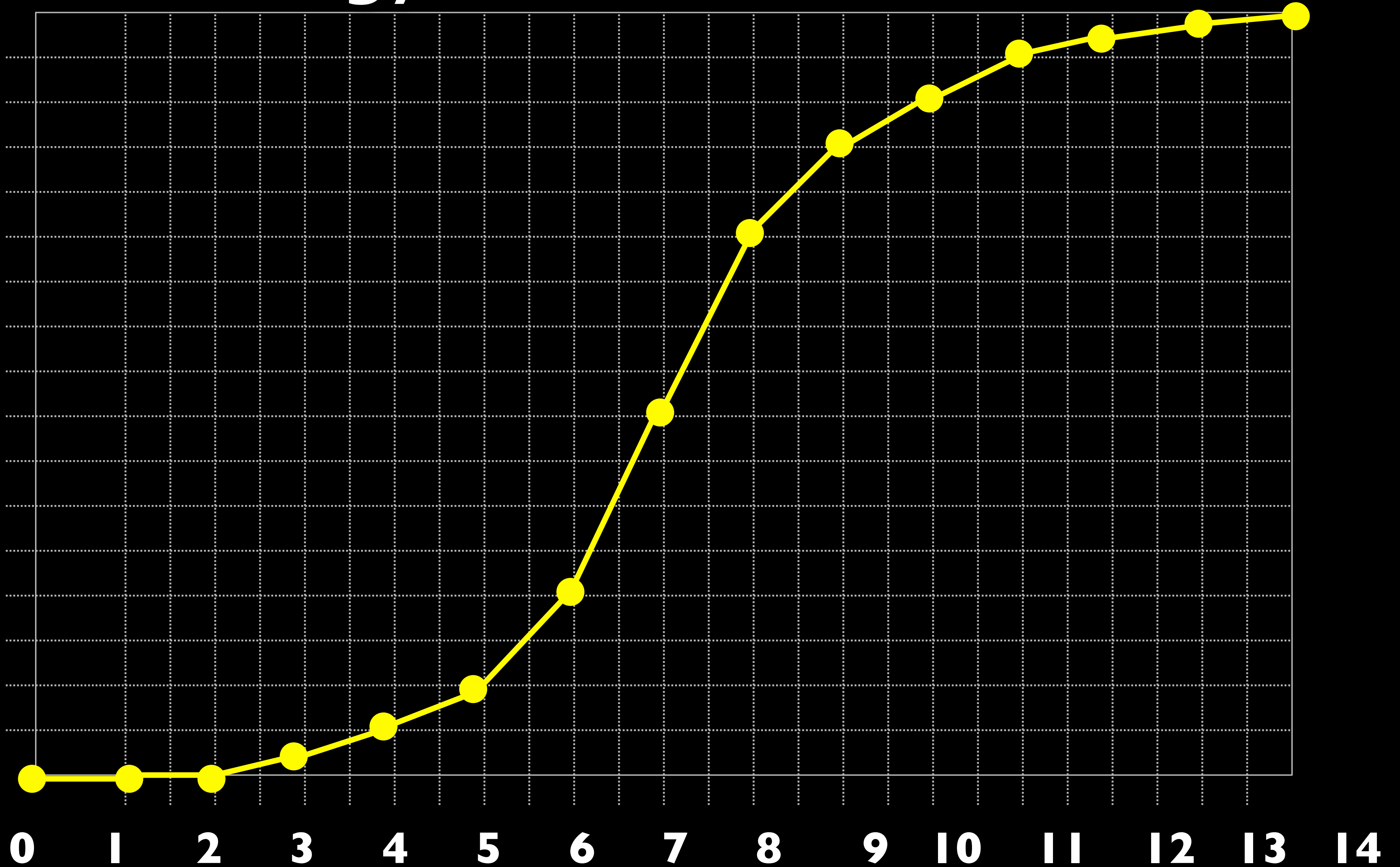


7.1 billion transistors
28 nanometers
7GHz
~ \$.0000001

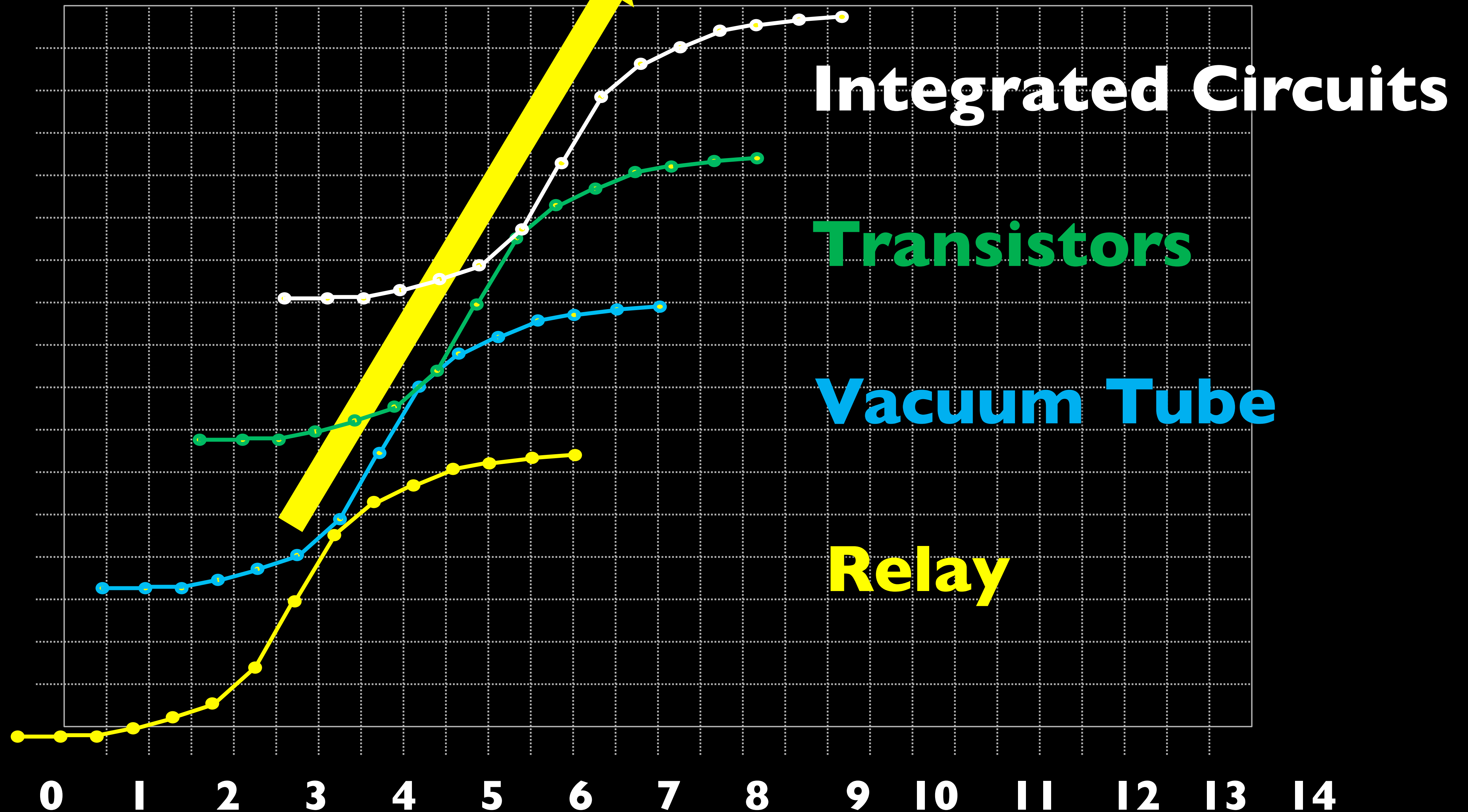
**← 10K (faster) & 10M (cheaper) →
100 Billion-fold improvement (40 yrs)**

Can this growth go on forever?

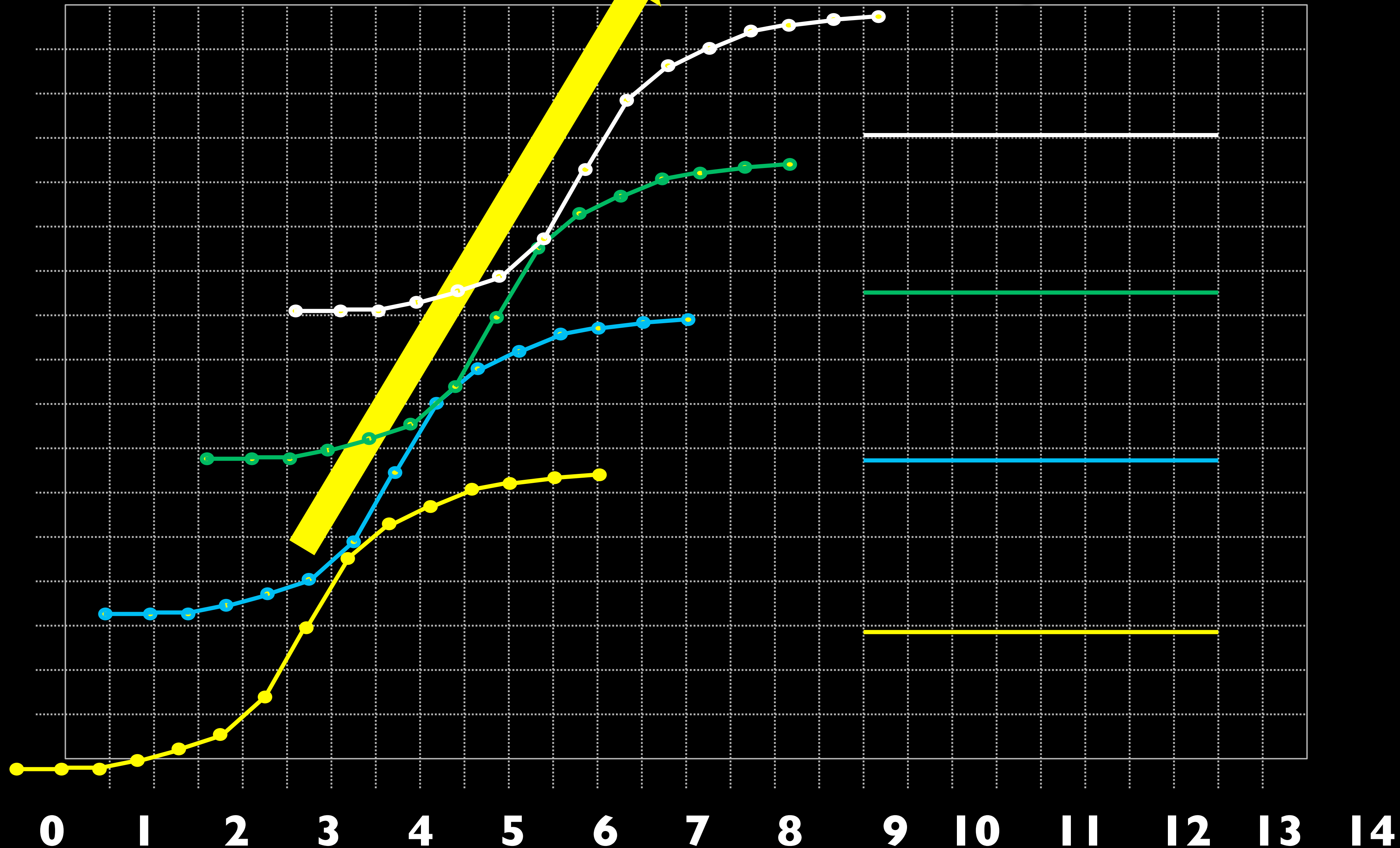
Technology "S-Curve"



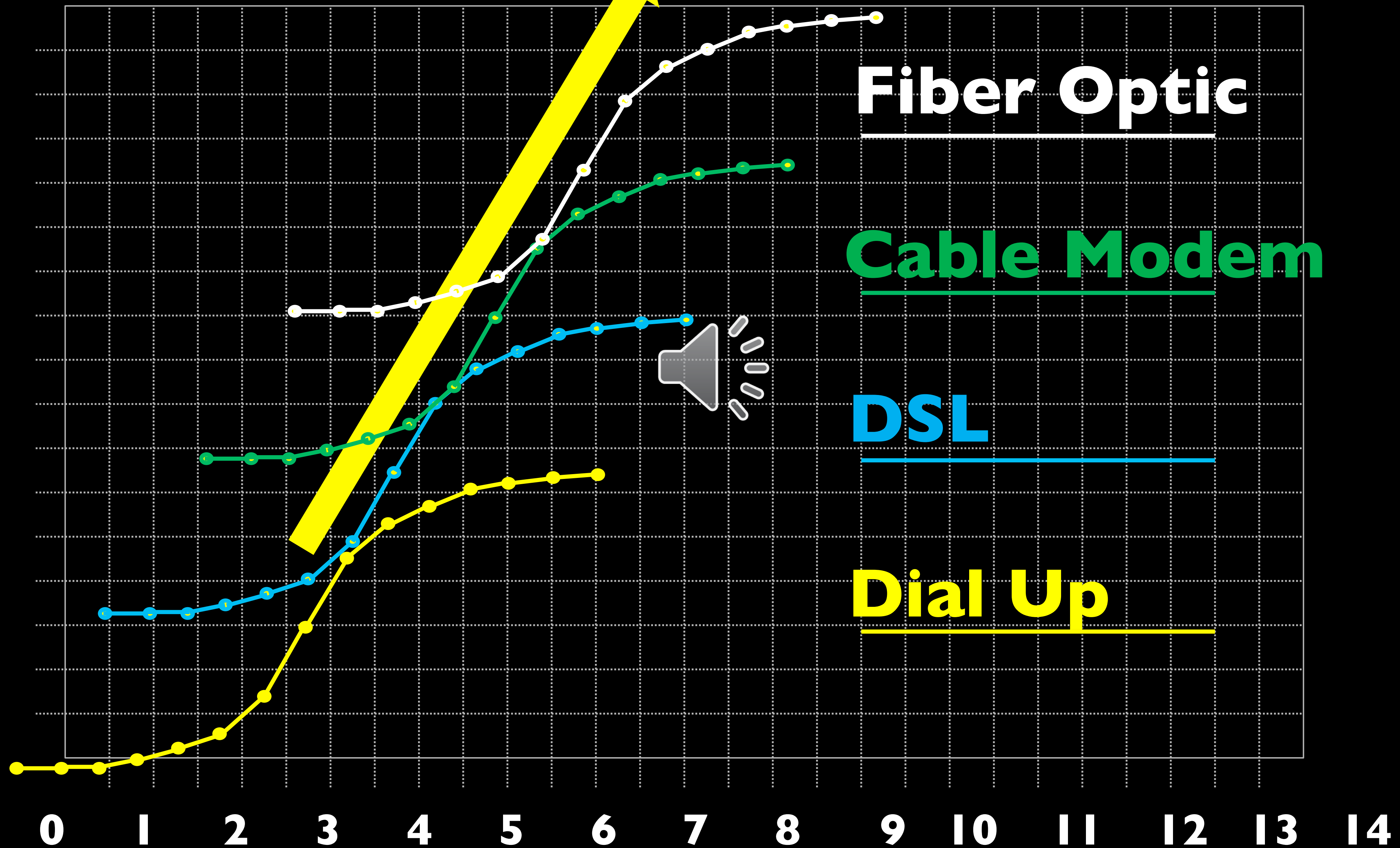
“Nested S-Curves” (5th Computing Paradigm)



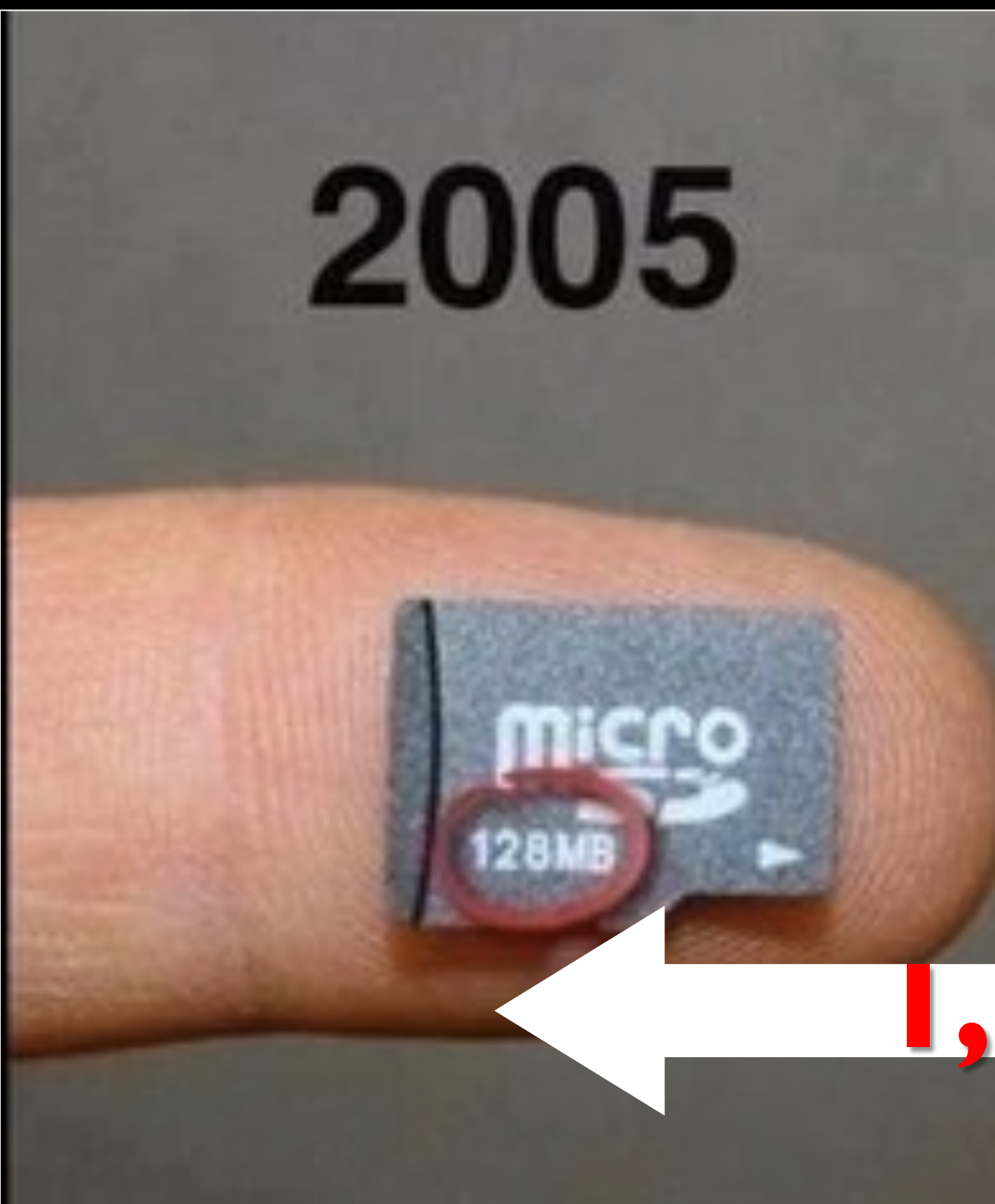
Where have you seen this in your life?



Wire-line Internet Access



Where are we seeing this growth?



1,000x

30,000,000x

5 Mbytes - \$120,000 | 28 Mbytes - \$99 | 28 Gbytes - \$99

Sensor Explosion

Steven Sasson



1976 – 1st Digital Camera
0.01 MP / 3.75 lbs / \$10K

1000x Resolution
1000x Lighter
1000x Cheaper

1,000,000,000 x better

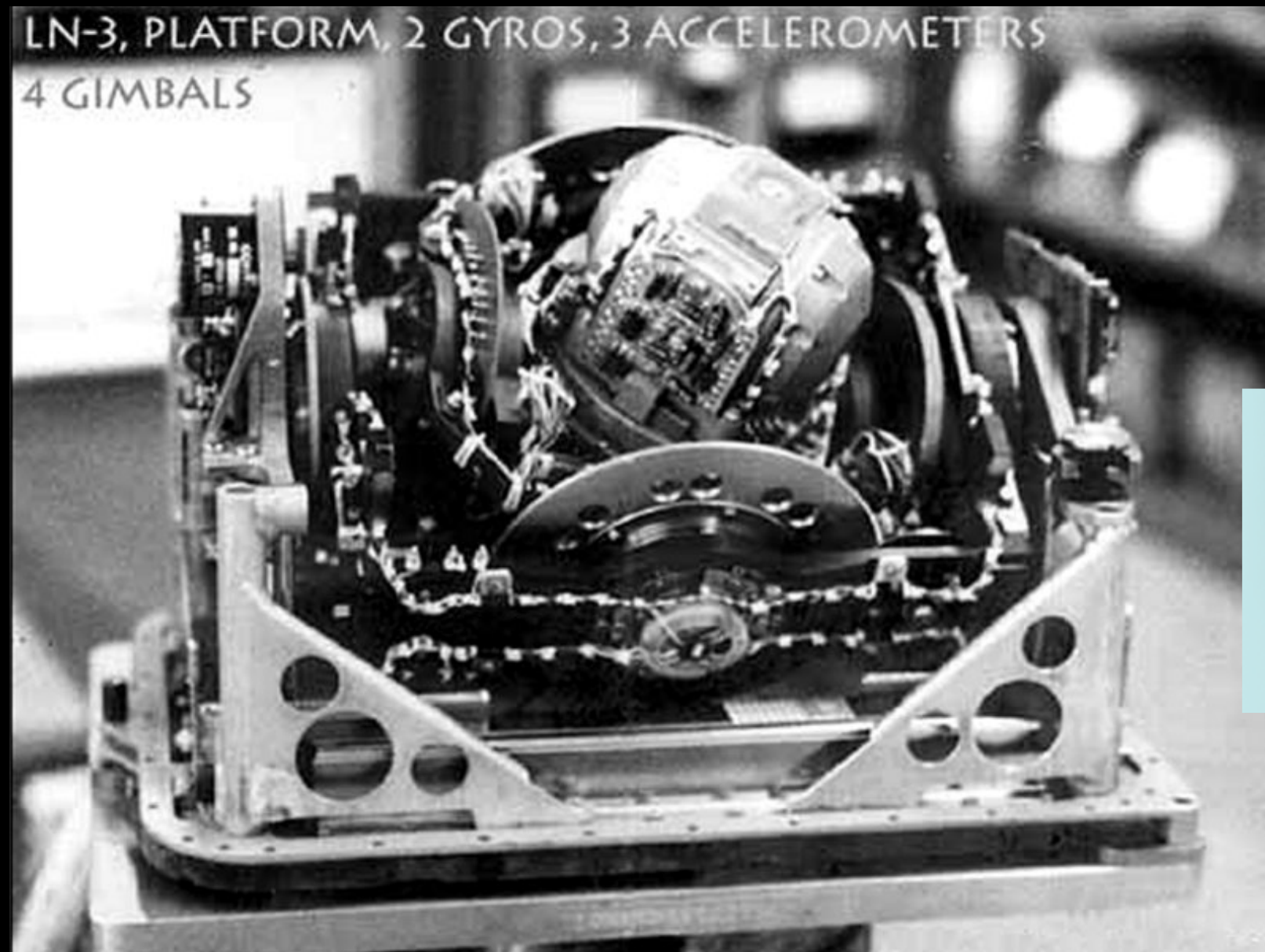
2014 – Digital Camera
>10 MP / 0.03 lbs / \$10



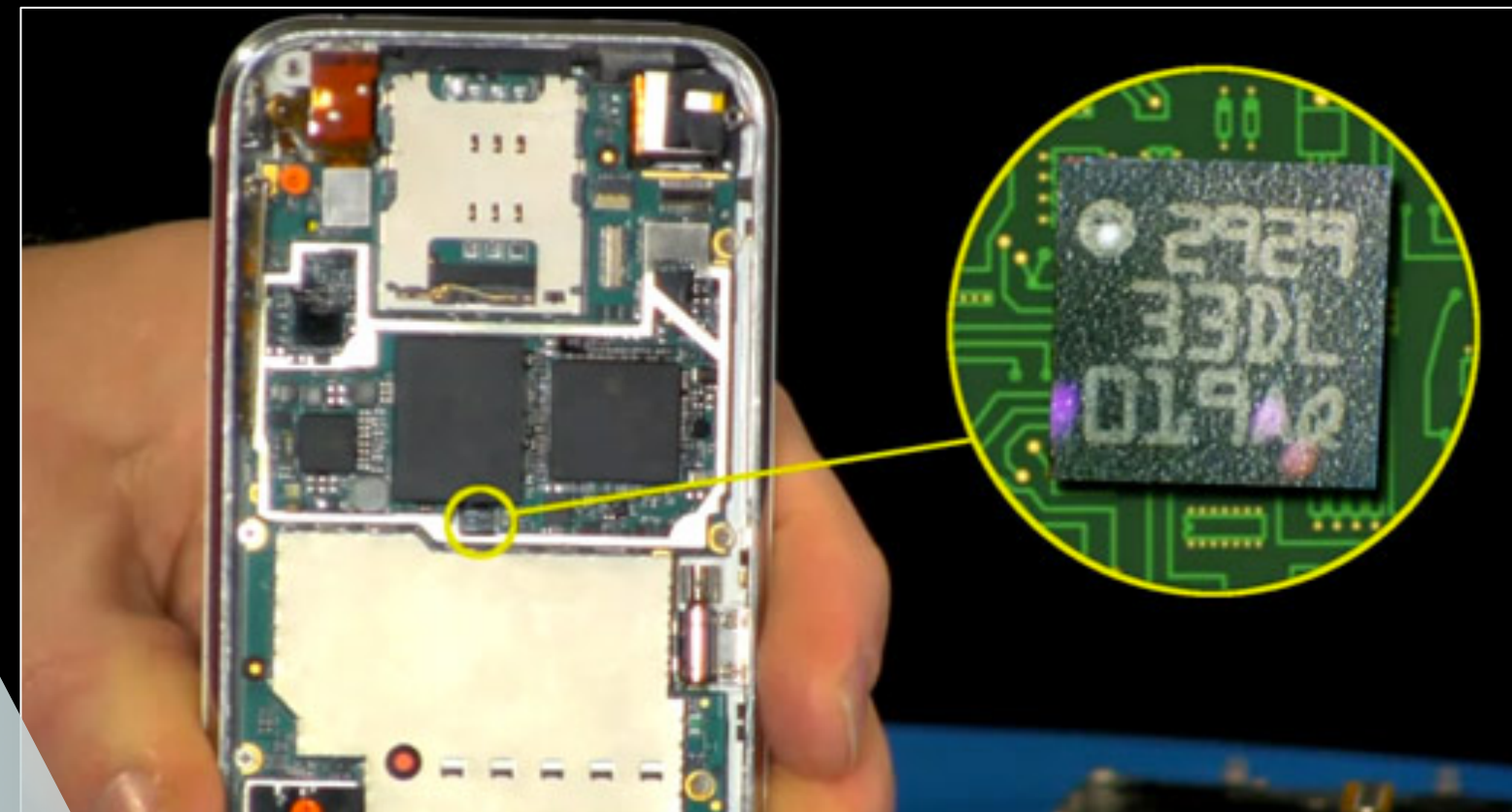
← 1 BILLION TIMES BETTER →

← 1,000x Resolution & 1,000 lighter & 1,000 cheaper →

Sensor Explosion



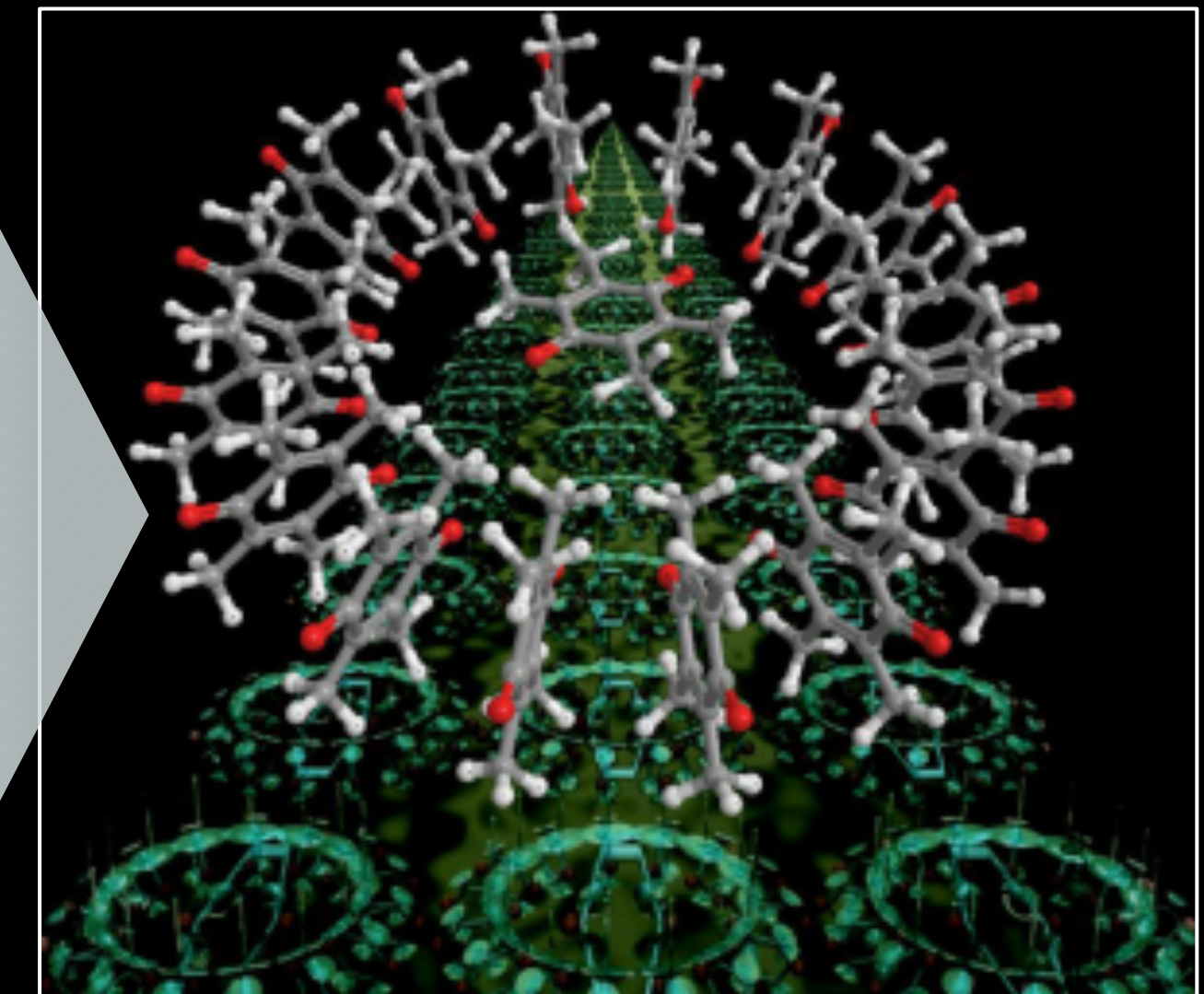
Early ICBM Navigation
Inertial Measurement Unit
1960's – \$ Millions – 50 lbs
Velocity/Orientation/Accel.



Accelerometer: ~\$1



Gyroscope: ~\$1

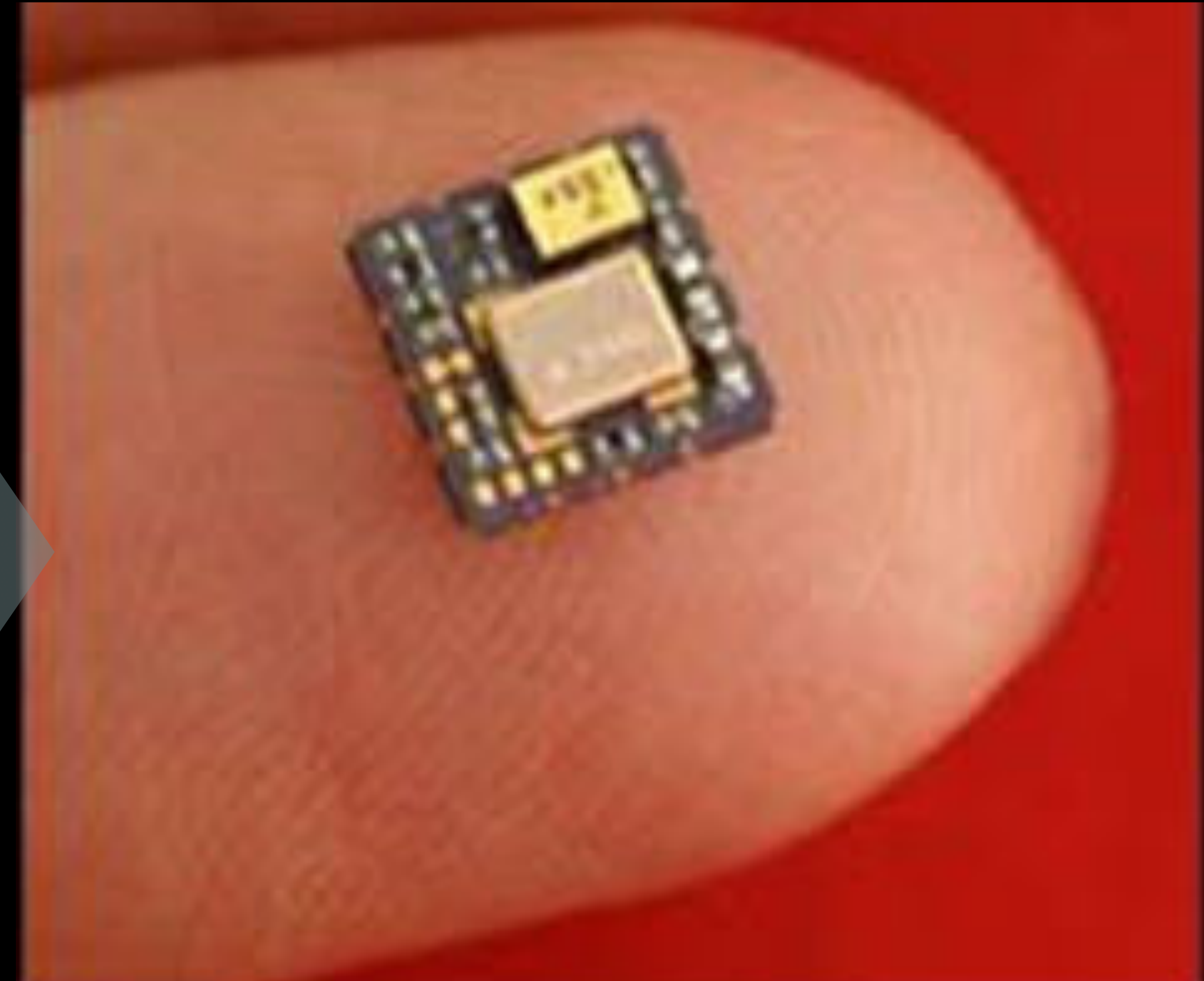


Molecular Machines
Free & embedded

Sensor Explosion

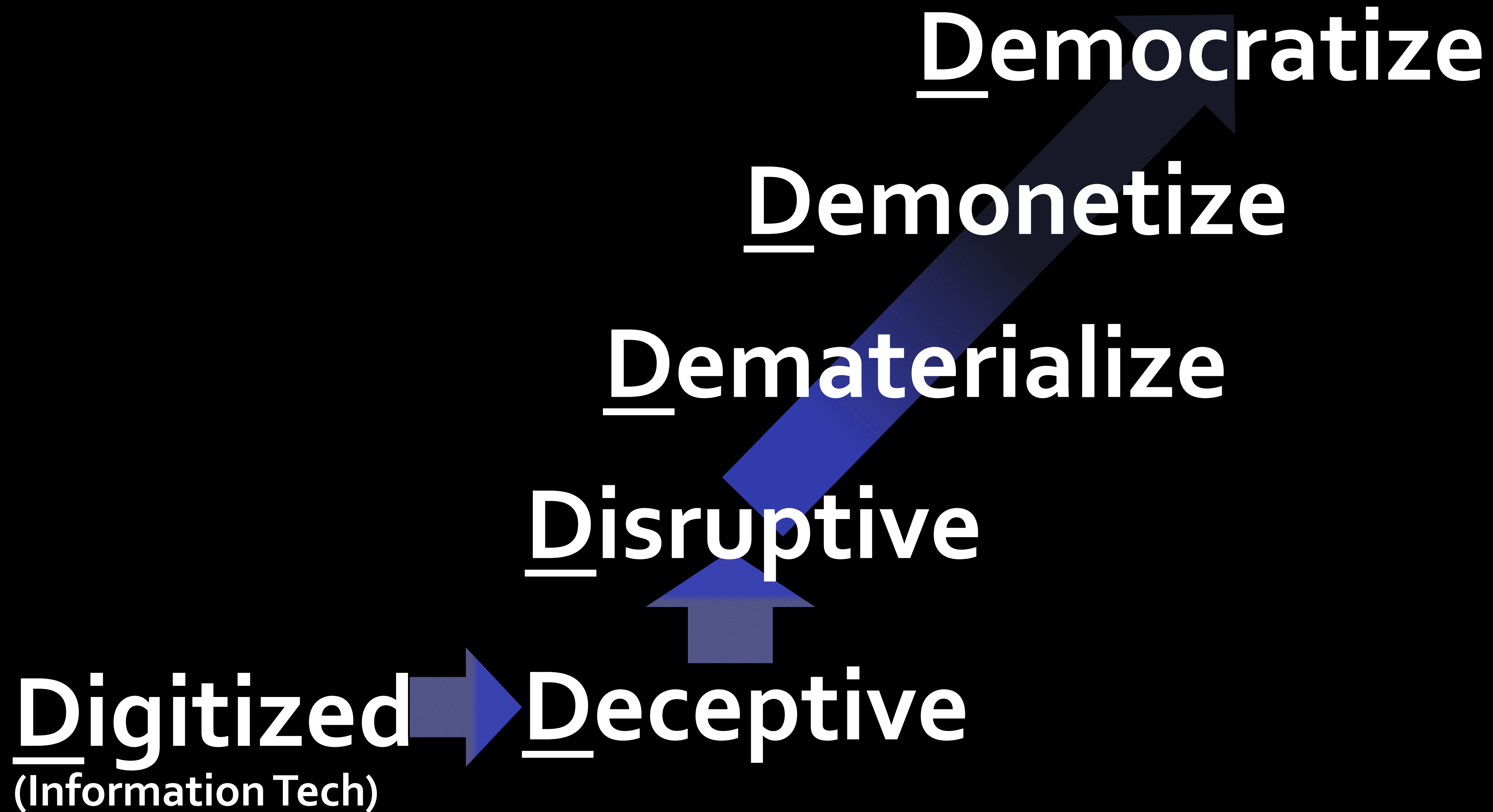


1st commercial GPS Receiver in 1981
Weight: 53 lbs; Cost: \$119,900



Single Chip GPS Receiver
2010; <\$5 each

“6Ds” – Exponential Framework



“6Ds” – Exponential Framework

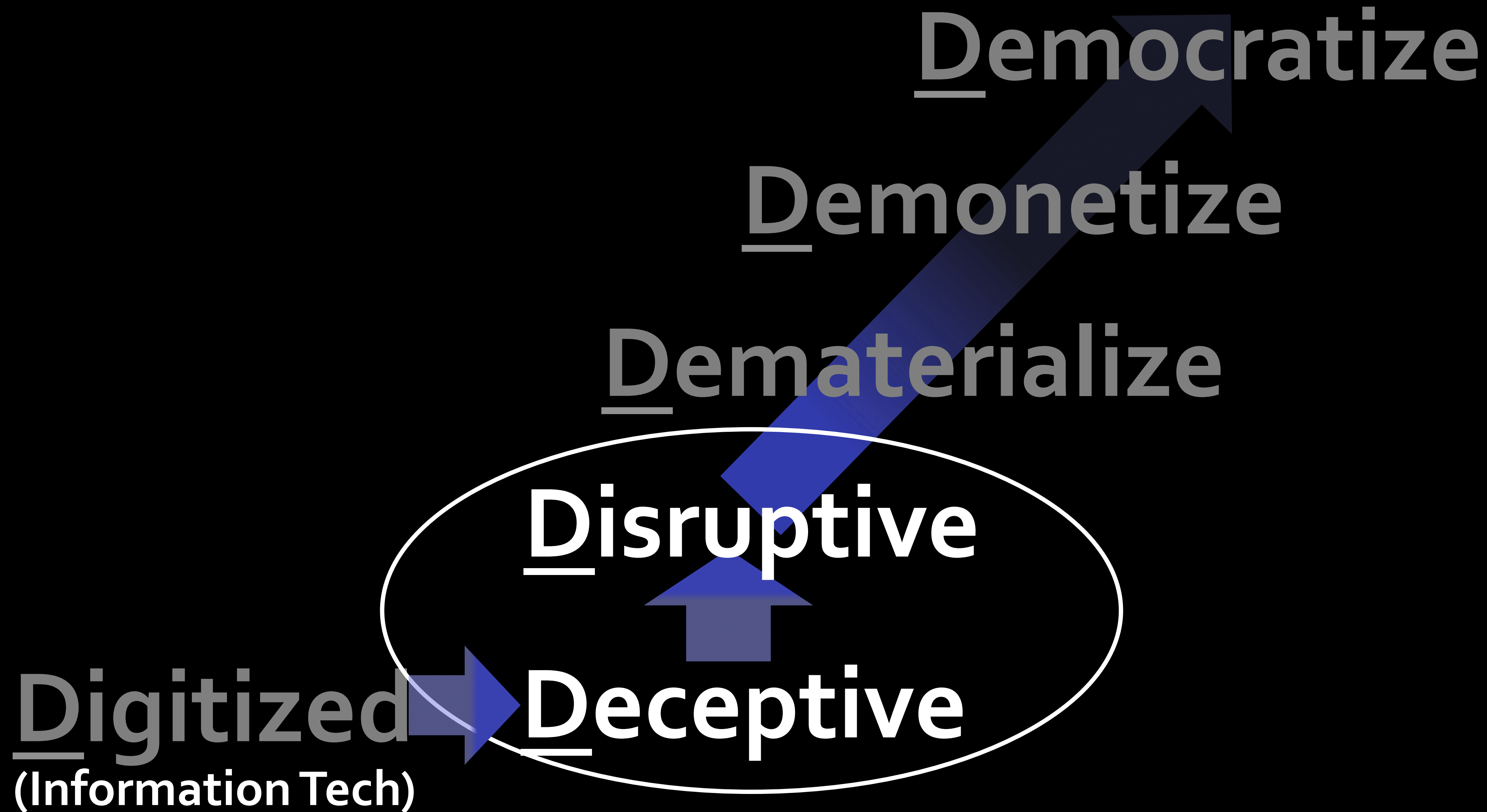
00010110010100101010100110101
10100101010100110101101001010
10100110101101001010101001101



00010110010100101010100110101
10100101010100110101101001010
10100110101101001010101001101

Digitized
(Information Tech)

“6Ds” – Exponential Framework



Linear Vs. Exponential Growth

150
140
130
120
110
100
90
80
70
60
50
40
30
20
10

— Exponential Trend
— Linear Trend

(Disruptive)

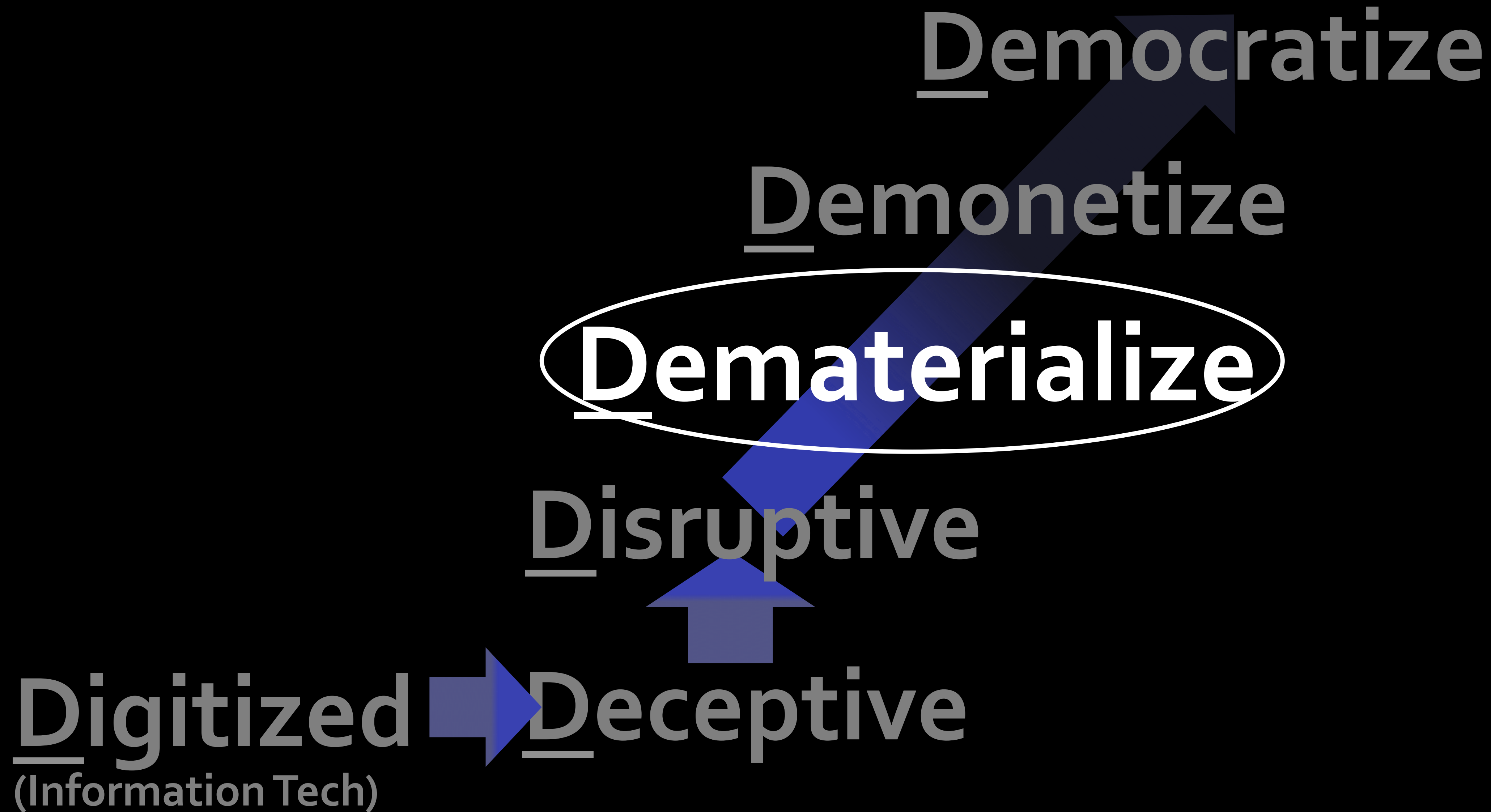
Knee of Curve

(Deceptive)

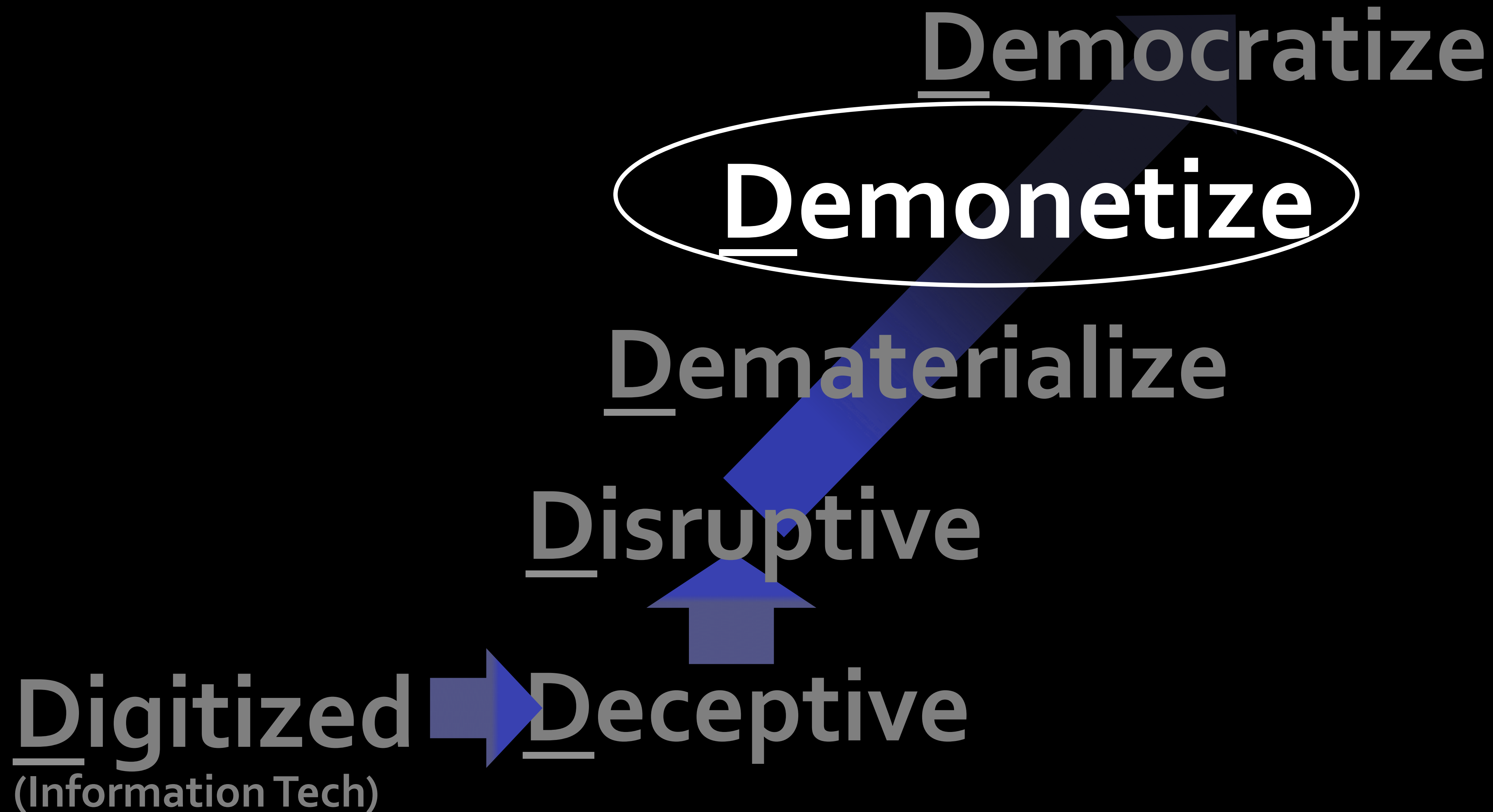
0 1 2 3 4 5 6 7 8 9 10 11 12 13

0	0.01
1	0.02
2	0.04
3	0.08
4	0.16
5	0.32
6	0.64
7	1.28
8	2.56
9	5.12
10	10.2
11	20.5
12	40.9
13	81.9

“6Ds” – Exponential Framework



“6Ds” – Exponential Framework





Taxi Fleets



Long Distance



Book Stores



Research/Libraries

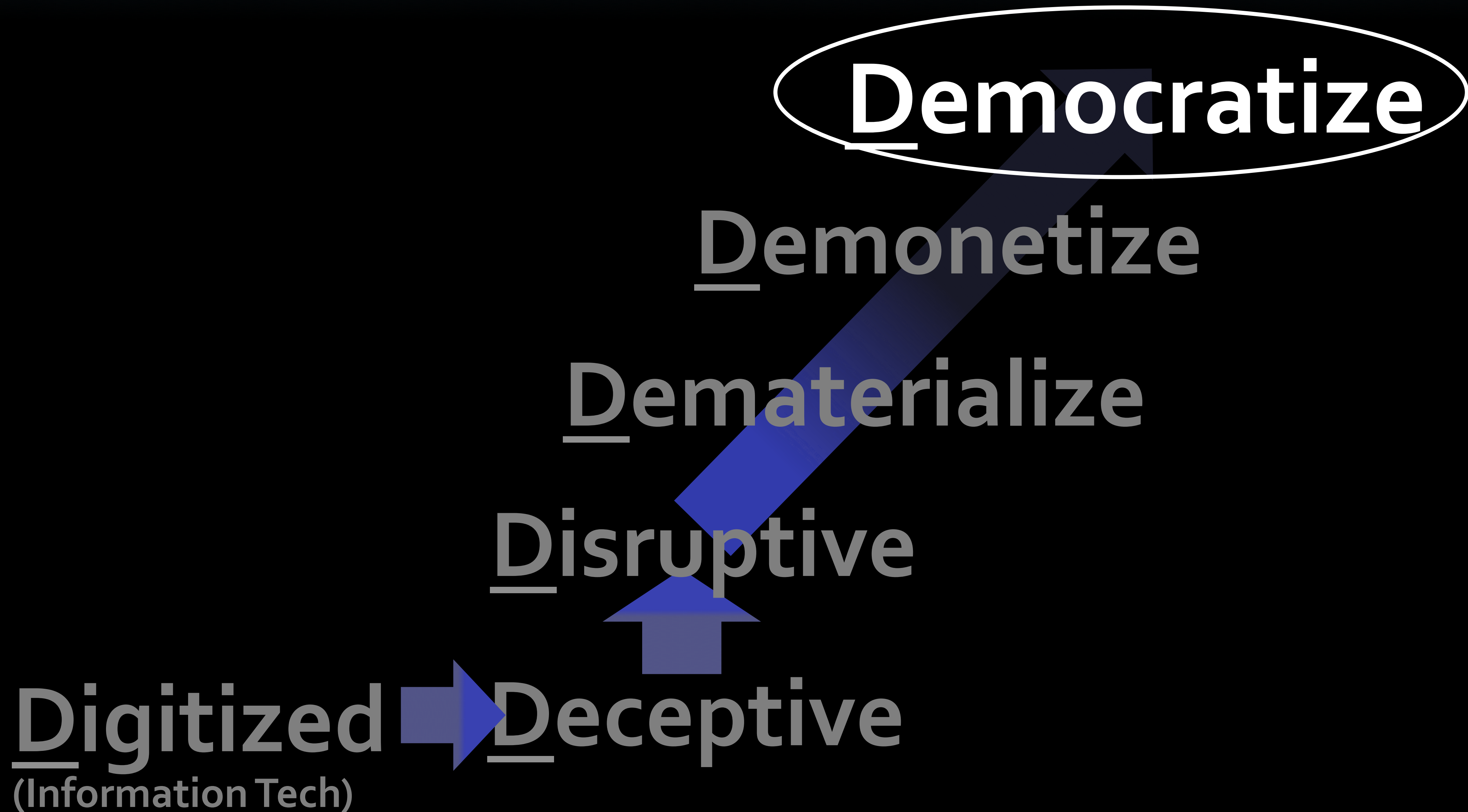


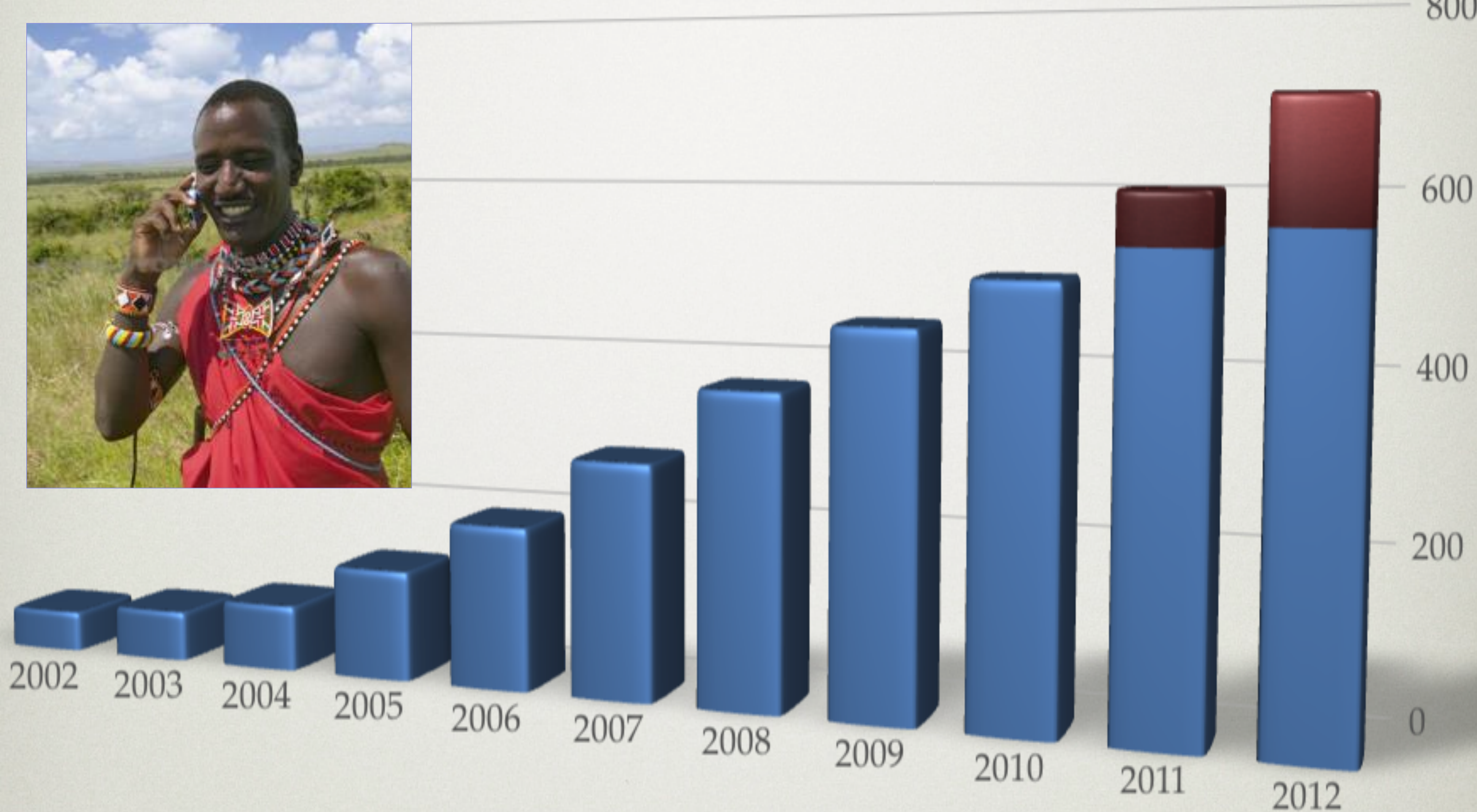
Classifieds



Hotel Chains

“6Ds” – Exponential Framework

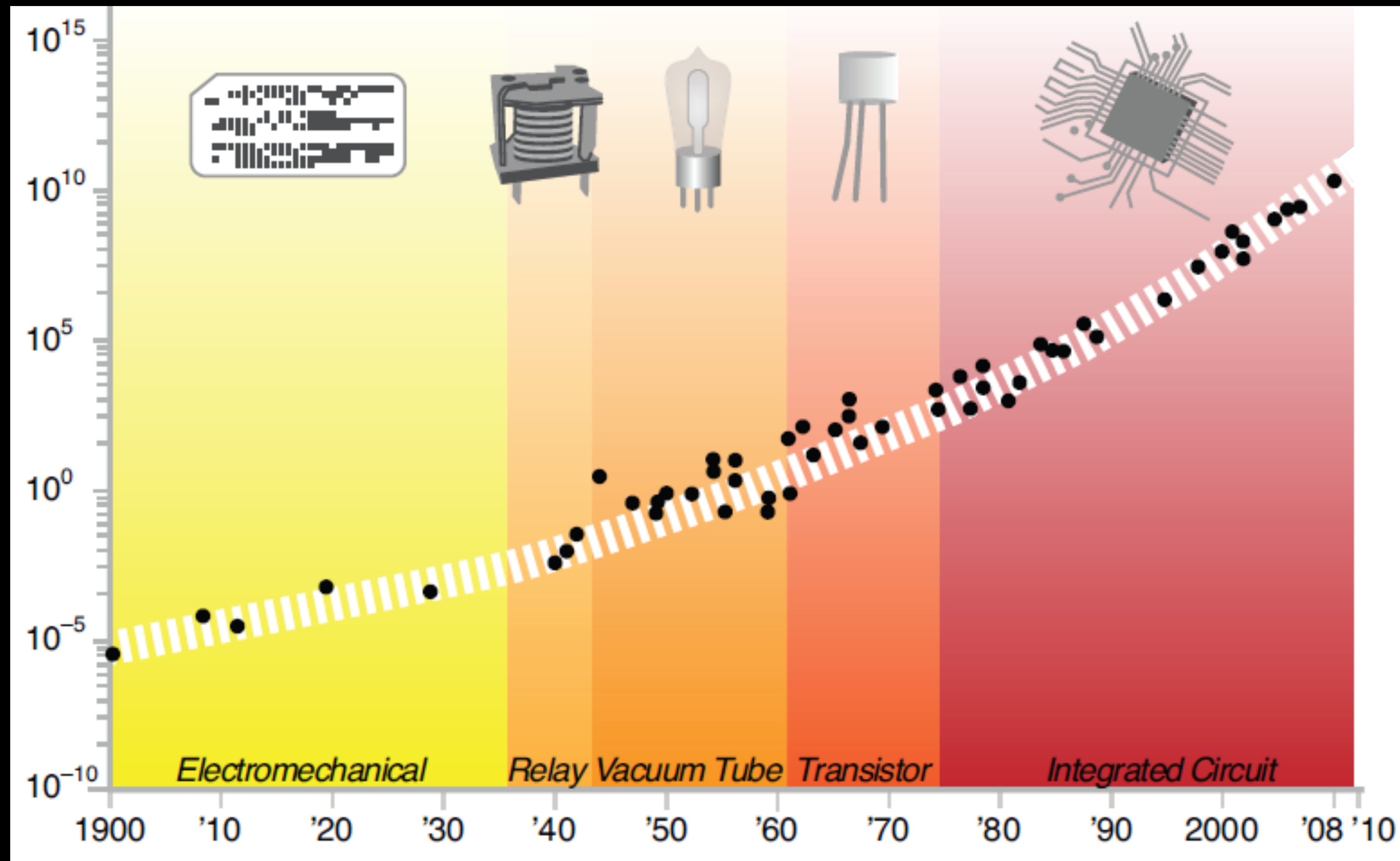




African Mobile Growth: ~1B by end 2016

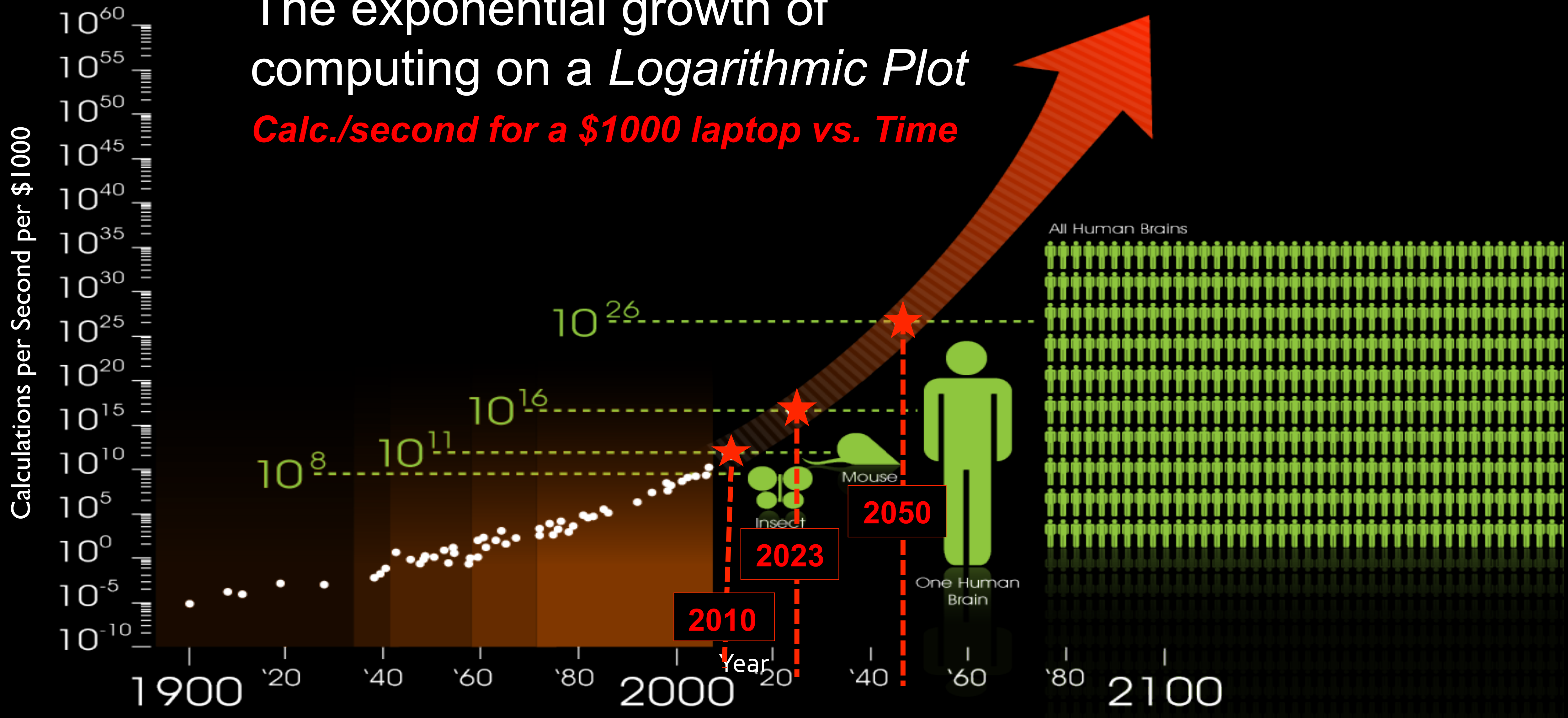
Moore's Law – 5th Paradigm of Exponential Growth

Calculations/Sec per \$1000 computer



The exponential growth of computing on a *Logarithmic Plot*

Calc./second for a \$1000 laptop vs. Time



“Unexpected Convergent Consequences”

Faster,
Cheaper,
Computing
Power



Networks

Sensors

Artificial Intelligence

Robotics

3D Printing

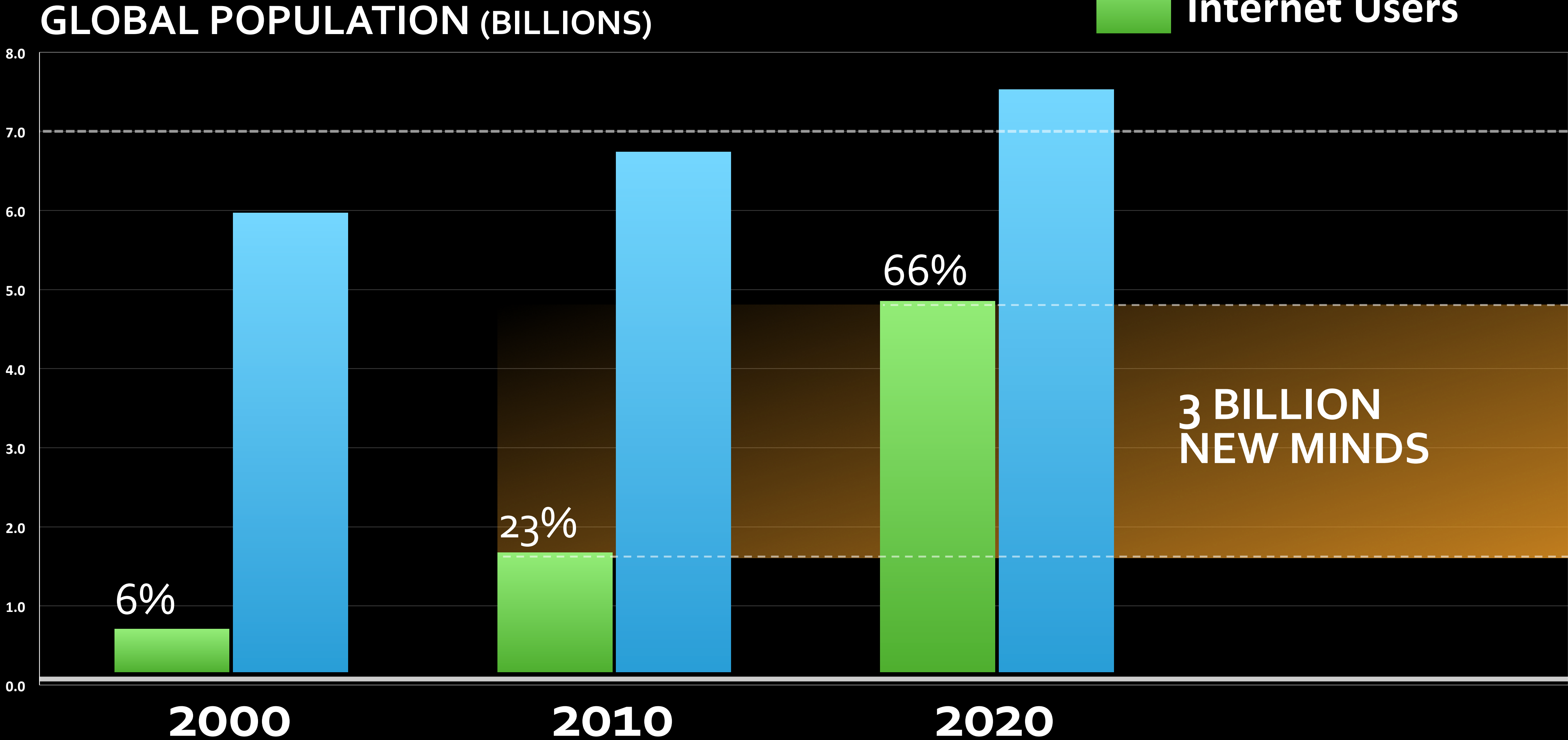
Synthetic Biology

Materials Sciences



Unexpected
Convergent
Consequences

FORCE: Rising Billion



Connecting 8 Billion...

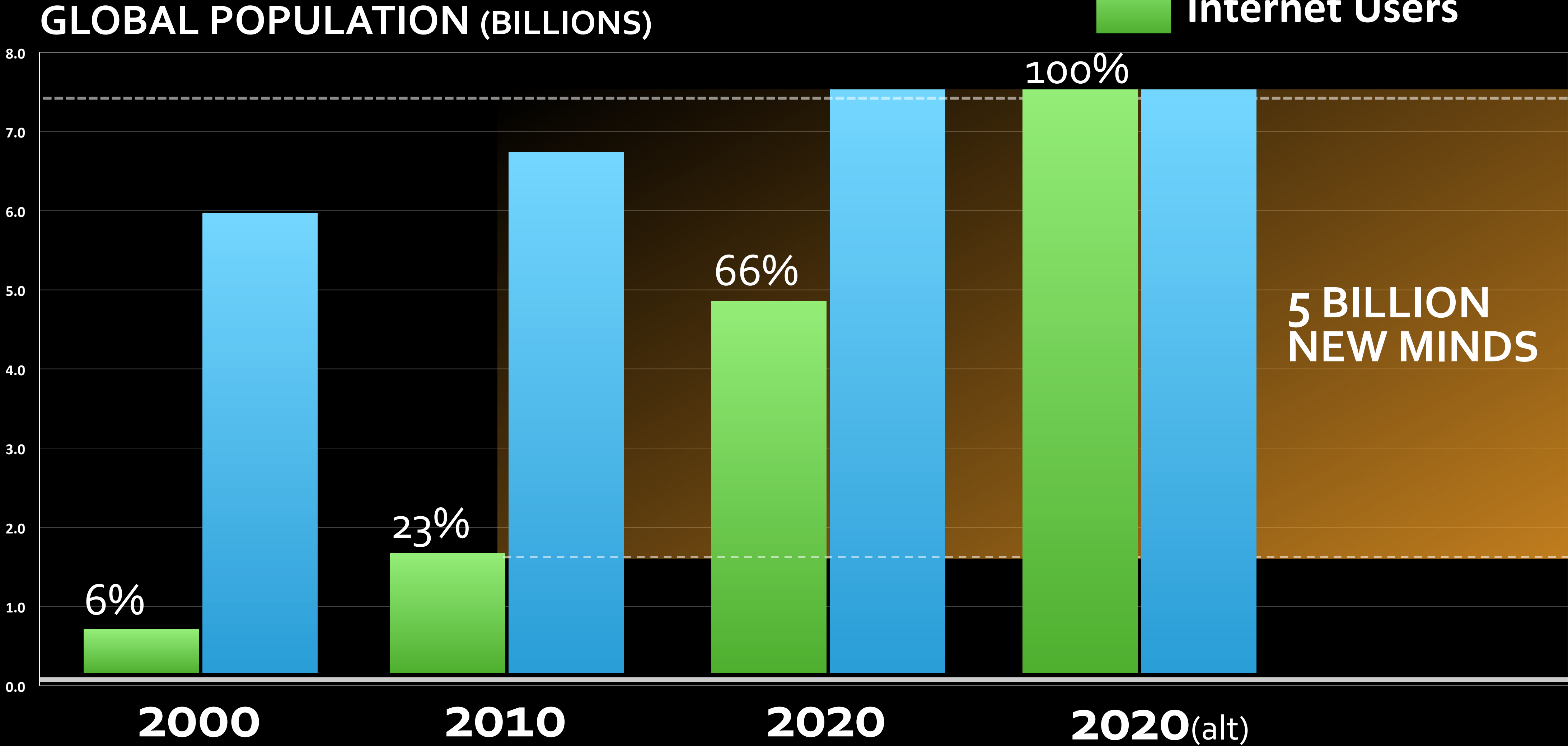
Facebook, Google, OneWeb, SpaceX



FORCE: Rising Billion

Global Population

Internet Users



What will 5 Billion New Minds...

create

discover

consume

desire

invent

...Tens of trillions of annual PP

...Greatest period of Innovation (ever)

IMPACT SLIDE - I

What are the Key Insights you should take away?:

- **Our thinking is biased: We are Local & Linear Thinkers in a Global & Exponential World.**
- **Are you “skating to the puck”? Anticipating exponential growth?**
- **The only constant is change & the rate of change is increasing.**
- **You either disrupt your own company/products, or someone else will. Standing still = death**

IMPACT SLIDE - 2

Impact of 6 D's:

- **Which of your processes haven't you digitized yet, that you should to forester exponential growth?**
- **Which technologies are currently in deceptive growth, that could become disruptive?**
- **Which of your products & services could become dematerialized and demonetized?**
- **Where could you be servicing the 3 Billion+ new consumers coming on-line in the next 5 years?**

If you'd like a copy of my PPT slides...

Text your Email to:

+1-310-299-8772





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