GERD LEONHARD: FUTURIST, KEYNOTE SPEAKER, AUTHOR
& CEO, THE FUTURES AGENCY

Gerd

The digital transformation of business and society, and its impact on the shipping, ports and maritime industries by 2030

IAPHHAMBURG2015
29th WORLD PORTS CONFERENCE

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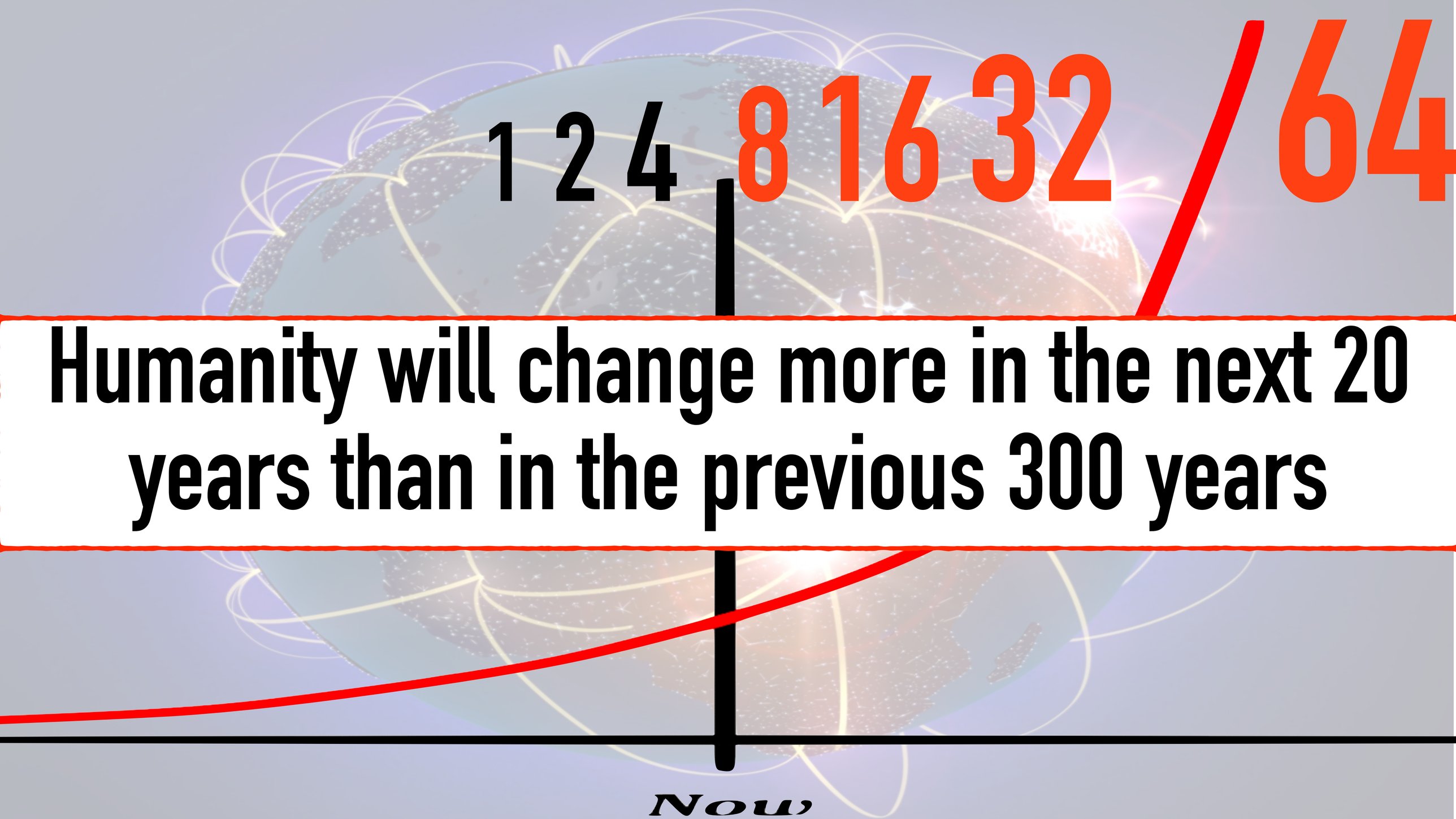
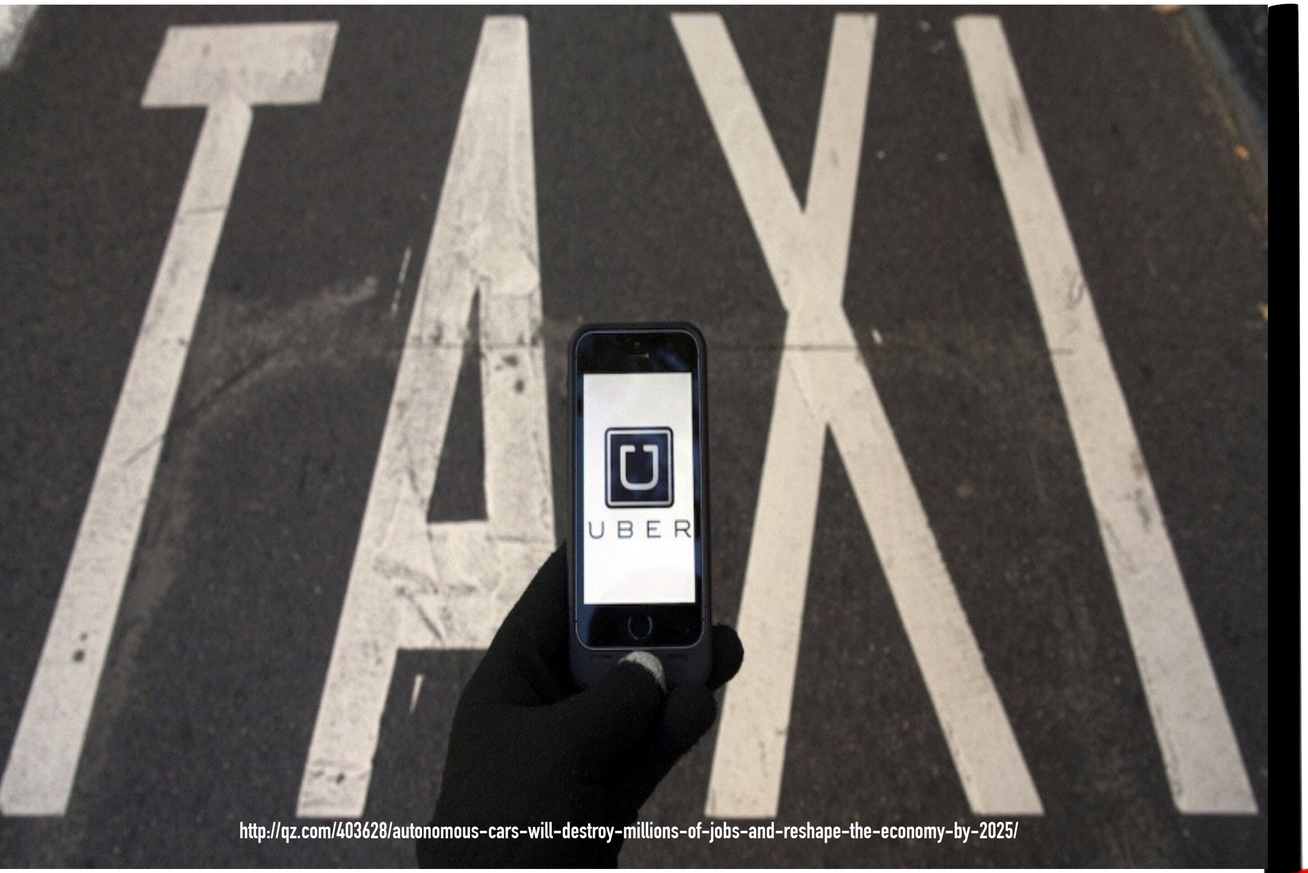

1 2 4 8 16 32 64
Humanity will change more in the next 20 years than in the previous 300 years
Now

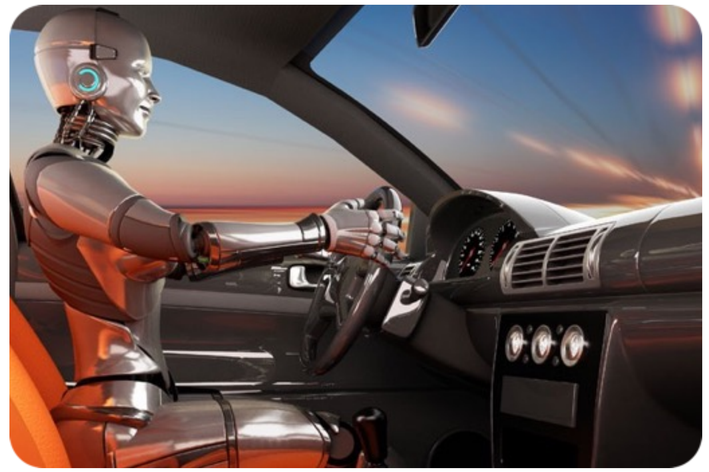
With technology, increasingly the answer will be ‘yes, we can’!



http://qz.com/403628/autonomous-cars-will-destroy-millions-of-jobs-and-reshape-the-economy-by-2025/

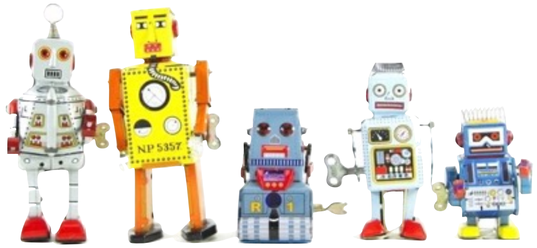
“A January 2013 Columbia University study suggested that with a fleet of just 9,000 autonomous cars, Uber could replace every taxi cab in New York City, and that passengers would wait an average of 36 seconds for a ride that costs about $0.50 per mile”

Robotic cars, ships, planes, pets…friends…?

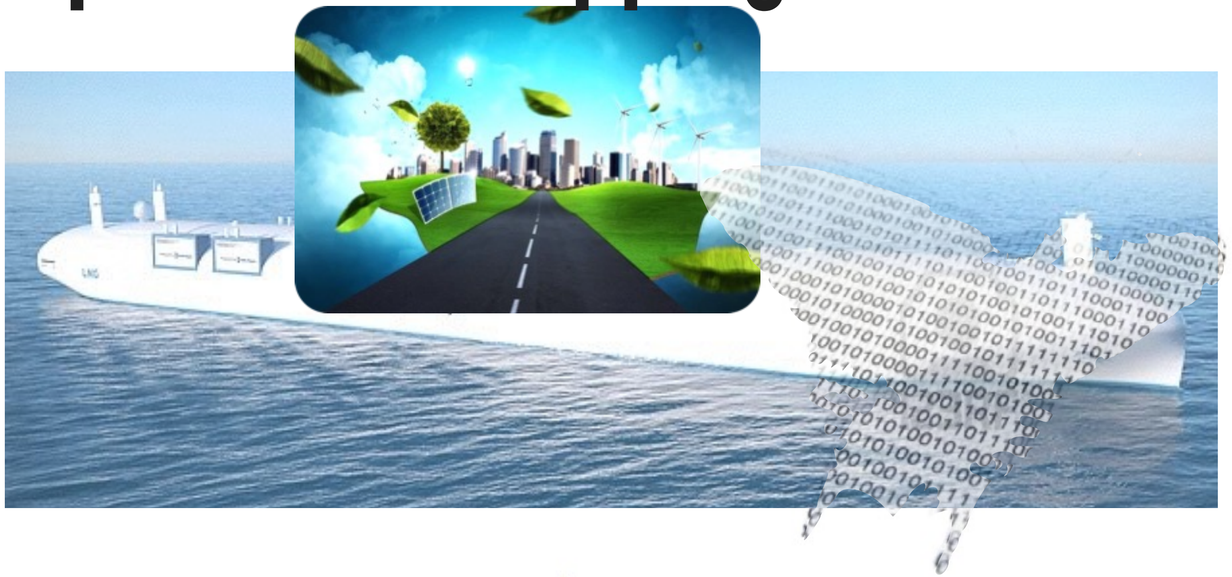


container ship, reimagined *Nick Kaloterakis*

The digital transformation of the ports and shipping is imminent



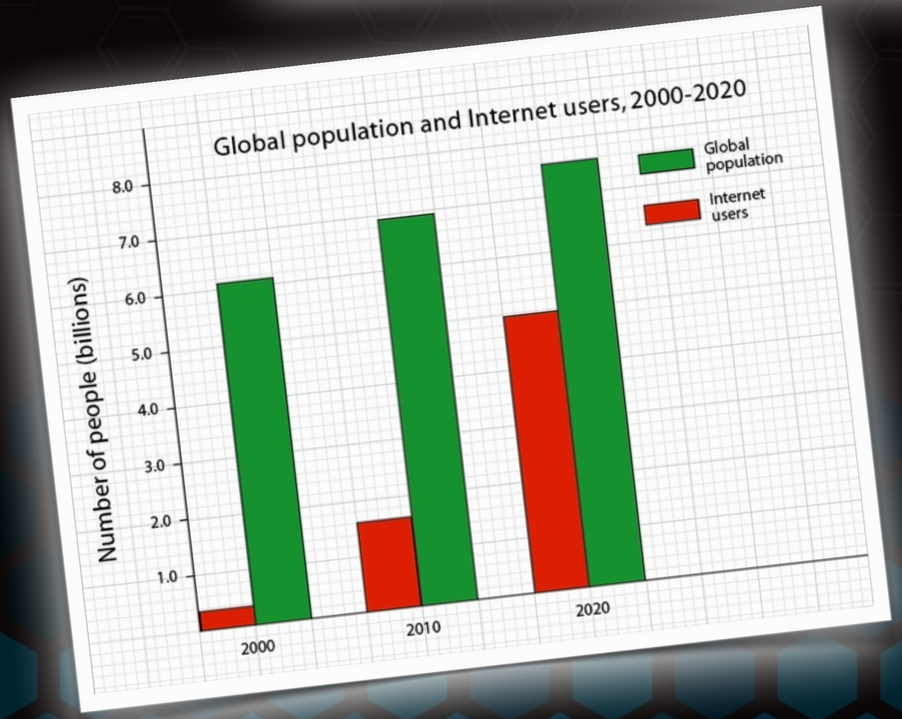
AI
Artificial Intelligence

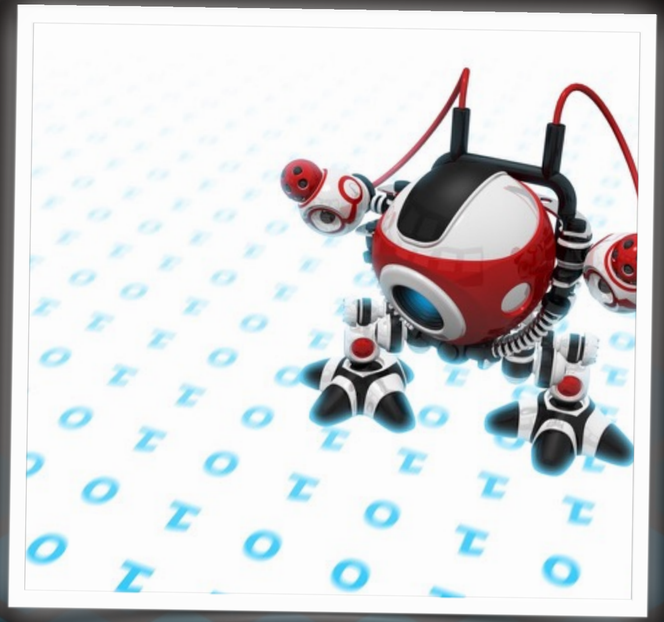


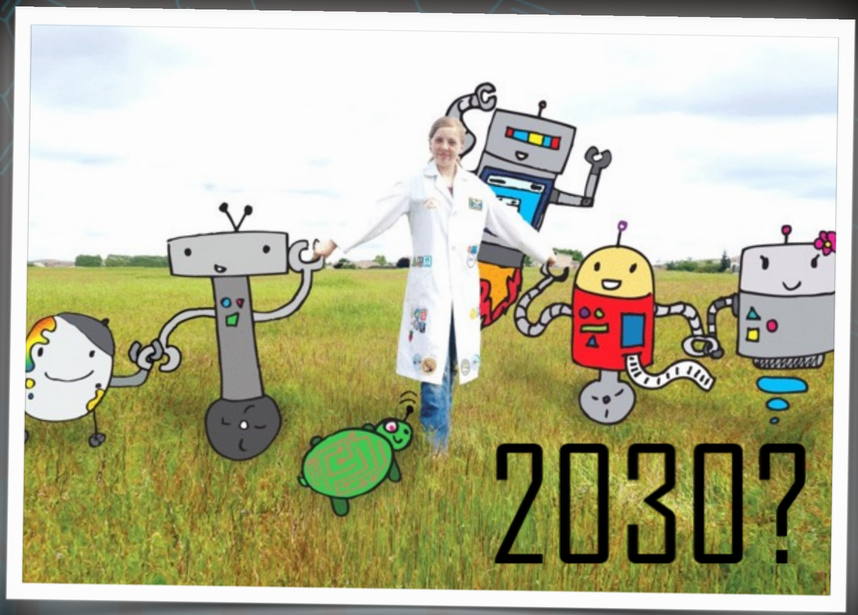
2030 ?


baxter
sawyer


3D
PRINTED
FOOD?!


Global population and Internet users, 2000-2020
Global population
Internet users
Number of people (billions)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
2000
2010
2020




2030?

1 The accelerating pace of change ...

Agricultural Revolution ← 8,000 years → Industrial Revolution ← 120 years → Light-bulb ← 90 years → Moon landing ← 22 years → World Wide Web ← 9 years → Human genome sequenced

2 ... and exponentia in computing pow

Computer technology, shown here climbing dramatically by powers of 10, is now progressing more each hour than it did in its entire first 90 years

"No, you weren't downloaded. Your were born."

3 ... will lead to the Singularity

2045
Surpasses brainpower equivalent to that of all human brains combined

10^{26}

10^{20}

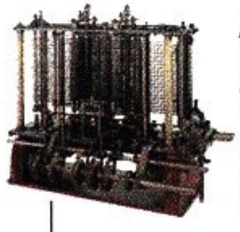
Surpasses brainpower of human in 2023

10^{15}

Surpasses brainpower of mouse in 201

10,000,000,000

COMPUTER RANKINGS
By calculations per second per $1,000



Analytical engin
Never fully built, Charles Babbage' invention was designed to solve computational and logical problems

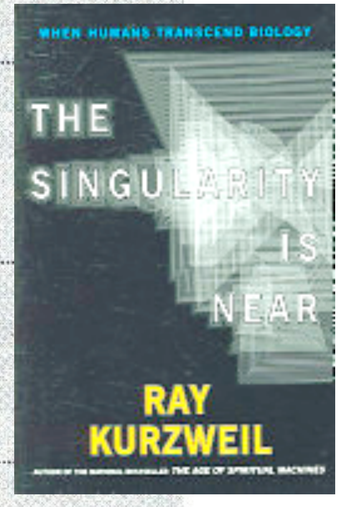
Apple II
At a price of $1,298, the compact machine was one of the first massively popular personal computers

Power Mac G4
The first personal computer to deliver more than 1 billion floating-point operations per second

Hollerith Tabulator
IBM Tabulator
National Ellis 3000
Zuse 2
Zuse 3
ENIAC
IBM SSEC
EDVAC
Datamatic 1000
IBM 1620
IBM PC
Compaq Deskpro 386
Pentium PC
Pentium II PC
Dell Dimension 8400
Mac Pro
Nvidia Tesla GPU & PC

ELECTROMECHANICAL — RELAYS — VACUUM TUBES — TRANSISTORS — INTEGRATED CIRCUITS

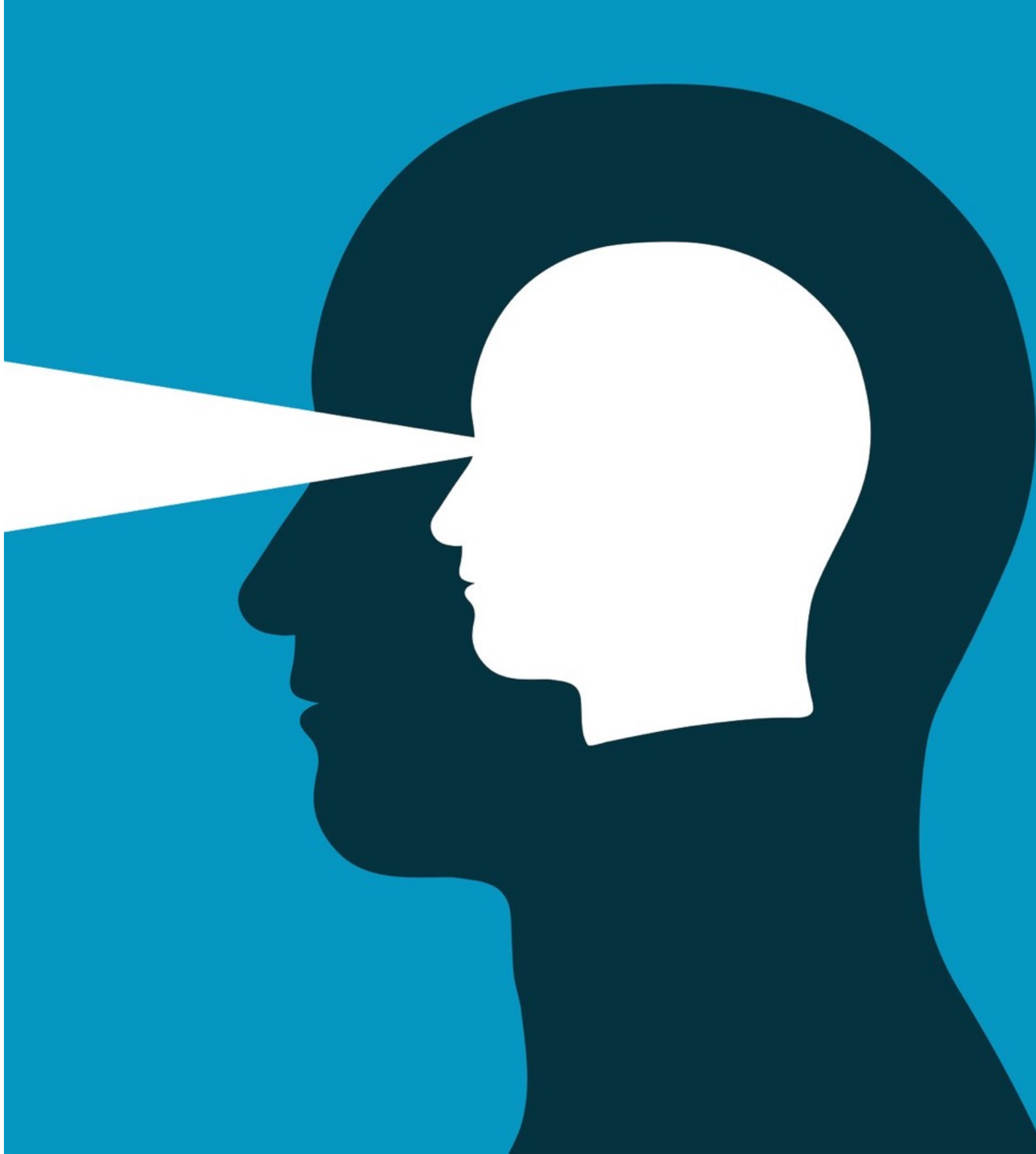
1900 1920 1940 1960 1980 2000 2011 2020 2045



"The single biggest reason that companies fail is that they over-invest in what is. . .

2030?

. . . as opposed to what might be" (Gary Hamel)



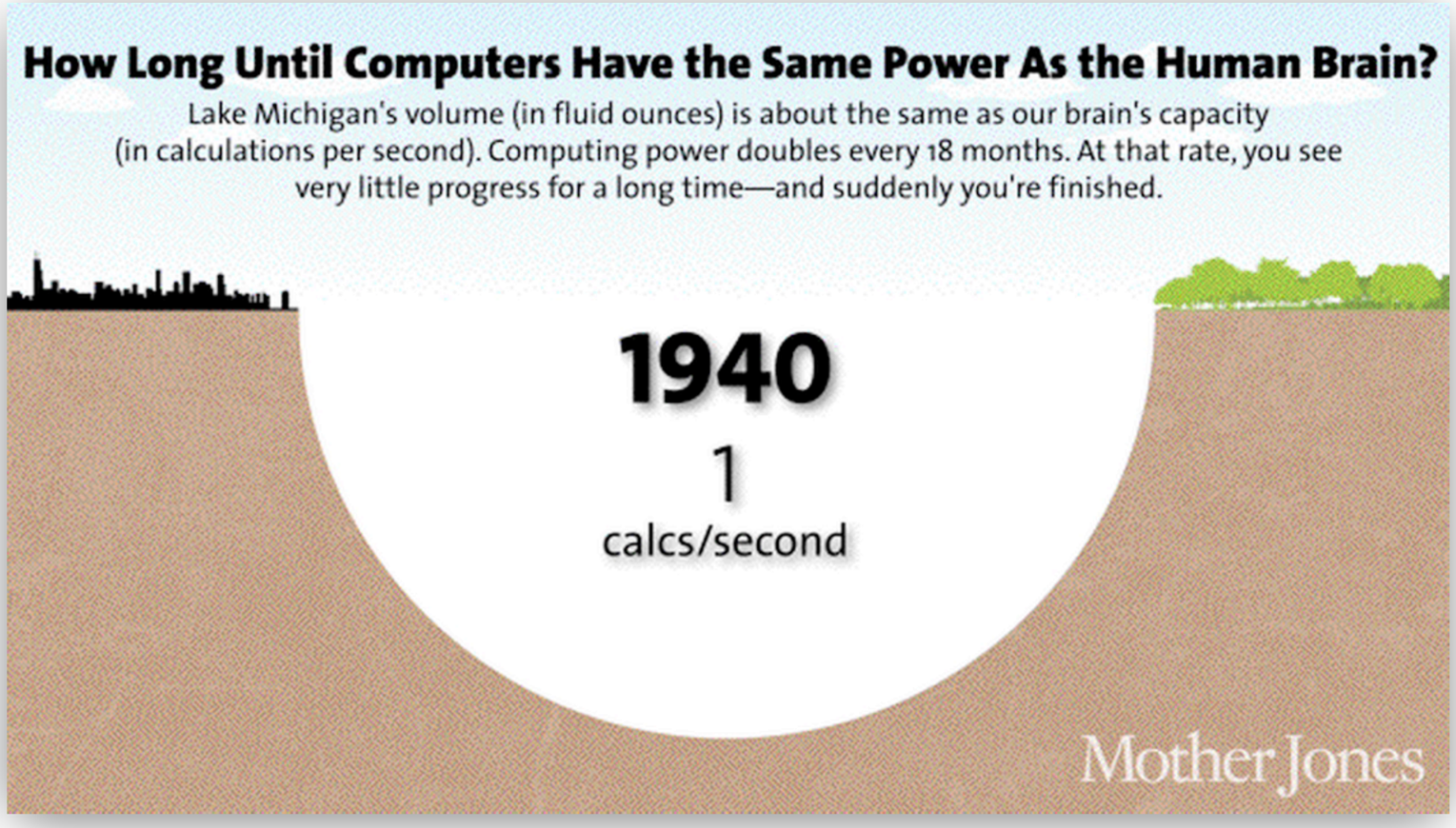
Understanding ‘gradually then suddenly’

Supercomputer takes 40 minutes to simulate 1 second of a human brain

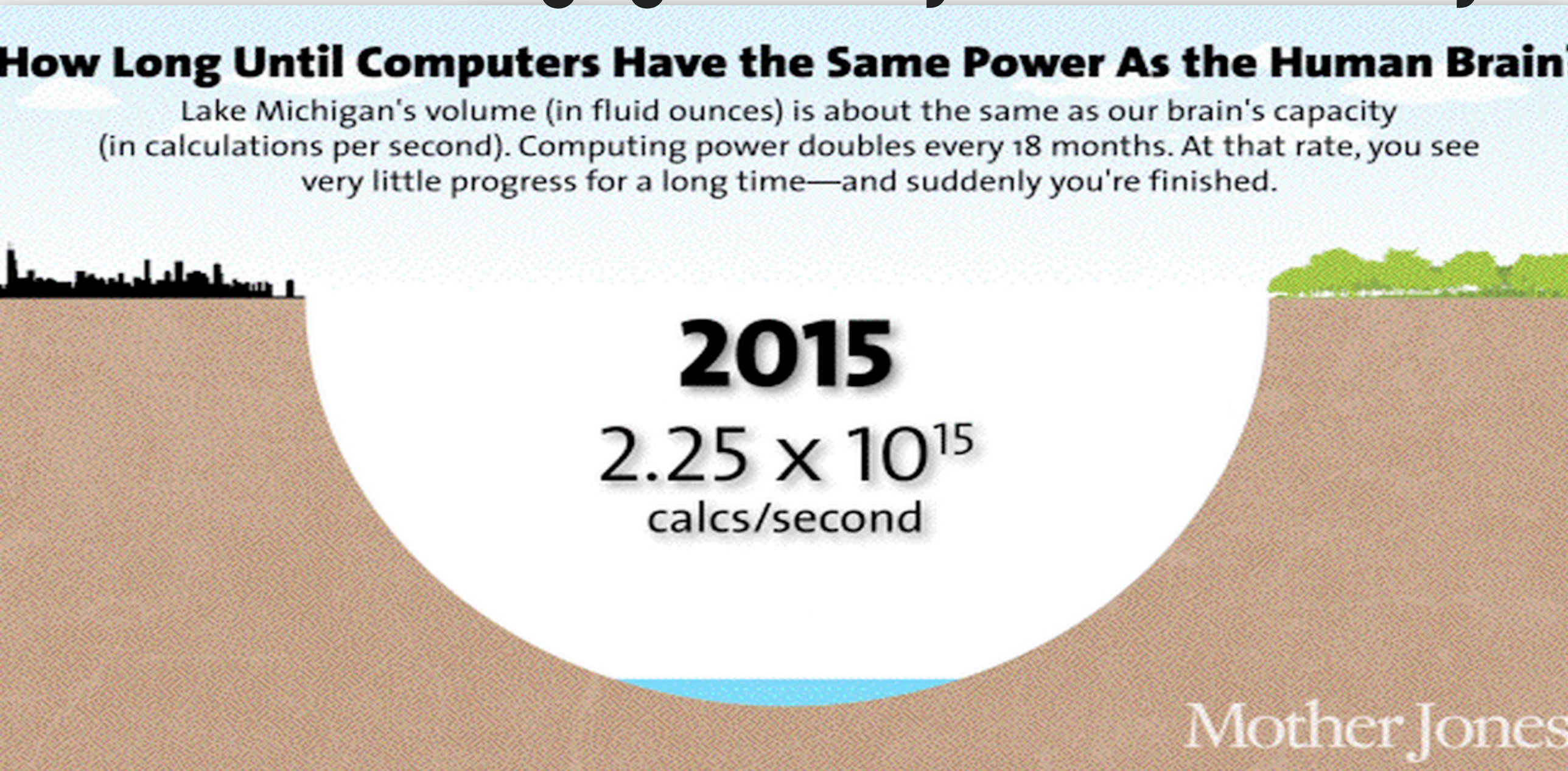
For just one second of simulated human brain activity, it takes one of the world's fastest supercomputers 40 minutes

By: Anthony Garreffa | **Super Computing** News | **Posted:** 1 day, 4 hours ago

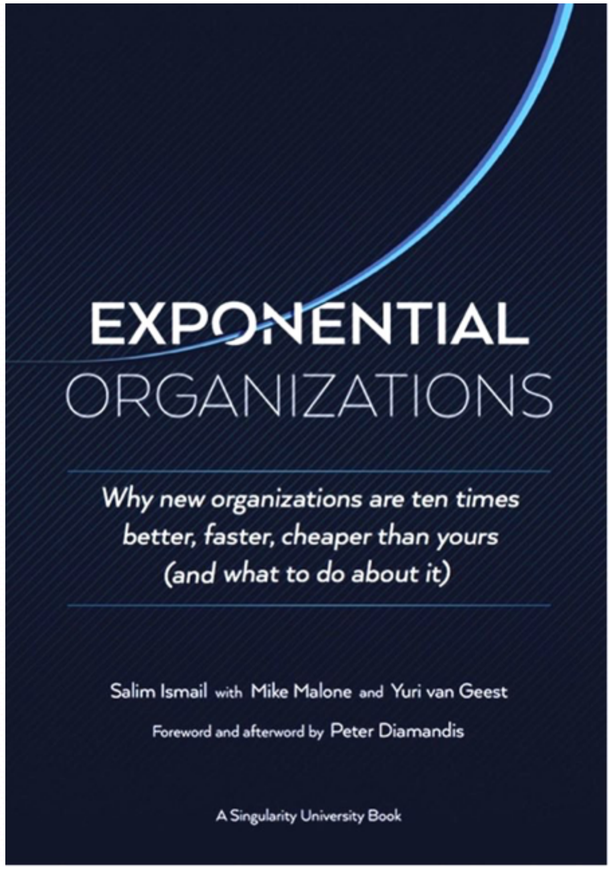
K, one of the world's fastest supercomputers based in Japan, is capable of 8.162 petaflops of performance, thanks to its insane 82,944 processors. The supercomputer is capable of driving 1016 billion operations per second, but even then, it is still hard pressed to compete with the brain in your head reading this article.



Understanding ‘gradually then suddenly’



Linear vs. Exponential



GROWTH

0

TIME

EXPONENTIAL

DISRUPTION

LINEAR

How will this impact ports in the future?

	Potential Economic Impact ($ Trillion, Annual)	
Disruptive technology	**Low**	**High**
Automation of knowledge work	$5.2	$6.7
Advanced Robotics	$1.7	$4.5
Autonomous vehicles	$0.2	$1.9
The Internet of Things	$2.7	$6.2
Mobile Internet	$3.7	$10.8
Total	**$13.50**	**$30.10**

Source: Frank Diana and McKinsey

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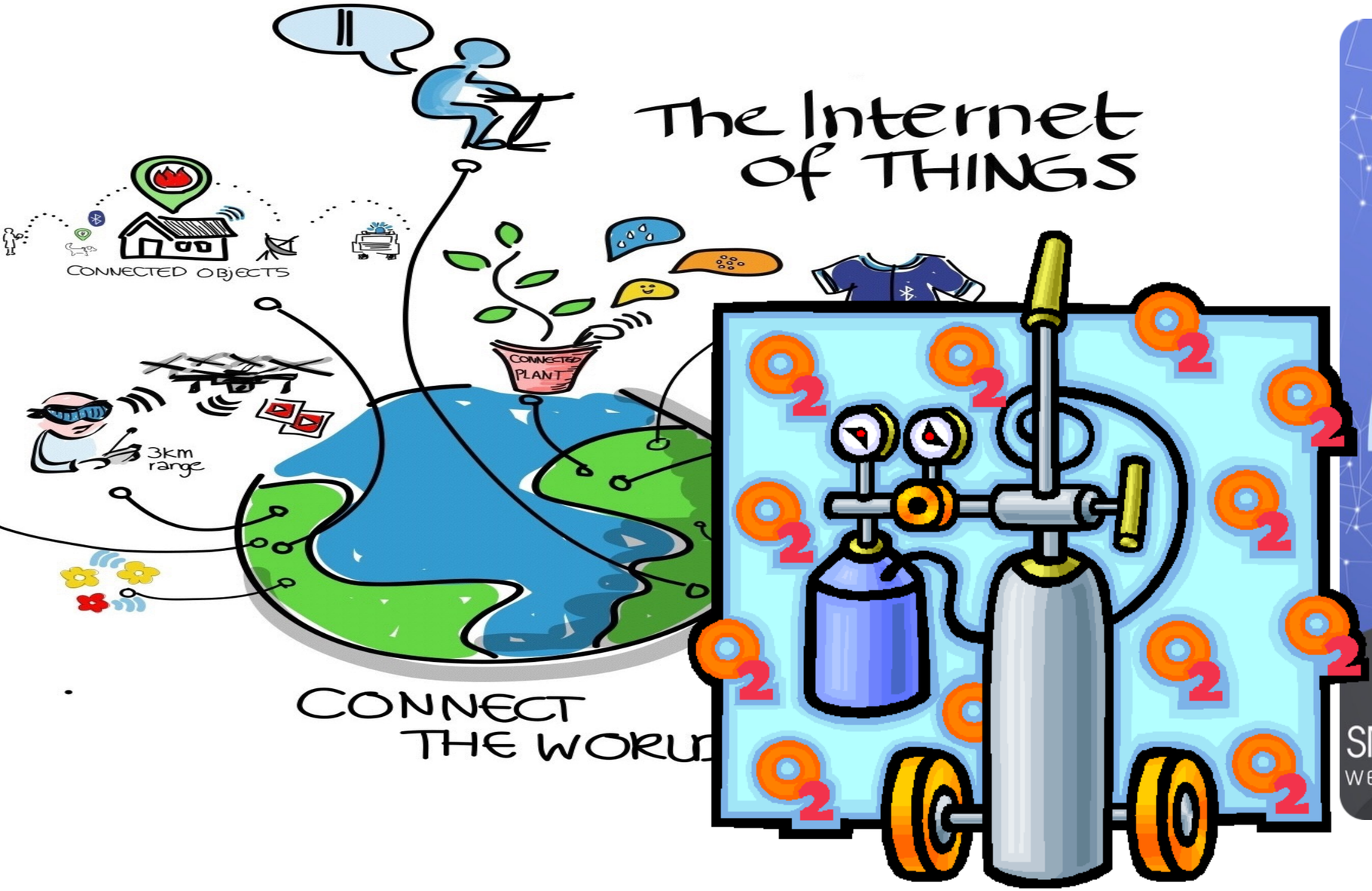
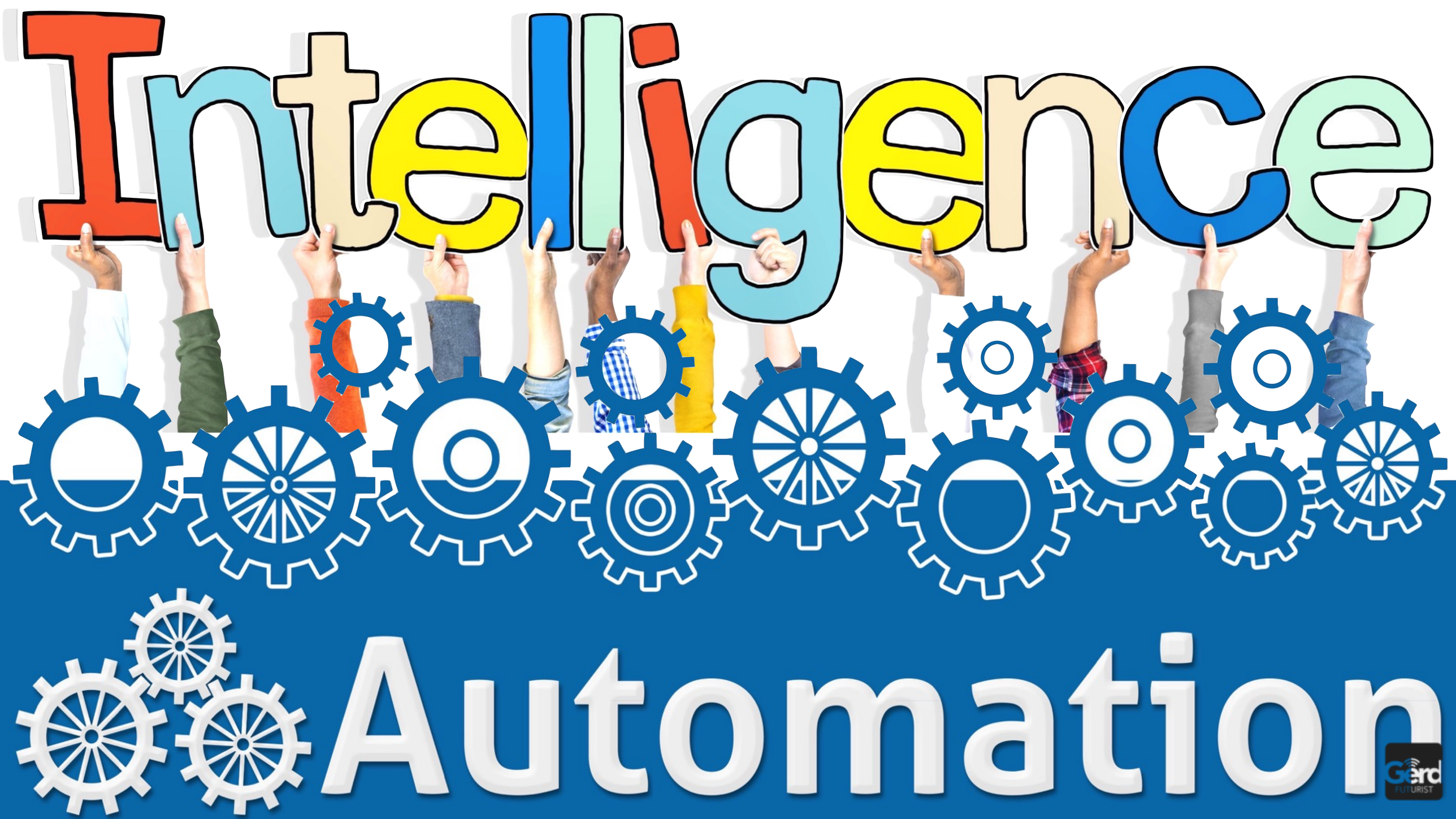
Connectivity is the new oxygen *




Intelligence
Automation

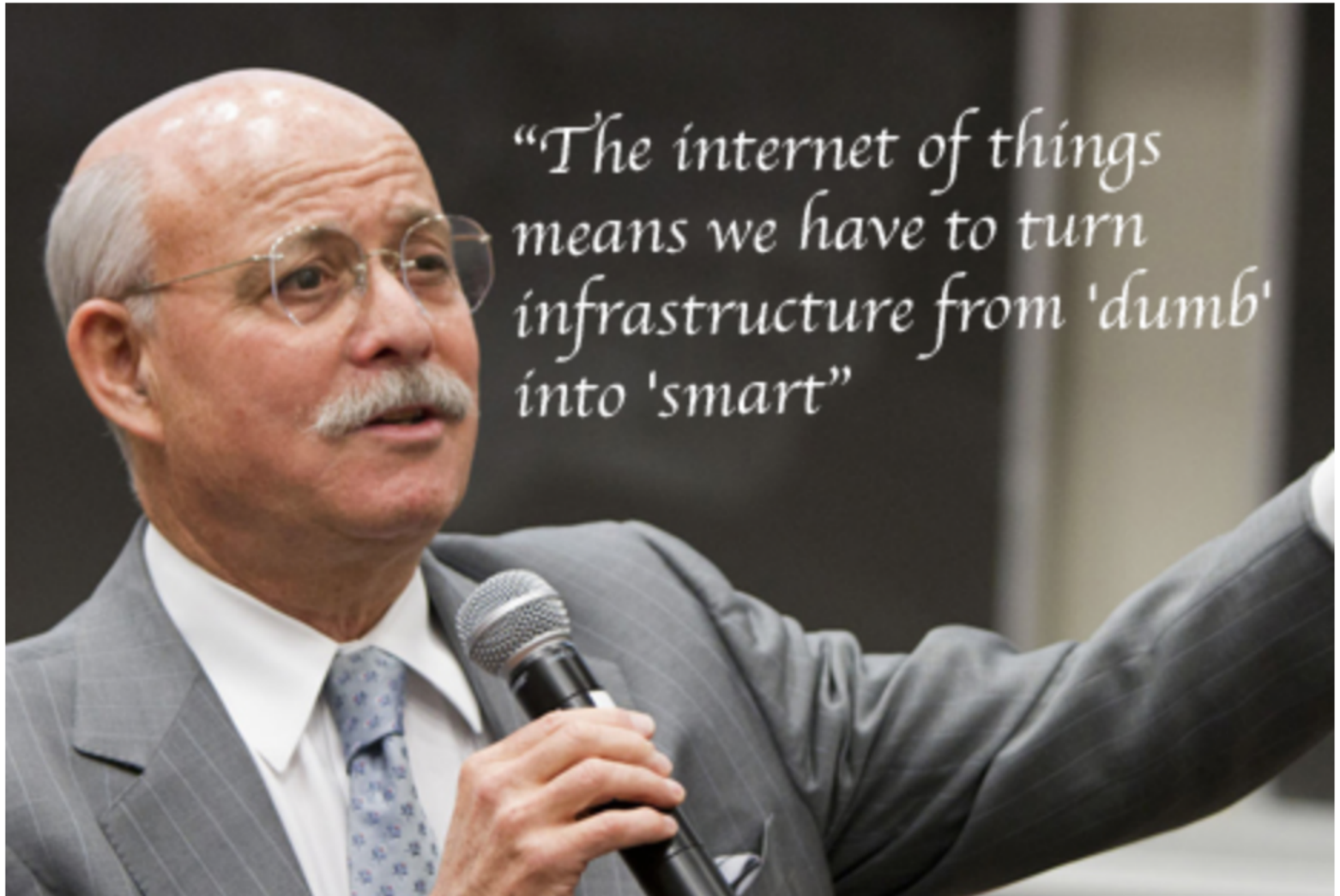
Everything becomes connected, intelligent, observed efficient, optimized . . .*

The future of ports: turning infrastructure from ‘dumb’ into smart

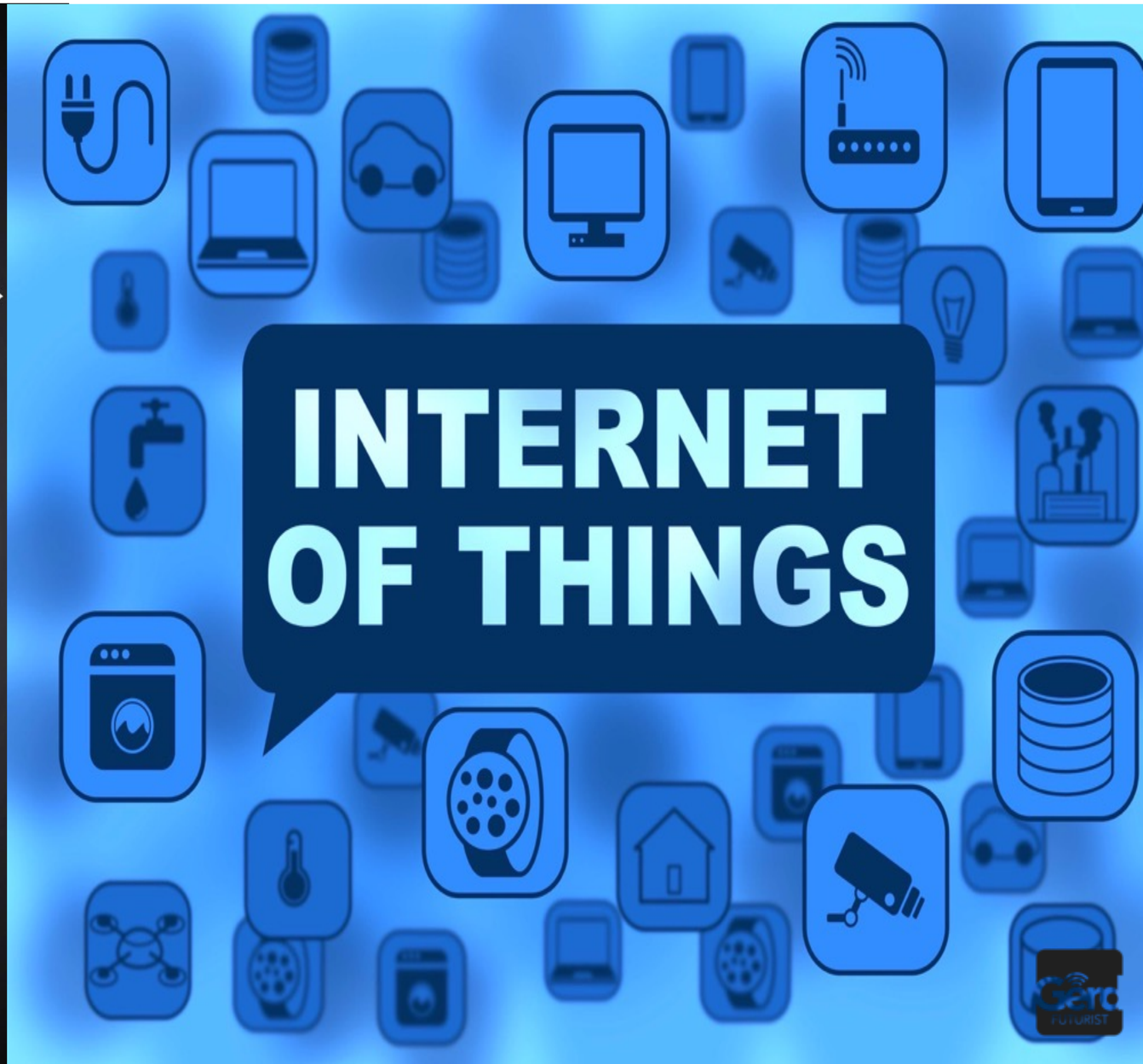
Arianna Huffington retweeted

HuffPost UK @HuffPostUK · 5h

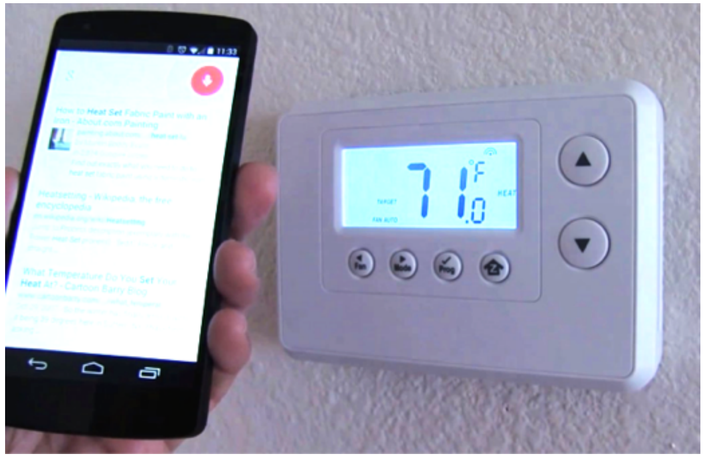
.@JeremyRifkin on #FutureWork

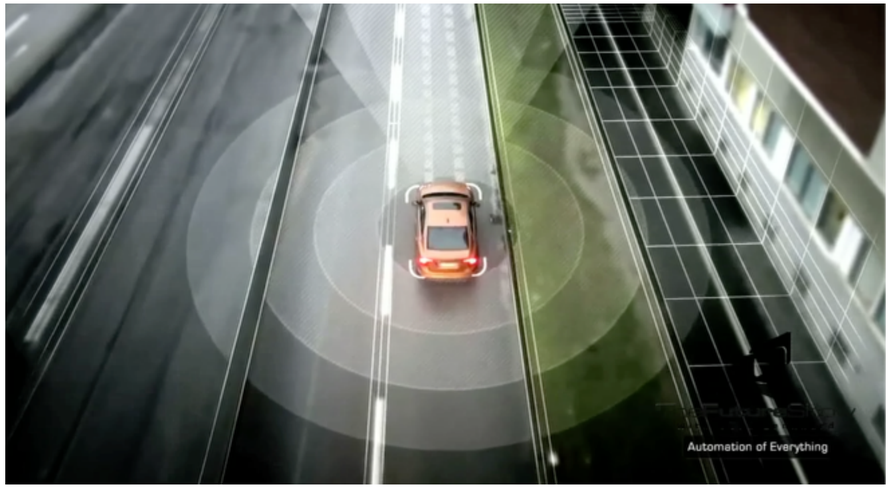


The IoT will be a $8.9 trillion market in 2020, with over 227 billion connected things



Pretty much everything that can be digitised or automated… will be



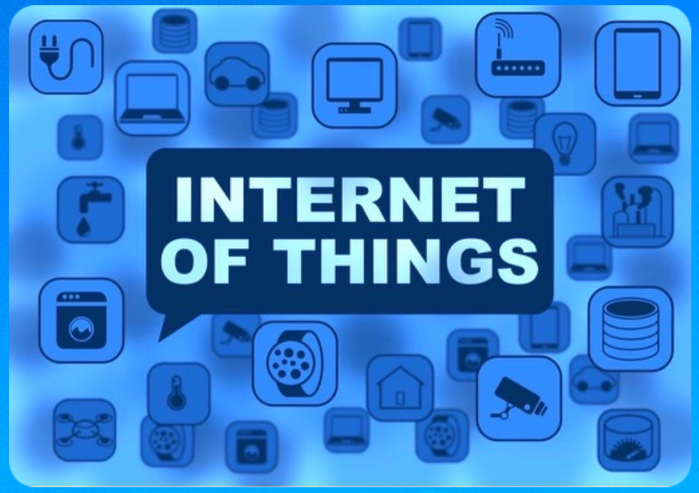


But should we try and...

E-Everything?

In the digital age, everyone wants to be connected, and shipping crew are no different. Networks and the Internet are vital part of crew welfare in modern shipping and satellite technology has risen to meet the demand. According to a recent report from NSR, there will be nearly 1 million in-service satellite units in service by 2023, demanding over 160 satellite transponders.

Everyone and everything is moving into the Intelligent Cloud



data

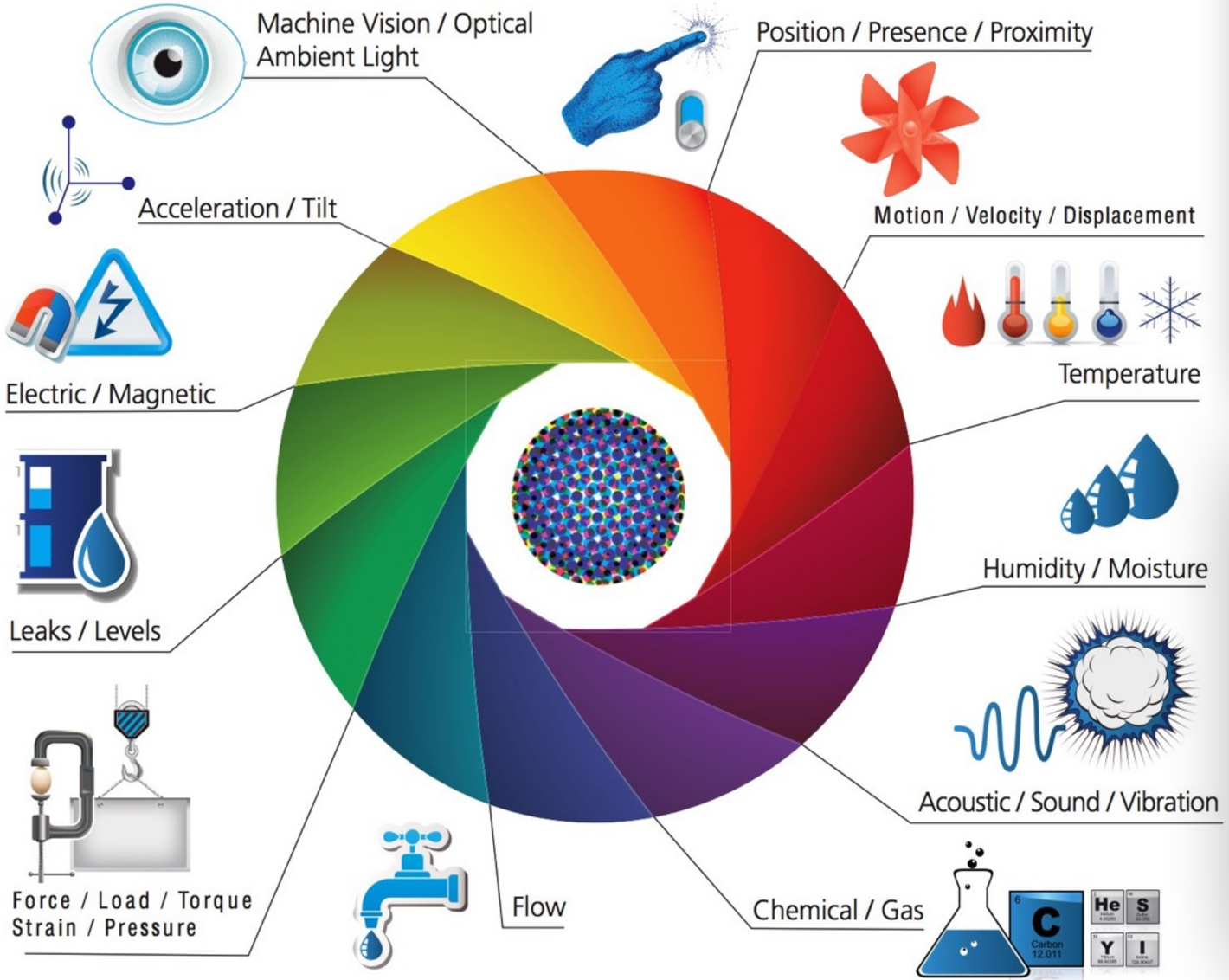
BUSINESS INTELLIGENCE

strategy

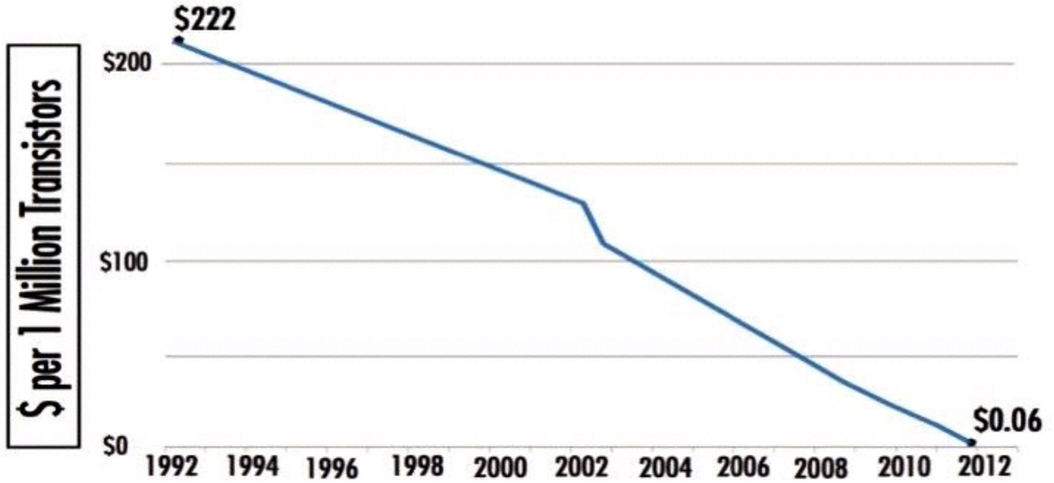
analysis

1 SENSORS & *ACTUATORS*

We are giving our world a digital nervous system. Location data using GPS sensors. Eyes and ears using cameras and microphones, along with sensory organs that can measure everything from temperature to pressure changes.

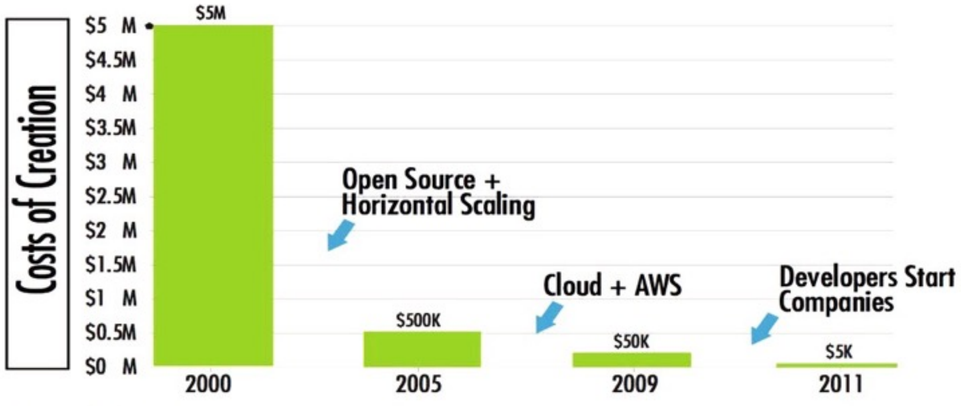


Computing Cost-Performance (1992 - 2012)



Source: Deloitte University Press

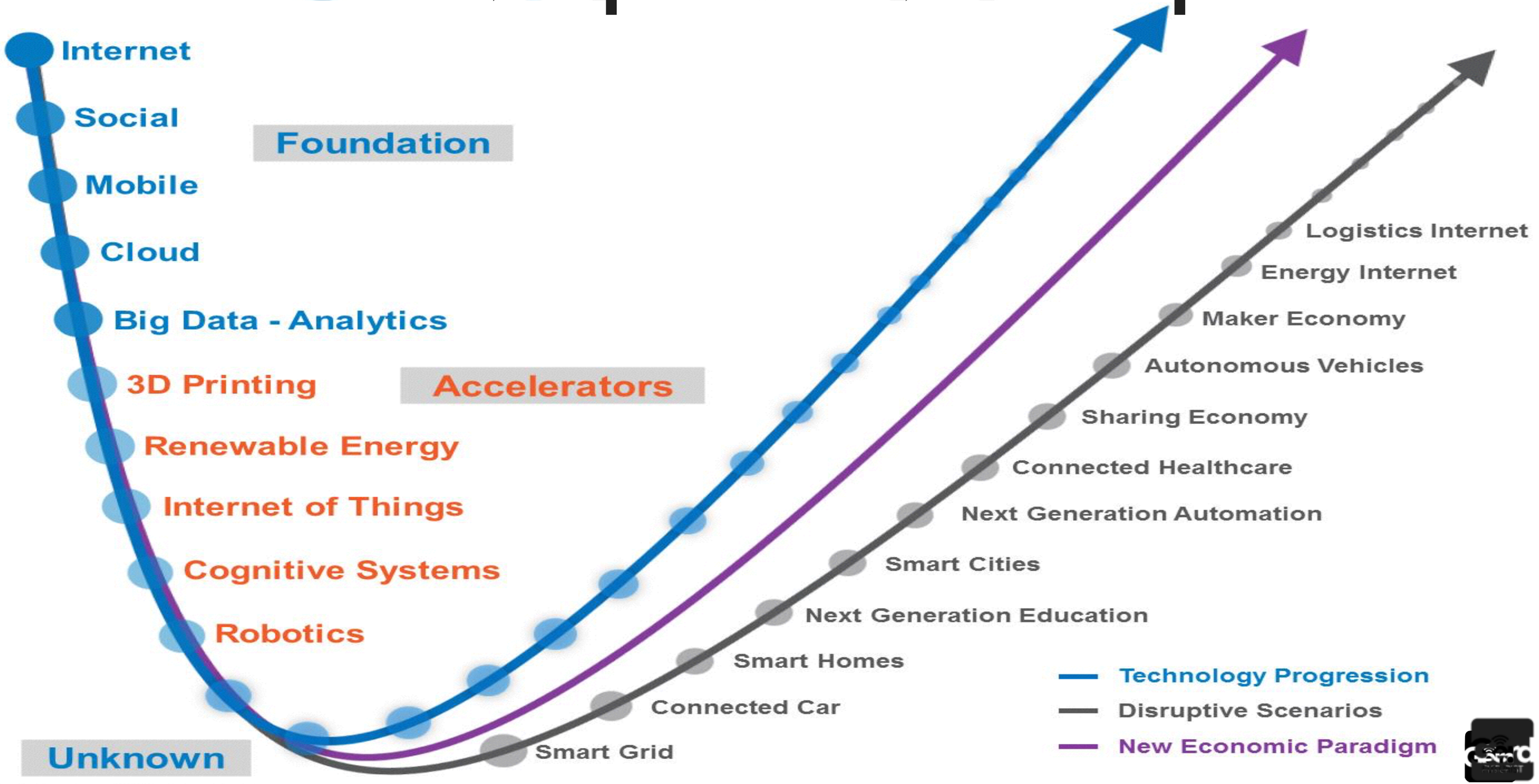
Cost to Launch an Internet Tech Startup



Source: Mark Suster

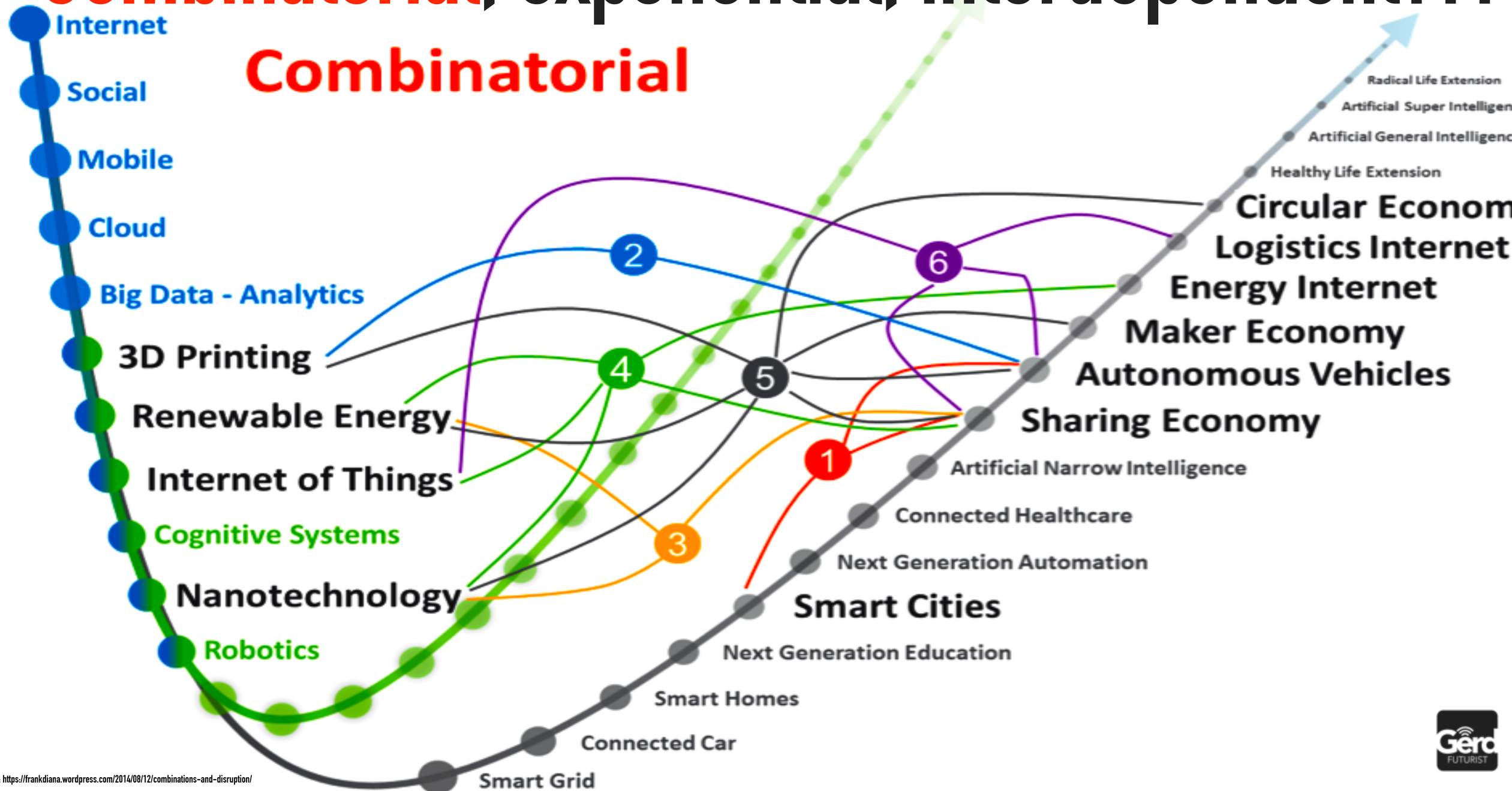
Source: Peter Diamandis

Combinatorial, exponential, interdependent…



Source: https://frankdiana.wordpress.com/2014/08/12/combinations-and-disruption/

Combinatorial, exponential, interdependent. . .



Source: https://frankdiana.wordpress.com/2014/08/12/combinations-and-disruption/

It is quickly becoming less lucrative to strive for independence than to be good at managing interdependence

The end of silos

FUTURELAB


GAME OV
LIVES 0

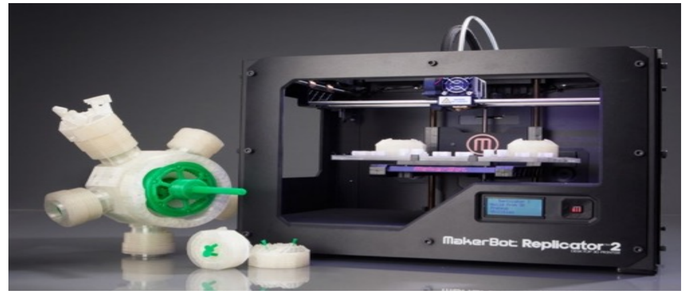

FUTURELAB
© Phillip Minnis | Dreamstime.com

Black swans and unicorns

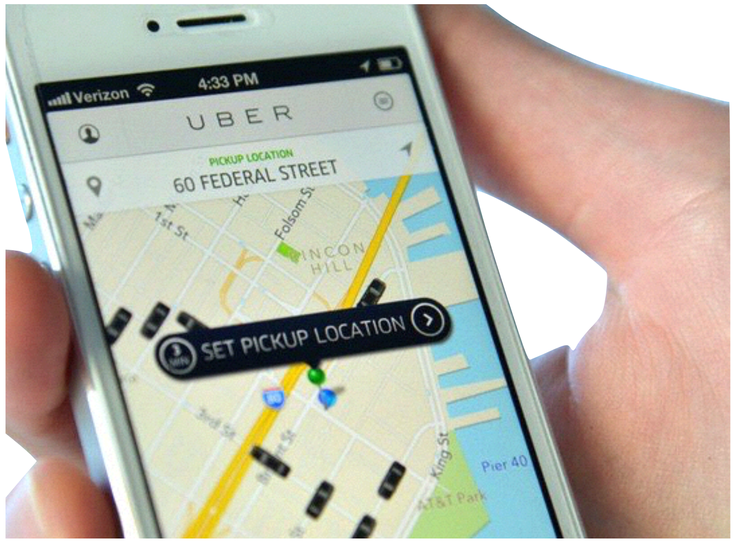
http://www.businessinsider.my/how-to-get-a-billion-dollar-valuation-2015-5/#UvwyJXb1zYv7LPmK.97

At the dawn of 4 new ‘economies’:

1. **Maker-Economy**: distributed manufacturing and 3D printing
2. **On-Demand / Sharing Economy**: own less, access more; a kind of… disownership?
3. **Circular Economy**: people, planet, profit – towards a sustainable capitalism ?
4. **Experience Economy**: immersive and embodied experiences, focus on lifetime memories instead of purchases



From products and ownership to service and access



But: 5 Billion people in the middle class by 2030

Which pieces of the ports, shipping and maritime business are ‘digitally contestable’?

THE BILLION-DOLLAR STARTUP CLUB

48

US:

40/48 based in California
20/48 based in San Francisco
4/48 in New York
2/48 in Massachusetts
2/48 in Utah

Valuation leaders:
Uber 18.2 b$
Airbnb 10 b$
Dropbox 10 b$
Palantir Technologies 9.3 b$
Square 6 b$

EU:

1/3 Sweden
1/3 UK
1/3 Germany

Valuation:
Spotify 4 b$
Powa Technologies 2.7 b$
Delivery Hero Holding 1 b$

China:

4/8 based in Beijing
1/8 Shanghai
1/8 Shenzhen
1/8 Hangzhou
1/8 Guangzhou

Valuation Leaders:
Xiaomi 10 b$
Vancl 3 b$
Dianping 2 b$

http://rude.vc

Watching the Trends

2013 U.S. home entertainment revenue, by type

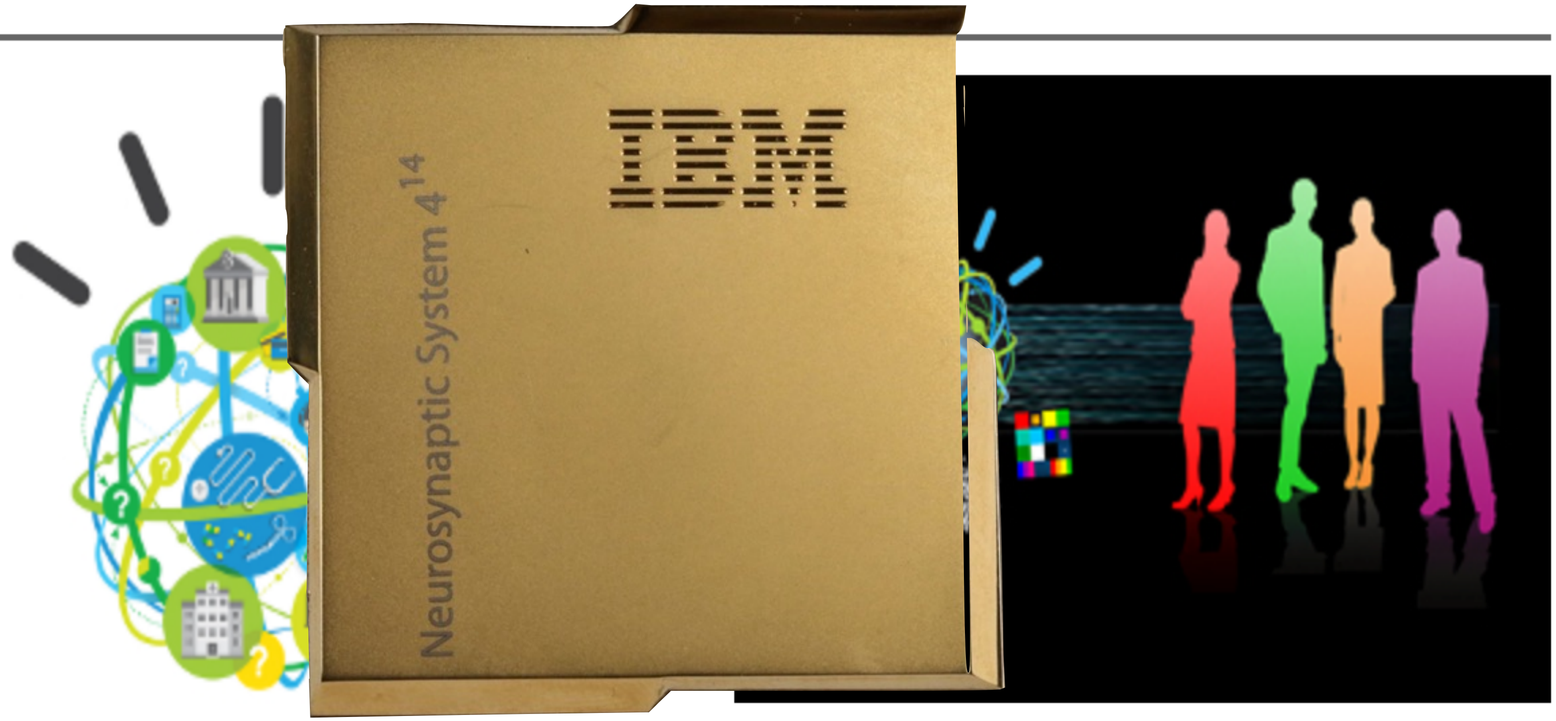
Type	2013 sales (billions)	Percentage change from 2012
Digital purchases	$1.19	
Subscription streaming	$3.16	
Video-on-demand rental	$2.11	
Kiosk rental	$1.92	
DVD/Blu-ray sales	$7.78	
Rental from stores	$1.04	
Disc subscription rental	$1.02	

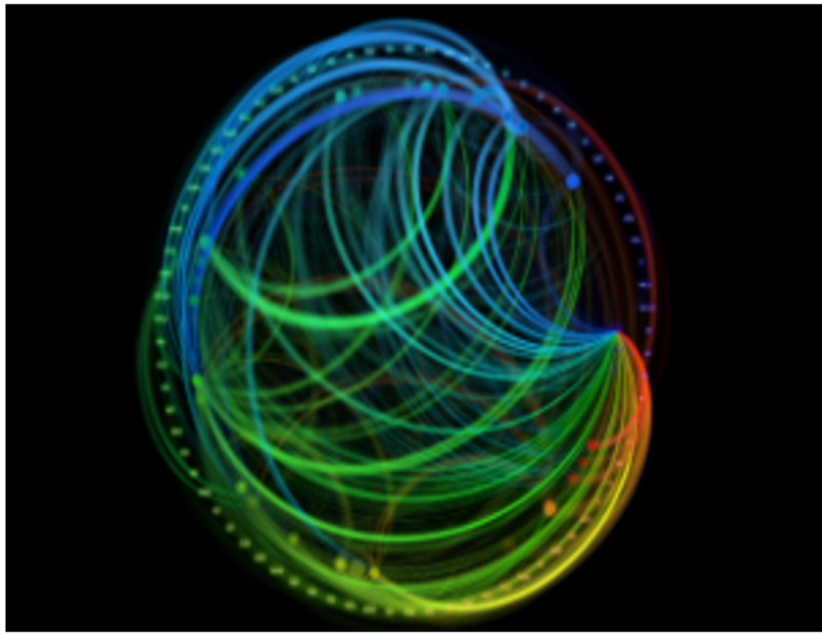
-20 -10 0 10 20 30 40 50%

Source: Digital Entertainment Group

The Wall Street

Sentient ports? (following computing, in general)





Why cognitive systems?

→ Explore why cognitive computing, which combines machine learning and artificial intelligence, is essential in the era of Big Data

Cognitive Environments

→ Learning systems, designed to collaborate with people, to scale and magnify human cognition

Neurosynaptic chips

→ Learn about neurosynaptic chips - created under SyNAPSE - and how crucial they are in cognitive systems needed to process Big Data

Cognitive computing and the shipping industry…?

Predictive analytics and anticipatory services will become the new normal

Image: Minority Report The Movie

Image of BP platform via US Coast Guard

Ambient Computing – Predictive Analytics – Business ‘Super Intelligence’

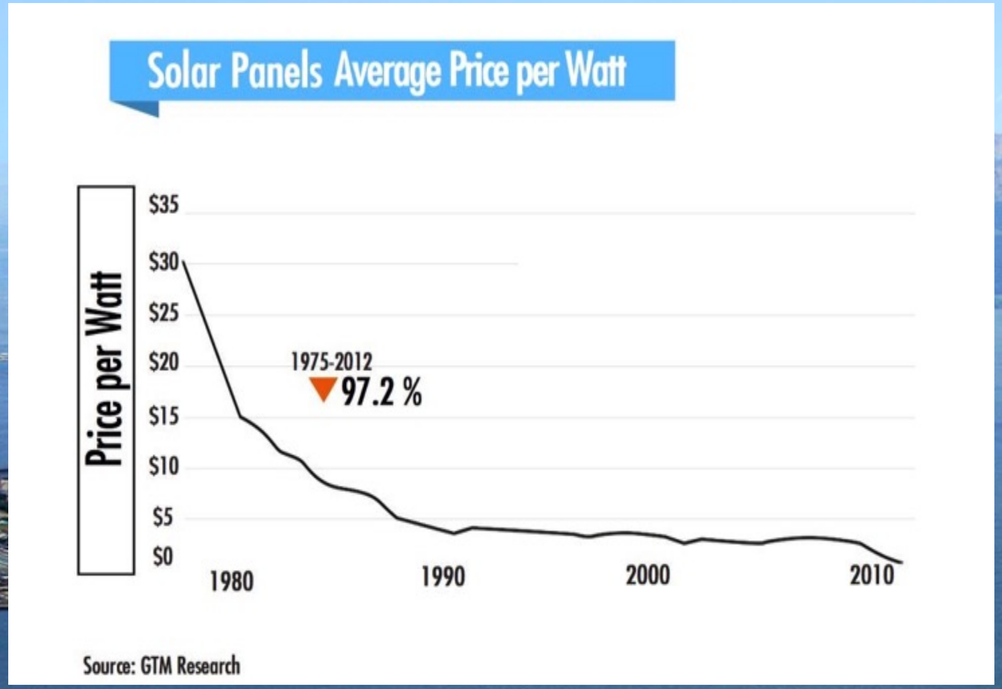
ENERGY

All power is renewable, dominated by solar panels and energy storage, which have both become very cheap.

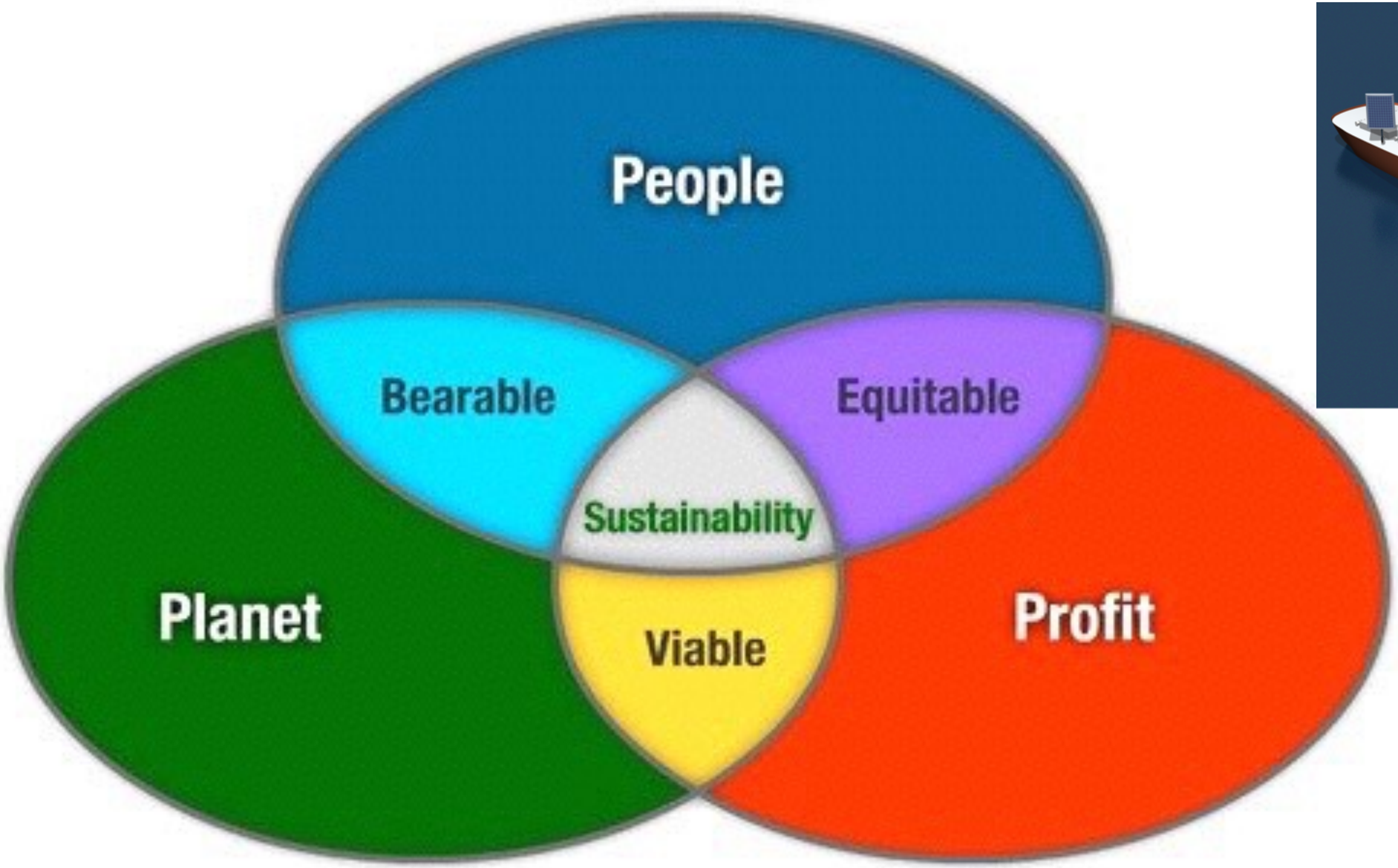
Upgraded power grids work a bit like the Internet did back in 2015.

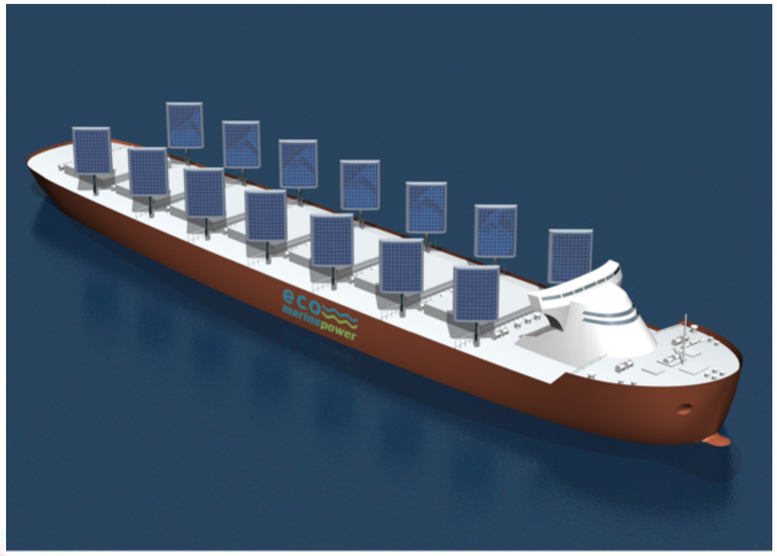
Electricity is distributed, shared, and stored like data was then, and it's abundant - even though more electricity was needed to replace fossil fuels. This process has gone a long way to helping solve climate change.

LOIC LE MEUR
2030
MY LIFE ON MARCH 26 2030



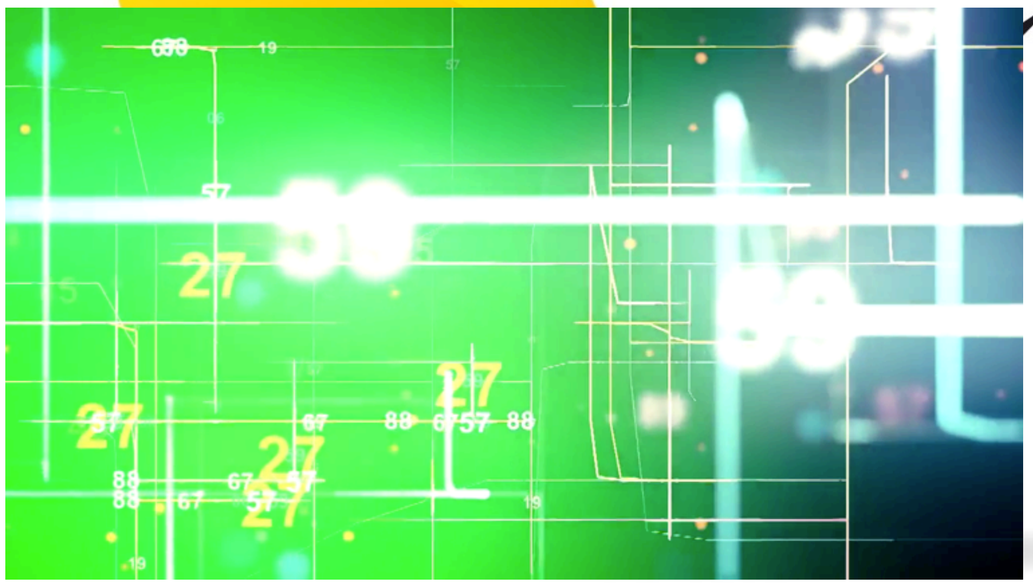
‘Sustainable’ will become the new ‘Profitable’





Will global logistics sooner or later be run largely by Robots and AI?

Once we reach ‘peak efficiency’, human-only qualities and social or emotional intelligence will be key differentiators



Machines are for answers, humans are for questions (Kevin Kelly)


"No, you weren't downloaded.
Your were born."


"The single biggest reason companies fail is they overinvest in what is, as opposed to what might be."
Gary Hamel
Big-time Business Thinker
source | http://www.flickr.com/photos/hsm-mexico/4130847529/

Summary and key take-aways

1. Change is increasingly ‘gradually then suddenly’ *
2. Expect: exponential, combinatorial, interdependent
3. Interdependence: think hyper-collaboration, ecosystems
4. Machines are for answers humans are for questions
5. Examine the areas where you are ‘digitally contestable’!

“The best way to predict the future is to create it”

Alan Kay

GERD LEONHARD: FUTURIST, KEYNOTE SPEAKER, AUTHOR
& CEO, THE FUTURES AGENCY

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Thank you for your attention!

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