The 4th Industrial Revolution

Exponential realities and social implications

How many are?

30 linear steps

vs.

30 exponential steps

The answer:

30 meters

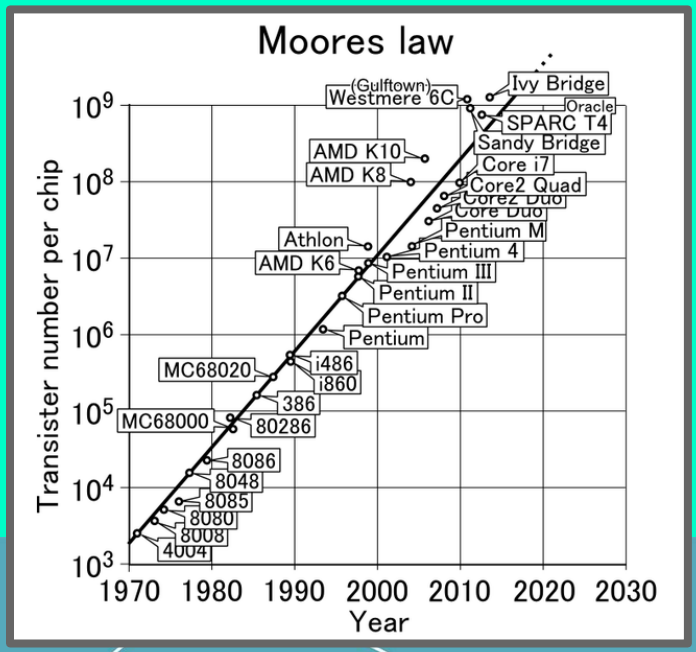
vs.

A billion meters

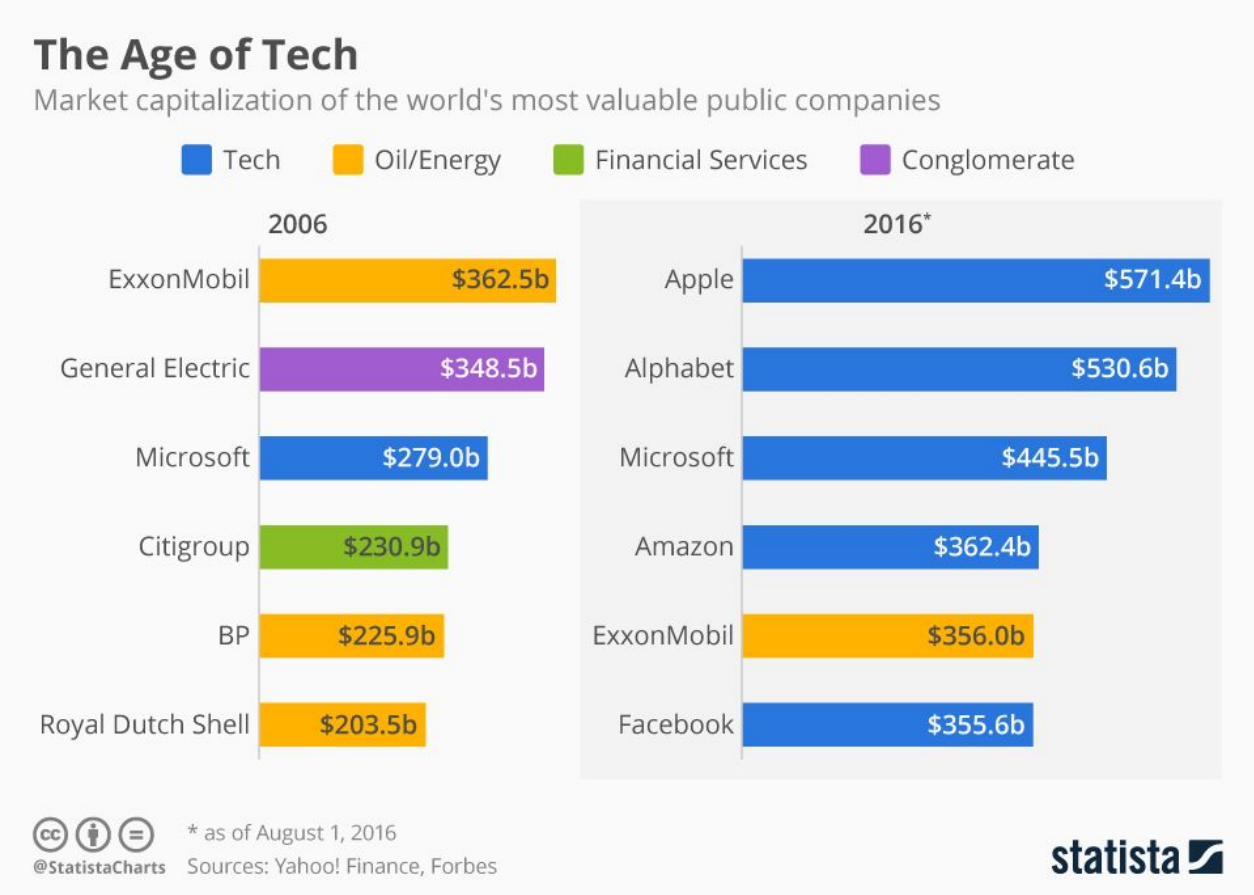
(26 times around the earth)

A look at Today

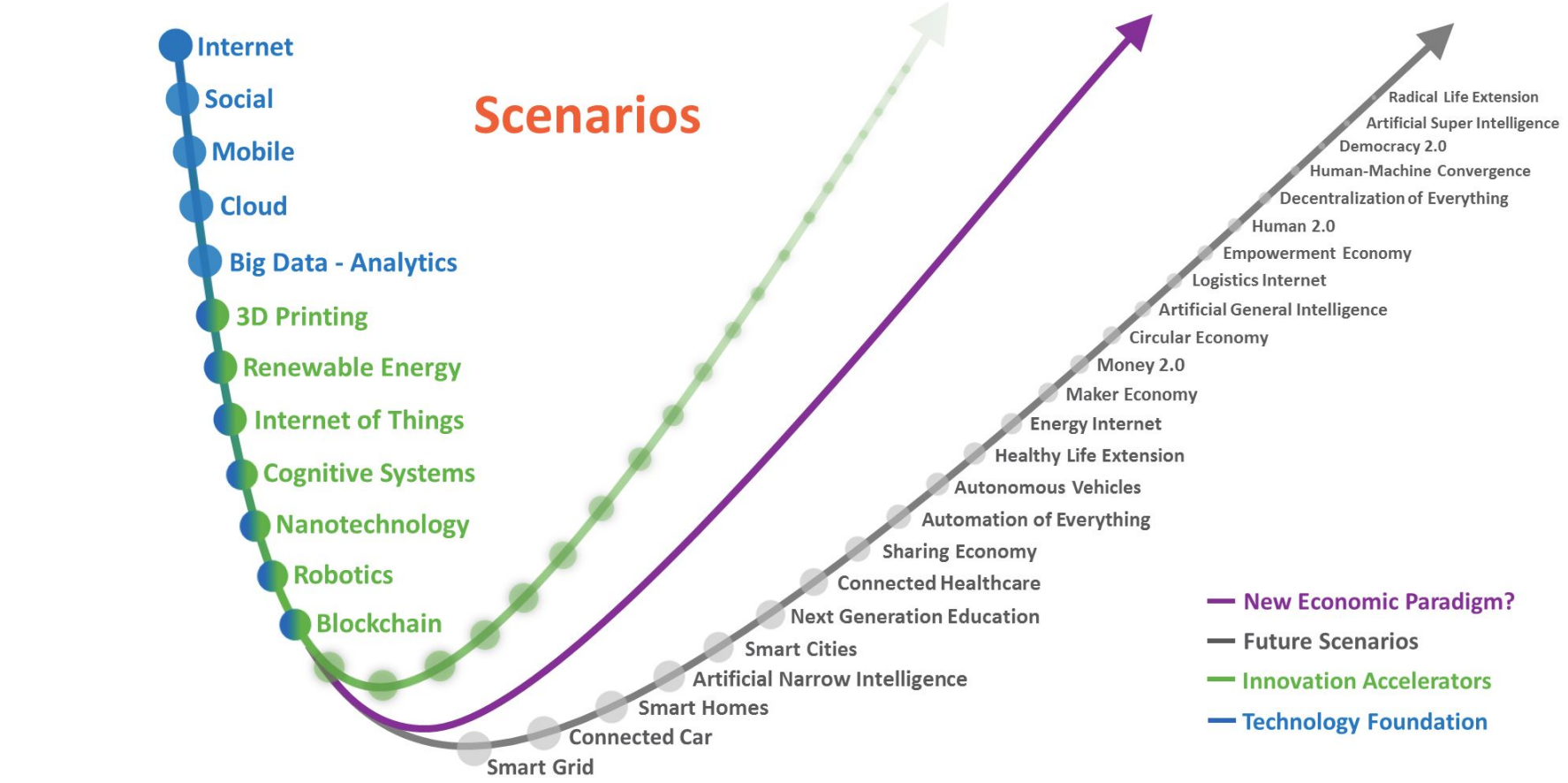
- Moore's Law, now Exponentialism
- Iphone: first mind extension
- How fast we've already changed: Social Media/VR/AR Drones/Digital Currencies/Robots/AI



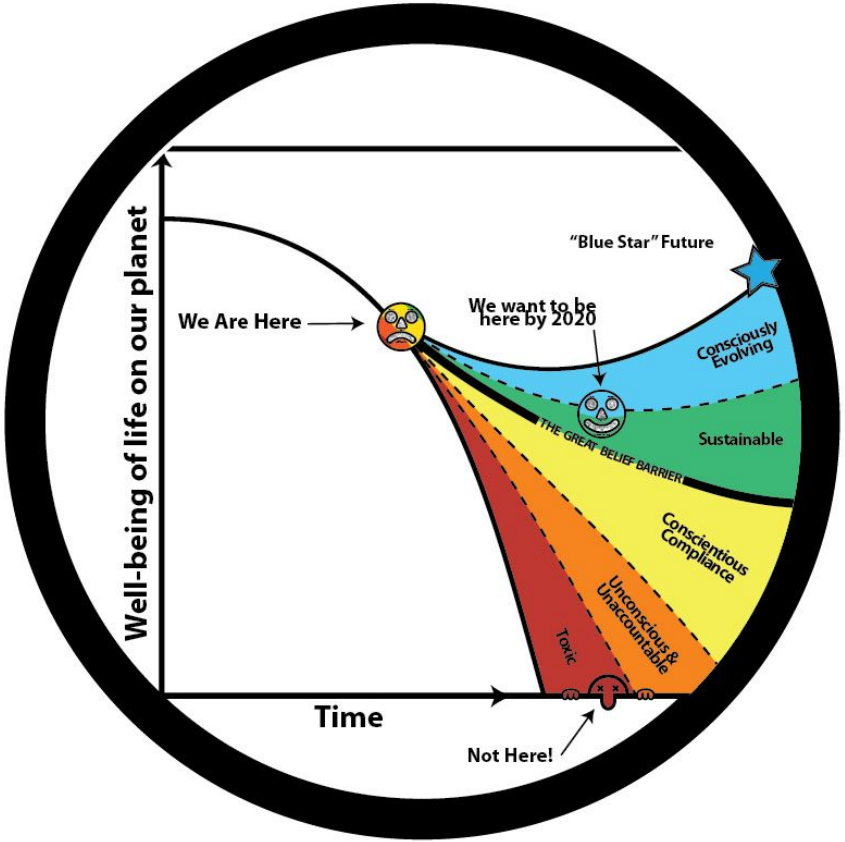
10 years stock market challenge



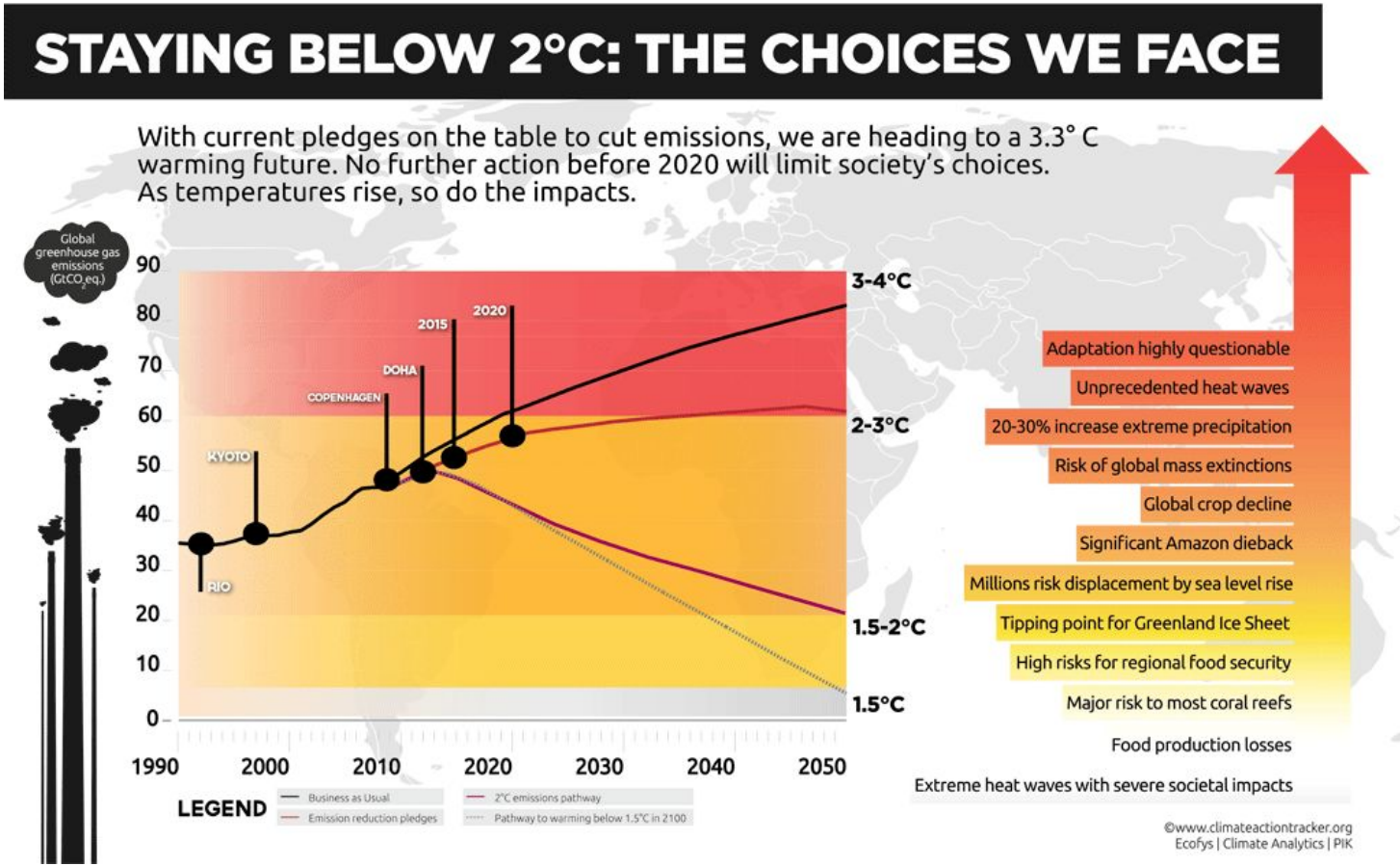
Potential Scenarios



What this means



In some areas, this is already going rogue



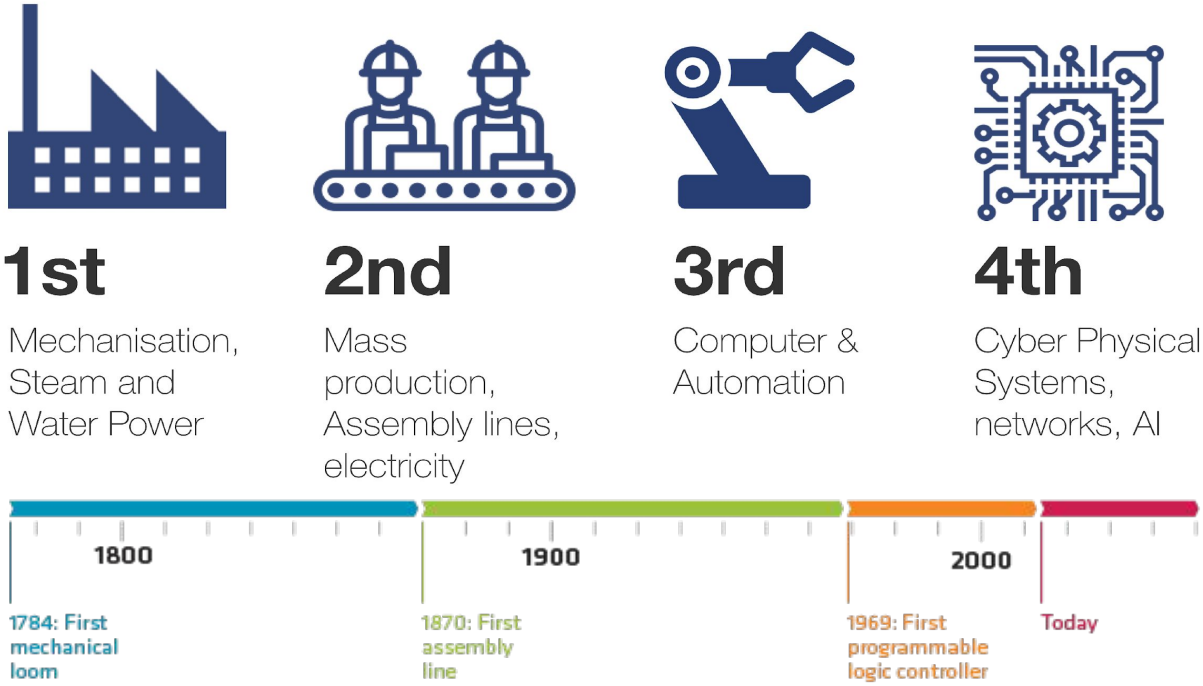
The 4th Industrial Revolution

"85% of jobs that will exist by 2030 have not been yet invented."

- What is the root cause of this trend?
- What will be the implications for our society?

Three factors to consider:

- Time
- Scalability
- Wealth

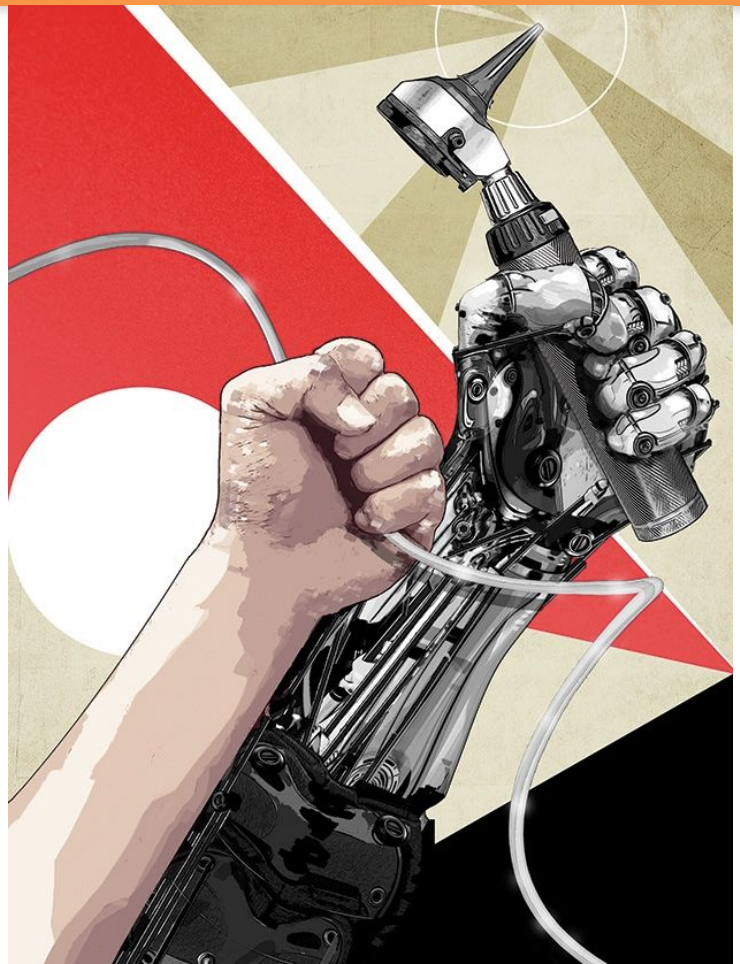


AI and the Future of Work

In the upcoming context of the 4th industrial revolution, AI has the potential to yield the most significant productivity increase in the history of our civilization. At the same time, this fast change is likely to change the structure of work and leave many people behind.

We are running Akademy.ai with two underlying goals:

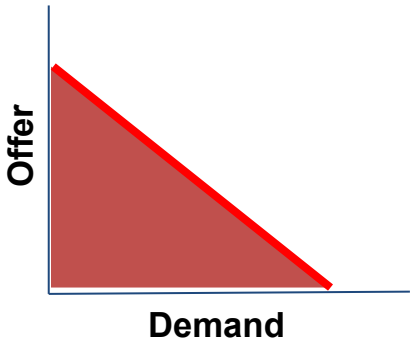
- Accelerate the training of AI Professionals
- Share ethical and responsible AI principles



Current Education Model is Broken

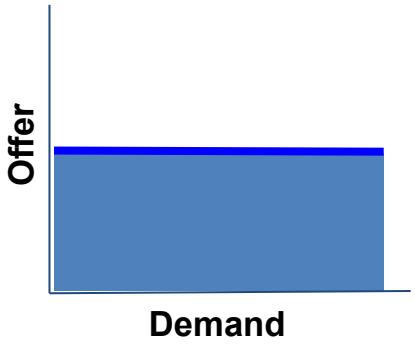
Option A: Traditional Education

High Marginal Cost
Requires Expertise
Huge Barrier to entry
High Maintenance
(Ideally) High Value



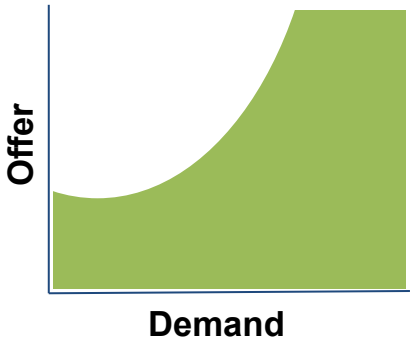
Option B: MOOCS

Highly Scalable
Still requires (less) experts
High Barrier to entry
Medium Maintenance
Concentration of Knowledge



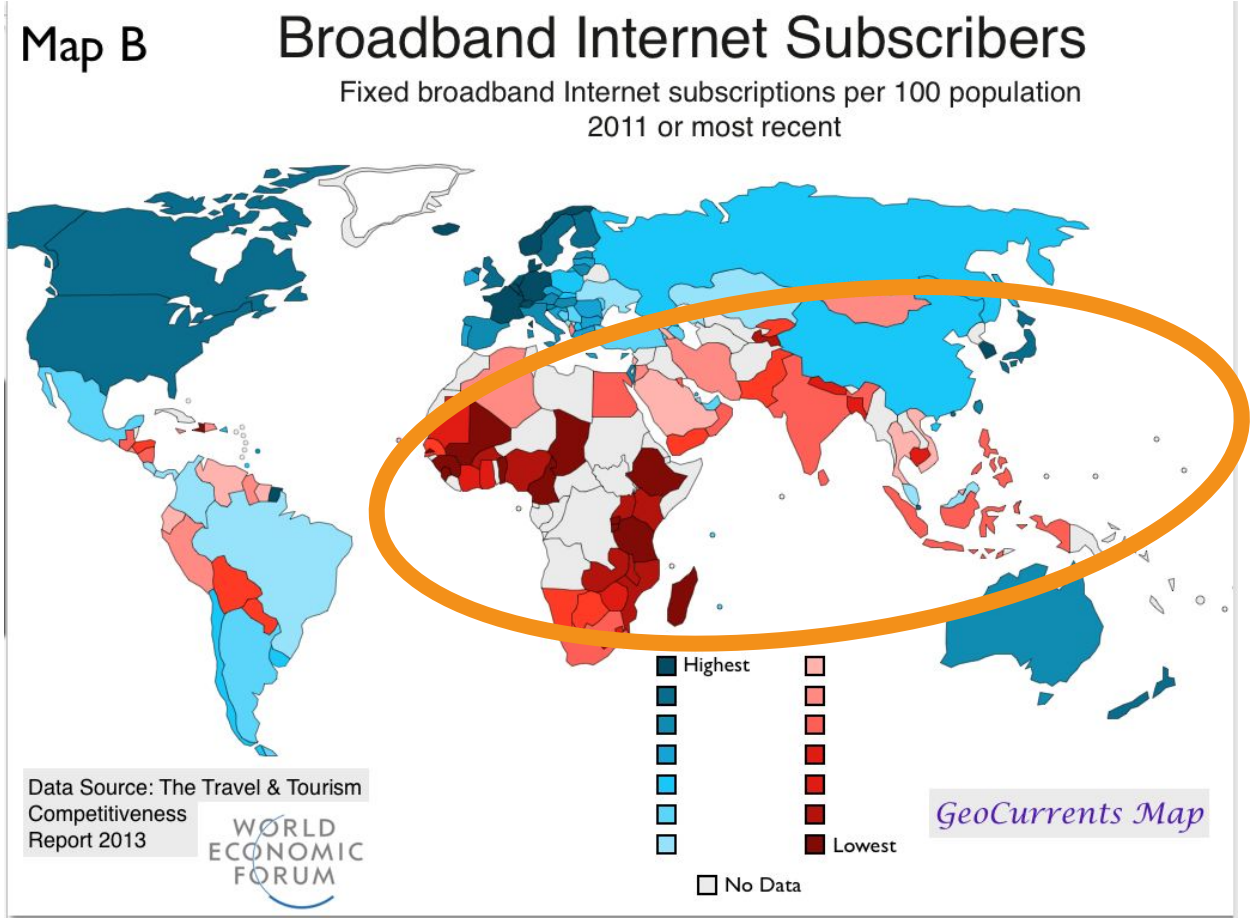
Option C: Exponential learning

(Almost) No resources
No teachers
Low costs
Highly Accessible
Decentralized knowledge

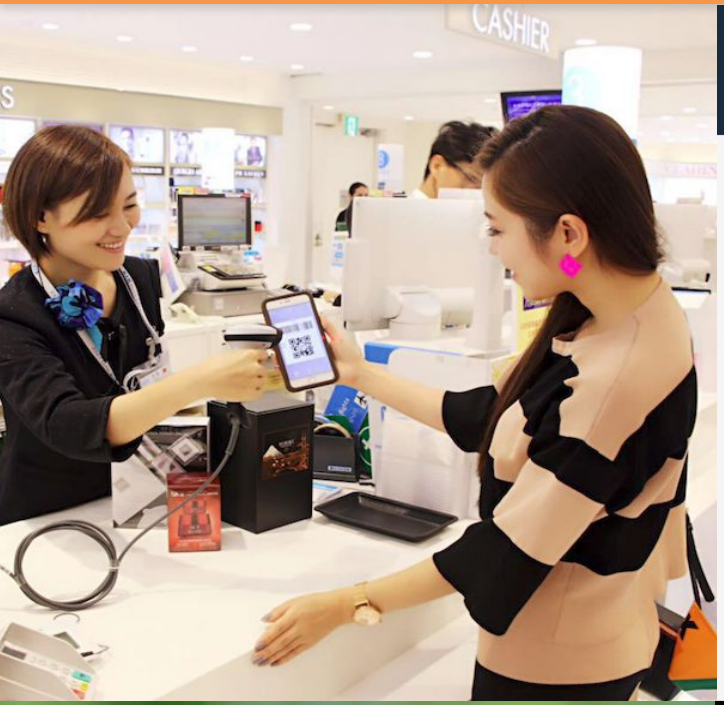


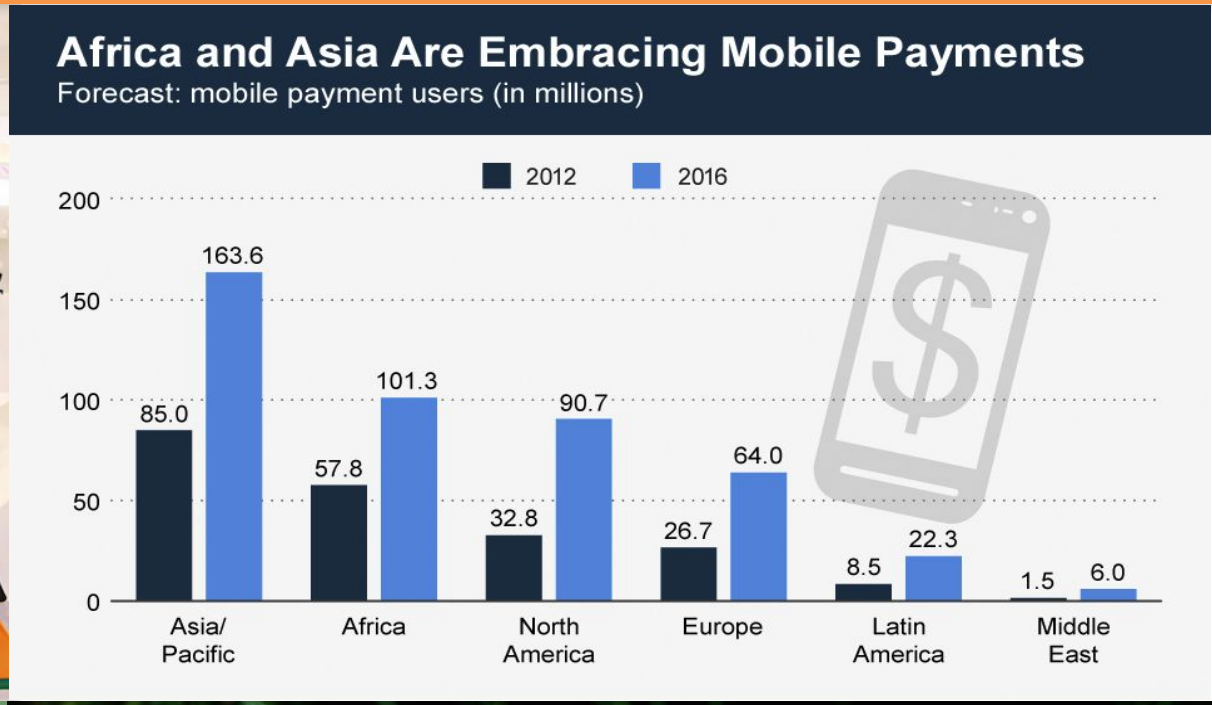
Previous revolutions: 2nd

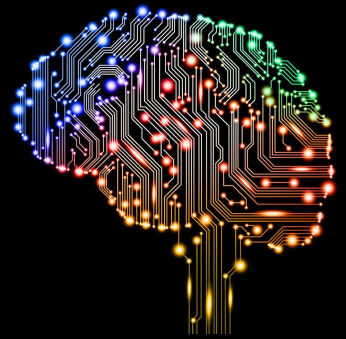
Previous revolutions: 3rd



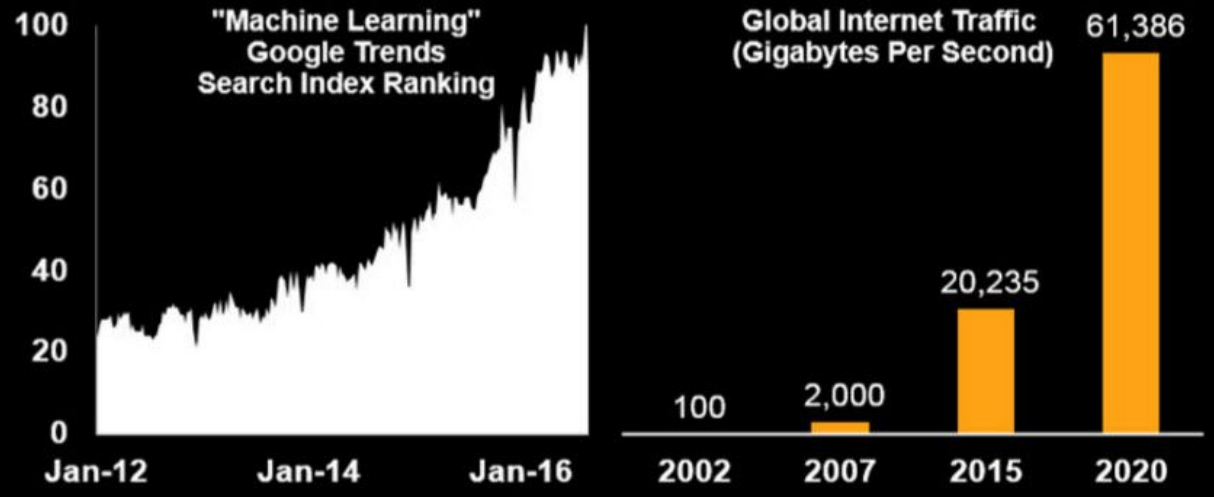
Leapfrogging opportunities







"Machine Learning" Search Rank, Internet Traffic

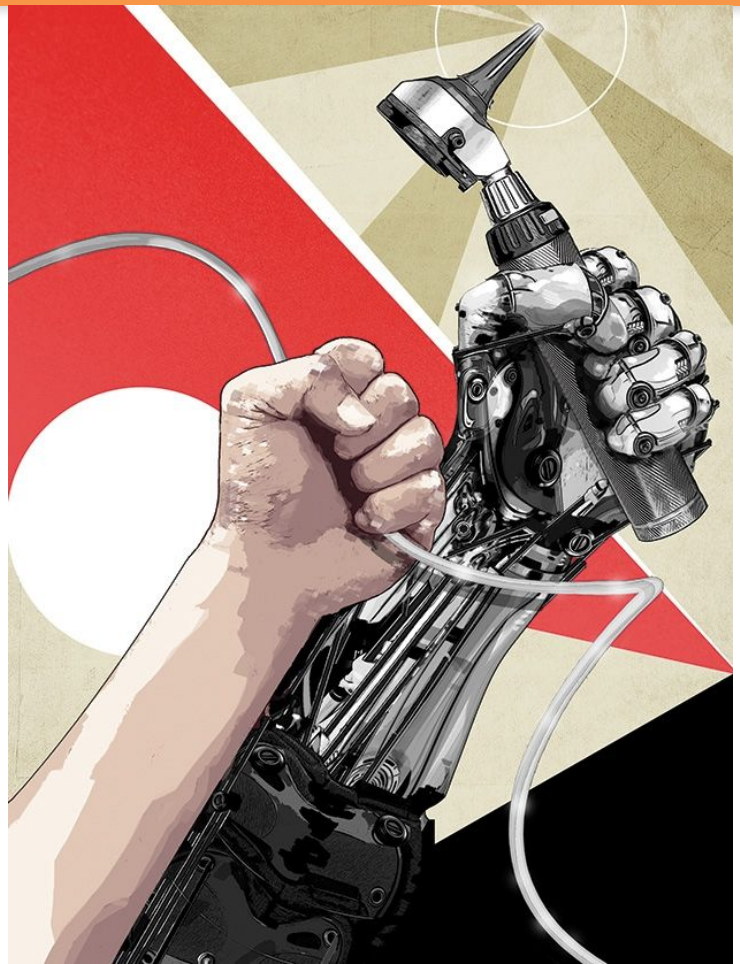


Source: Google, Cisco

AI and the Future of Work

- 4th industrial revolution
  - Productivity increase
  - Negative implications
  - Fast changes → society?

How can we use AI to spark positive change?



Use Case: Autonomous Driving

"If there were a rumour that Mercedes or Daimler planned to start building smartphones then they (Apple) would not be sleepless at night. And the same applies to me."

—Dieter Zetsche, Daimler CEO [Feb 2015]

"We don't consider customers cargo. We don't want to build a robot that delivers the cargo from A to B."

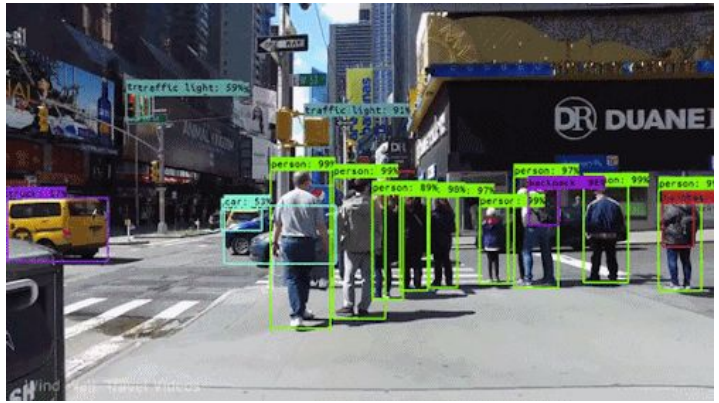
—Wolfgang Epple, Jaguar's head of R&D [July, 2015]

"An iPhone belongs in your pocket, not on the road"

—Oliver Blume, Porsche CEO [Feb 2016]

"It gives you the impression that it's doing more than it is. [Tesla's Autopilot] is more of an unsupervised wannabe.

—Trent Victor, Sn. Leader of crash avoidance at Volvo [April 2016]

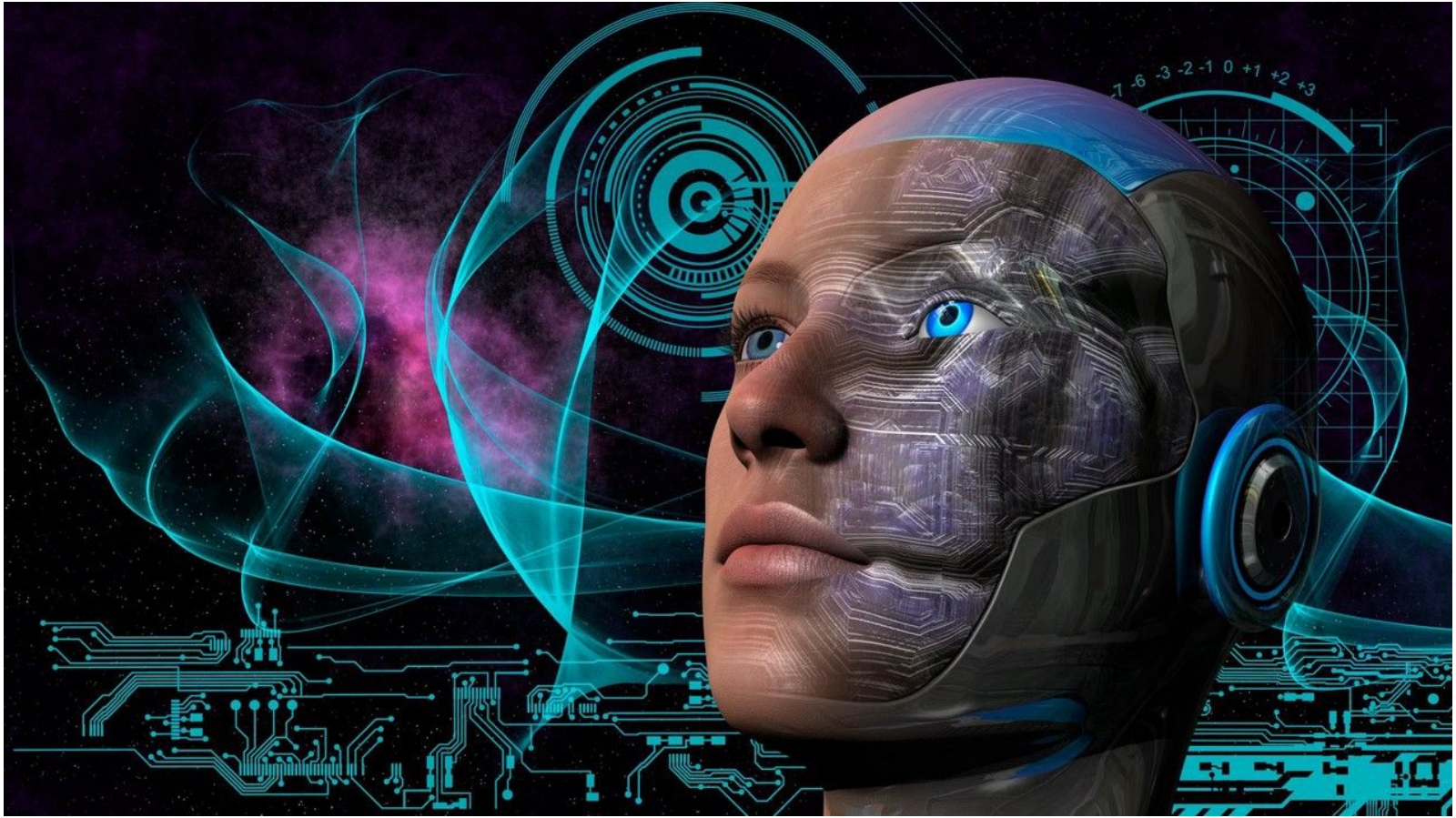


[1] CB Insights: Corporations Working On Autonomous Vehicles

How Long Until Computers Have the Same Power As the Human Brain?

Lake Michigan's volume (in fluid ounces) is about the same as our brain's capacity (in calculations per second). Computing power doubles every 18 months. At that rate, you see very little progress for a long time—and suddenly you're finished.

Singularity is near?



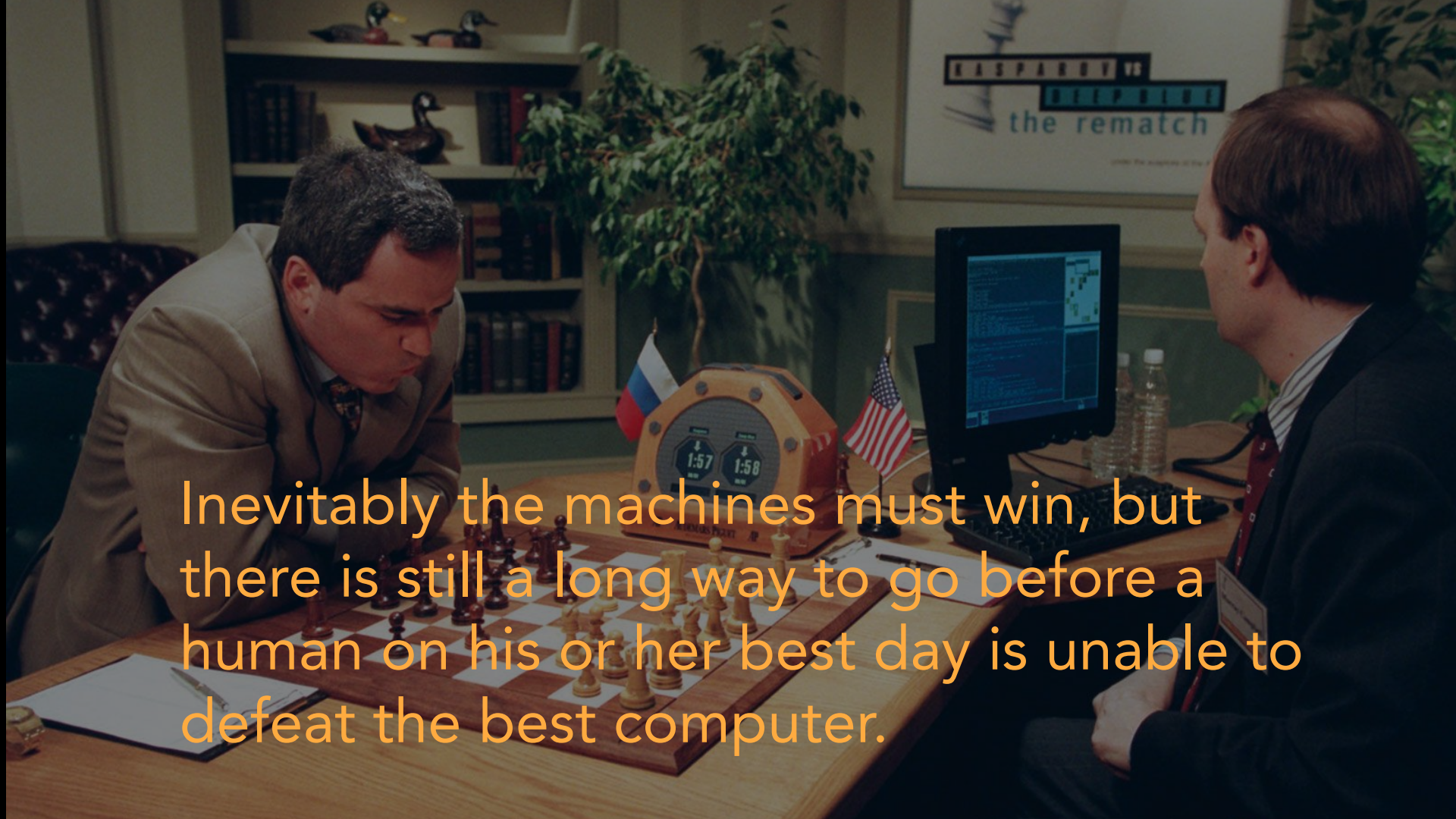
2019

Is it possible?

How to prepare

- Creative field → Magic?
- Don’t work in silos
- Irrational work will be more valued - beer ice cream, chess psychology. DHH Programming argument
- Expert generalist
- Don’t stress out about it or getting hit by a bus


(RE)LEARNING
HOW TO LEARN
Embracing change, being a
Chameleon



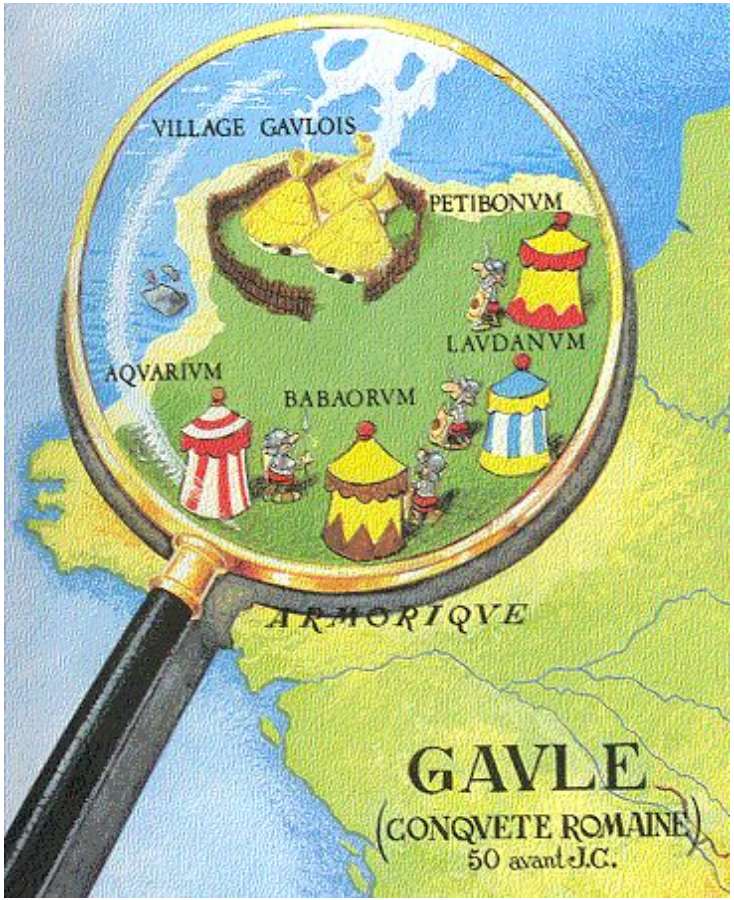
Inevitably the machines must win, but there is still a long way to go before a human on his or her best day is unable to defeat the best computer.

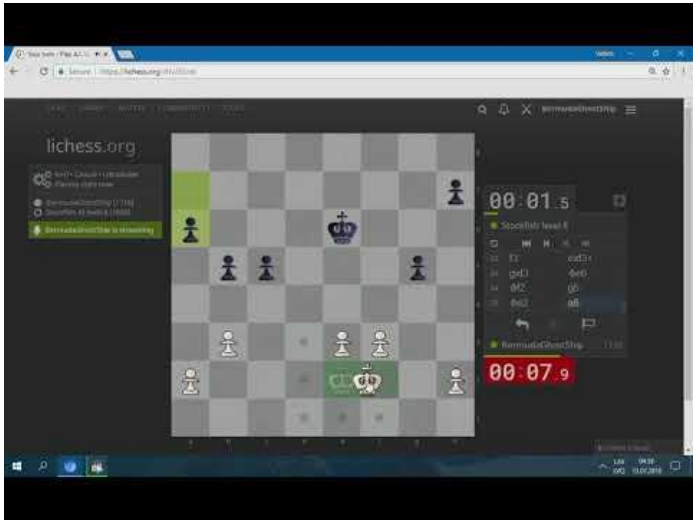

1. e4 c6 2. d4 d5 3. Nc3 dxe4

A humbling exercise:

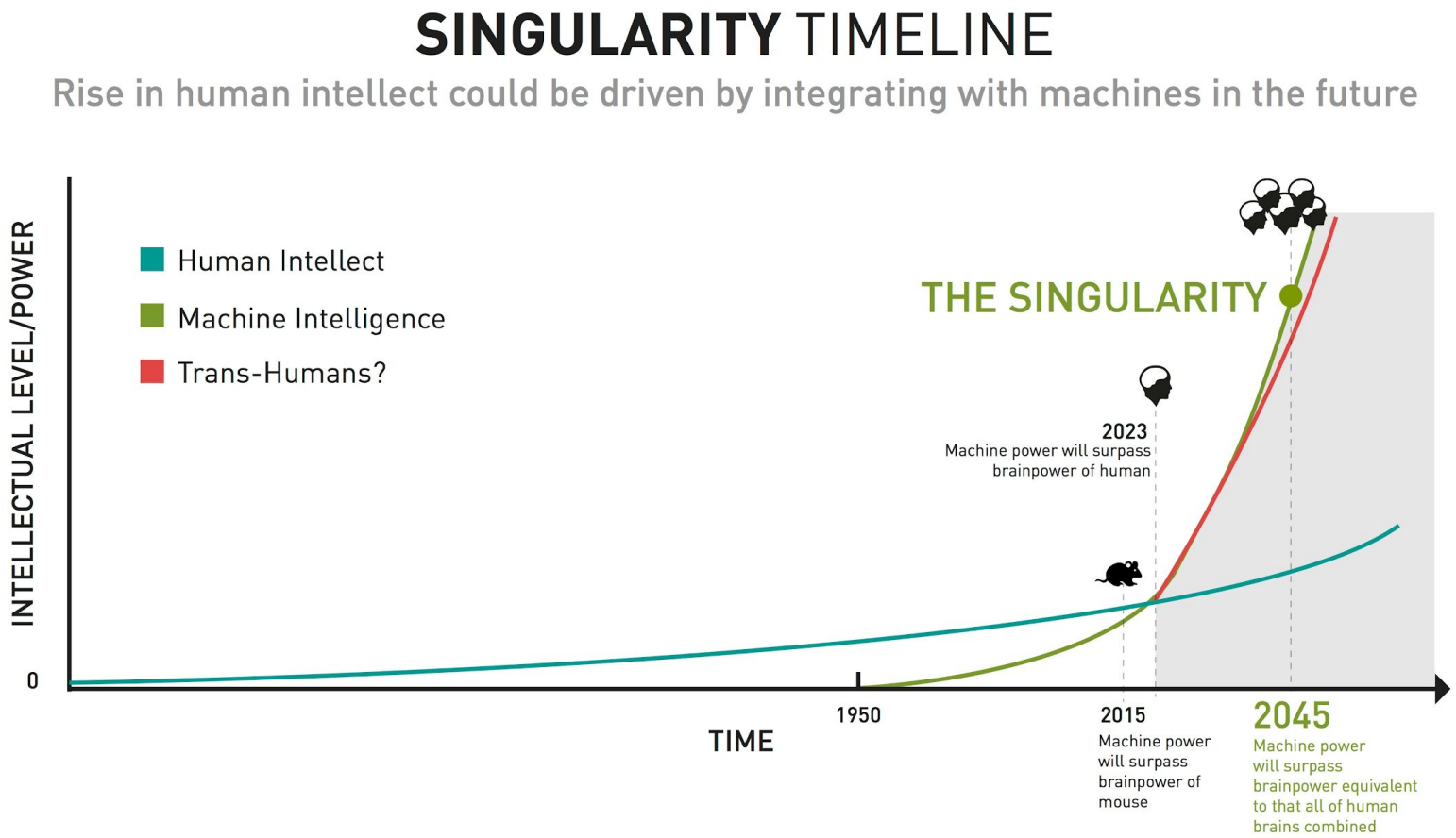
- Go to https://lichess.org
  - Play with the Machine
  - Variant: Standard
  - Time control: Real Time
  - 5 Minutes per slide
  - 0 second increment
  - AI Level 8
  - Random color

One the bright side… We can still resist





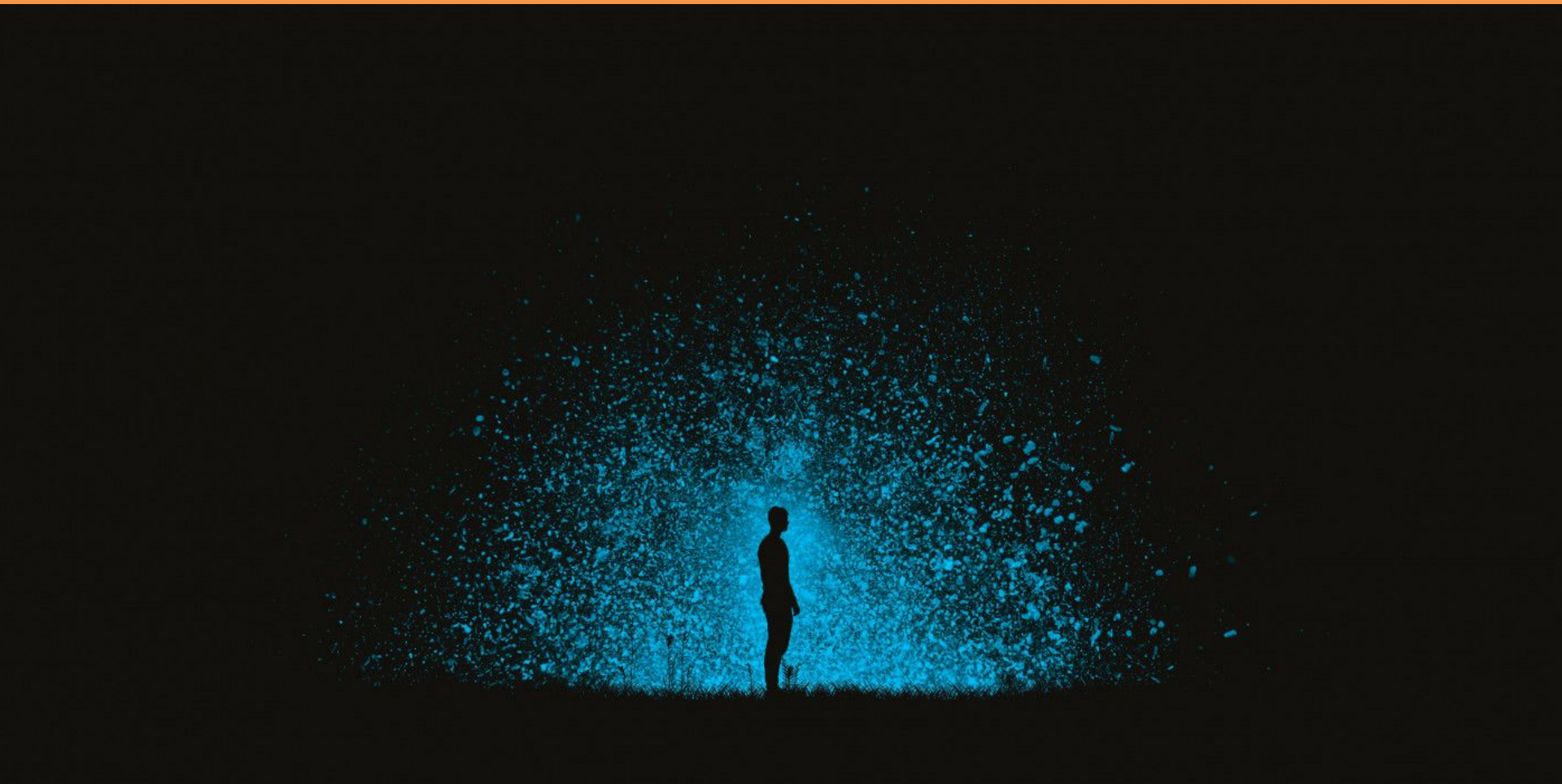
What is the Technological Singularity?



Is it possible?

- So far, there is **no proof it cannot happen**.
- **Game Theory** → Competition among nations
- Continuous advances in technology
- **Moore's Law**
- **Analogous to evolution**
  - Evolution of mankind – 5 million years
  - Computing power – 50 years

What are your thoughts?



What are the implications? Negative ones...

- Dominance of a single entity
- Deadlier weapons
- Global technological unemployment
- Retrogradation of humankind
- Physical extinction of human race

Can AI eliminate non-civilian deaths?

WE ARE HERE
TO CREATE
POSITIVE SCENARIOS

Optimistic perspective

- Better, (possibly unimaginable) technologies
- Advancement in medical sciences
- Enhancement of mental faculties
- Improve quality of human life
- Effective policy making
- Last invention need ever be made!

Is everything allowed towards positive impact?

- Privacy
- Should AI make decisions or serve as an indicator?
- What happens when this has real life consequences?

We need to think about...

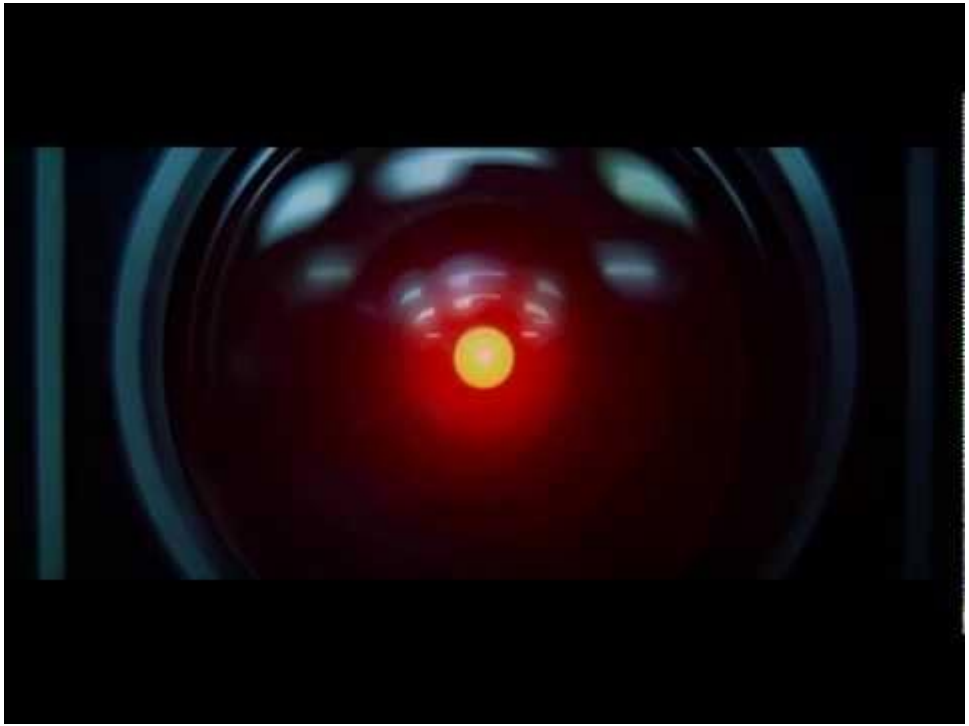
- How people may misuse our AI solutions
- What are the redlines that we are not willing to cross
- How we obtain, treat and represent our data. Is it ethical?

A moral exercise

Go to
http://moralmachine.mit.edu/
-> Click on the descriptions, it will make the problem harder :)

Once you are done, let's discuss the results

So… Are you curious about AI yet?



One last thing...

The AI Hero Pledge

I will apply AI towards the benefit of humanity at all costs.

I will respect every human's privacy as if it was my own.

I will do everything in my power to acquire knowledge and share it with others.

I will set positive models for others to emulate.

I will consider the impact of my models and disobey unjust requests.

I will train my models again and again until I succeed.

I will consider the impact of historical and new bias in my work.

I will preserve human concerns over technological ones.

I will work to create a new set of conditions that reduce inequalities.

My AI models will be designed to prevent harm at all costs.

I will keep my word.

bit.ly/ai_pledge