INDUSTRIAL REVOLUTION 4.0

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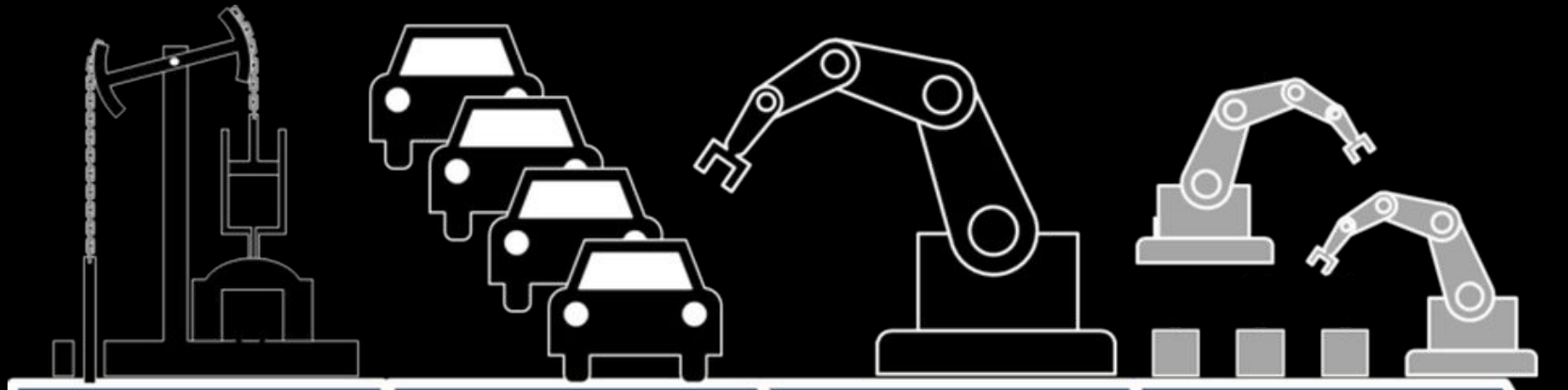
WELCOME TO NEW TECHNOLOGICAL ERA-



1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems

HOW IT IS DIFFERENT FROM 3.0?

- To put in simple words the basic difference being that the machines work autonomously without the intervention of a human in Industry 4.0. Whereas in the industry 3.0 the machines are only automatized.

For Ex: CNC Milling Machines 3.0 v/s CNC Milling Machines 4.0

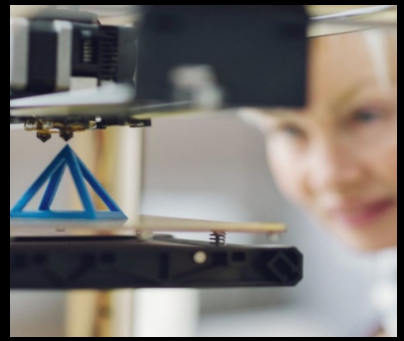
ADVANTAGES-

“We are at the beginning of a revolution that is fundamentally changing the way we live, work and relate to one another.”

- Enabling innovation across many applications,with much larger economic impact on growth.
- Energy-efficient and environmentally sustainable production and systems.
- Economic gains, such as increased revenues because of lower transaction and transportation costs

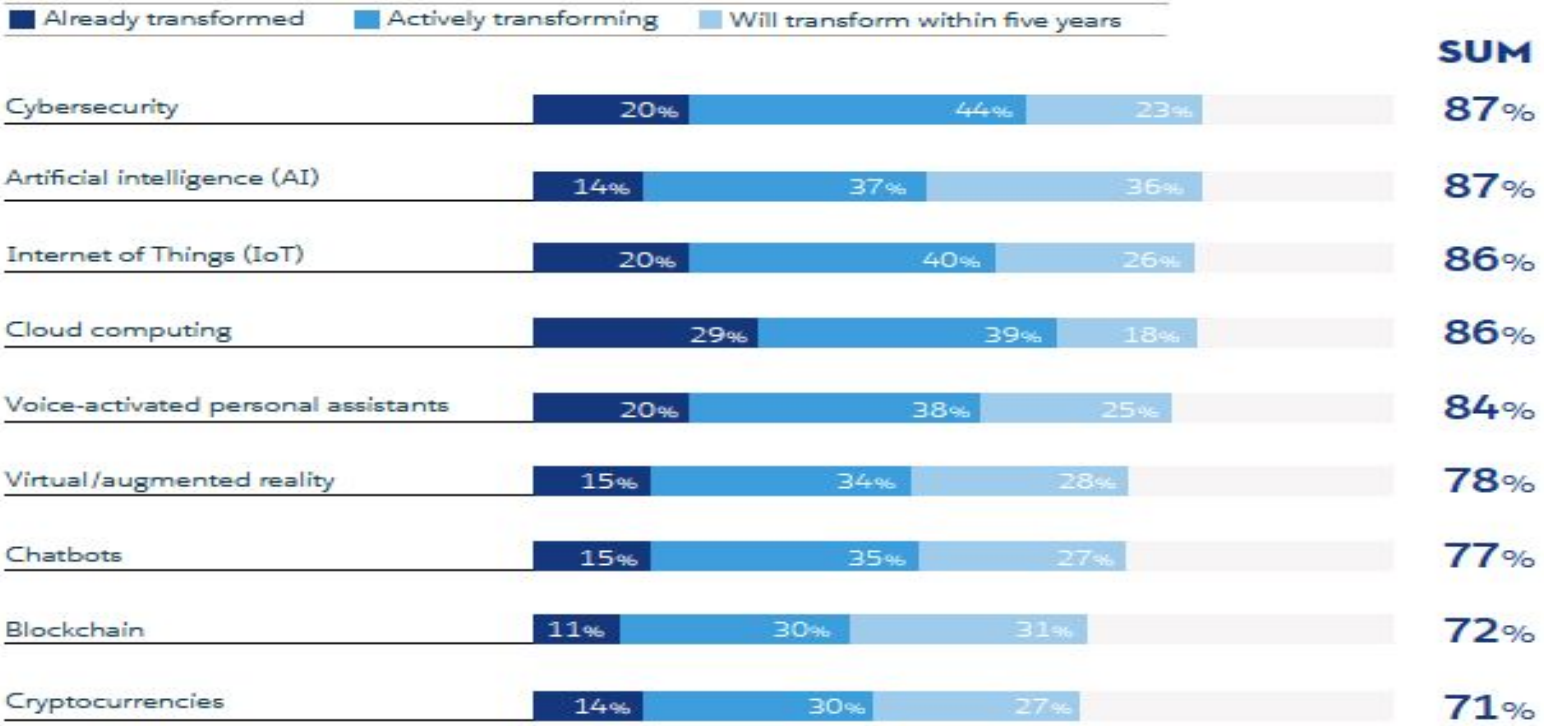
MEGATRENDS-

1. Physical: Autonomous Vehicles, 3D Printing, Advanced Robotics.
2. Digital: Live Vedios, AI and ML, Voice Search.
3. Biological: Gnome, Synthetic biology.



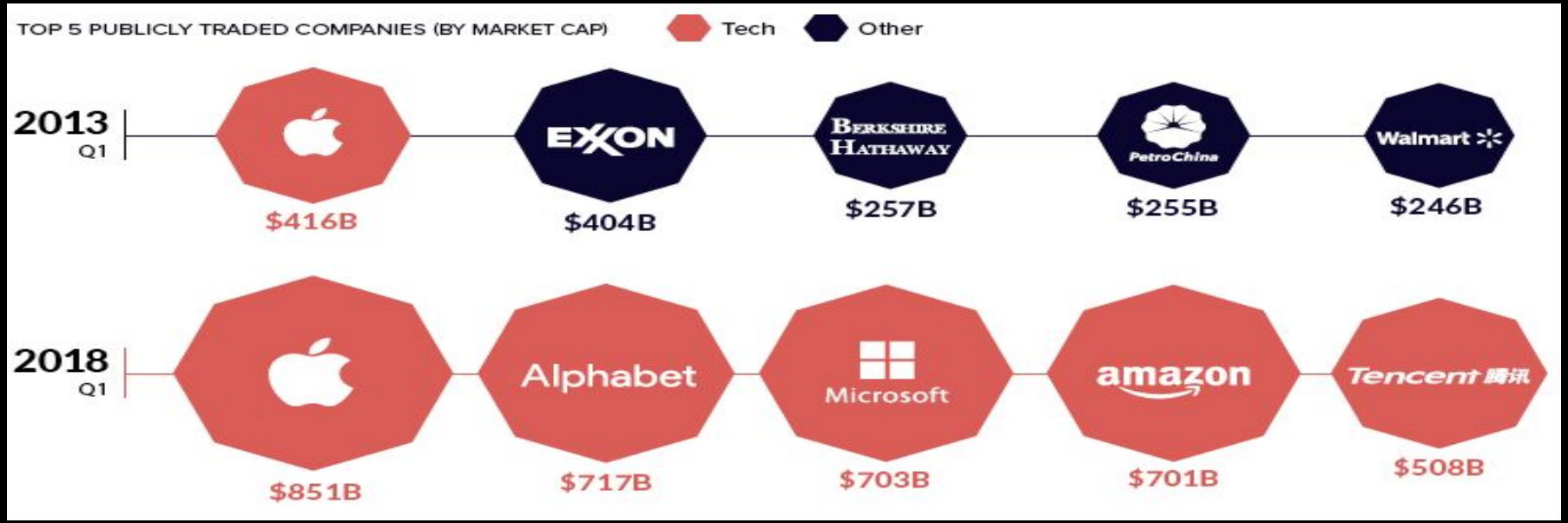
The Fourth Industrial Revolution Is in Full Swing

Percentage of Customers Who Believe the Following Technologies Will Transform Their Expectations of Companies



IMPACTS

❖ IMPACT ON ECONOMY



In 2013, only one of the top five companies on the Standard & Poor's 500 Index was technology based, whereas in 2018, all top five companies, worth USD 3.48 trillion, were technology-based.

Technological revolutions spread from core to periphery*

Once core markets start to saturate, key players search for new growth in less developed markets*

Source: "Technological revolutions and techno-economic paradigms. Carlota Perez. January 20, 2009

Pendulum shift

The GDP is anticipated to increase fourfold over the next four decades.

- In the year 2050 it is expected that the OECD's share of the global economy is likely to drop from 54% in 2010 to less than 32%.

- In the meanwhile the share of Brazil, Russia, India, China and South Africa (BRICS) is projected to grow to more than 40%.

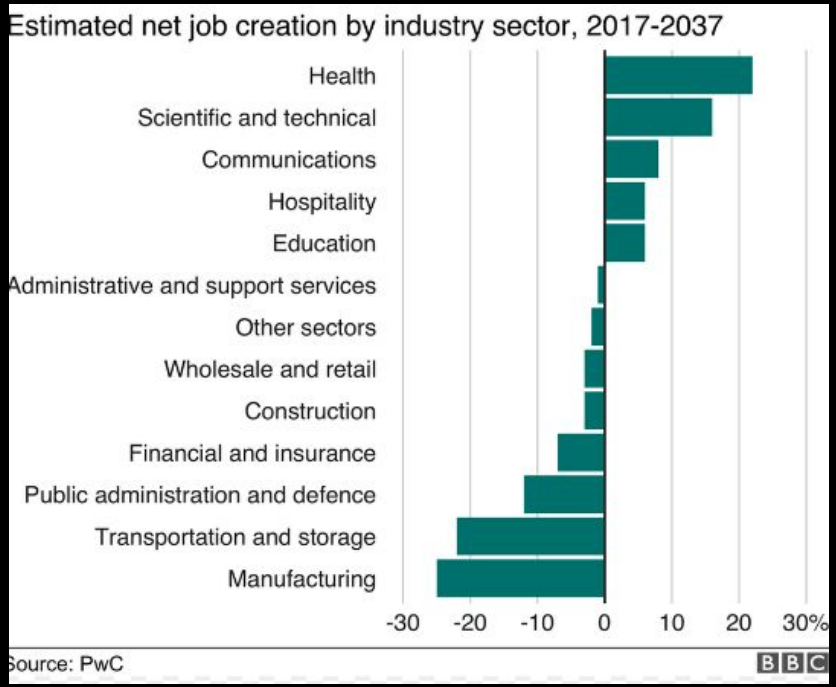
While, US economy that has been the leading one in the world, in measures of GDP and based on the purchasing power parity exchange rates (PPPs), is being overtaken by China since 2012.

The GDP of India is projected to surpass that of the United States before 2040.

Effect of AI on employment

- PwC said about seven million existing jobs could be displaced by AI from 2017-2037, but about 7.2 million could be created, giving the UK a small net jobs boost of around 200,000.

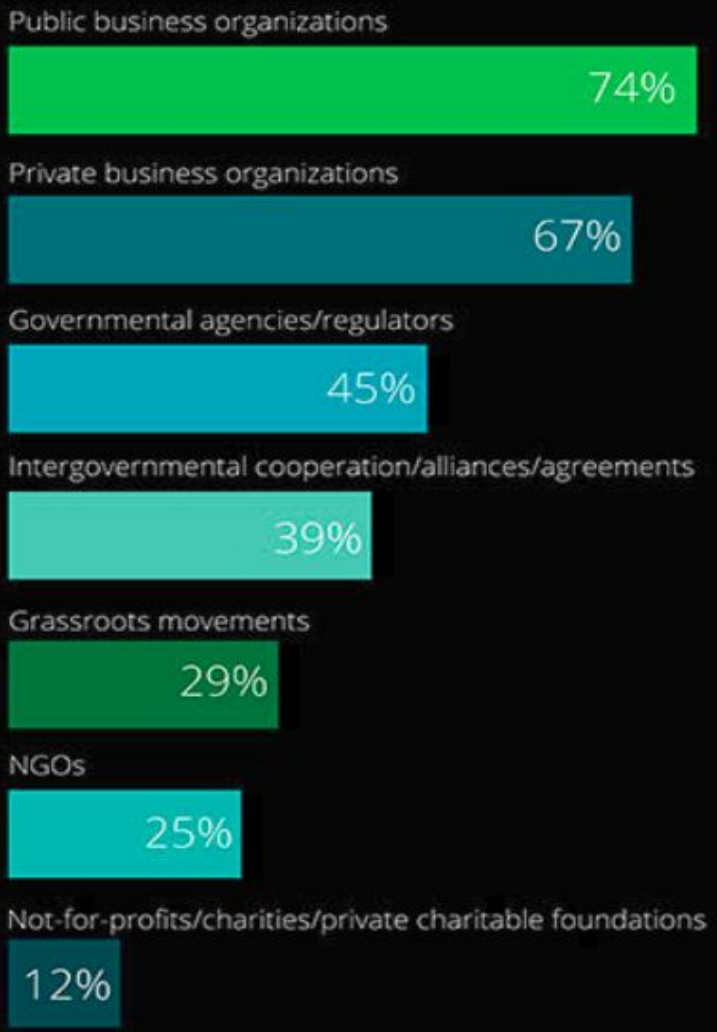
- "It's likely that the fourth industrial revolution will favour those with strong digital skills, as well as capabilities like creativity and teamwork which machines find it harder to replicate."



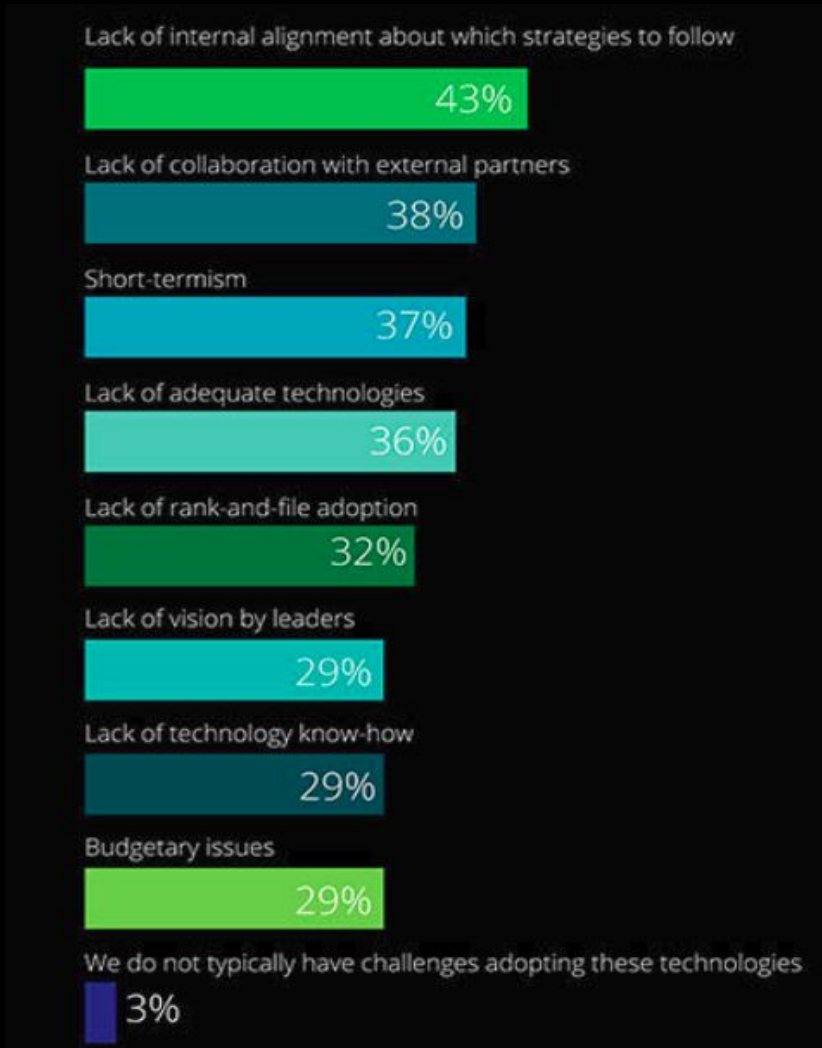
❖ IMPACT ON BUSINESS

- Improves OEE (Overall Equipment Effectiveness). 60% of adopters said that digital technology helped them to boost productivity.
- Reduce Costs (Almost 50% reduced operating costs).
- Quality Control (42% improved overall product quality).
- Innovate Faster (13% experienced greater capacity to innovate).

Which of the following will have the most influence on how Industry 4.0 shapes society?



The most common challenges Organizations face as they seek to adopt new technologies.



Basic principles for change to be effective-

- Change from a position of advantage.
- Change requires unity of purpose.
- Change requires giving a new meaning to products and services.

❖ IMPACT ON NATIONAL AND INTERNATIONAL MARKET

- It profoundly impacting the nature of national and international security, affecting both the probability and the nature of conflict.

- Disruptive changes are redefining how public institutions and organisations operate.

- Governments will increasingly face pressure to change their current approach to public engagement and policy making.

- Technology will increasingly enable citizens providing the new way to voice their opinion.

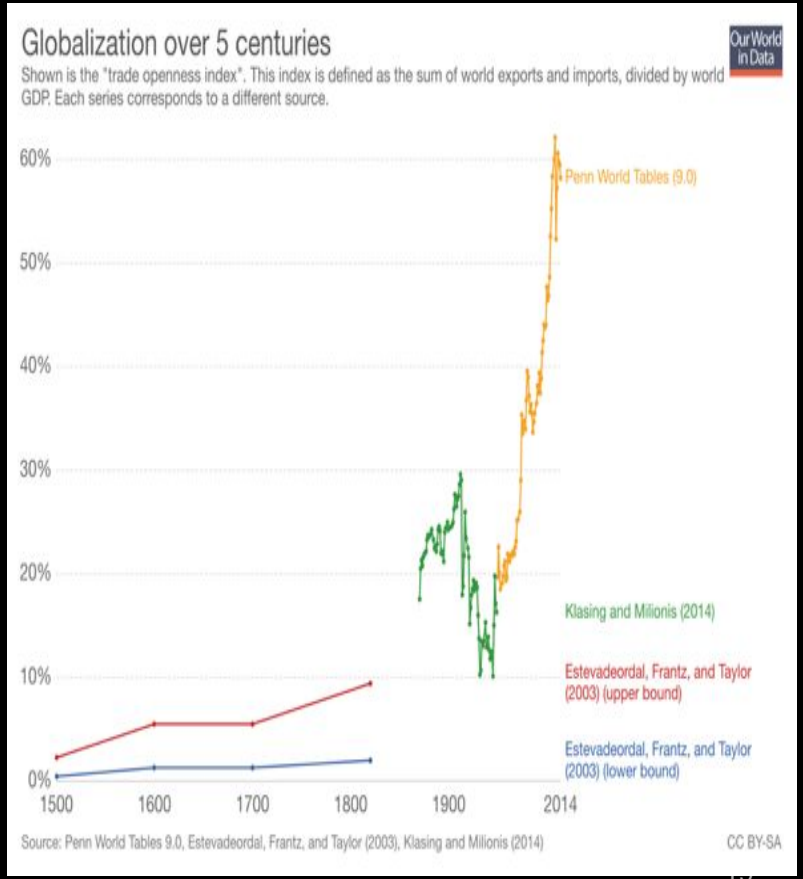
- Fourth Industrial Revolution drives the new phase of globalisation - “GLOBALISATION 4.0”.

Four things we can learn from history, at the impact of technology :

1. Even as technology improves, globalization is not inevitable

Globalization as a core characteristic of modernity that has steadily progressed since the First Industrial Revolution, this is not the case.

Indeed, levels of global economic integration reached a peak in 1914 and it took until the second half of the 20th Century for these heights to be recovered.



2. Global systems and standards matter more than individual technologies

- The falling cost of transport and communications makes it viable to exchange more things.
- The intermodal shipping container, which revolutionized global trade in goods from the 1950s.
- Global trade and global wealth moved to a new rate of growth which persisted over decades as entrepreneurs.

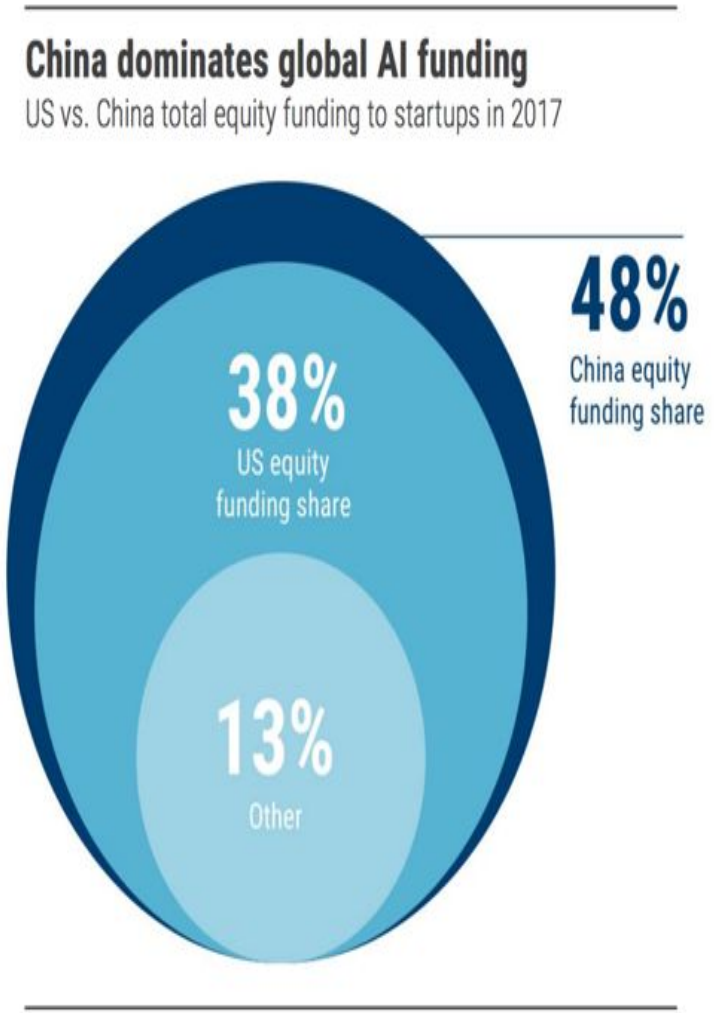
3. The Global Village is built on digital foundations

- Spreading of the internet and low cost of digital technology to access digital networks are becoming more global and more local at the same time.

- Culturally, internet connecting those, to village conversations, brings the opportunity both for enhanced cultural understanding and empathy, as well as the risks of polarizing dynamics.

4. The Great Game, redux

- Technological advancement lays the foundations of geopolitical influence, including influence the form of globalization.
- Countries are aggressively investing in technologies such as artificial intelligence and quantum computing.China is among the best placed to win the next phase of the AI race.



Role of India in shaping IR-4.0

The Fourth Industrial Revolution holds a lot of promise for India.

- The World Economic Forum has partnered with the Government of India to set up the Center for the Fourth Industrial Revolution India in Mumbai.
- The Center will work to accelerate the development and implementation of governance protocols for emerging science and technology.

- Indian Government has already paved the path by bringing the necessary structural reforms and promoting an entrepreneurial ecosystem.
- Deploying technologies optimally and strategically yield better quality, more sustainable growth.

“With one of the youngest labour forces in the world, a sizeable technical aptitude, the second largest number of internet users on mobile devices and the second largest English speaking population, India is well positioned to enhance its global leadership in a post Fourth Industrial Revolution era.”

❖ IMPACT ON SOCIETY

- The change from chiefly agricultural to service-based society.
- Industrialization led to the concept of monthly wages and the new working class - The middle class.

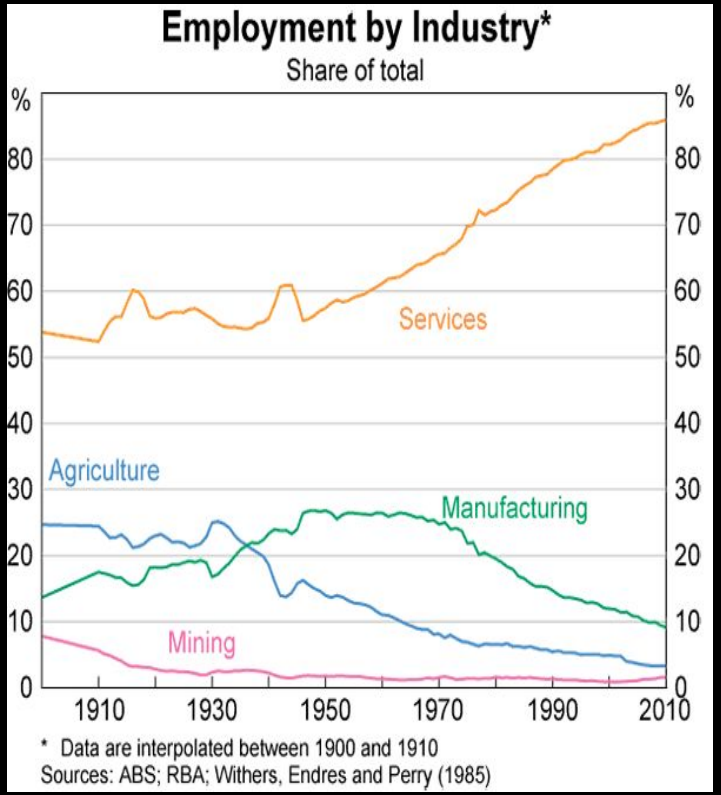
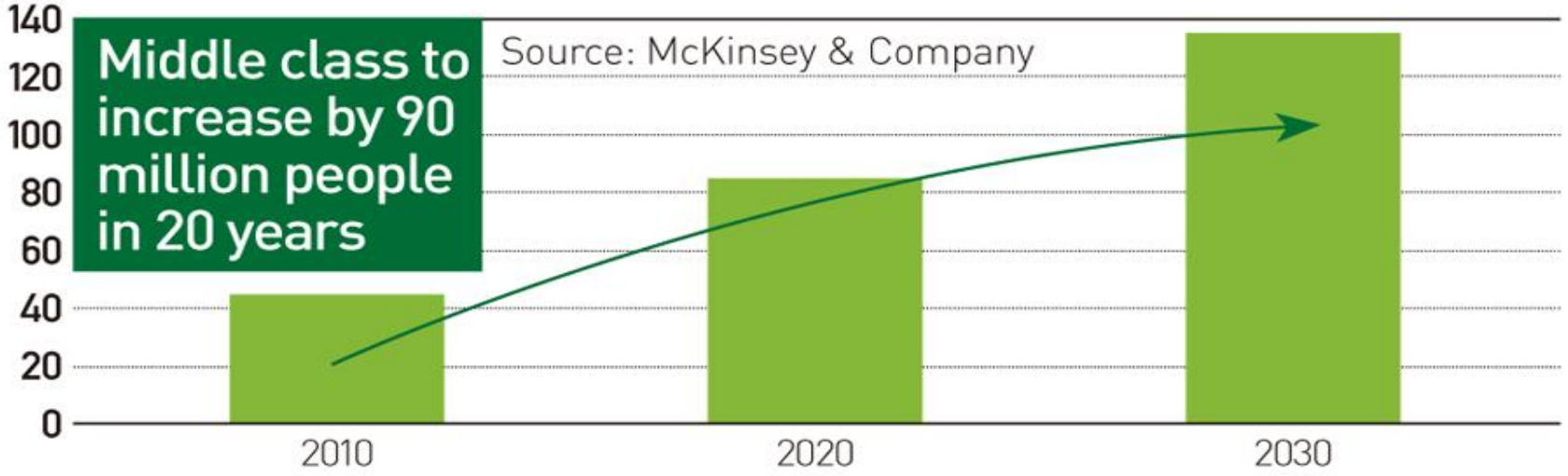


Table 4

Middle Class to Grow to 135 Million People

Middle Class Consumers (1 million people)

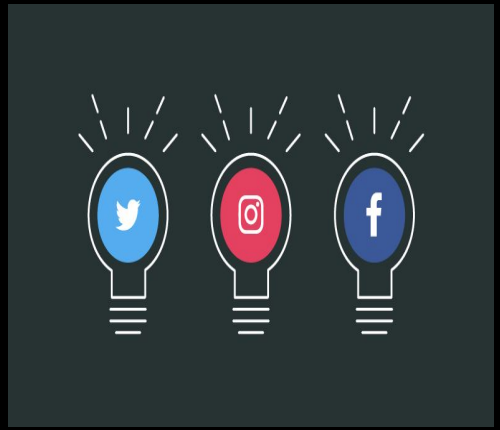


- Changes in Equality - According to the World Economic Forum Global Risks Report 2017, “the Fourth Industrial Revolution has the potential to raise income levels and improve the quality of life for all people.
- But, concentration of wealth among small group of people is constantly increasing.
- Education and access to information can improve the lives of billions of people.

❖ IMPACT ON INDIVIDUAL

This revolution is not only changing what we do but also who we are.

It will change our identity in many aspects -



- Behaviours

  Everyone is able to express and highlight their views before the world through these social media platforms.

- Communication

  Communication is becoming easier steadily.

- Time for work

  People work with flexible working hours and even things like work from home are common these days.

- Privacy

  Privacy of an individual is not at all totally private.

- Everything is online
  - Online shopping - Online shopping sites are making commodities accessible at home as well as increasing economical benefits.
  - Online banking - people do not need to go to banks for transactions or other important works at bank
  - People can book cars or vehicles online and avail them at their doorsteps.

Figure 2: E-Commerce vs. In-store Sales Growth Rates

Source: emarketer.com, U.S. Census Bureau, CBRE Research

CHALLENGES-

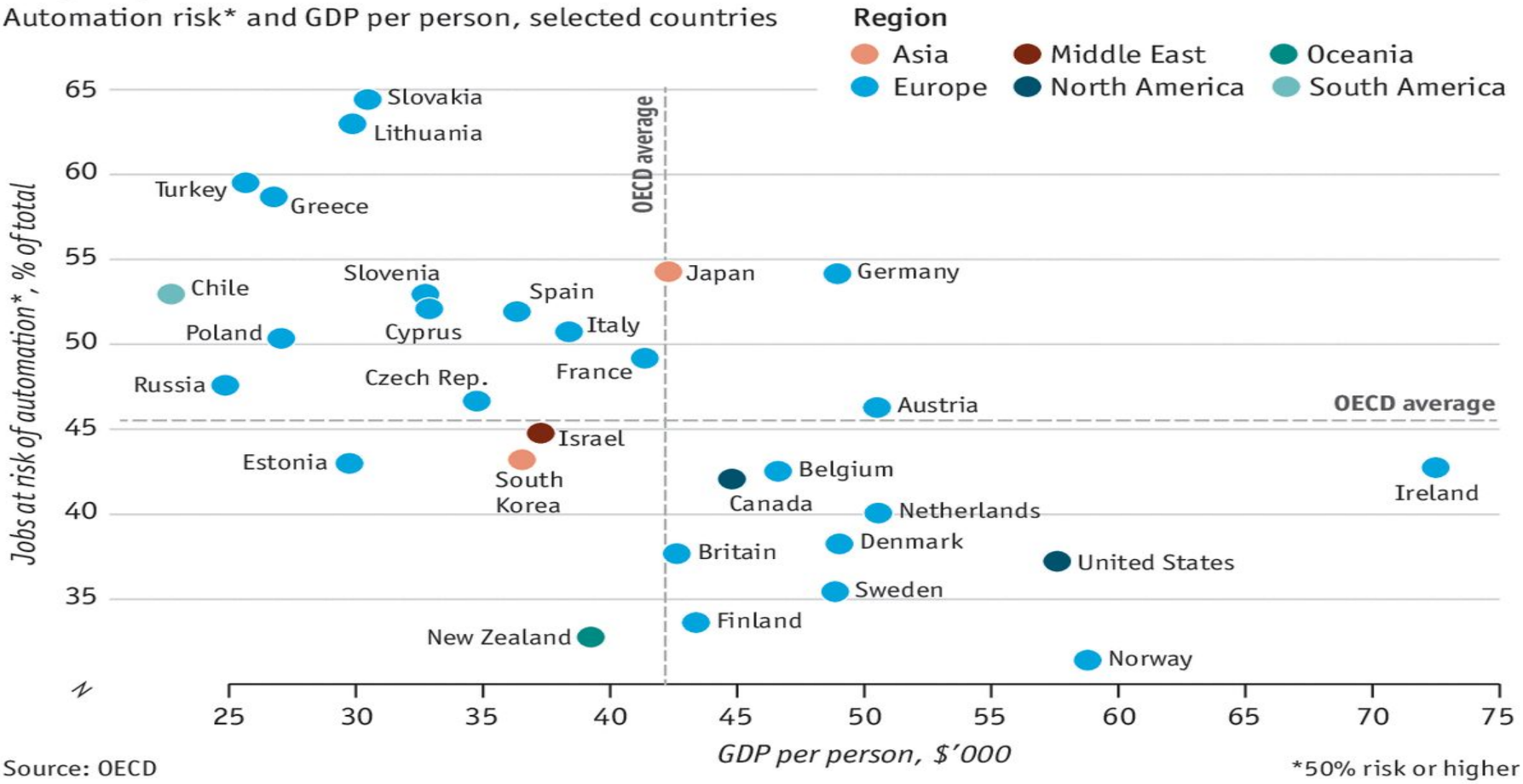
- Employment
- Security
- Capital

1. EMPLOYMENT

- Need of a different or an all-new skill set
- Automation will take over jobs
- No room for unskilled or repetitive jobs

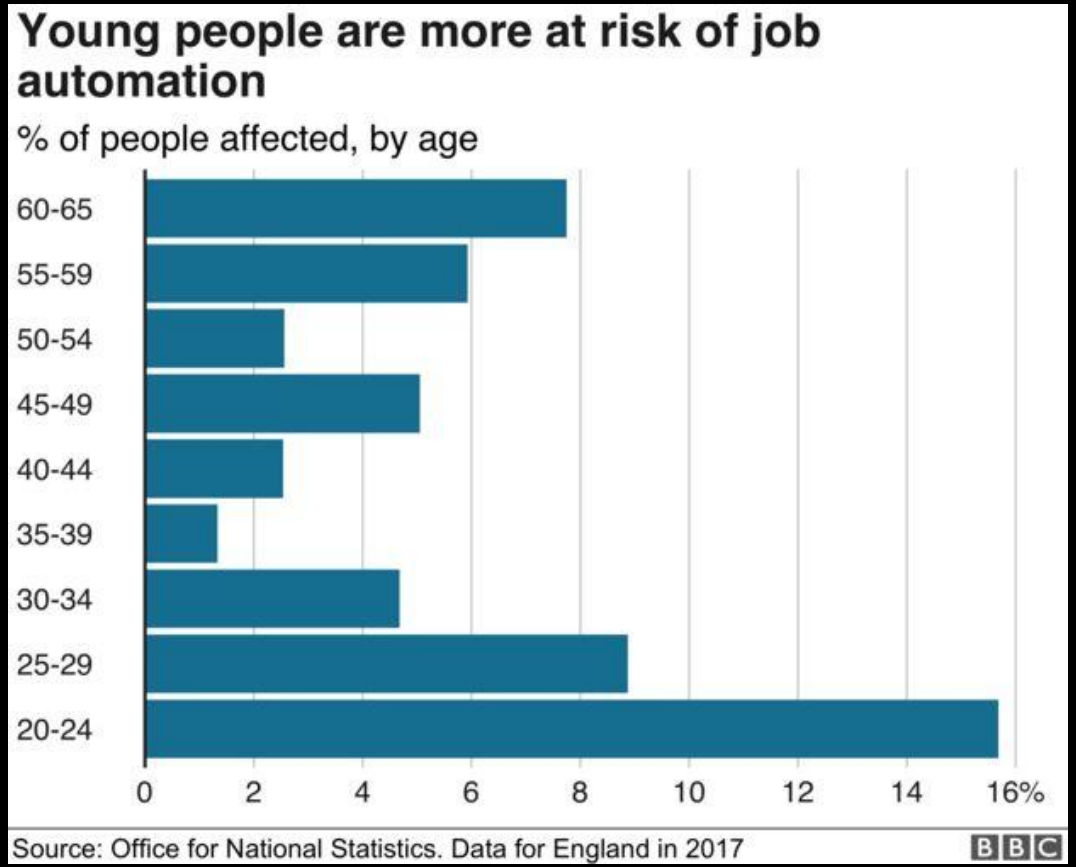
Wage against the machine

Automation risk* and GDP per person, selected countries



Source: OECD

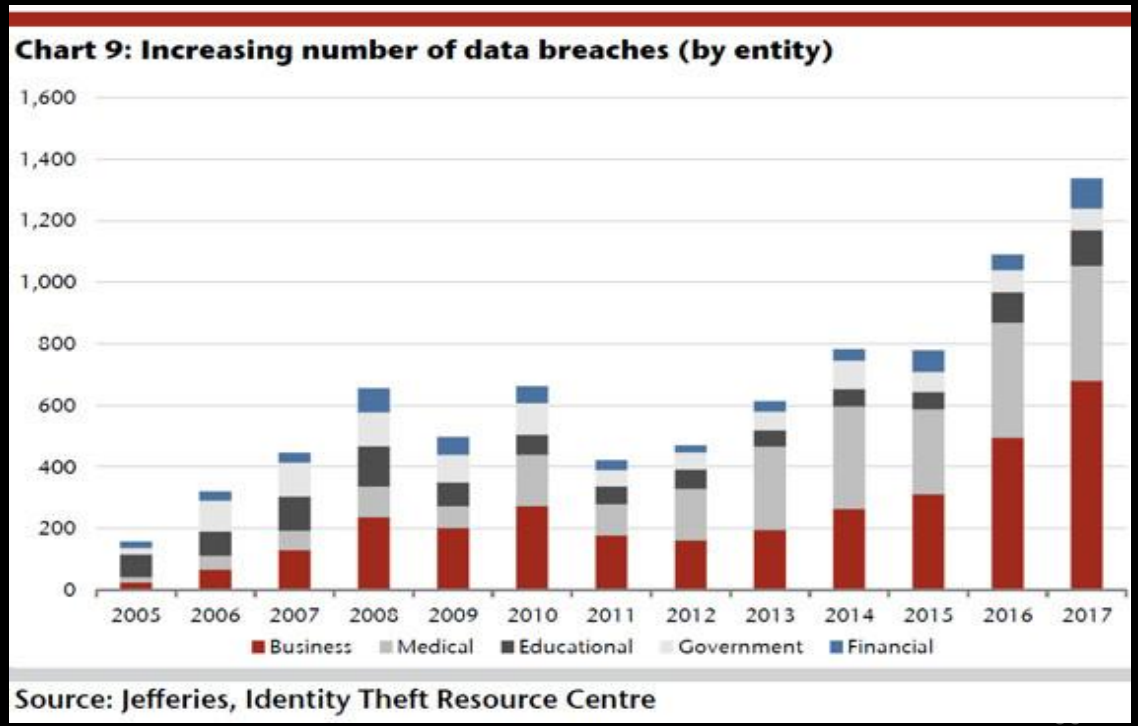
*50% risk or higher



Shocking!! Right??

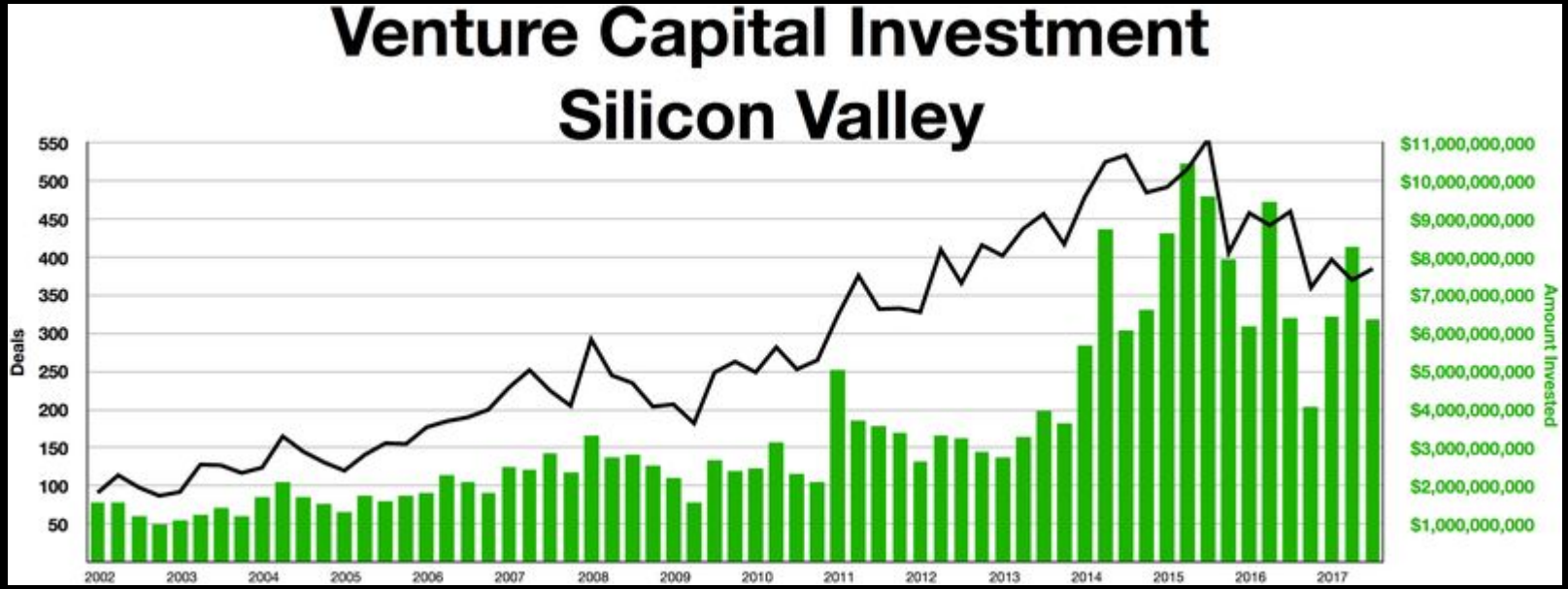
2. SECURITY-
(Another day, Another data breach)

- Security breach
- Data leak
- Cyber theft
- Exposure of Public Data



3. CAPITAL

- Huge investment
- Potential of risk (though calculated risk)
- Alienation of small businesses


Venture Capital Investment
Silicon Valley
Deals
550
500
450
400
350
300
250
200
150
100
50
$11,000,000,000
$10,000,000,000
$9,000,000,000
$8,000,000,000
$7,000,000,000
$6,000,000,000
$5,000,000,000
$4,000,000,000
$3,000,000,000
$2,000,000,000
$1,000,000,000
Amount Invested
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

CONCLUSION

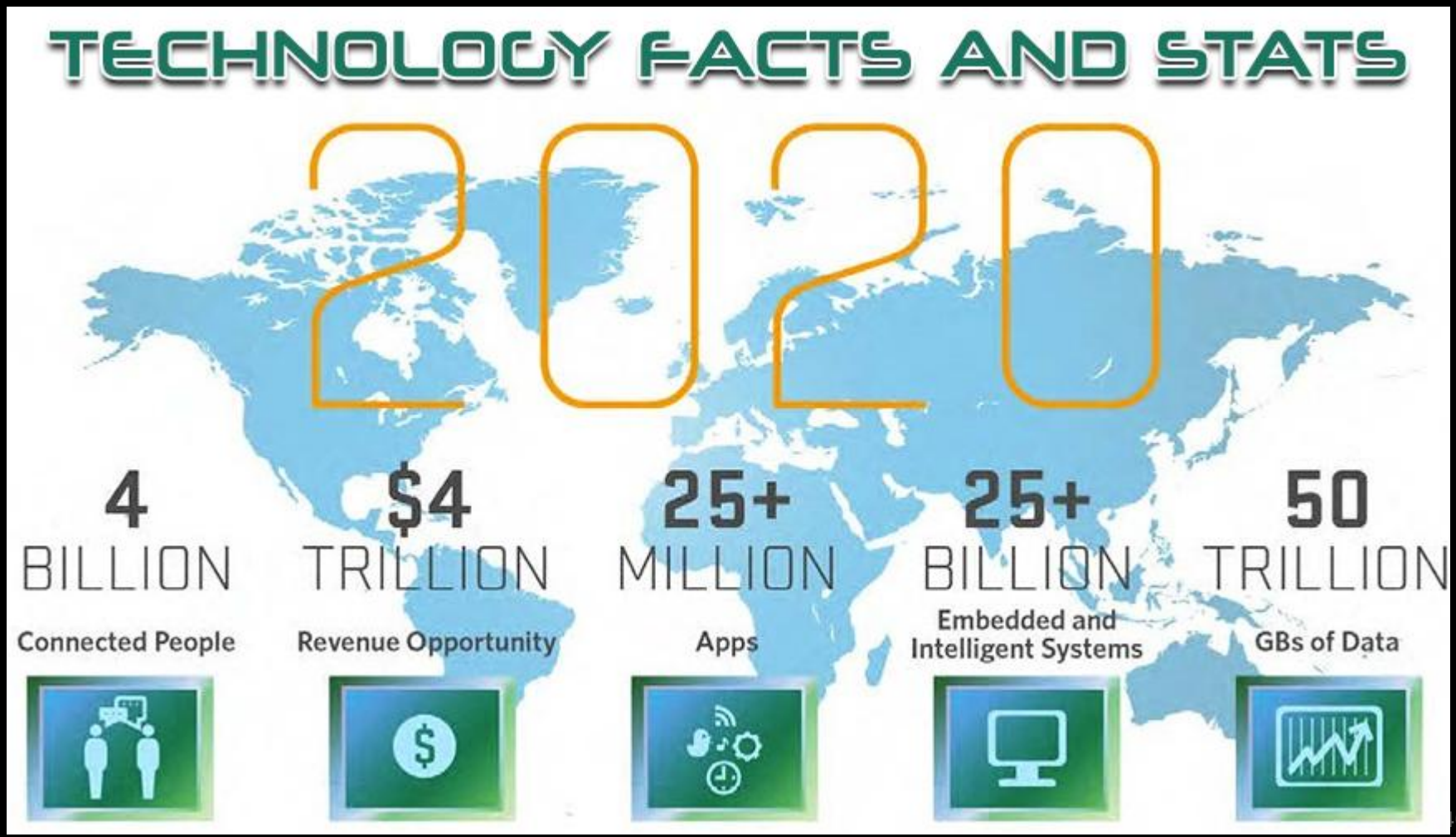
Promise

- Improve Quality of life
- Raise income levels

Potential Peril

- Increased social tension
- Segregated job market of low and high pay segments

TECHNOLOGY FACTS AND STATS



REFERENCES

To refer:

1. https://trailhead.salesforce.com/en/content/learn/modules/impacts-of-the-fourth-industrial-revolution/understand-the-impact-of-the-fourth-industrial-revolution-on-business
2. https://www.unido.org/sites/default/files/files/2018-11/UNIDO_GC17_Industry40.pdf
3. https://interestingengineering.com/the-industrial-revolution-40-and-its-possibilities-revealed
4. https://www.visualcapitalist.com/the-8-major-forces-shaping-the-future-of-the-global-economy/

Not to refer:

1. https://en.wikipedia.org/wiki/Technological_revolution

DEDICATED TO-

FUTURE GENERATION