# Transforming R&D Direction from Capital-Centric to Human-Centric

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# The Rise of Disruptive Technologies

## The 4th Industrial Revolution & Digital Transformation





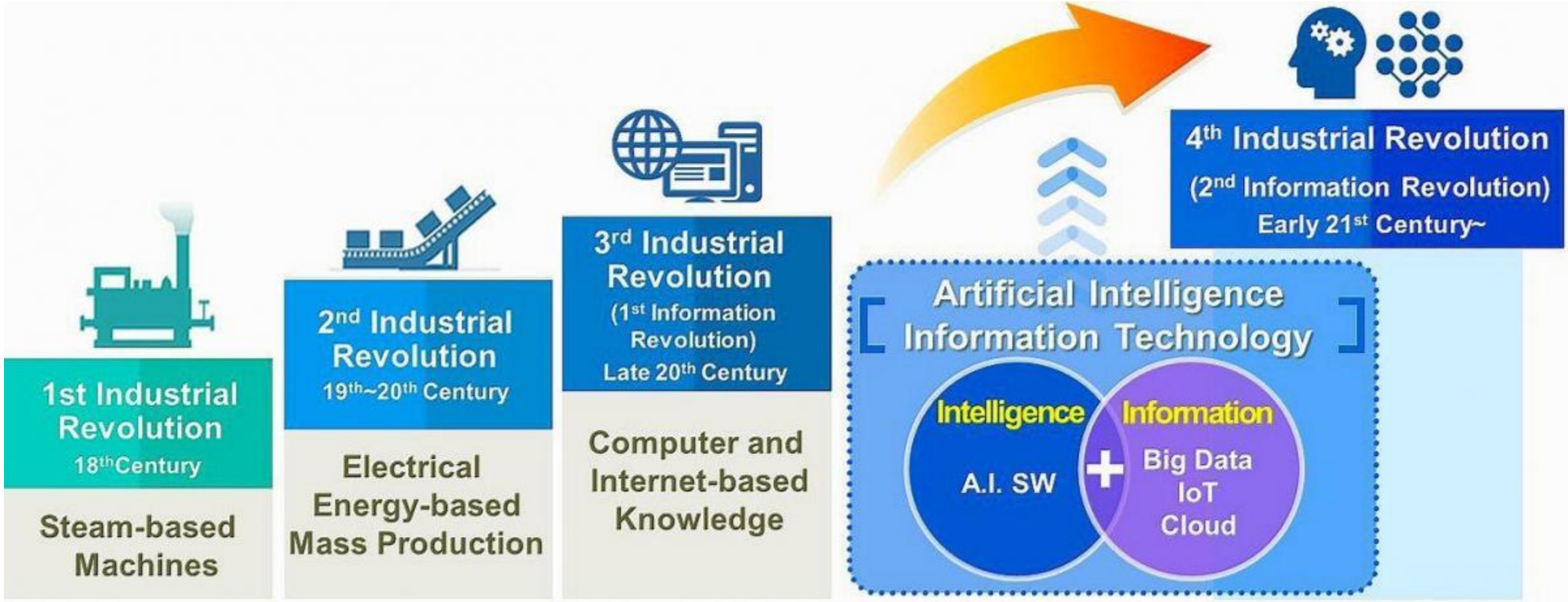
BLOCKCHAIN

AI

- The technological developments that we are currently experiencing are expected to bring about revolutionary changes in almost every sphere such as economy, industry, society, politics, and culture.

# The Rise of Disruptive Technologies

## The 4th Industrial Revolution & Digital Transformation



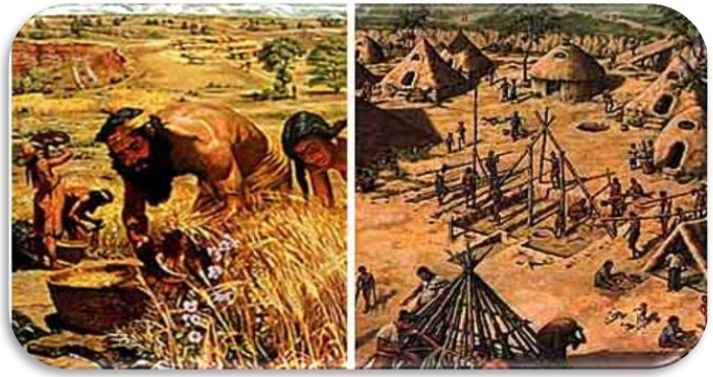

Source: WorldBank.org

# The Rise of Disruptive Technologies

## The 4th Industrial Revolution & Digital Transformation

**Hunting & Gathering(200 Million ~ BC 8,000)**

**1st Agricultural Revolution (BC 8,000 ~ 1750s)**



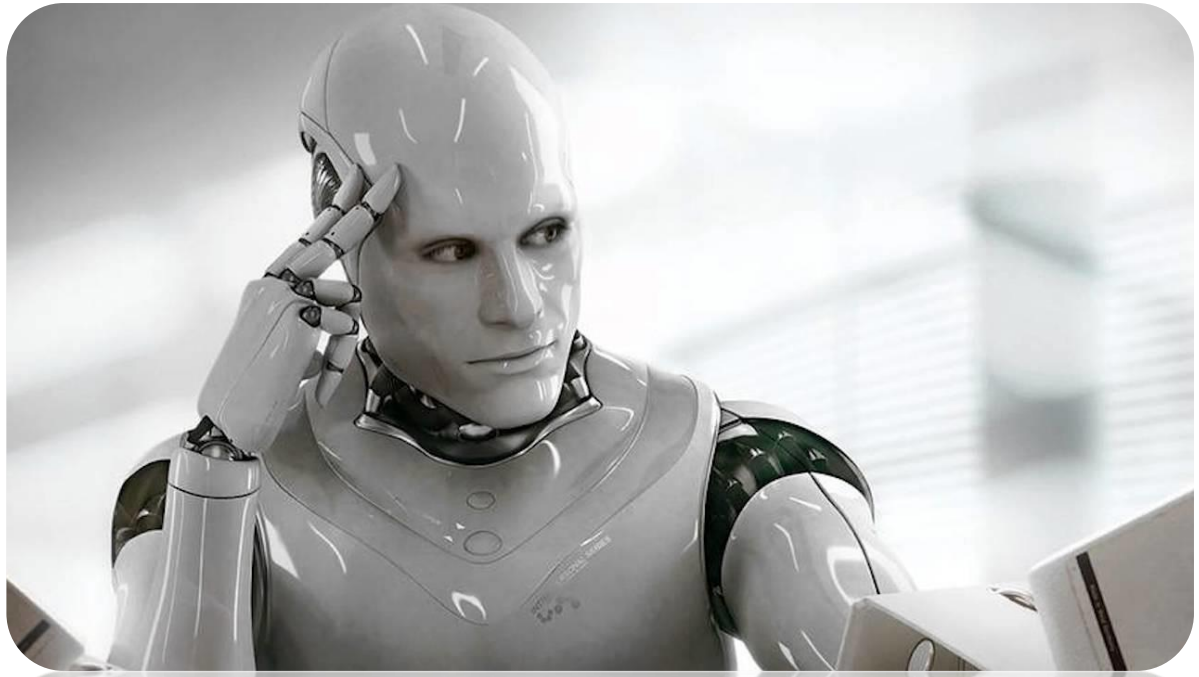
**Three Technological Revolutions**

**2nd Industrial Revolution(1750s ~ 1950s)**

**3rd Information Revolution (1950s ~ 1990s)**

# The Rise of Disruptive Technologies

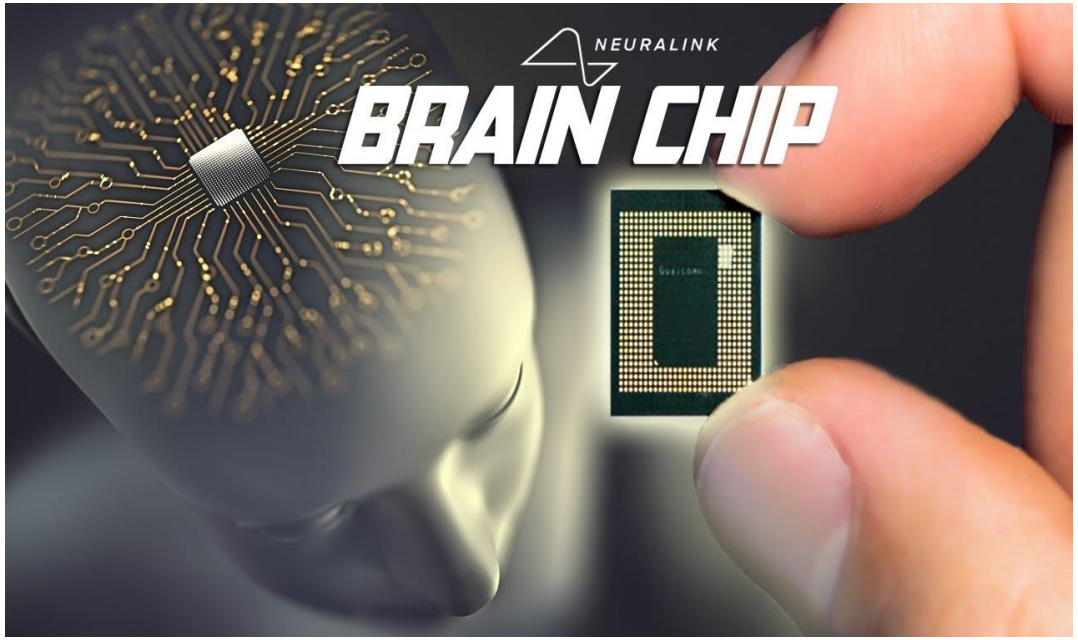
## The 4th Industrial Revolution is Intelligence Revolution

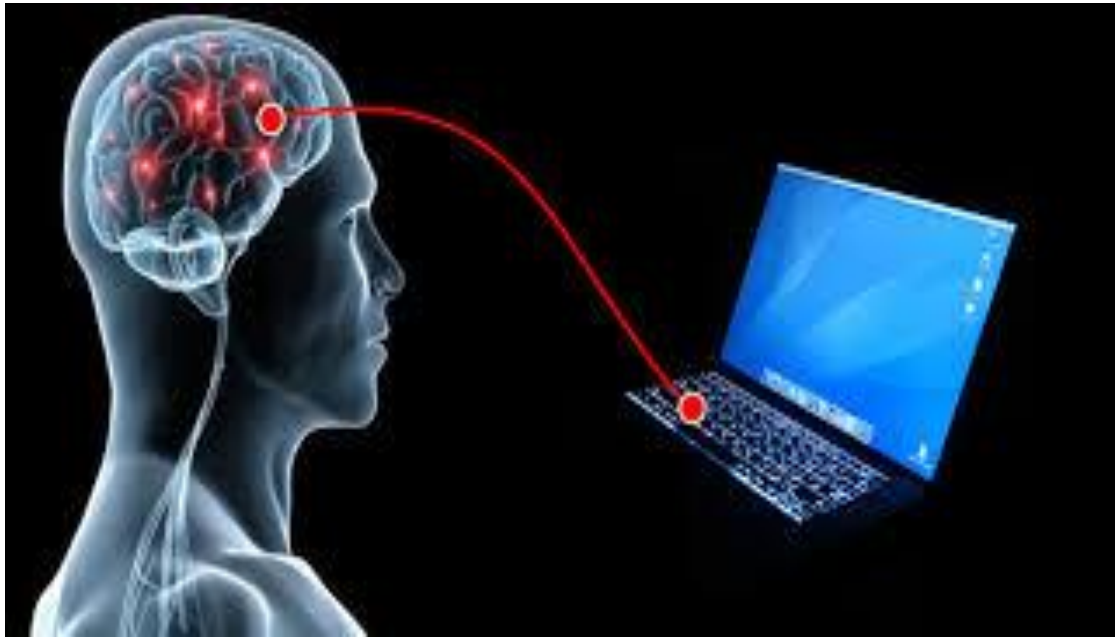


- The Fourth Intelligence Revolution is expected to bring about revolutionary changes as man-made artificial intelligence and human brain, or human intelligence, co-evolved together.

# The Rise of Disruptive Technologies

## The Connection between the Human Brain and the Machine



- As the human brain is connected to machines, the possibility of human brain evolution is also increasing.
- Currently, various experiments and developments are being conducted to connect the human brain and machines, and in the future, human thoughts, feelings, emotions can be expressed or stored in computers.

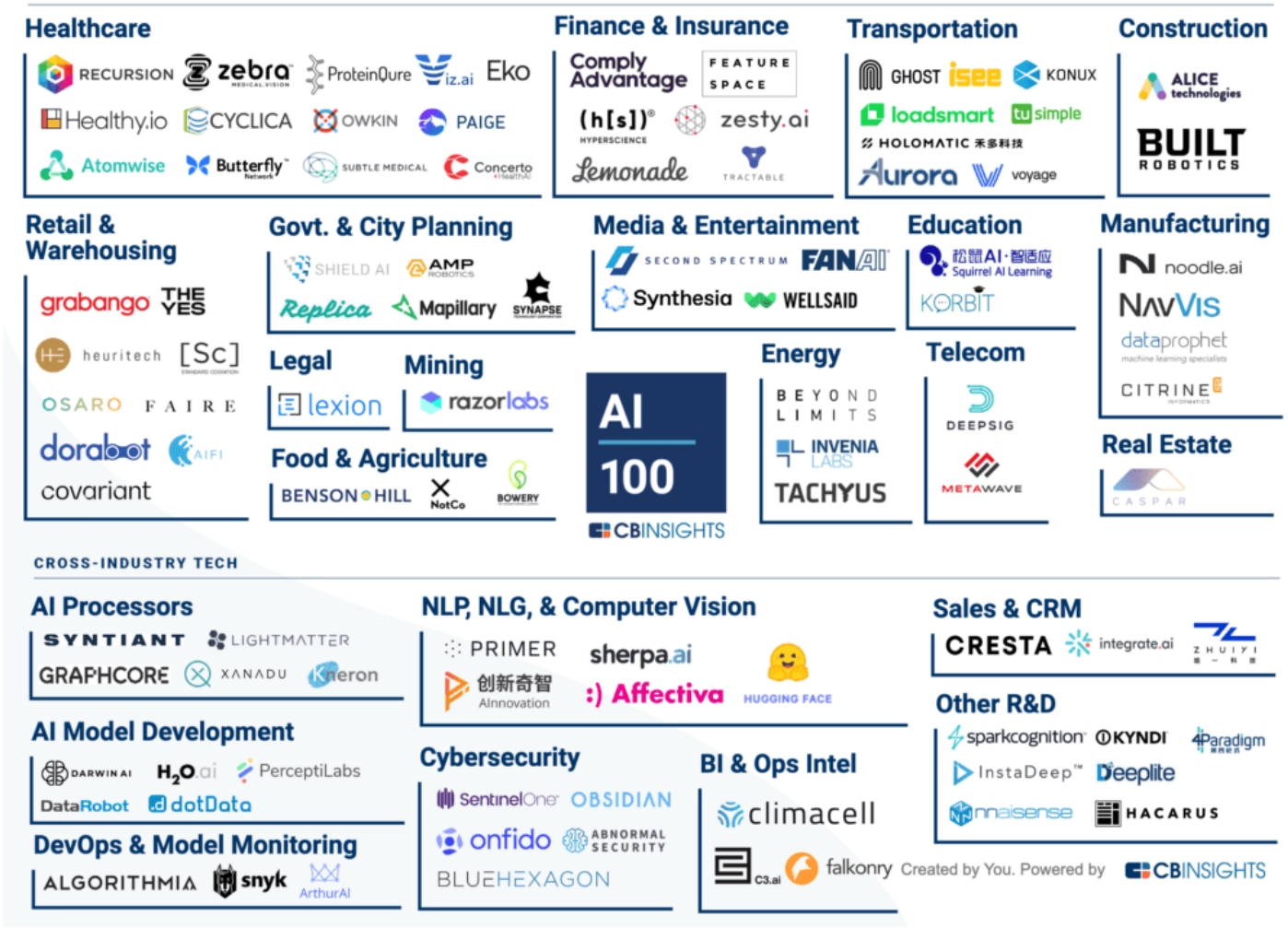
# Prerequisites for the Golden Cycle

## Big Data and AI as Universal Public Goods


- As the Internet has done so far, AI and Big Data will serve as public goods in the future, thus individuals, companies, and countries will be able to make good use of these public goods.

# Prerequisites for the Golden Cycle

## Artificial Intelligence Startups Redefining Industries and Jobs

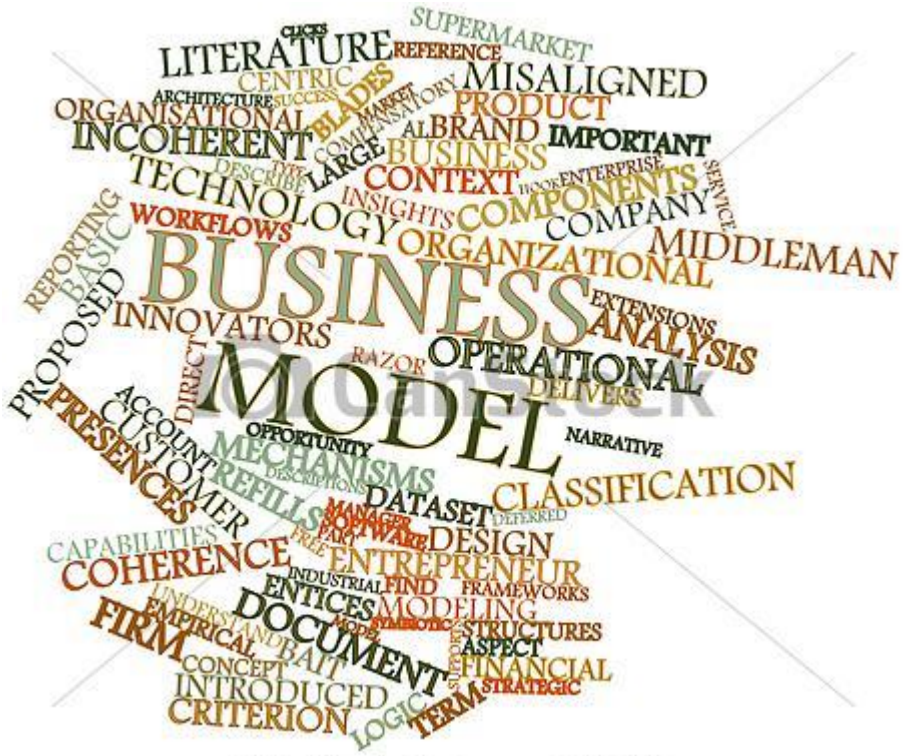



Source: cbinsights.com

- AI-Man Hybrid Teams
- AI Maintenance
- AI in Robotics Engineering
- AI Facilitator Roles
- AI in Healthcare
- AI in the Gaming Industry
- AI in Automated Transportation
- AI in Education
- AI in the Entertainment
- AI and Digital Assistants

# Prerequisites for the Golden Cycle

## Create New Business Models based on Global Public Goods

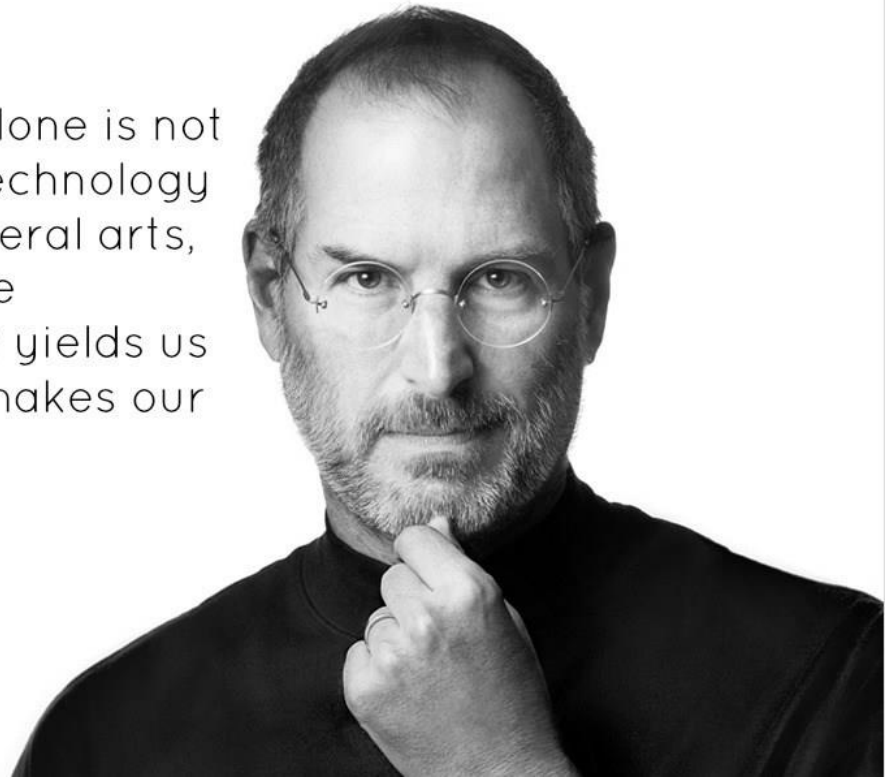

- Creating new business models based upon AI and Big Data is critical to getting on the golden cycle that AI will bring.

# Prerequisites for the Golden Cycle

## Education to Improve Technology Sensitivity

"...technology alone is not enough — it's technology married with liberal arts, married with the humanities, that yields us the result that makes our heart sing."

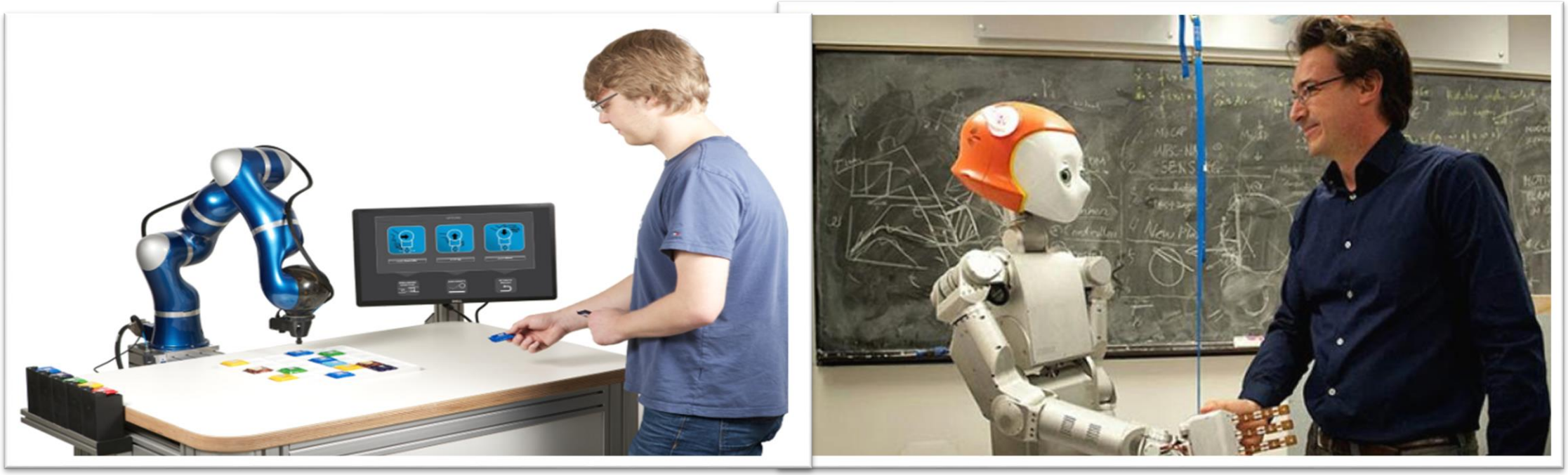
—Steve Jobs




- Technology sensitivity is the ability to increase the utilization of technology by taking into account social needs, acceptability, and commerciality of the market.

# Prerequisites for the Golden Cycle

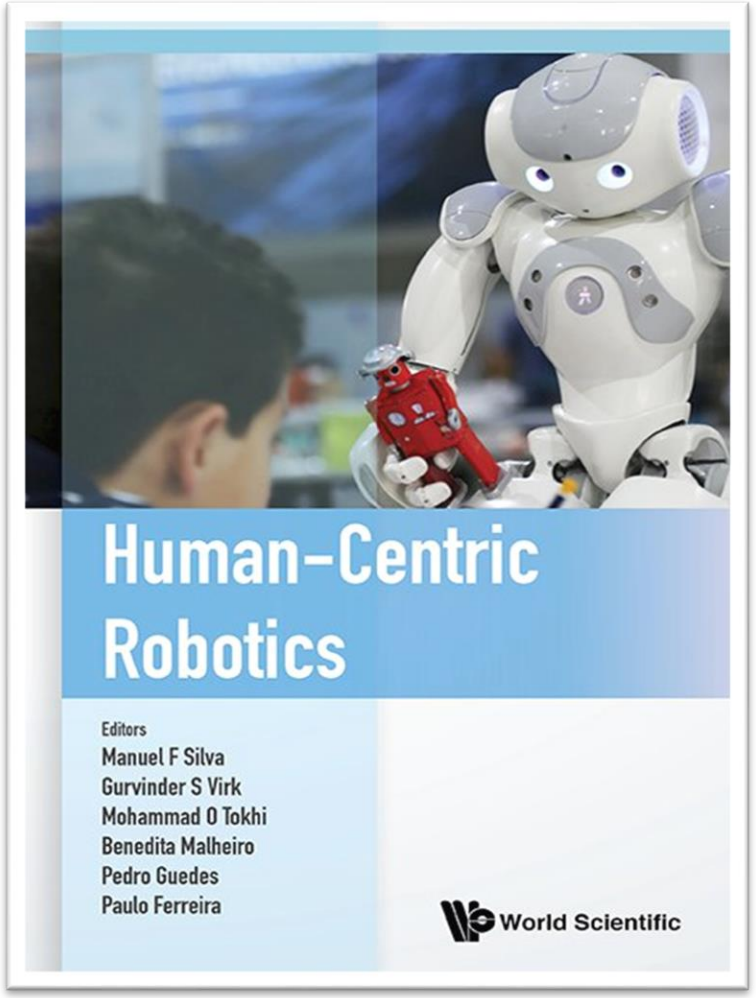
## Productivity Improvement through AI–Man Hybrid Teams

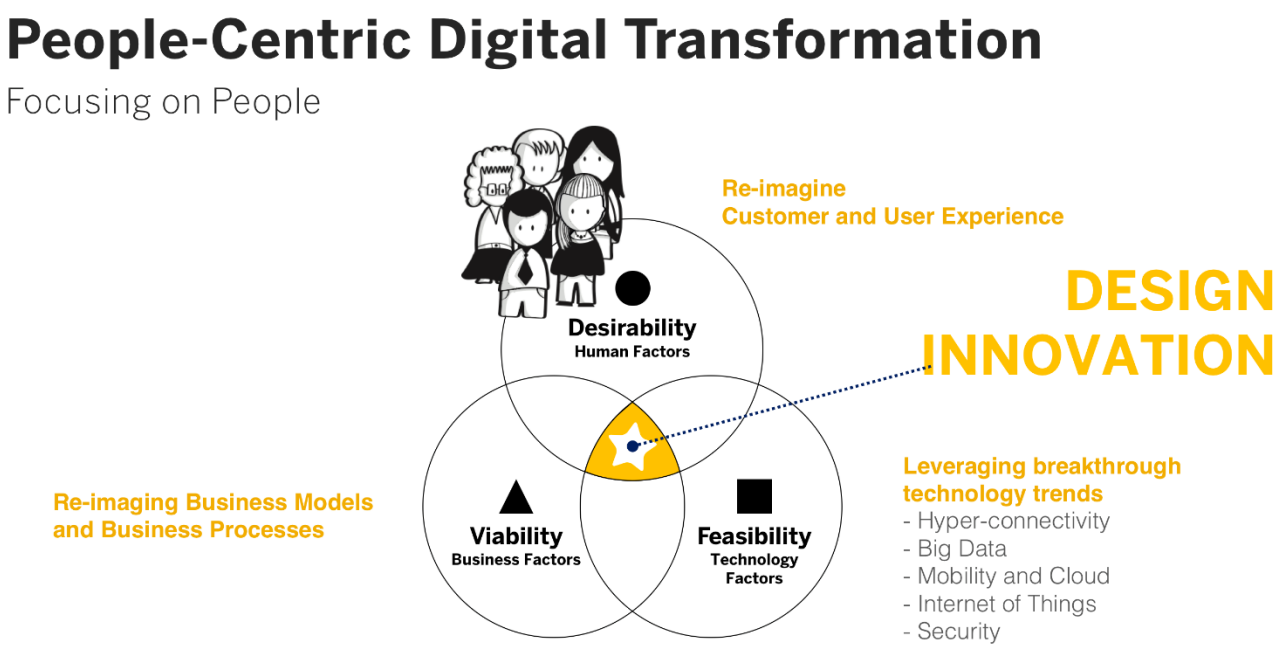


- AI will not take away human jobs, but will contribute to improving human work efficiency and productivity.
- The competition in the future will not be between machines and man but between AI-Man Hybrid Teams.

# Prerequisites for the Golden Cycle

## Transforming R&D Direction from Capital–Centric to Human–Centric

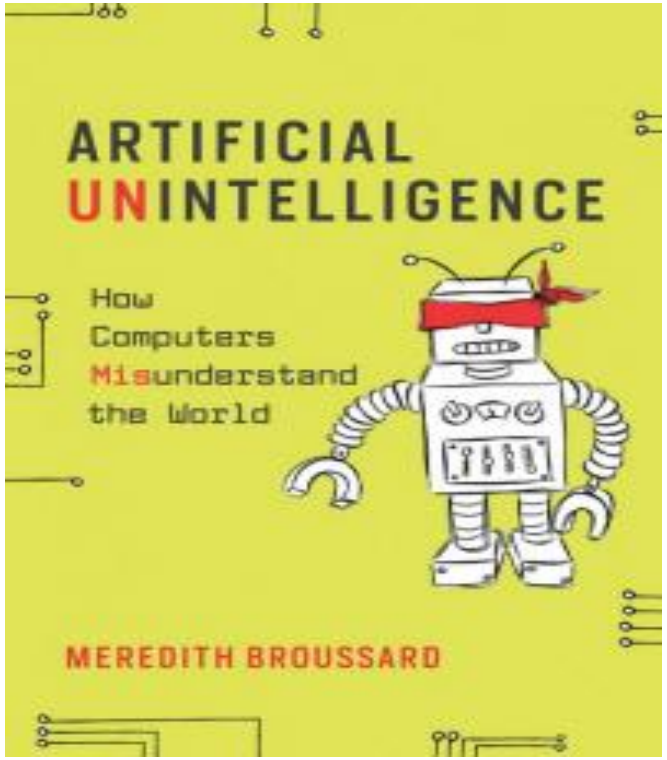



- In the future, governments and businesses should shift its R&D direction from capital-centered, which maximizes profits, to human-centered, which values human convenience and jobs.

# A Few Problems

## Algorism Bias and Digital Literacy

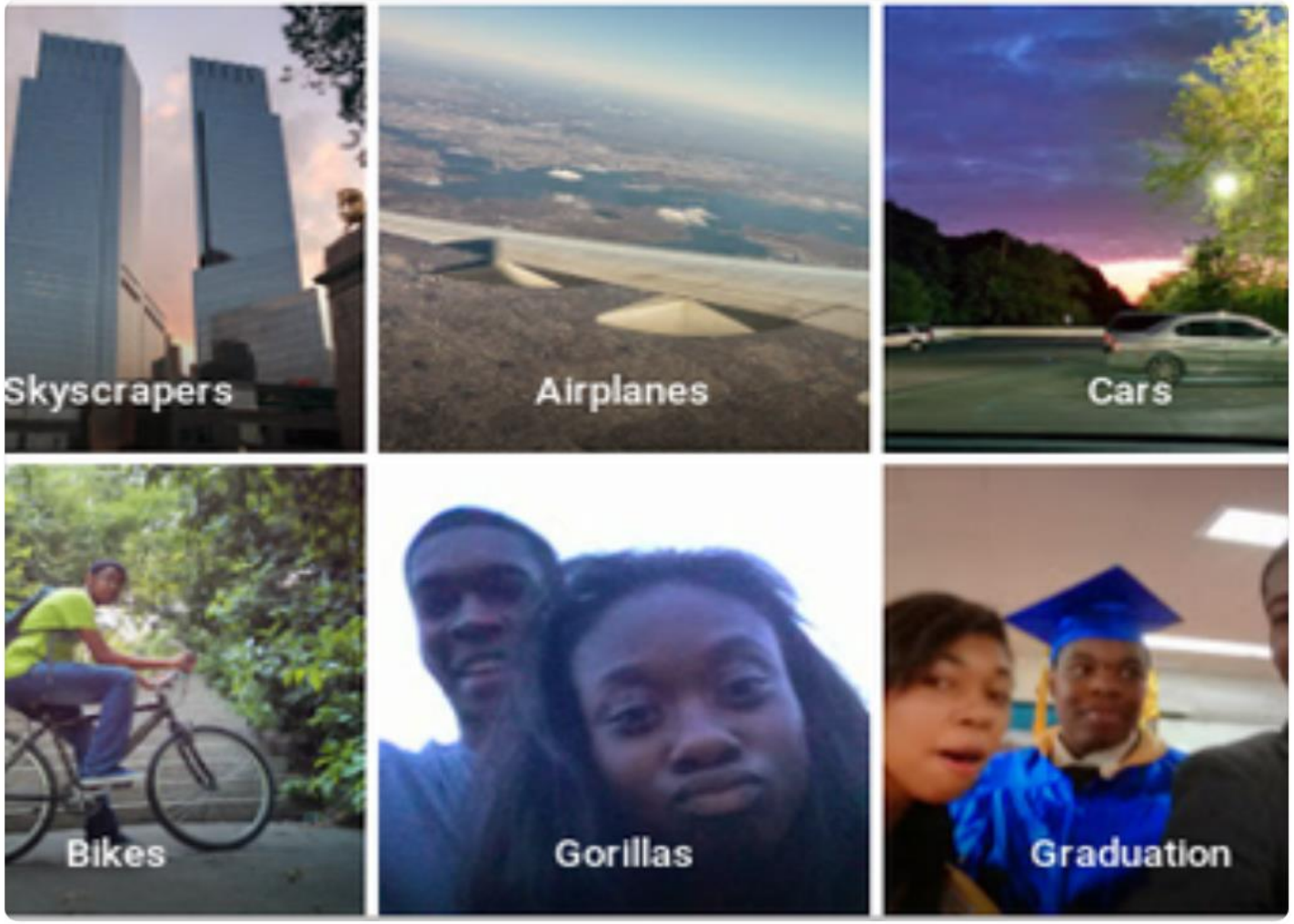




- It is humans who design algorithms and selecting data. In this process, individual values and bias must be reflected. In addition, the currently developed AI algorithm is a structure that learns from human selected data to make judgments and decisions. Recently, there have been a series of cases in which biased AI remarks and actions have been made.

# A Few Problems

## Algorism Bias and Digital Literacy




Recognizing a black woman as a gorilla,

Google Photo Camera App

# A Few Problems

## Digital Code


- Laws in the paper age are stored in paper, and laws in the digital age are stored in digital code.

# A Few Problems

## Digital Code

- The emerging digital technologies accelerate the digitalization of existing laws, social rules, and commitments (Lessig, 1999).

- Digital technology generates codes, namely, laws that must be implemented (automated rules). This is a new kind of legal system that mankind has never experienced before.

- The social rules and commitments inherent in digital code control people's behavior or guide them in a particular direction, and even demands 'absolute compulsory force.'

- The digital code has the same level of binding and forcing as the law, and the force that the digital code can be even stronger than the law in reality.

# Summary and Conclusion

- AI and Big Data will serve as **public goods**, thus, individuals, companies, and countries will be able to make good use of these public goods.
- **Creating new business models** based upon AI and Big Data is critical to getting on the golden cycle
- Developing educational programs to improve **technology sensitivity**
- The competition in the future will not be between machines and man but between **AI-Man Hybrid Teams**.
- Governments and businesses should shift its R&D direction from capital-centered, which maximizes profits, to **human-centered**, which values human convenience and jobs.
- **Enhancing digital literacy** of the public to avoid bias and discrimination, and the loss of human autonomy.

# Thank You!