Industry 4.0 and Society 5.0

A.

Industry 4.0

Industry 4.0 is a project which promotes the computerization of traditional industries such as manufacturing. The goal is the intelligent factory (Smart Factory), which is characterized by adaptability, resource efficiency and ergonomics as well as the integration of customers and business partners in business and value processes.

In essence, industry 4.0 is the trend towards automation and data exchange in manufacturing technologies and processes which include cyber-physical systems (CPS), the internet of things (IoT), industrial internet of things (IIOT), cloud computing, cognitive computing and artificial intelligence. Industry 4.0 envisions environmentally-sustainable manufacturing by having green manufacturing processes, green supply chain management, and green products.

From: https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/#75bb8ed69788

1. **Industry 4.0** – Optimization of the computerization of Industry 3.0

2. **Industry 4.0 applications**
   - Identify opportunities
   - Optimize logistics and supply chains
   - Robots
   - Additive manufacturing (3D printing)

3. **Contents**: Smart manufacturing; Smart factory; Lights out (manufacturing) also known as dark factories; Industrial internet of things also called internet of things for manufacturing.

4. **Four Design Principles**: Interconnection; Information Transparency; Technical assistance; Decentralized decisions

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B

Society 5.0 – The future Society

I.

Towards a Bright Future

1. **Development of Human Society:** To date, humankind has lived in four types of society: Hunting, Agrarian,Industrial, and Information. Digital transformation heralds a fifth stage.

2. **Digital Transformation:** Digital transformation will dramatically alter many aspects of society, including private lives, public administration, industrial structure, and employment. Utilization of data and AI will open up many new possibilities. The important question is what to use these technologies for.

3. **The Nature of Society 5.0:** Digital technologies and data should be utilized to create a society where people lead diverse lifestyles and pursue happiness in their own ways. In the future, humans will require imagination to change the world and creativity to materialize their ideas. Society 5.0 will be a Creative Society.

4. **The fruits of Society 5.0**: Compared with Society 4.0, Society 5.0 is characterized by problem solving and value creation, diversity, decentralization, resilience, and sustainability and environmental harmony. The aim is to bring about a society where anyone can create value anytime, anywhere, in security and harmony with nature, and free from various constraints that currently exist.

5. **Blueprint of Society 5.0 for SDGs (UN Sustainable Development Goals):** Society 5.0 will transform lives and industries. Aiming to resolve social issues in harmony with nature, Society 5.0 will contribute to delivering on United Nations SDGs. The two reforms share a common direction.

Society 5.0 is not something to come, but something to co-create. Main player of that society is not technology but human being. It is a society realized by people who pursue diverse values with diverse imagination and creativity. This report demonstrated society 5.0 that we wish to create as "Creative Society". We hope it will trigger discussion by many people on the kind of future to create in times of drastic change. Keidanren will take an initiative in the reform of Japan's economy and society as a leader of Society 5.0. Following this report, it will discuss and propose more specific measures to take and move forward with its member companies as well as domestic and foreign stakeholders toward realization of Society 5.0.

II

The world is facing a great tide of change such as "technological change" "economic and geo-political change" and "change in mind set". Every change brings opportunities as well. Imagination is the key to shaping the future Society5.0 is not a prediction of the future, but a concept that shows the bright future we want to create. In this vision, we redefined the concept of Society 5.0 and proposed Japan's action plans.

1. **Society 5.0**
   - Digital Transformation
   - Society 5.0 will be an Imagination Society

- ➢ The Fruits of Society 5.0
  - ➢ Society 5.0 for United Nations SDGs.

2. Action Plans to become a platform for success
  - ➢ Digital Transformation and Inclusion of Diversity
  - ➢ Reform of Business Sector
  - ➢ Reform of Public Sector
  - ➢ Reform by Data and Technology

C

Industry 4.0 and Society 5.0

1 and 2

Digital transformation will dramatically alter many aspects of society, including private lives, public administration, industrial structure, and employment.
Utilization of data and AI will open up many new possibilities. The important question is what to use these technologies for.

IoT: IoT means that every "thing" is connected to the Internet. Improved technologies for sensing precise data from physical real world will enable appropriate data to be gathered in real time and deployed in cyberspace

AI: One essential aspect of AI can be viewed as "distribution and commoditization of abilities."

Robotics: AI exerts its capabilities not only in cyberspace, but also in physical real world via robots.

Distributed Ledger Technology: Distributed ledger technologies such as blockchains do much to improve transaction efficiency and traceability.
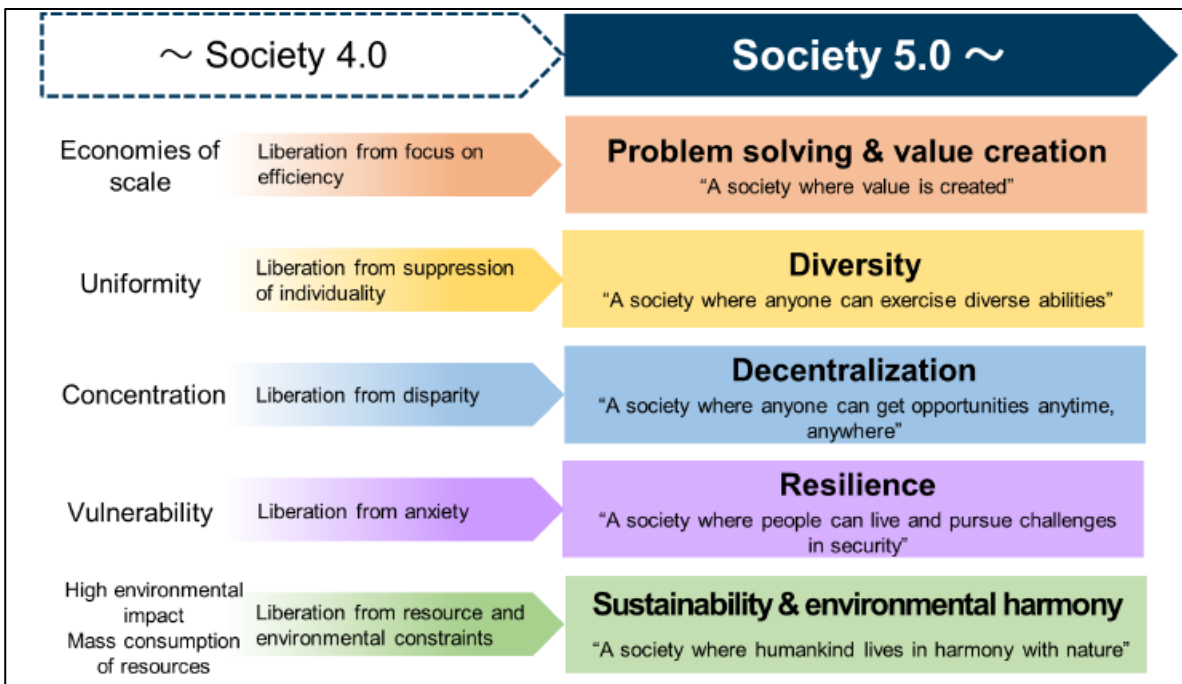
3

Digital technologies and data should be utilized to create a society where people lead diverse life styles and pursue happiness in their own ways. In the future, humans will require imagination to change the world and creativity to materialize their ideas. Society5.0 will be an Imagination Society.

Digital Transformation x Imagination & Creativity of diverse people =

  - ➢ **Problem Solving and Value Creation**

4

The aim is to bring about a society where anyone can create value anytime, anywhere, in security and harmony with nature, and free from various constraints that currently exist.

5

Aiming to resolve social issues in harmony with nature, Society 5.0 will contribute to delivering on United Nations SDGs. The two reforms share a common direction.

Source:
http://www.unic.or.jp/activities/economic_social_development/sustainable_development/
2030agenda/sdgs_logo/

① **Cities and Regions**
  ➢ Data will be shared to facilitate smarter solutions.
  ➢ Decentralized communities will be created in suburbs and rural areas.
  ➢ Such developments will enable diverse lifestyles and creating a society where diversity is respected.

② **Energy**
  ➢ Reliable energy will be available to anyone.
  ➢ Clean and sustainable energy will be supplied.
  ➢ Decentralized micro grids will be developed with local conditions

③ Disaster Prevention
- ➢ Sharing disaster information across organizations will facilitate swift responses to disasters.
- ➢ Digital technologies will be used for disaster mitigation.
- ➢ Medical services will be maintained even in the event of disasters.

④ Healthcare
- ➢ New approaches will provide care tailored to individual health at the preventive stage.
- ➢ Individuals will use and manage life-stage data on their own initiative.

⑤ Agriculture and Food
- ➢ Full use will be made of cutting-edge technologies.
- ➢ Data and technologies will also be used to optimize the food value chain (FVC).
- ➢ Diverse players including private corporations, youth, and agritech ventures will participate.

⑥ Logistics
- ➢ Players will optimize entire supply chain by sharing data on procurement, production, transportation and sales.
- ➢ Most work substitutable by autonomous driving, drones, and robots will be automated.
- ➢ Diverse customer needs will be identified to realize logistics that create value.

⑦ Manufacturing and Services
- ➢ Distribution of abilities will enable individuals and small companies to provide high levels of goods and services.
- ➢ Systems will be established enabling consumers to easily and affordably make one-of-a-kind items.
- ➢ Business models will be based on services, not hardware.

⑧ Finance
- ➢ Digital transformation will make available diverse, custom-made financial services.
- ➢ Financial systems will allocate funds efficiently and effectively across society.
- ➢ Improved access to financial services will contribute to economic independence and greater income equality.

⑨ Public Services
- ➢ By quickly sharing data among diverse actors, they will provide more creative public services.
- ➢ Public bodies will make timely and appropriate preparations and provide necessary services.
- ➢ Safety nets established by governments will enable anyone to tackle a variety of challenges with security.