



The 4th Industrial Revolution

The Digital Transformation



President Byung-Jo SUH

The 4th Industrial Revolution should be interpreted as both social and economic “mega trend” that completely transform the way we live and work

- Chung Sye-kyun, Speaker of the National Assembly, Republic of Korea(2017.7) -

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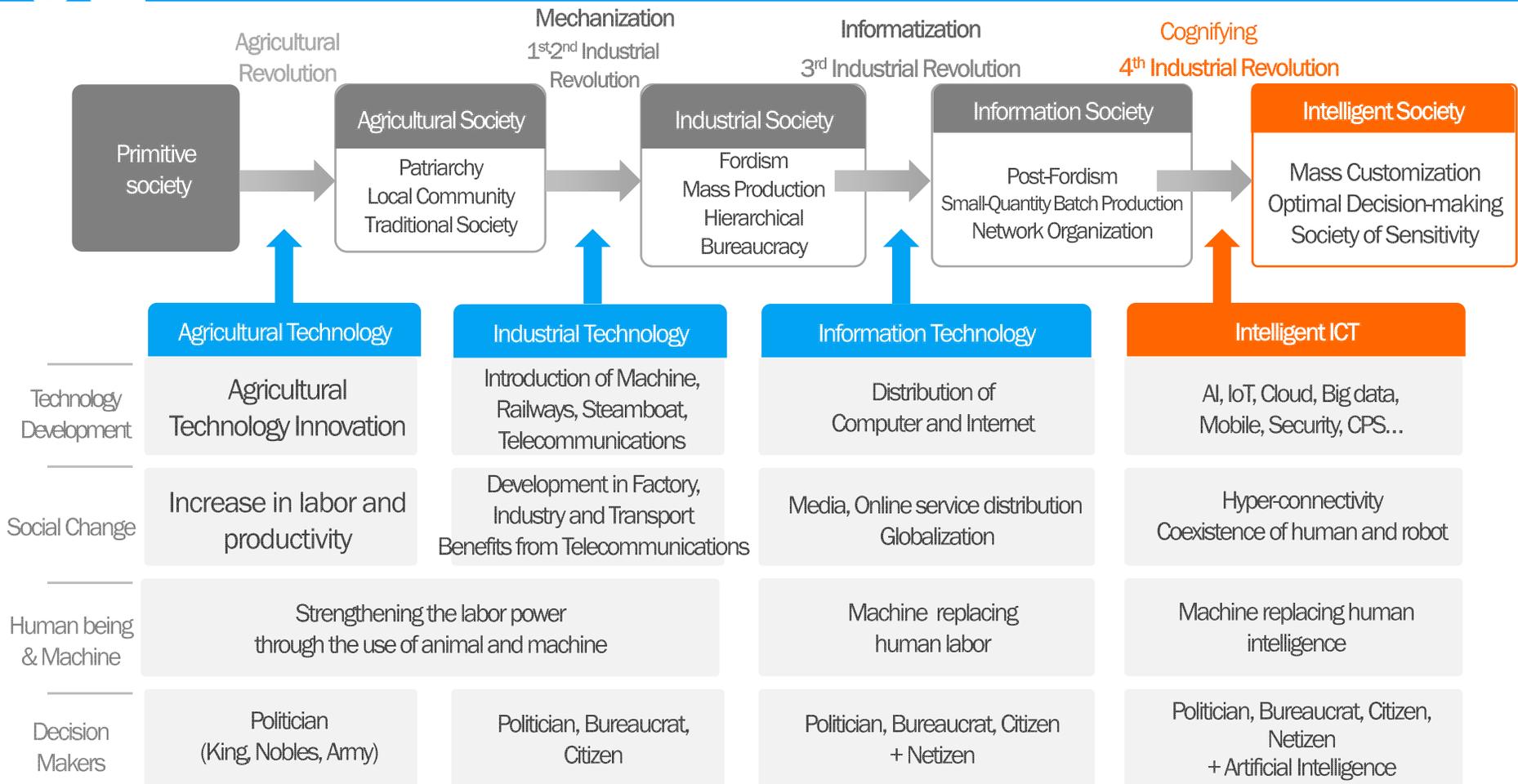
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I

The new Phase of the Digital Economy :
The 4th Industrial Revolution

01

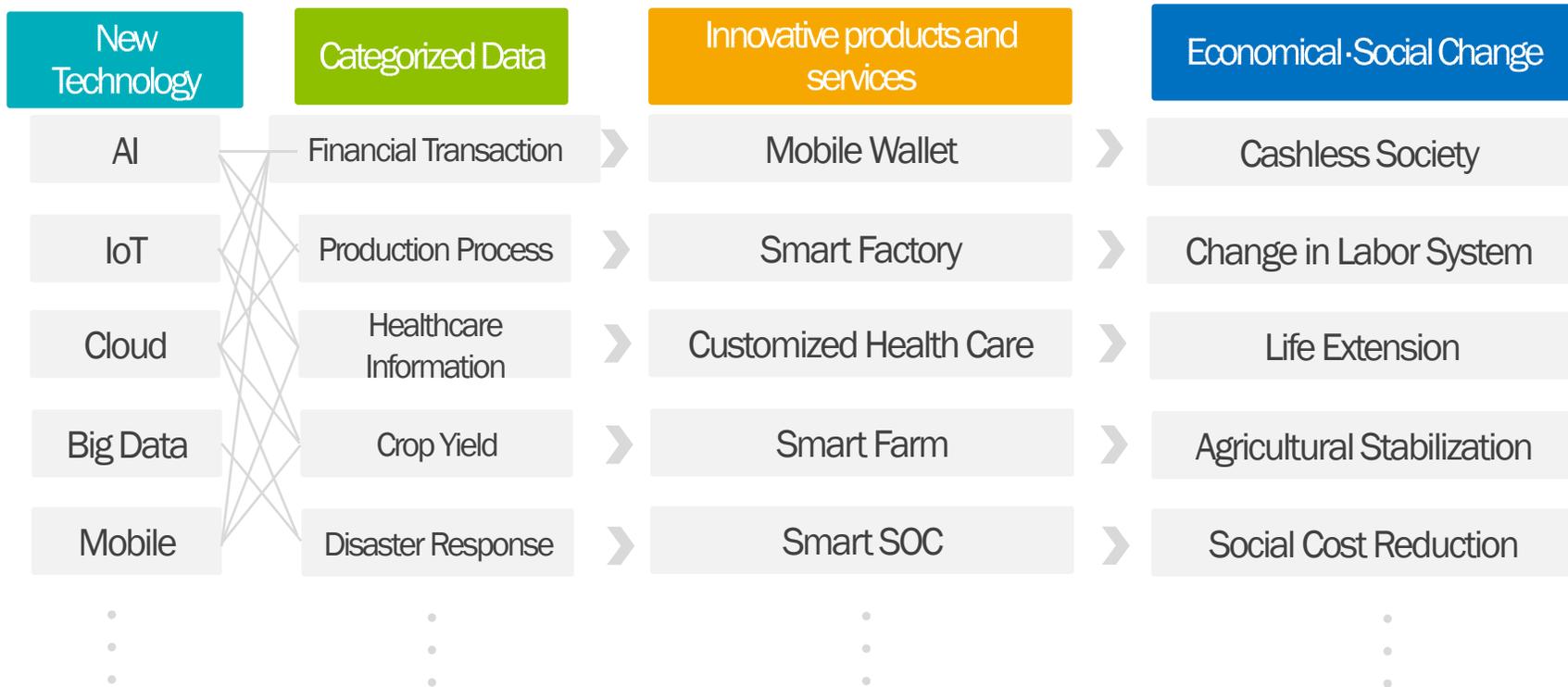
Shift in Social -Economic Paradigm



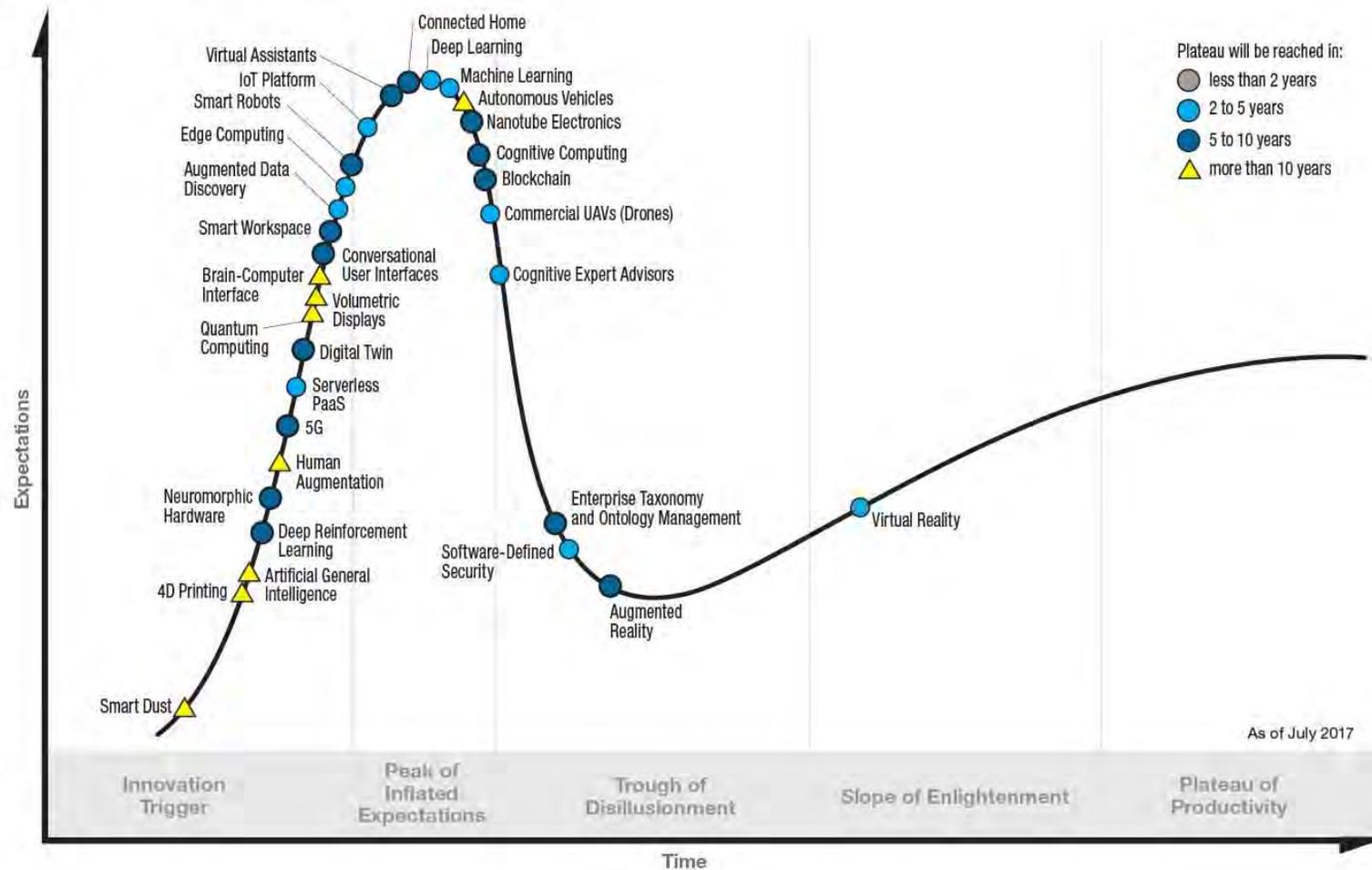
02

The New Phase of the Digital Economy

- **Intelligence Information Technology**, the core engine of the 4th Industrial Revolution merges with big data, creating new products and services and triggering economic and social revolution.



03 Hype Cycle for Emerging Technologies, 2017



Source: Gartner (July, 2017)

I

The 4th Industrial Revolution & Issues Arising from the Digital Transformation

- Digital Transformation is a driving force of global, innovative, inclusive and sustainable growth and can contribute to reducing inequality and achieving the Sustainable Development.

Bridging the Digital Divide

- We need to promote digital literacy and digital skills in all forms of education and life-long learning.

Supporting SMEs & Start-ups

- We need to recognize the important role that SMEs and start-ups play in the development of a full range of new and innovative BMs
- We need to promote better access to financial resources and services and a more entrepreneurial friendly environment.

Boosting Employment

- Digitalization offers the opportunity for creating new and better jobs, while at the same time raising challenges regarding skills, social protection and job quality.
- We need to educate and train people with the necessary skills for the future of work, the importance of opportunities to retrain and upskill throughout their working lives

05 [Industry] New Industrial Processes and Regulations

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Digital Transformation

- Redefining the industrial ecosystem as ICT and non-ICT Industries merge
 - ICT rises as the core element of competitiveness in all industrial sectors through conversion
 - Mass expansion of new products & services and process re-evaluation

Collapse of Industrial Boundaries

- ICT industry threatens traditional non-ICT industries
 - Active expansion of online companies generate competition with offline giants, destroying the traditional manufacturing, delivery, and sales processes
(i.e.) Amazon vs. Walmart, Google vs. Automobile manufacture, Alibaba (FinTech) vs. Financial company

Increase in Productivity

- Productivity will steadily increase in the era of the 4th industrial revolution
 - Factors such as automation of complicated tasks and increase in labor efficiency will likely double economic growth before 2035.

(Source : Accenture, analysis based on 12 leading countries, before 2035)

New Competition New Processes

- Data, the key material of the 4th industrial revolution, becomes the new source of competition, surpassing labor and capital
 - The top 5 world's most valued companies are all part of the ICT industry (Apple, Google, Microsoft, Amazon, Facebook)
 - Google and Uber lead self-driving car technology, rather than traditional automobile manufacturers

Employment

- Job Creating & Replacement

- Job Creation



- Job Replacement



Labor power

- Labor Power Increasing

- Amount of Labor



- Quality of Labor



- Flexibility of Labor



Digital Transformation

Resolving Social Issues

- Self-Driving Car → Safety Issue
- Saving Environment → Healthy Life
- Robotics → Population Decline



Tesla's Autopilot system

: Traffic Accidents rate reduced up to 40% ('17.1)

Improving Quality of Life

- Intelligent Service → Increased Leisure Time
- Customized Living Education Welfare
- Increased Accuracy in Diagnosis → Improved Health Care



IBM Watson : University of Tokyo, School of Medicine

: Analysis of thousands of genetic characteristics and papers
 → Took only 10 minutes to suggest a cure that doctors failed to (16.1)

Potential Threat

Digital Divide → Social Polarization

- Groups isolated from technological benefits

Technical Error , Moral Issue

- Inaccurate Data → Incorrect Result
- Possible Malicious use of Algorithms

✓ 2017 Asilomar Conference

: A Principled AI Discussion on Beneficial AI

(Research on beneficial AI, Cooperation between Developers, Protection and Responsibility from AI)

Hacking and Invasion of Privacy

Tech Incidents	Google Self-Driving Car Crashes with Bus ('16.2), Intelligent Robot breaks glass at a Chinese conference ('16.11)
Hacking Incidents	Commercial drones by Parrot → Control Malfunctions ('15.8) Tesla Autopilot system Hacked → Braking issues arise ('16.9),

Heterarchy

- A system of organization where Country, Citizen, and Market share the same “horizontal” position of power and authority, each playing an equal role.

ICT Development

- Changes in political processes such as e-Voting, Political debate in cyber space, and online political campaign
- ✓ The Umbrella Movement(Hong Kong, 2014), Jasmin Revolution (Tunisia, 2010), Orange Revolution (Ukraine, 2004)

Democracy in Social Media

- Multi-directional & active interaction between Politician and Citizen both Online and Offline

Introduction of Heterarchy

- Citizens with data power can create network with the government and private-sectors to gain access to big data, becoming the policy maker, distributor, user, consumer and ultimately establishing the e-Democracy
- ✓ Bot, Cognitive Agent are used to resolve the daily issues and regular concerns of citizens.
- ✓ e-Voting system using Block Chain technology

III

Transformation of Government's Role and Korean Practices

Post-Information Society so called “Intelligent Society”
in the era of 4th Industrial Revolution

will be a society with more **Convenient Life**

and **Secured Environment** in which

Intelligent Disaster Management,....

Mobile Wallet, Smart Factory,
Customized Medical Service,
Smart Farm...

the **Enhanced Intelligent ICTs** solve **Social Problems**

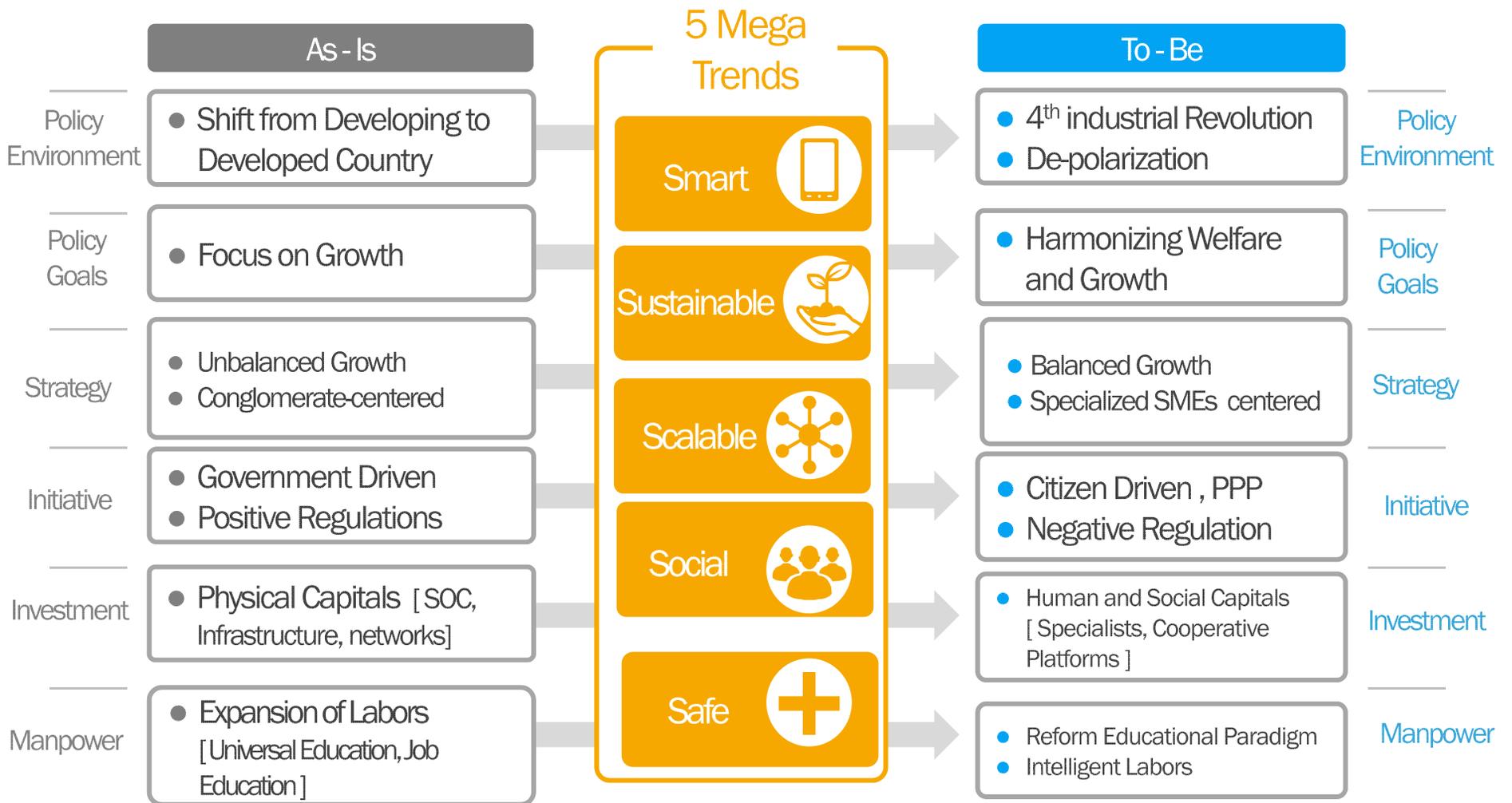
AI, IoT, Cloud, Big Data, CPS...

Natural Disasters,, Wicked Problems, Aging Society...

and **Creating New Value**

New Service, Jobs, Healthcare

10 Transformation of the Role of Korean Government



11

Best Practices in Korea (1) : Digital Innovation

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Agriculture

- AI Smart Farm Technology ; based on precision cultivation
- Crop yield rate monitoring and prediction system
- Livestock disease prediction system and prevention system

Transportation

- Establishment of real-time intelligent traffic system
- Enlargement of Cooperative – Intelligent Transport System (C-ITS)
- Support system for Self-Driving automobiles

Manufacture

- Development and distribution of Smart Factory technology
- Construction of 3D printing service platform

Financing

- Household debt and risk prediction information system
- AI based financial crime response system

Environment

- AI based Fine Dust forecast system
- Smart water management system
- IoT based daily waste management system

Welfare

- Intelligent caring robot : DoHo-mi
- Wearable suits for the aged
- Self-Driving mobility for the disabled

Health Care

- Personalized AI health care service
- Establishment of health care data exchange network.
- Ai-based cardiovascular intervention robot

Safety

- Smart SOC management system
- Intelligent CCTV with self-cognitive system

Thank You !

President Byung-Jo SUH