METI
Ministry of Economy, Trade and Industry

Towards Realizing a Digital Society

Economic and Industrial Policy Bureau

Commerce and Information Policy Bureau

1. Current Status and Issues

① The "Lost 30 years" of Japan

Delay in digitalization caused sharp decline of international competitiveness. Automobiles, Japan's main industry, also faces a drastic change by digitization (CASE). Japan's industries are facing a severe situation.

- Japanese companies among world top 10 market cap: 7 (1989) ⇒ 0(2020)
- Japan's share in the semiconductor market: 50.3% (1987) ⇒ 10.0% (2019)

②Long-term stagnation in digital investment

Underinvestment in digitization has been a major cause of slow economic growth.。

- US : 1994⇒2018 Digital investment x3.6, GDP x2.8
- Japan : 1994⇒2018 Digital investment x1.1 GDP x1.1

③Digital investment focused on "optimization" of existing practices

"Real" DX that transforms business and produces new value is necessary (esp. for SMEs).

- 80% of IT budget in Japanese firms spent on maintenance/operation of current practices

④ Lack of quantity/quality of digital talents

IMD World Digital Competitiveness Ranking among 64 countries: 47th in Talent, 62nd in Skills

- 40% of Japanese companies say they have a "major lack" in quality/quantity of digital talents

⑤"Digital Defeat"

Competitiveness of digital industry declined in Japan but improved in other countries.

	US (GAFAM)	China (BAT)	Japan (NTT·Fujitsu·NEC·Hitachi)
Market Cap in 1992	$30 Billion	$0	$110 Billion
Market Cap in 2020	$7.5 Trillion	$1.4 Trillion	$180 Billion

1. Current Status and Issues

⑥Explosive increase in data traffic due to digitalization of society

Implementing Society 5.0 nationwide requires establishing data centers in rural areas

- Data traffic expected to increase by more than 30 times in the coming 10 years
- Data processing must be done within 0.01s for automatic driving and drones, but sending data from rural areas and processing in Tokyo/Osaka takes around 0.05s.

⑦Issues that have become apparent through COVID-19

Issues and lessons around administrative services have arisen. Digital reformation of the entire society and regulations/institutions is necessary.

- Inconsistency between national/regional systems, flaw in online procedures, etc.

⑧Improving business environment for energy procurement

- Restraining industrial electricity cost and procuring carbon-free energy is key to competitiveness.

⑨Large-scale industrial policies by other countries in digital generic technology

- China: “Integrated Circuit Industry Investment Fund” (2014, 2019) invests over ¥5T in semiconductor-related technology. Rural governments also own funds over ¥5T.
- Europe : ”Digital Compass 2030” proposes “creating secure, high-performance and sustainable digital infrastructure” regarding networks, semicons and quantum computing. (¥18.8T)
- US: Passed NDAA 2011 which allows grants amounting over $3B and “Multilateral Microelectronics Security Fund.” USICA, including $5T investment in semiconductors, passed Senate.

2．”New Direction” in Policy Measures

Traditional Policies

- ✓ **Lack of recognizing importance, impact and speed of change by digital technology**
- ✓ **Lack of shared future view between public and private, resulting in underinvestment**
- ✓ **Continuation of existing businesses and lifestyle as a premise, resulting in partial digitization**

- **“Digital Defeat” and “Lost 30 years”: slow response to digital reform brought decline of int’l competitiveness**
- **Need to respond to “nationwide explosion of data traffic”: digital infrastructure/industries to support distributed data processing is necessary**
- **Deficiency of administrative services: COVID-19 revealed inexperience in public digital procedures and alignment between government and medical settings.**

“New Direction”

(General Outline)
Digital investment is the engine of economic growth. Public/private sectors shall share a future vision and create change.

(Policy direction at each layer)

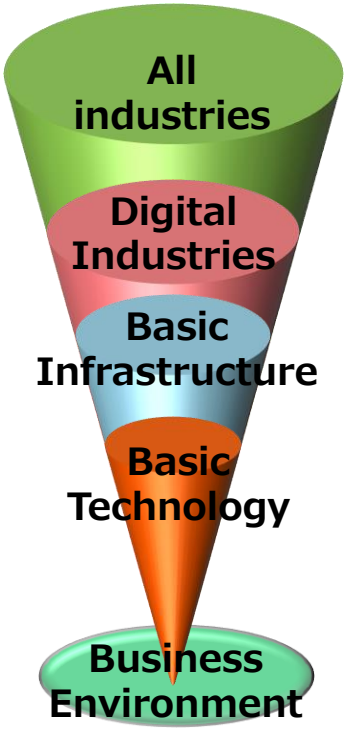
① “Real” DX by “all” industries
- Enhancing industrial DX that leads to real transformation, rather than maintaining the status quo.

② Competitive digital industry
- Enhance cloud and software industries in response to expanding BtoB market and changing business, while GAFA thrives in BtoC sector.

③ Digital basic infrastructure
- Increase of data traffic, edge processing and open/virtual technology requires enhancing digital infrastructure

④ Protect/enhance basic tech
- Improving competitiveness of semicon, storage cells, photonic-electronic convergence, computing

⑤ Business environment of digital era
- Digitization of society and regulatory reform
- Ensuring industrial base through public procurement
- Energy procurement



Policy direction of foreign countries :
- ✓ Establishment of national digital base and enhancement of digital-related industries
- ✓ Fostering of semicons, storage cells and other important technologies through national policy measures
- ✓ Establishing data centers and organizing digital infrastructure

3．Concept of “Building a New Digital Japan”

○A partial response is insufficient for the progress of DX in Japan. A major national reform, or **“Building a New Digital Japan,”** is necessary. This will realize **“Vision for a Digital Garden City Nation”** and overcome the barrier of distance which still exists after the “Building a New Japan” framework 50 years ago.

○ “Vision for a Digital Garden City Nation” : By fully utilizing digital technology, rural areas could achieve

- the **same quality** of administrative, medical, educational and other basic services
- a **higher quality** of living by new working habits (remote, no commuting) and leisure time
- a larger chance for new businesses and DX to provide **digital solutions for regional issues**

with a possibility to outperform urban cities if global industrial hubs and human ecosystems could be established.

○**Partial efforts by each sector is insufficient** to achieve “Digital Garden City”. “Building a New Digital Japan” must include the following factors to maximize the potential of digital technology:

- Improved of quality/competitiveness of **software, cloud service and data platforms**
- **Digital infrastructure** that anticipates technological development and increasing data demand
  - **Distributed and efficient electric supply** (with the use of renewable energy) is indispensable for distributed data processing (=digitalization of energy infrastructure)
  - Resolving regional issues such as the aging society requires **digitalization of transportation/logistics** such as through automatic driving and delivery, along with distributed digital infrastructure.

○The government of Japan will formulate the “Building a New Digital Japan Roadmap” as an integrated plan including **regional utilization of digital technology**, organization of **digital infrastructure**, **energy infrastructure** that optimizes renewable energy supply, **digitalization of transportation and logistics**, and **data platforms** that control the above, while taking technological progress into account.

○At the same time, the government will consider how **regulations, institutions, legal systems and international rules** (regarding data flow and other issues) should be aligned with the digitalization of the entire society, to thereby strive toward the digitalization of the entire country.

3．”Building a New Digital Japan” compared to “Building a New Japan”

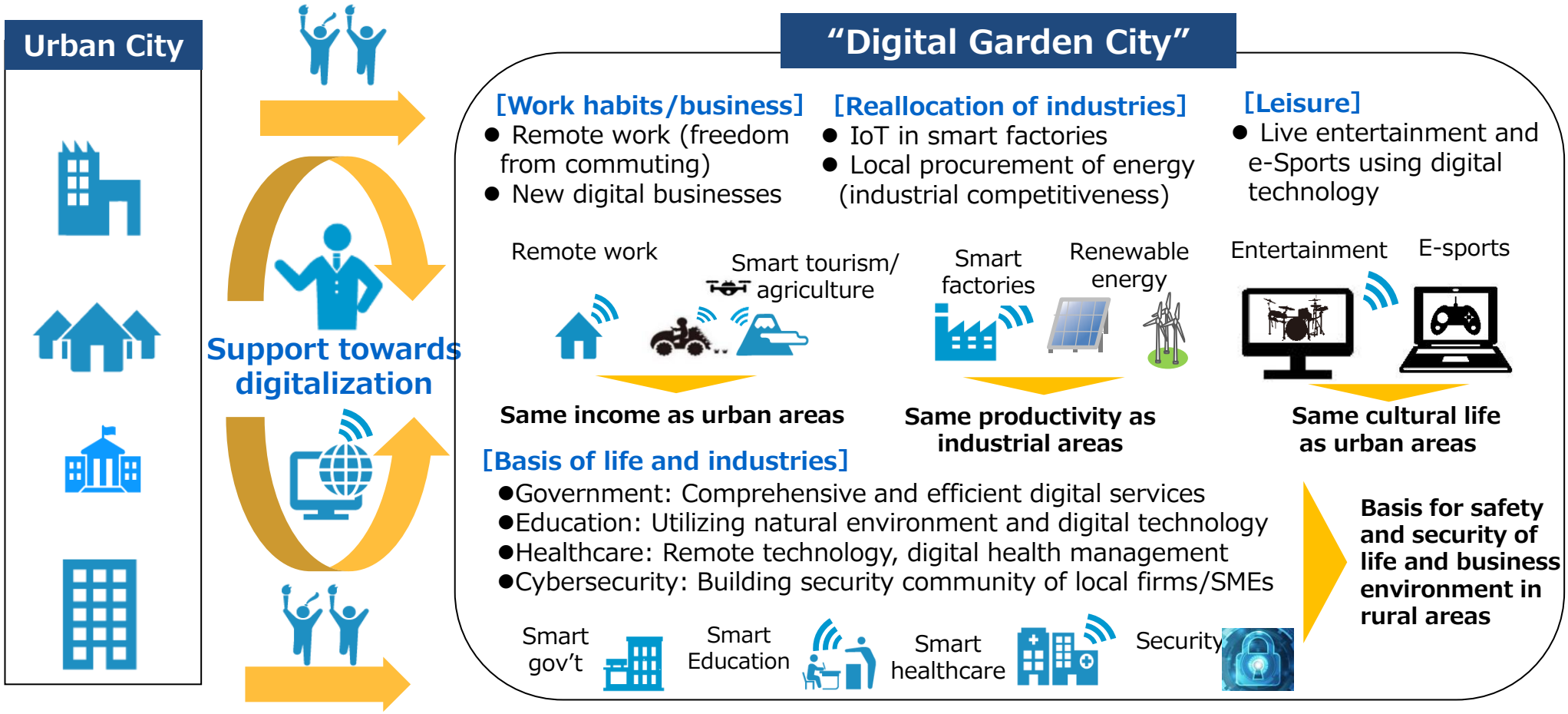
- Exactly 50 years has passed since the **“Building a New Japan” plan. (1972)**
- This plan aimed for decentralization by reallocating industries and organizing nationwide transportation and telecommunication infrastructure. However, it could not overcome the **barrier of “distance,”** and accelerated urbanization as a result. Also, the aim to overcome disparity resulted in **uniform administrative services**.
- “Building a New Digital Japan” aims to realize “Digital Garden City” with **regionality and diversity** through full utilization of digital technology. We will accelerate the trend toward digitalization which has become irreversible through COVID-19, and promote the **reformation of national/regional administration**, **industrial innovation** and **organization of digital infrastructure**. Simultaneously, we will **create new jobs and businesses** in rural areas so that every individual could live a prosperous and diverse life.

Comparison between ”Building a New Digital Japan” and “Building a New Japan”

	“Building a New Japan”	**“Building a New Digital Japan”**
Year	1972	2022
Goal	Decentralization by reallocating industries and organizing nationwide transportation and telecommunication infrastructure	Rural societies full of originality through full utilization of digital technology
Result	Urbanization, national uniformity	Realization of “Digital Garden City” with diversity and charm of regional areas

4．”Vision for a Digital Garden City Nation” through full utilization of digital technology

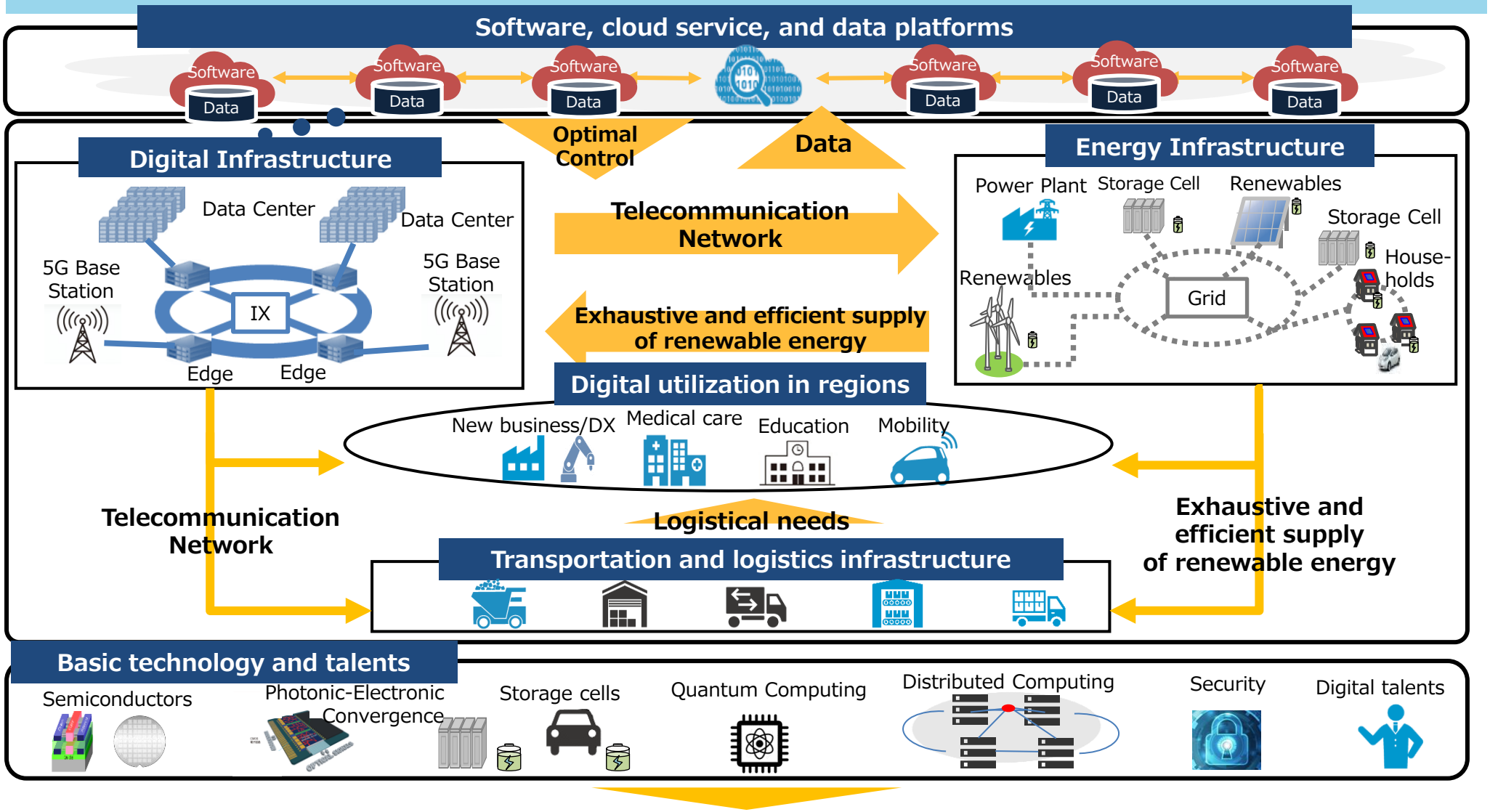
- Full utilization of digital technology will bring “freedom from the barrier of distance.”
- At the same time, the “real” charms of each region will be maximized in peoples’ daily lives and industries, leading to the realization of “Digital Garden City.”



Digital technologies will enhance regional charm and, combined with abundant nature of regional areas, will accelerate natural emigration to regional areas

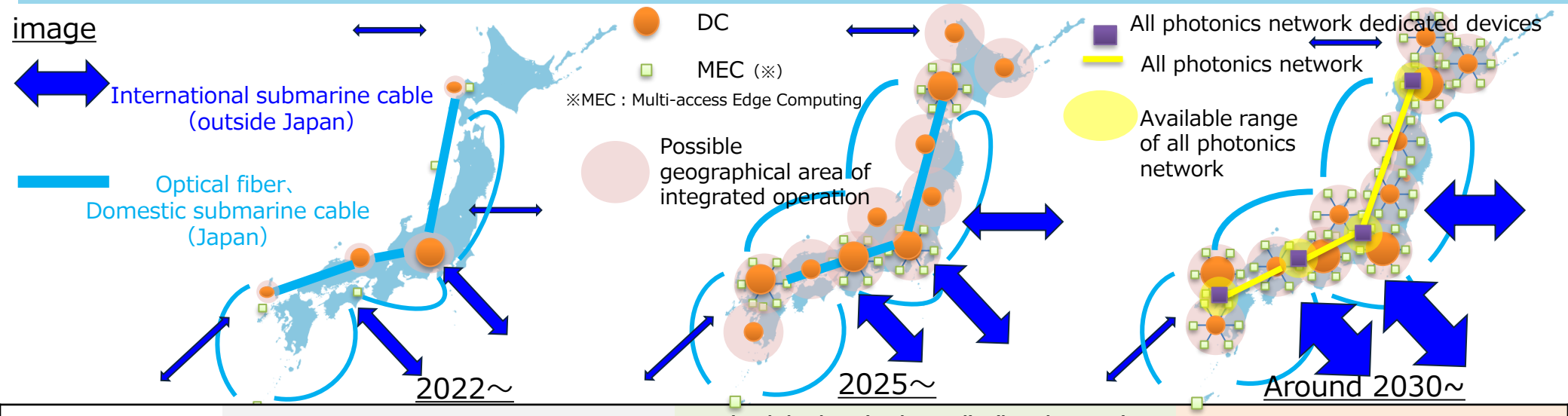
5. "Building A New Digital Japan Roadmap" for "Vision for a Digital Garden City Nation"

- The **"Digital Roadmap"** is an integrated plan including **regional utilization of digital technology**, organization of **digital infrastructure**, **energy infrastructure** that optimizes renewable energy supply, **digitalization of transportation and logistics**, and **data platforms** that control the above, while taking technological progress into account.



6. Image of “Building A New Digital Japan Roadmap”

- Technologies, infrastructures and industries that support data-driven society have developed dynamically.
- It is important to develop Japan’s infrastructure for information processing, telecommunication and power management in an integrated manner, considering global trends.
- Japan will secure the players of digital industrial infrastructures that support the economy, society and democracy, regardless of whether they are domestic or foreign capital.



Soft/Cloud/Data Collaboration Infrastructure	・Development of hybrid could, public cloud ・Change of on-premise to cloud in Industry ・Expansion of IoT（Smart XX）	・Regional cloud service, hyper-distributed computing ・Advancement of Digital Twin ・Next generation super computing ・Establishment of IoT platform ・Development of data platforms	・Implementation of quantum computing
Base infrastructures (DC, Network, Energy)	・Development of 5G and optical fiber ・Optimal location of Data Centers ・Restraining operational cost(e.g. energy) ・Promotion of renewable energy procurement	・Post-5G, domestic submarine cable, satellite constellation ・Expansion of reginal green data centers ・Development of MEC ・Expansion of quantum cryptography communication and leased line ・Expansion of renewable energy and storage battery introduction	・Beyond5G ・All photonics network ・Full-scale implementation of MEC ・Using renewable energy as the main power resources, updating of grid control, mass introduction of storage batteries, demand response, V2G development
Basic technologies (semiconductors, storage batteries)	・Reinforcement of semiconductor bases ・Securing domestic production base for storage batteries ・R&D of photonics electronics convergence, hyper-distributed computing and quantum computing	・Development of next generation semiconductors （Beyond2nm, 3DIC, Green Power Semiconductor ） ・Implementation of next generation storage batteries (All-solid-state batteries)	・Implementation of future semiconductors (chips of photonics electronics convergence, quantum related devices)