Dr. Koji Yasui

Senior Chief Technologist
Mitsubishi Electric Corp.

- 1982: joined Mitsubishi Electric Corporation
- 35 years+ in R&D and Management in Mitsubishi Electric Corporation
  - Roles as Researcher, R&D Manager as well as factory manager and corporate strategic manager
  - Providing automation solutions including industrial processing machines
- Leading roles in state-run technology projects
  - "Photonics and Quantum Technology for Society 5.0," supported by Cabinet Office and QST
  - COI program "A center for innovation using coherent photon technology"
    supported by MEXT and JST
- B.S. and Ph.D. degrees in applied physics from the University of Tokyo
- Visiting scientist at Stanford University in 1989

NL Netherlands

MITSUBISHI ELECTRIC
Changes for the Better

August 19, 2021

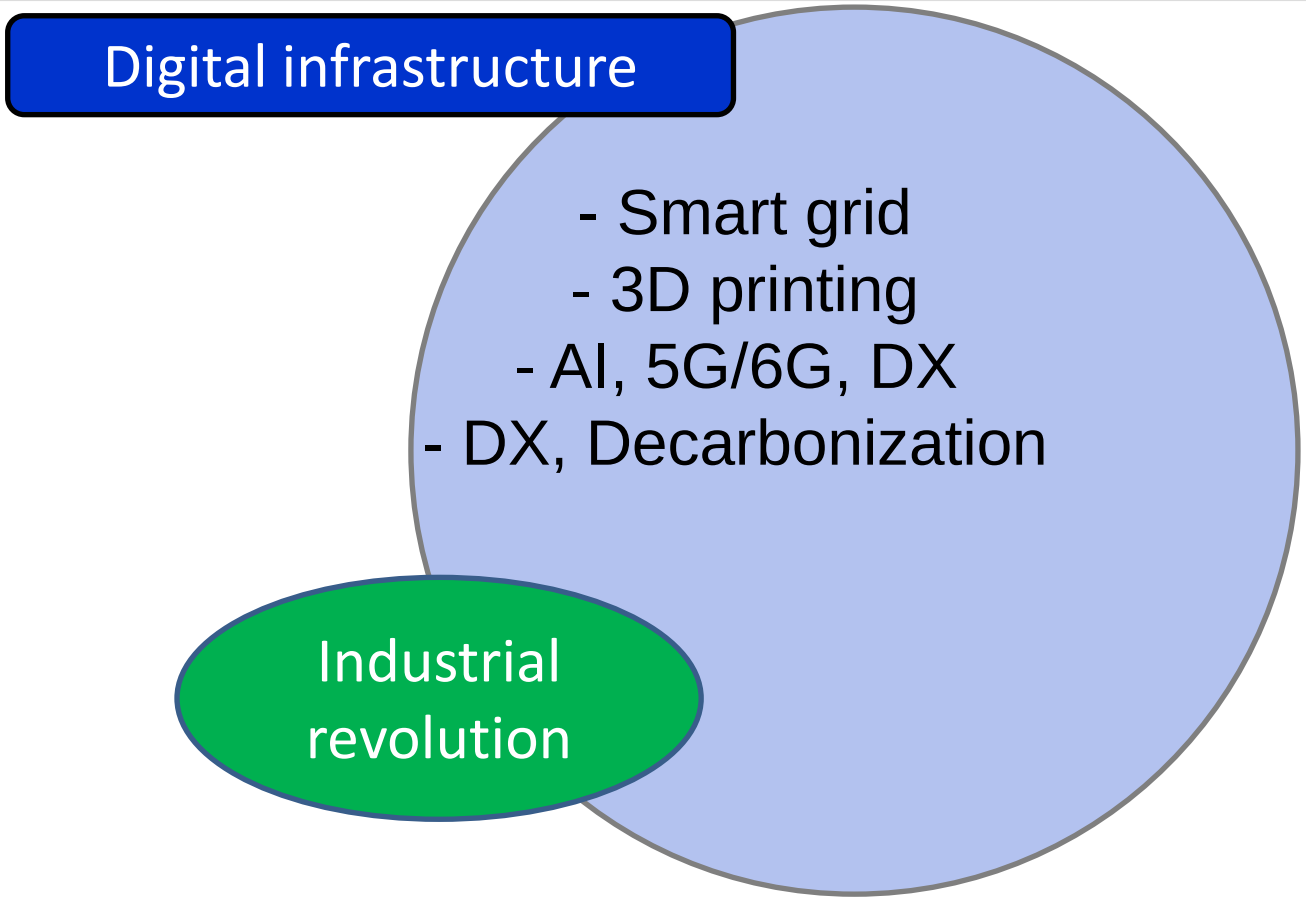
Netherlands-Japan Smart Industry Expert Meeting

Status and Ambitions of Smart Industries in Japan

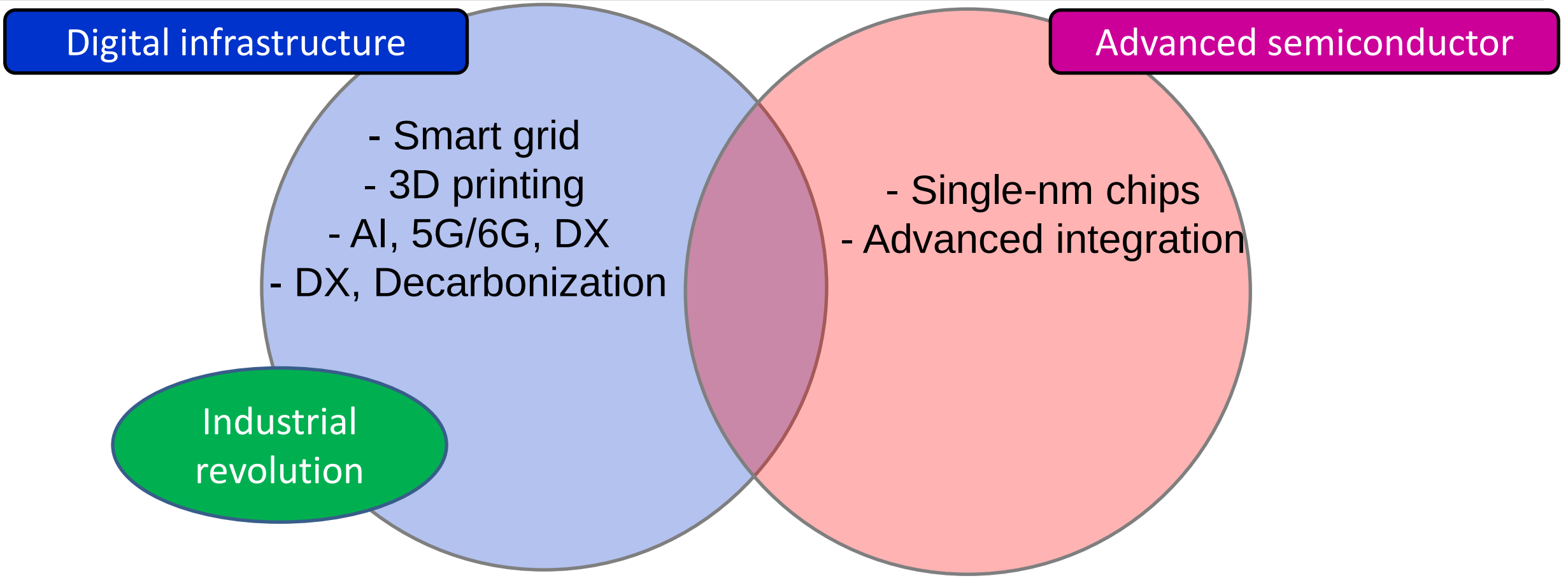
Koji Yasui, Ph.D.
Yasui.Koji@aj.MitsubishiElectric.co.jp

Senior Chief Technologist
FA Systems Group
Mitsubishi Electric Corporation

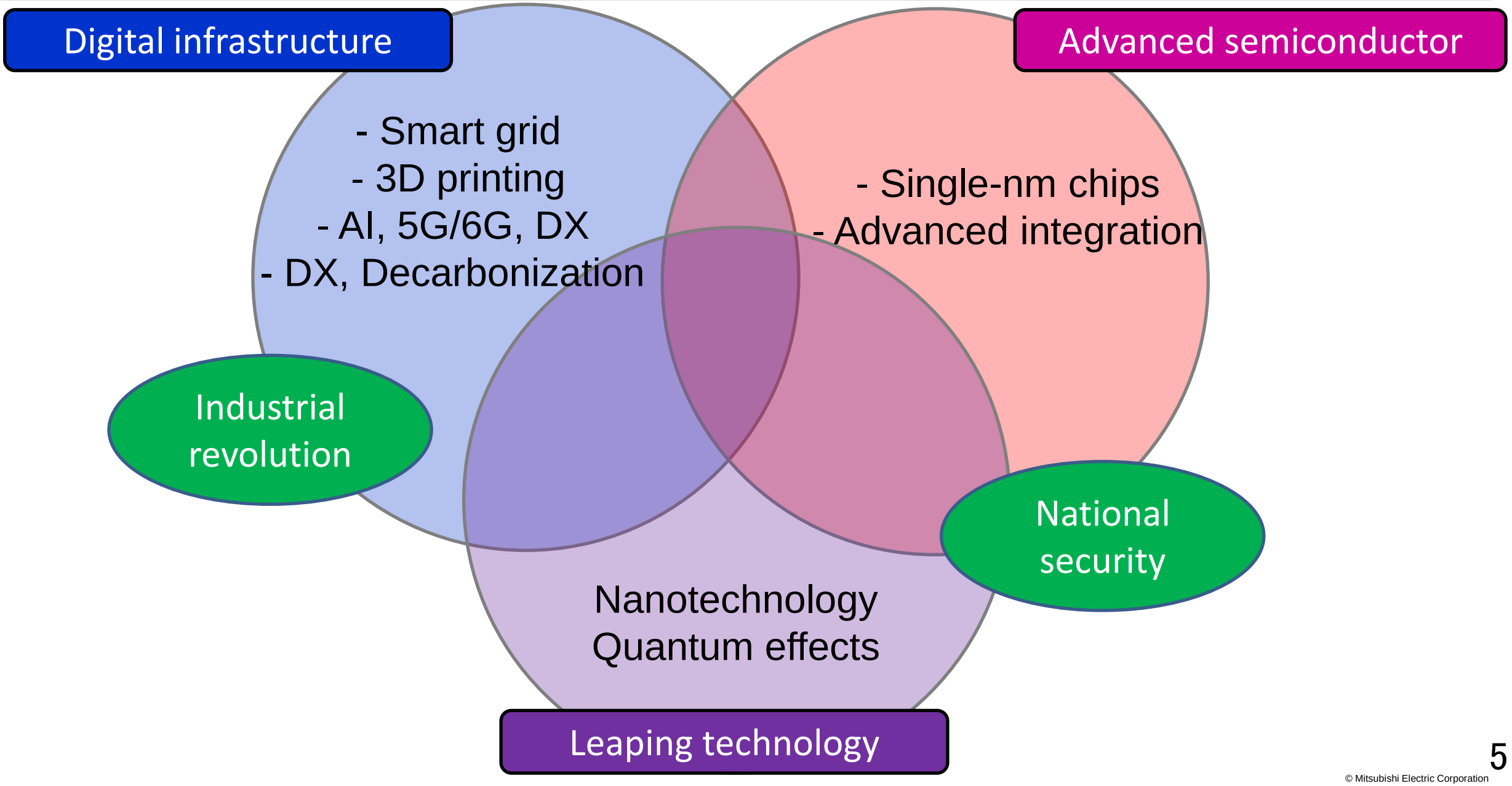
1. Recent market situation



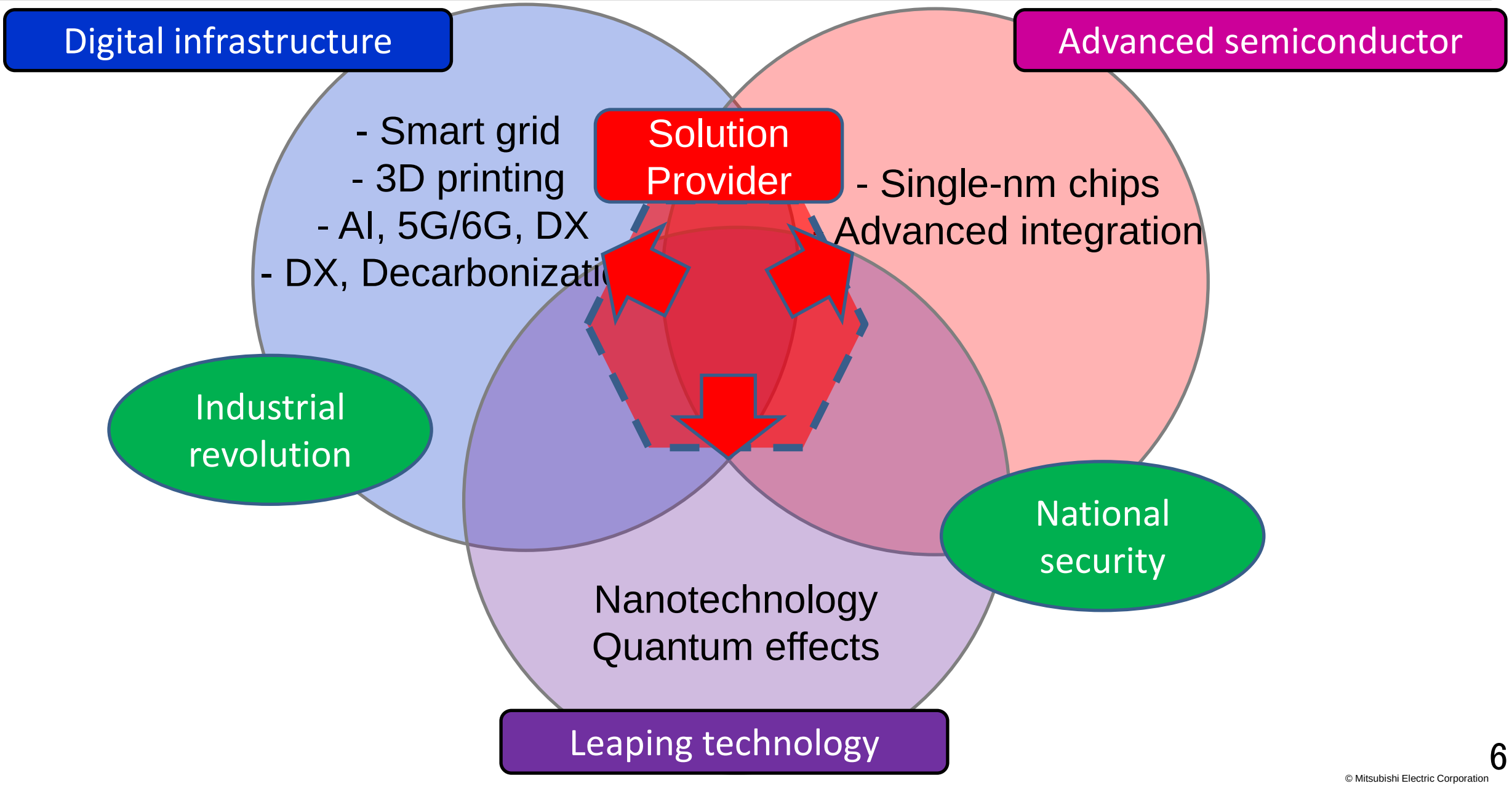
1. Recent market situation



1. Recent market situation



1. Recent market situation



1. Recent market situation

2. Road map and goal image

2. Road map and goal image

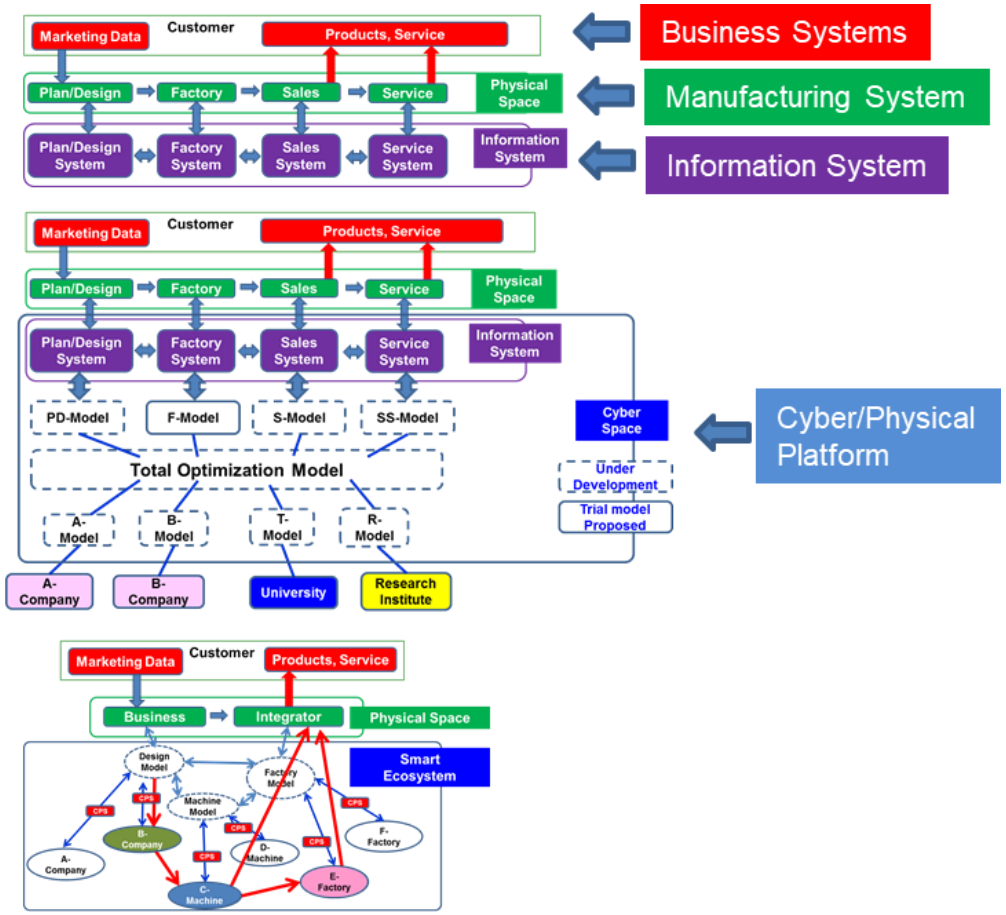
Road map has been shared to show that ～2021 should be the key year

Now: Advanced IT System

We are here

~2020: Middle target System

2020~30: Networking Manufacturing System



Cyber/Physical Platform

Digitalization

Cyber Physical System

Smart Industry

Ref: Japanese-German Center Berlin: "The future of Manufacturing: Industrie 4.0 in China, Germany and Japan," 2017.
Koji Yasui; "Smart Era: Recovery from the coronavirus crisis, New Industrial revolution and new world," ASIN: B088R9RWKJ, Amazon Kindle, 2020.

2. Road map and goal image

Cyber Space

Physical Space

Total optimization by using models

Quantum Computing

nm-chips

Model construction of processes

Quantum Computing

nm-chips

Model maintenance

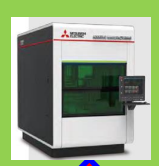
Single nm-chips for 5G/6G, AI

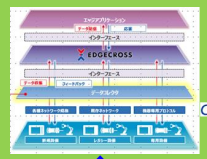
SNC ⇒Digital Twin

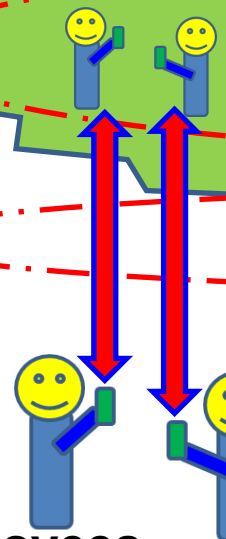
Digital Twin

Digital Twin

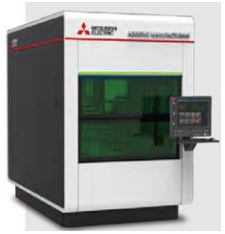
Digital Twin



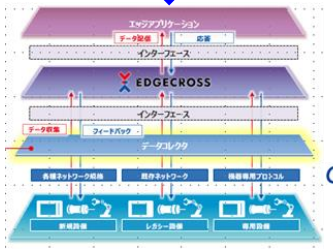




Employees



Mother machines



Production lines

Machines

Small/Mid Enterprises

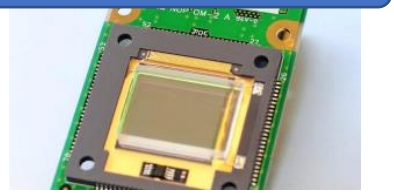
Big Enterprises

Program to supply best solutions for industrial sites

Solutions inevitable to complete CPS

Model building

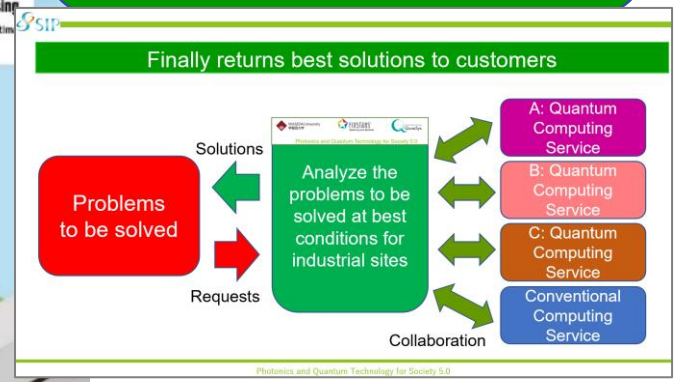
Model maintenance



Physical tools: Lidars

図1 通常のブロードエリアタイプ半導体レーザーとフォトニック結晶レーザーの違い。

Quantum related services collaborated with global suppliers



Ref: Koji Yasui, Q2B Practical Quantum Computing, QC Ware, December, 2020.

SIP program supported by Cabinet office, MEXT, and QST
Ref: https://www.qst.go.jp/book/list/book61.html

Ref: Smart Manufacturing Platform Japan (LinkedIn)

1. Recent market situation

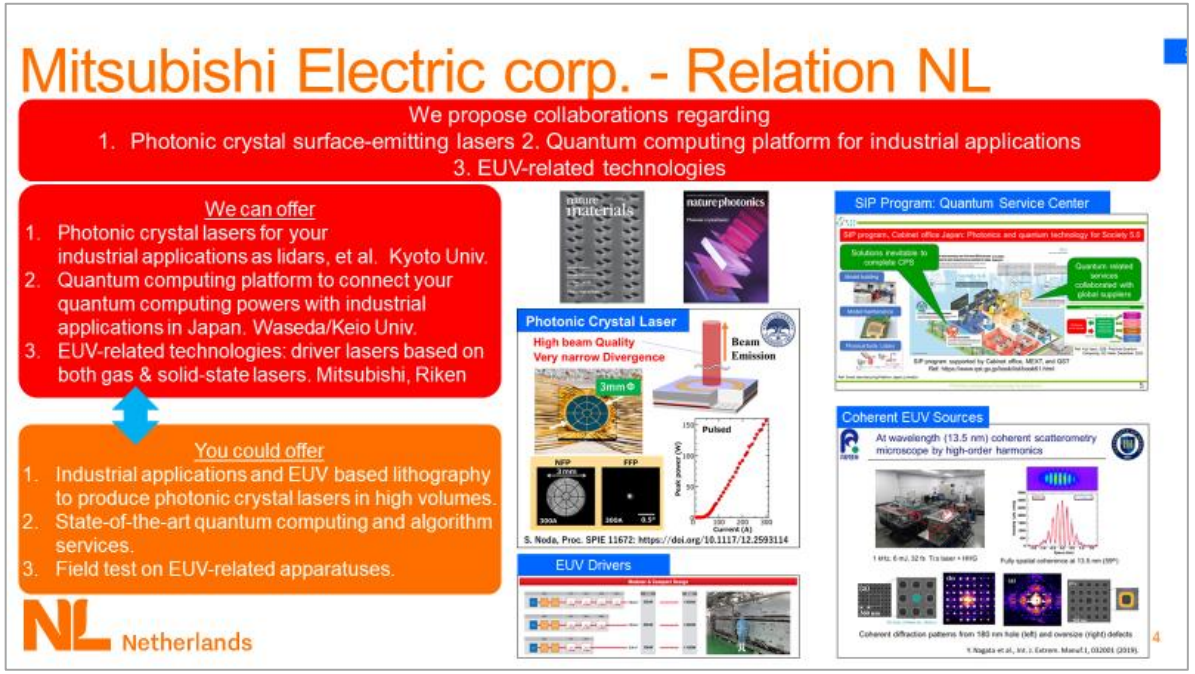
2. Road map and goal image

3. Collaboration targets

Recent activities for collaborations with NL

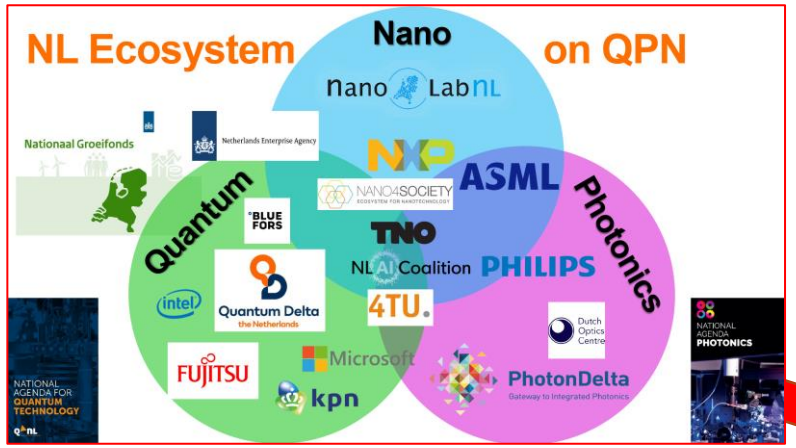
1. Advanced technologies related to Photonics and EUVL
Quantum-Photonics-Nanotechnology meeting on 8 July

Contact persons on Japan side
1. Kyoto University: Dr. Noda, Dr. Ishizaki



2. Promote the development of hubs that can respond to the demands of the global markets

Contact persons on the Netherlans side
1. TNO: Dr. Claire Stolwijk
2. DOC: Mr. Bart Snijders



Nationwide
Kyoto and Kansai area
(Electronic components industry, 3D printer)

Kyoto University Center

Collaboration with various activities
(Example) Kansai-3D Practical Application Project(400 companies)
Kansai, METI

Nation wide

University of Tokyo Center (Hongo, Kashiwa)

TACMI Consortium (70 companies)

Contact persons on the Netherlans side
Post quantum technology
Compumatica: Dr. Petra van Schayik

Kyushu (Semiconductor Industry)

Kyushu University　Center（KILA Consortium）

Collaboration with various activities
(Example) SIIQ Kyushu Semiconductor Innovation Council (180 companies)

Chubu Region and North Kanto Region (NEW)
(Automobile industry, electronics industry)

Questions from Japan side

Question 1: As smart manufacturing progresses, is there a risk that the control of the platformers represented by GAFA will increase? How do you think Japan and Europe, which depend on the U.S. as their platformer, should proceed?

Question 2: The risk of SMEs being left behind as smart manufacturing progresses has been well discussed in the Netherlands and Germany. In particular, there is an importance of cyber security measures, and I have heard that the Netherlands is also envisioning a trial of quantum computation-resistant communication as a concrete measure. What is the current situation in the Netherlands?