

# Network Services Business/ Global 5G Business

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# \Orchestrating a brighter world

NEC creates the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential.

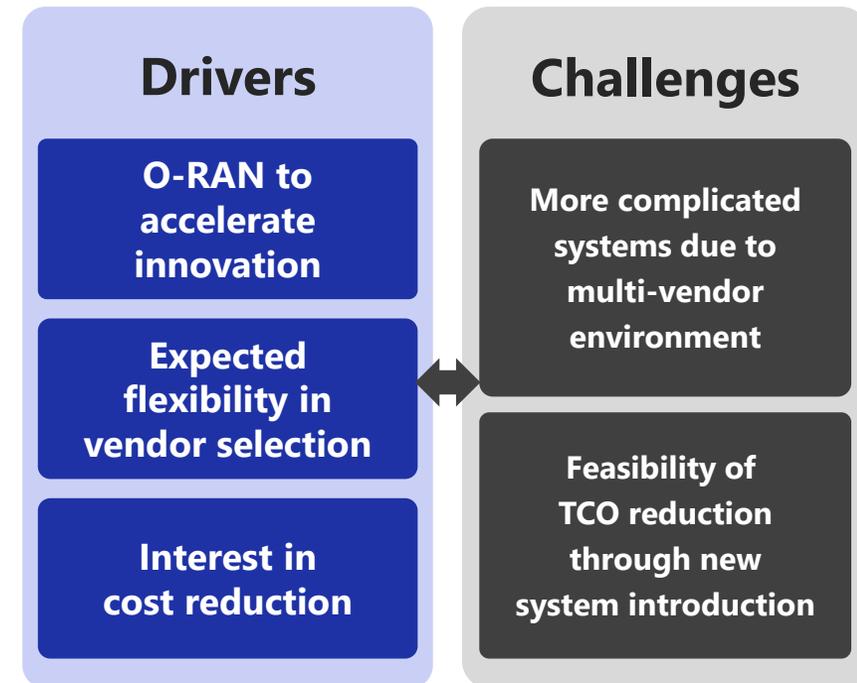
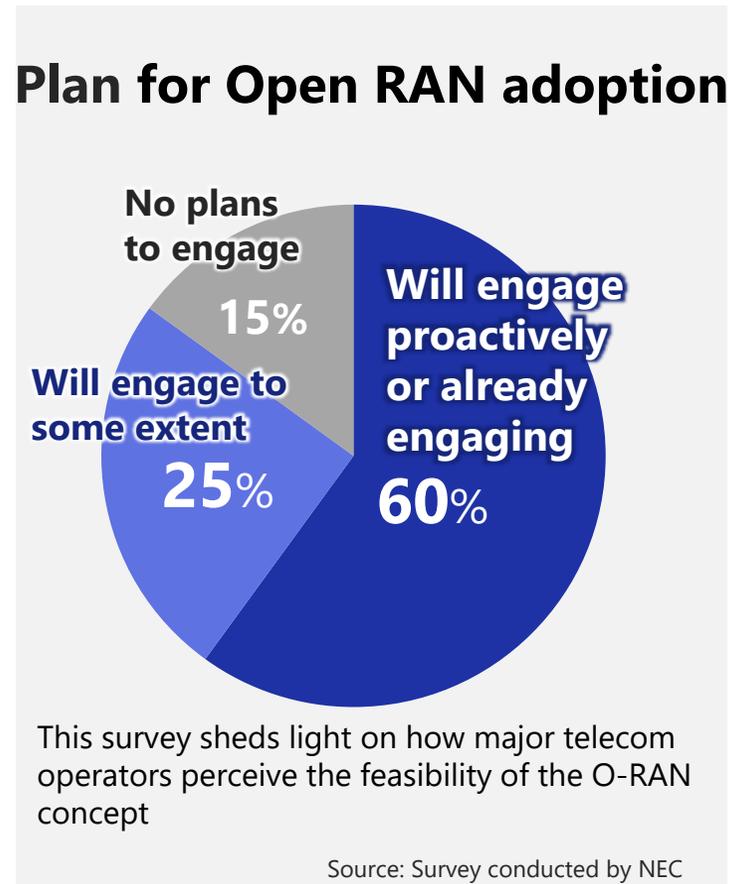
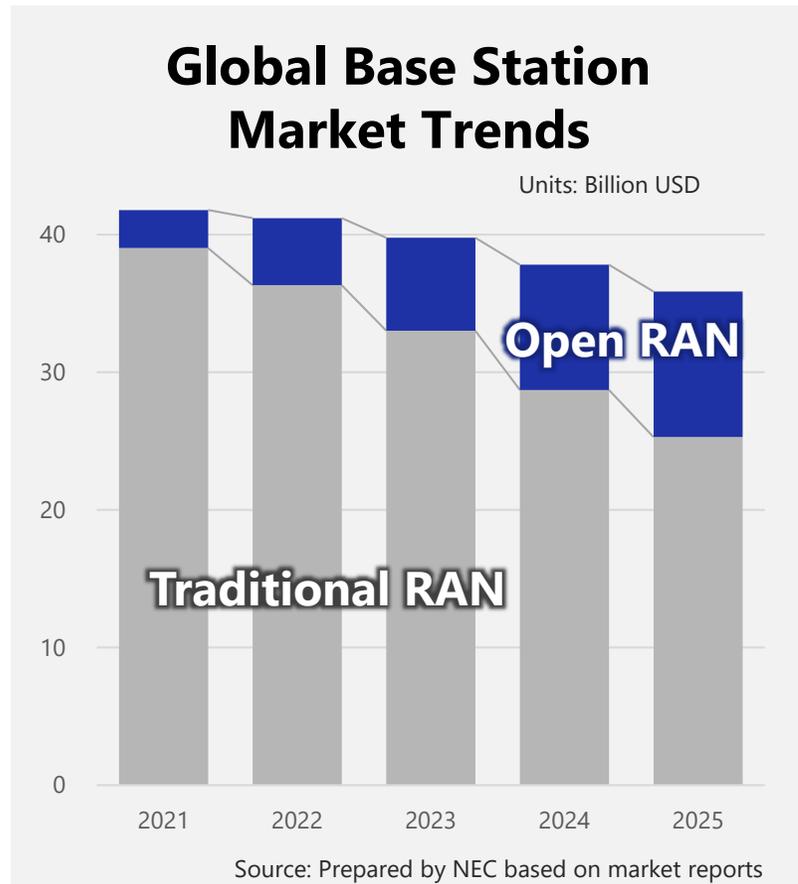
1. Global 5G Business

2. Network Services Business

# 1. Global 5G Business

# Global 5G Open RAN Market Trends/Environment

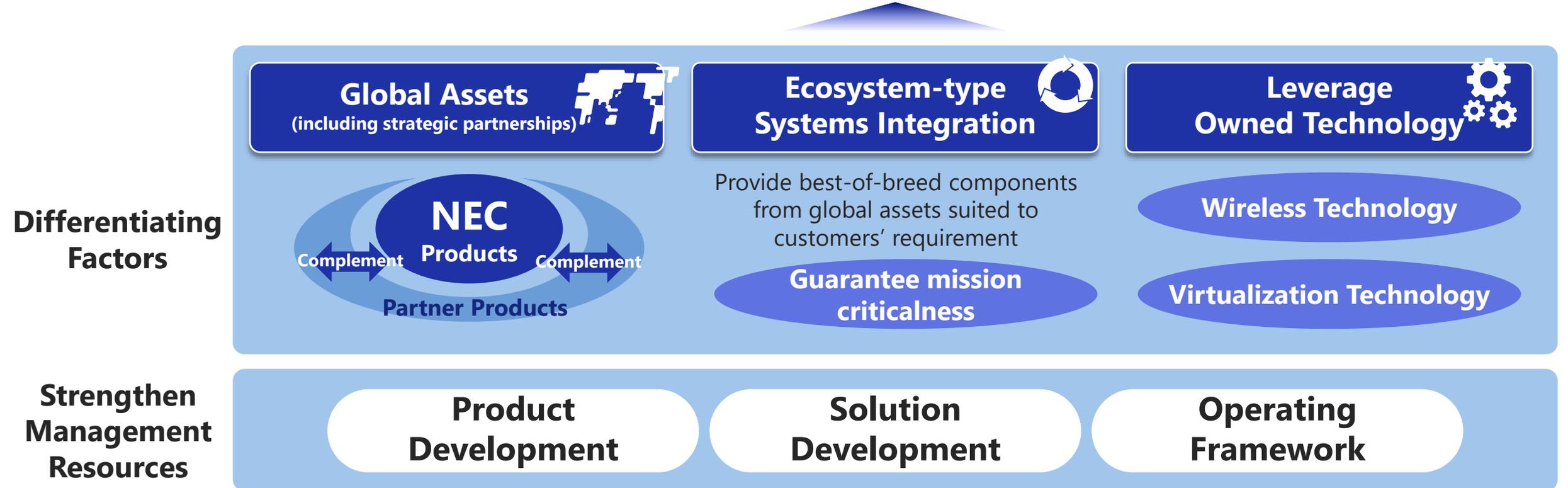
Many telecom operators are aggressively engaging in Open RAN initiatives, as its market is expected to grow at CAGR of 35% from 2021 to 2025



# NEC's Vision: Global 5G Business Model

Provide Open RAN ecosystem assembled with NEC and partners' products  
Commercialize global 5G business through market selection and concentration

## Commercialization through Market Selection and Concentration



# To Achieve Mid-term Management Plan

## FY2025 Numerical Targets

<b>Revenue</b>	<b>¥190.0</b> bn (including domestic)
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<b>Revenue CAGR (FY20-25)</b>	<b>35%</b>
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<b>Adjusted Operating Margin</b>	<b>10%</b>
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## Strategy to Achieve Targets

<b>Customer Strategy</b>	<b>Market expansion by focusing on the leading operators for Open RAN adoption</b>
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<b>Product Strategy</b>	<ul style="list-style-type: none"><li>• <b>Portfolio expansion from hardware to software</b></li><li>• <b>Develop a recurring business model</b></li></ul>
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<b>Business Strategy</b>	<b>Establish a global business framework starting from Europe, United States and India</b>
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# Strategy 1. Customer Strategy: Business building

Coordinate with leading Open RAN project and focus on operators planning aggressive investments in Open RAN to build a solid track record  
Strengthen business infrastructure for rapid response to customers

- ✓ Major global telecom operators participate in multiple active industry groups
- ✓ Trend towards retaining trusted vendors to ensure a secure telecom infrastructure

## Activities of telecom operators who are global Open RAN pioneers

O-RAN Alliance

Telecom Infra Project

Open RAN Policy Coalition

**Business development in existing customers who are aggressively utilizing Open RAN**

**Various approach to customers leveraging strategic partnerships**

**Strengthen customer engagement such as PoC\*<sup>1</sup> and respond quickly through global support scheme**

\* 1:Proof of Concept

# Global Customer Engagements

- Leveraging track record with domestic large-scale network deployments to obtain sales leads mainly in Europe and North America
- NEC being selected by global Tier 1 operators not only for trials/PoCs, but also commercial projects



## Track Records for Major Massive Commercial Network Deployments

Adapted to diverse telecom needs

Secure network implementation

7/2019 –

**NTT DOCOMO**

Base station conforms to O-RAN specification (commercial)

3/2020 –

**Rakuten Mobile**

6/2020

**Rakuten Mobile**

Selected as SA-type mobile core

10/2020

**NTT DOCOMO**



Domestic

# Telefónica and NEC to build Open RAN live pilots in 4 global markets as a key milestone toward mass deployment

**Pre-commercial trials in Telefonica's four core global markets: Spain, Germany, the UK and Brazil**

**NEC as the prime system integrator of multi-vendor-based Open RAN including NEC's 5G massive MIMO RU and RAN DO\*1**

**Joint validation of AI-driven RIC\*2 and SMO\*3 for RAN optimization and automation at Telefonica's newly established lab in Madrid**

**Live pilots aimed at scaling up to a total 800 sites for commercial deployment starting in 2022 across four countries**

\*1: RAN Domain Orchestrator   \*2: RAN Intelligent Controller   \*3: Service Management and Orchestration

# Voice from Telefonica (Video Message)

Short version of video message from “Telefónica and NEC to build Open RAN live pilots in 4 global markets as a key milestone toward mass deployment” press release issued on 14<sup>th</sup> Sep, 2021

URL: [https://www.nec.com/en/press/202109/global\\_20210914\\_01.html](https://www.nec.com/en/press/202109/global_20210914_01.html)



# Progress in Strategic Partnerships

Accelerating co-development and customer engagements aimed at global 5G business expansion

**NTT**

Aims

- Market formation of open networks
- Create global competitive advantages

Progress

- Started co-development of **RAN Intelligence Controller (RIC)** with NTT DOCOMO
- Global **co-creation activities for enterprises by utilizing 5G** with NTT Data

**Rakuten  
Mobile**

Aims

- Establish fully virtualized cloud-native network platform and expand globally

Progress

- Achieved world's highest UPF<sup>\*1</sup> performance in **5G core (5GC)**
- Promote business development for RCP<sup>\*2</sup>

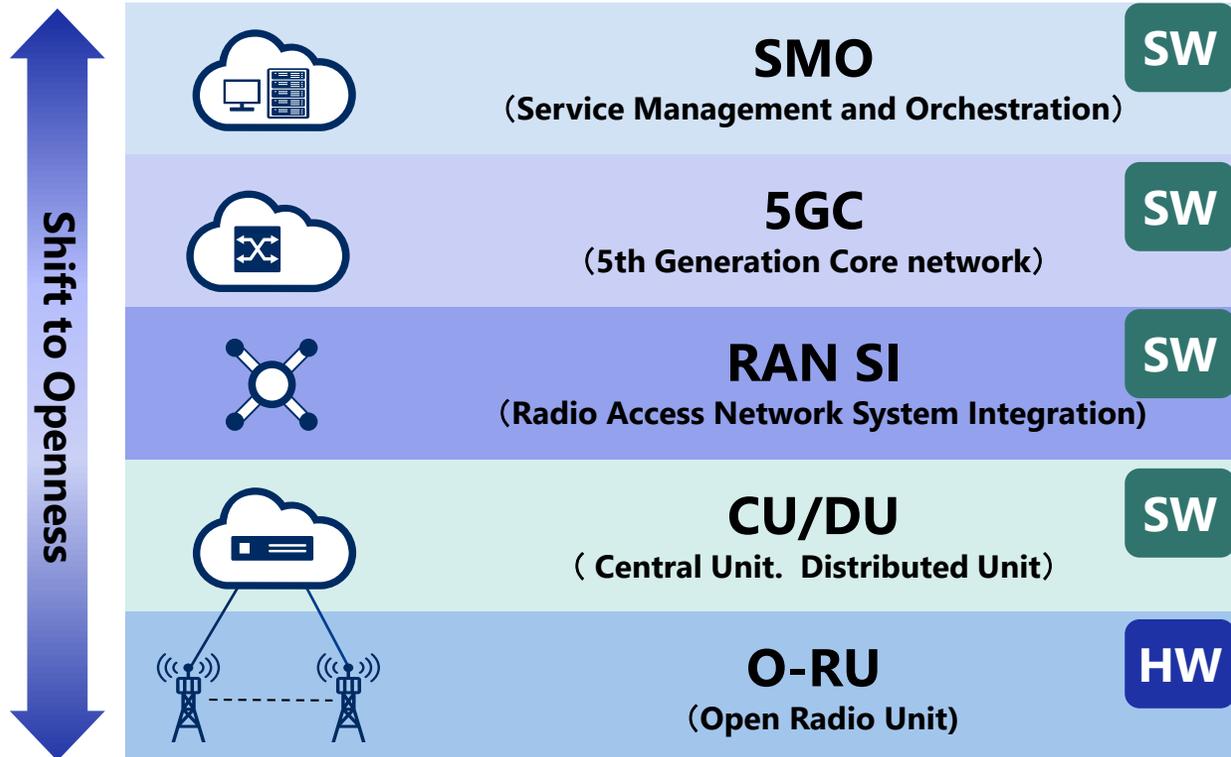
\*1:User Plane Function

\*2:Rakuten Communications Platform (Completely Virtualized Cloud Native Mobile Network Platform)

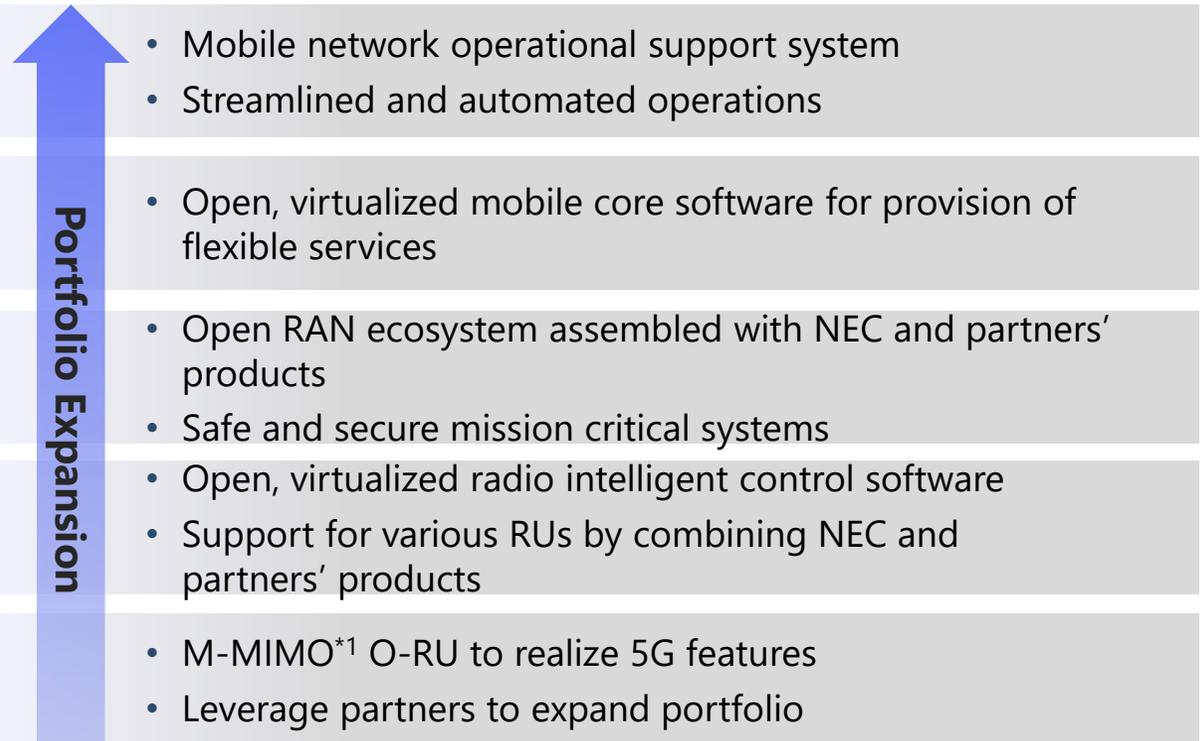
# Strategy 2. Product Strategy: Portfolio Expansion

- Expand business volume by adding software business to the O-RU hardware business
- Leverage partner ecosystem to provide best-of-breed solutions suited to customers' needs

## NEC 5G Portfolio



## Initiatives for Portfolio Expansion



\*1 : Massive Multiple Input Multiple Output

# Strategy 2. Product Strategy: Business Model Transformation

Expand from hardware business to software licensing and system integration services to achieve high profitability

2021



2022

Proactive  
Investment  
Phase

**Market environment: Introducing Open RAN and deploying the network**

- Market entry and customer base expansion with hardware business focusing on O-RU
- Introduce software products to the market

2023



2025

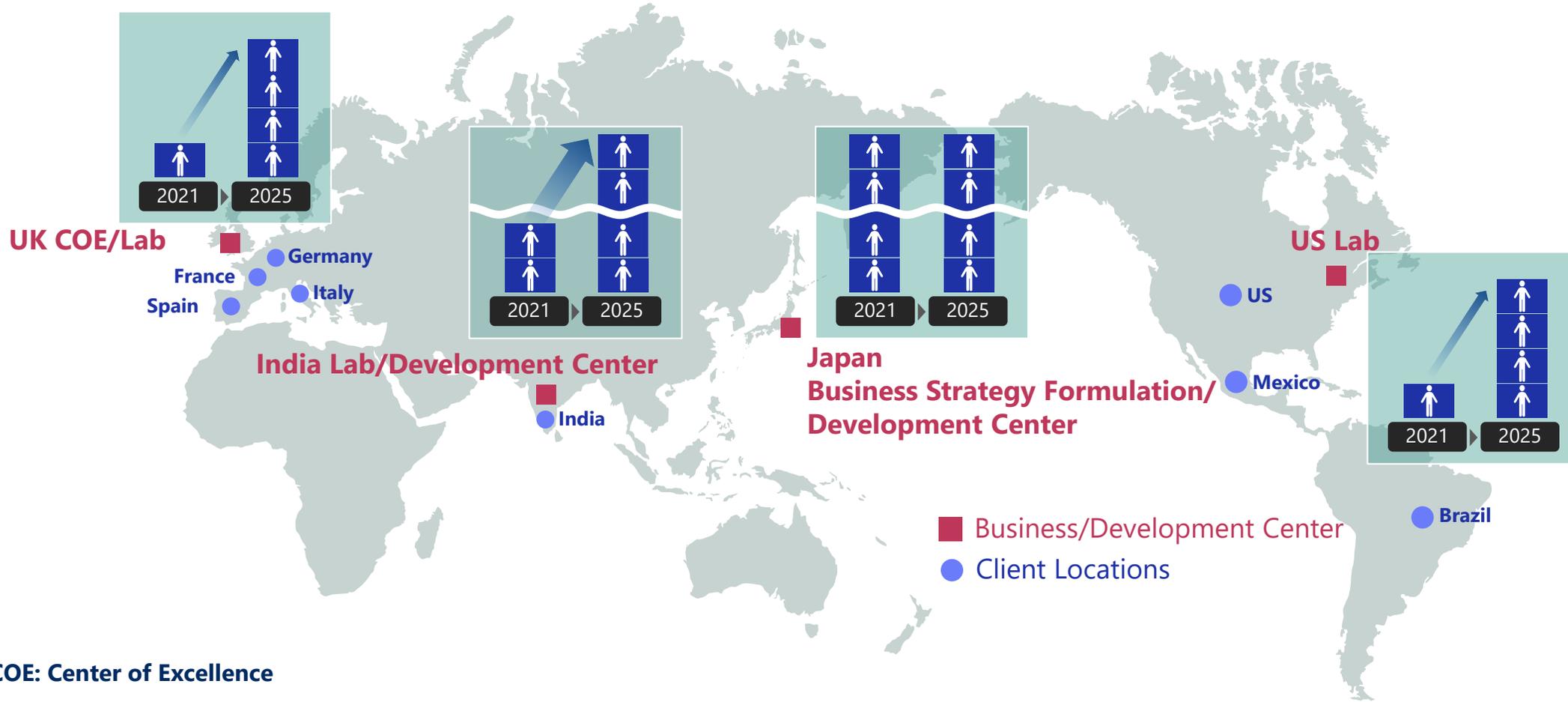
Investment  
Recovery Phase

**Market environment: Heightened importance of enhanced operational efficiency and automation as Open RAN deployment expands**

- Add software (CU/DU, 5GC, SMO) and services (systems integration) to hardware business (O-RU)
- Increase profit through high value-added solutions such as automation, efficient operation, and network resource optimization
- Expand software licensing and recurring businesses

# Strategy 3. Business Implementation Strategy: Establish Global 5G Business Framework

- Development and production are mainly conducted in Japan and India. In addition, establish business implementation framework in collaboration with partners
- Focus on Europe/US where Open RAN market will be actively revitalized, while establishing and enhancing a global support scheme



# Summary

## Steady progress in orders due to the increased recognition of NEC's strengths

- Highly appealing products supported by strong domestic track record
- Ecosystem which leverages the strengths of its own core products and combines them with partners' products

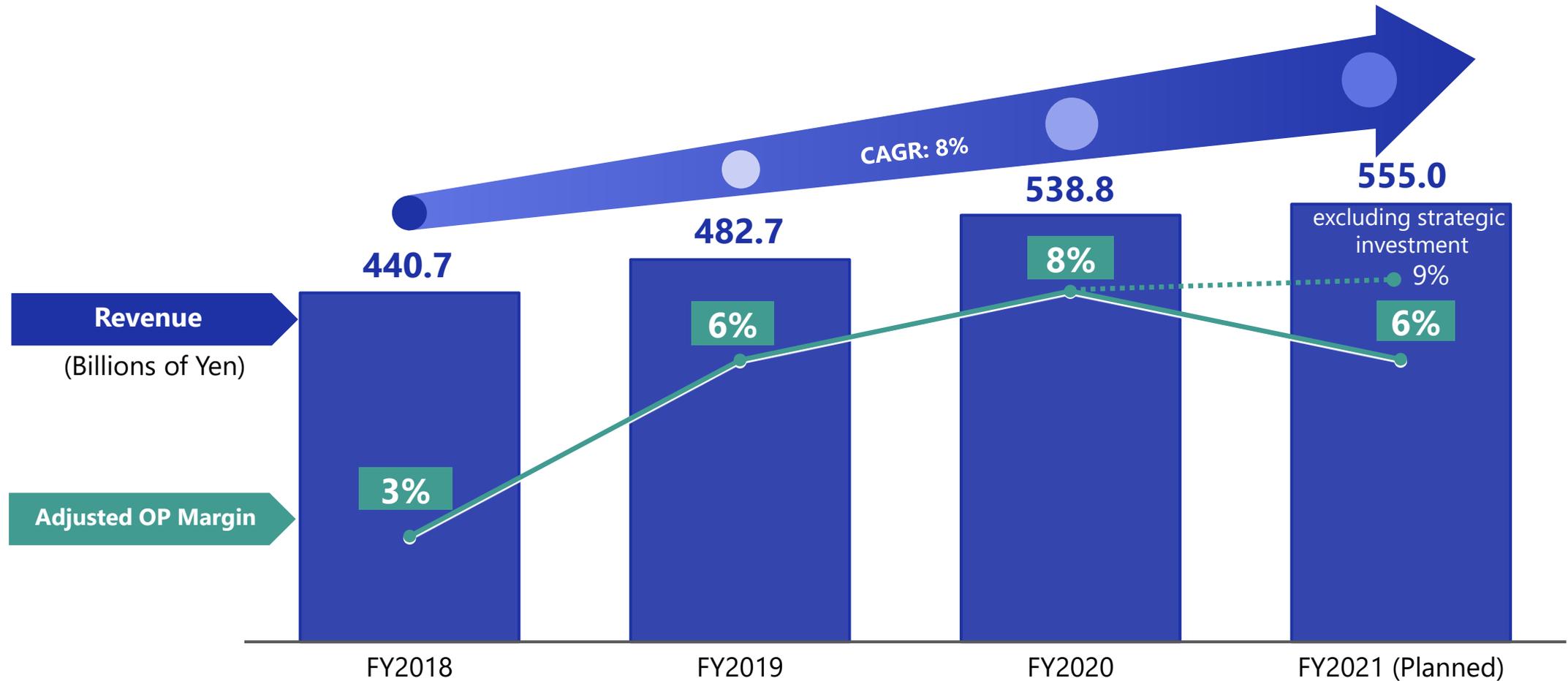
## Roadmap to achieve targeted profitability

- **Continue aggressive investments through 2022**  
Expand the high-margin software portfolio and strengthen the sales force
- **Shift focus to investment recovery from 2023; pursue profit growth**  
Capture the market trend for 5G full-scale rollout and grow software business

## 2. Network Services Business

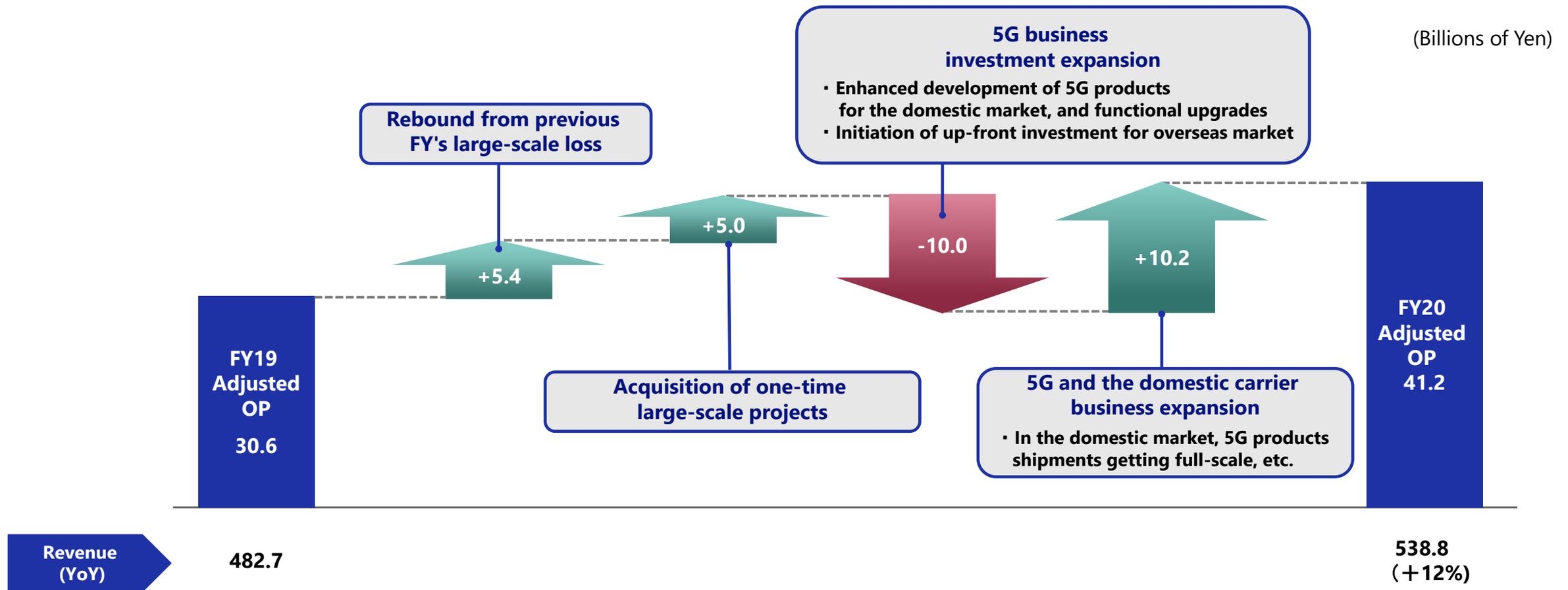
# FY2018-FY2021 Results

- Revenue and profit margin improved steadily mainly in mobile/fixed networks
- Strategic investment for overseas business in FY2021



# FY2020 Results

- Both top line and profitability increased through expanded demand in communication infrastructure
- Shipments of base station equipment getting full-scale, and continuously invest focusing on development



# FY2020 Summary

In Carrier business in Japan, supporting existing customers business and expanded our business through introducing DX

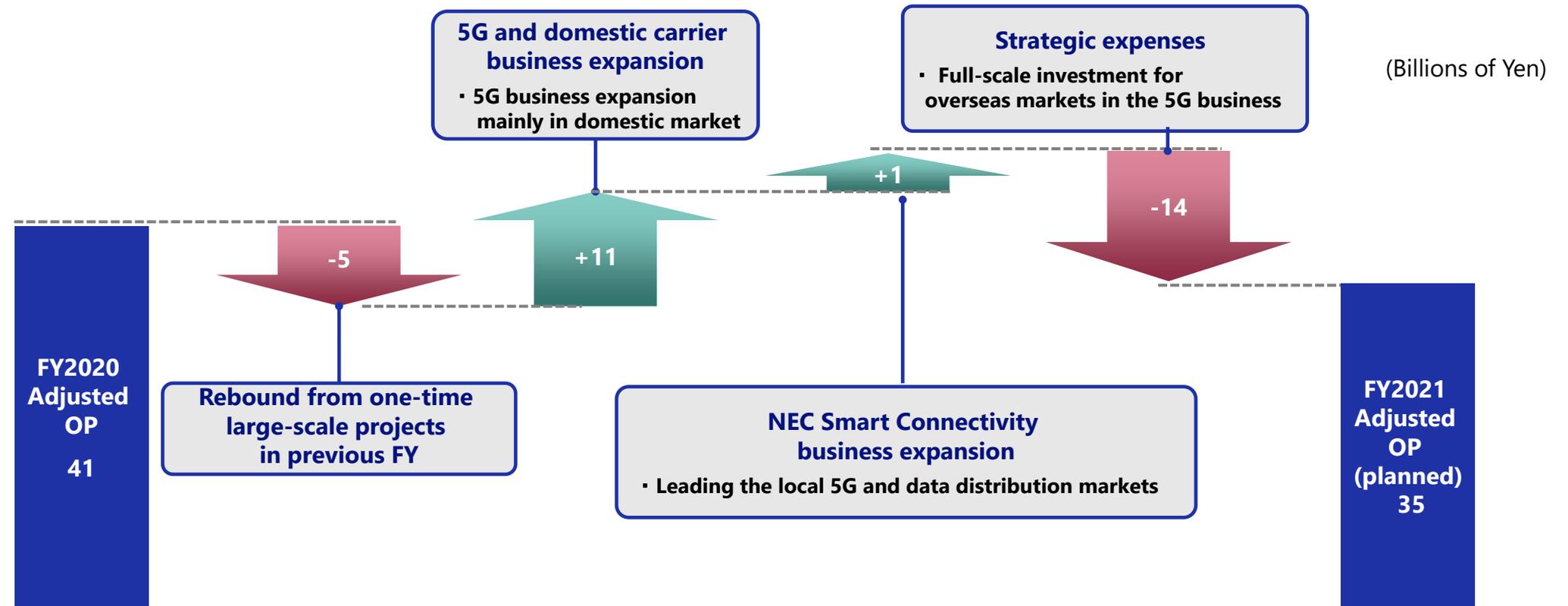
In the Global 5G and NEC Smart Connectivity businesses, set the groundwork for market expansion

	Achievements	Challenges
<b>Global 5G Business</b>	<ul style="list-style-type: none"> <li>Commercial shipments of domestic 5G base stations getting full-scale, and selected as SA-type 5G mobile core vendor</li> <li>Implemented joint demonstration test of Open RAN with overseas clients and the UK Government</li> <li>Established "Center of Excellence" to accelerate global adaption of 5G Open RAN</li> </ul>	Expanding market track record to lead the open market
<b>Carrier Business in Japan</b>	<ul style="list-style-type: none"> <li>Captured demand for expanding backbone networks</li> <li>Received orders for large-scale operational platform</li> <li>Promote business process optimization through DX</li> </ul>	Establishing strong position for solving clients' management issues as an important partner
<b>NEC Smart Connectivity Business*</b>	<ul style="list-style-type: none"> <li>Achieved Local5G certification, expanded practical experiments</li> <li>Launched project of installing personal data distribution service</li> <li>Expanded network solutions for enterprise &amp; public sector, which support DX</li> </ul>	Leading the market by providing E2E vertical solutions in order to realize DX

\*E2E solution business utilizing connectivity for enterprise and public sector

# FY2021 Outlook

Top line increase through the Global 5G/NEC Smart Connectivity businesses expansion  
 Full-scale investment into strategic expenses for global expansion



Revenue (YoY)

538.8

555  
 (+3%)  
 (planned)

# FY2021 Business Strategy

Lead the Open RAN market by expanding global track record  
 Expand our business with combining existing business + modernization know how, and network + data usage expertise

	Business Strategy	Key Initiatives
<b>Global 5G Business</b>	<ul style="list-style-type: none"> <li>• Acquire position as Open RAN vendor in global market</li> </ul>	<ul style="list-style-type: none"> <li>• Expand commercial projects in leading Open RAN clients</li> <li>• Expand portfolio including use of partners, and strengthen our business structure for supporting Europe/US market</li> <li>• Enhance and expand collaboration with partners to extend global market reach and lead the open market</li> </ul>
<b>Carrier Business in Japan</b>	<ul style="list-style-type: none"> <li>• Expand business through solving clients' management issues by enhancing client engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Enlarge business domains through DX and modernization of clients' core infrastructure</li> <li>• Realize advanced management optimization using automation and packaged solutions</li> </ul>
<b>NEC Smart Connectivity Business</b>	<ul style="list-style-type: none"> <li>• Bring new value for industries utilizing networks</li> </ul>	<ul style="list-style-type: none"> <li>• Expand provision of comfortable, efficient and secure network services</li> <li>• Expand local 5G commercial projects using video analysis and automation</li> <li>• Establish data distribution business and expand market in Smart City and healthcare</li> </ul>

# To Achieve Mid-term Management Plan

## FY2025 Numerical Targets

**Revenue  
CAGR  
(FY20-FY25)**

**3 ~ 8** % level

**Adjusted  
Operating  
Margin**

**10** % level

## Basic policies for achieving numerical targets

- Market Development -

- **Lead the Open RAN market and expand market globally**
- **Implement expansion of business domains and value, using expertise of existing businesses**

- Solutions/Differentiation -

- **Expand world-class solutions to solve clients' issues utilizing existing strengths**

- Business Model -

- **Expand value as a solutions provider**

# Network Services Business 2025 Mid-term Management Plan

Aim at increasing revenue by about 1.3 times through realizing domestic clients' DX, expanding the value of telecommunications, and expanding overseas market

In addition, aim for an operating margin of 10% by expanding high-value-added businesses and increasing profitability of global 5G business

## Global 5G Business

- Global expansion of **5G business focused on "Open" technology, which is different competitive edge from mega-vendors**
- Bring about transformation in the industrial structure and **become the leading vendor in the open market**

## Carrier Business in Japan

- **Enhance client engagement with expertise from existing business** and develop a sustainable business
- **Contribute to clients' modernization and streamlined management** through dependable execution and innovation

## NEC Smart Connectivity Business

- **Provide E2E Connectivity for enterprise & public sector clients** while capturing societal change through network and IT skill
- **Expand the business utilizing the capabilities of NEC as a whole** based on private networks and data distribution

# Mid-term Management Plan for Carrier Business in Japan

Enhance client engagement by dependable execution of business which meets client needs and realizing DX through innovation  
 Establish overwhelming market advantage through expertise of NW and IT infrastructure for domestic carriers

## Service expansion applying DX

Integrate networks and IT infrastructure innovatively **by leveraging expertise from clients business** and **implement modernization for the future DX business platform**

## Renewal of networks and IT for the next generation

Using **full knowledge of clients' businesses and the ability to provide E2E solutions, bring management optimization** and co-create value with clients

## Increase in efficiency to handle staff shortages

**Provide a highly reliable and high-efficiency network infrastructure** using optical and wireless technologies to support the shift to high volume data transmission due to DX

## Expectation for domestic vendors

**Business opportunities towards Mid-term Management Plan Achievement**

Capability to utilize cutting-edge technology (such as wireless, virtualization and AI)

E2E solution proposal capability

Existing systems / operational know-how

NEC's strengths

Track record of providing solutions

# Achieve Management Optimization by Utilizing Full Knowledge of Clients Businesses and E2E Solution Capabilities

With E2E capabilities in NEC, implement clients' operation/maintenance work shift to IT and use of AI, achieve increased efficiency and upgrading while optimizing overall maintenance and operation, and realize clients' management efficiency

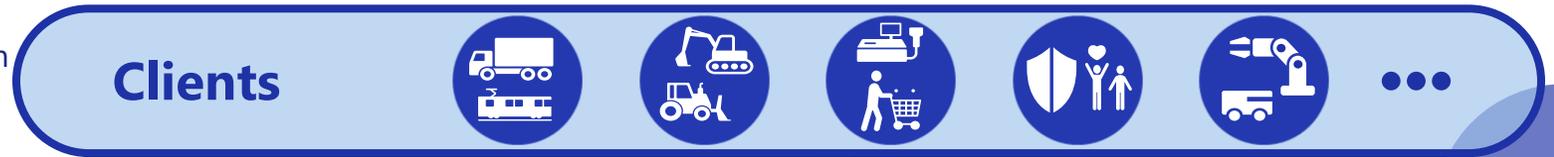


<b>NEC's providing value</b>	<b>Streamlined operation and maintenance</b>	<b>Stabilized service</b>
	<ul style="list-style-type: none"> <li>Routine task automation</li> <li>Unified management of maintenance equipment</li> <li>Shift to shared operation</li> </ul>	<ul style="list-style-type: none"> <li>Disaster countermeasures</li> <li>Security threat countermeasures</li> <li>Detection of signs</li> </ul>
<b>NEC's strengths</b>	<b>E2E capabilities in One NEC</b>	
	<ul style="list-style-type: none"> <li>Proposal capabilities for solving clients' issues (including cooperation with ABeam Consulting)</li> </ul>	<ul style="list-style-type: none"> <li>Technologies and expertise in all telecommunications infrastructure domains</li> <li>High-quality system which supports building system, operation and maintenance</li> </ul>

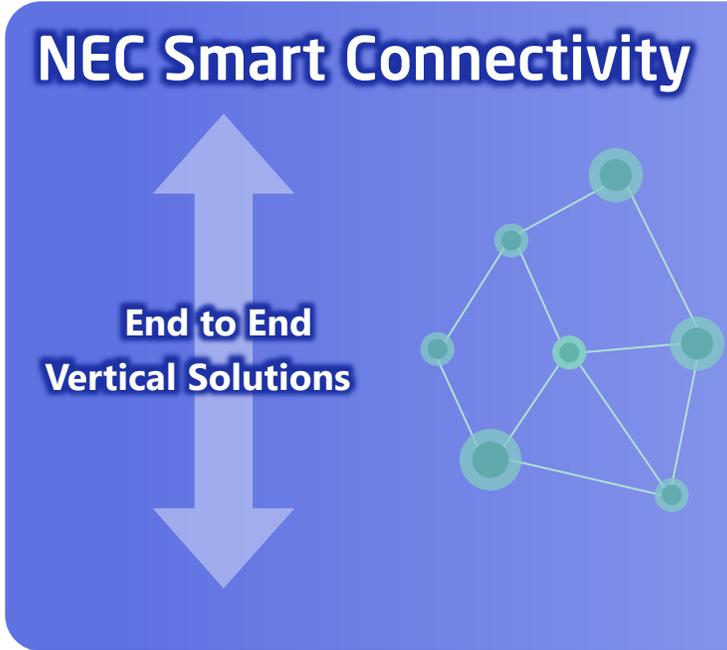
# NEC Smart Connectivity Business

Being the connectivity service provider with "NEC Smart Connectivity" as a leader in industrial/societal DX and the IoT era, that creates new value by connecting everything intelligently

Providing entire industries/in-house solutions from network to applications by combining assets within and outside NEC



## Value creation / DX realization



<b>Industry specific service</b>	OX	Remote construction	AGV controls	ID Integration	CX
<b>Data analytics</b>	IoT Platform		AI / Biometric Authentication		
<b>Network Services</b>	5G	Wi-Fi	LPWA	sXGP	
<b>Devices</b>	PC	Smartphone	Tractor	Robot	Mobile phone



# Data Distribution Service

**FY2019**  
(Start of the service)

**Connecting "Individuals"**

ID integration and Management

- Enhanced brand/loyalty
- Individual optimization service

**FY2021**  
(Ongoing)

**Connecting "Information"**

Data distribution

- Improvement of value provided
- Expansion of revenue and streamlined business

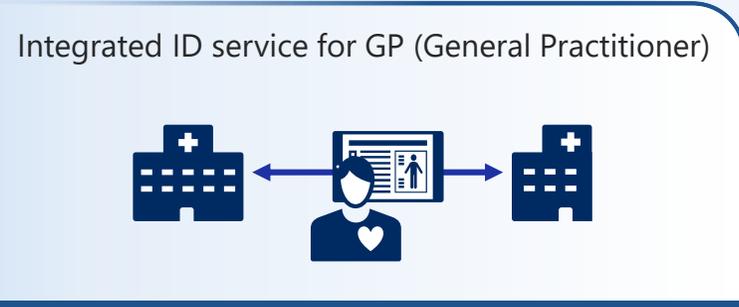
**FY2025**  
(Goal)

**Connecting "Various Industries"**

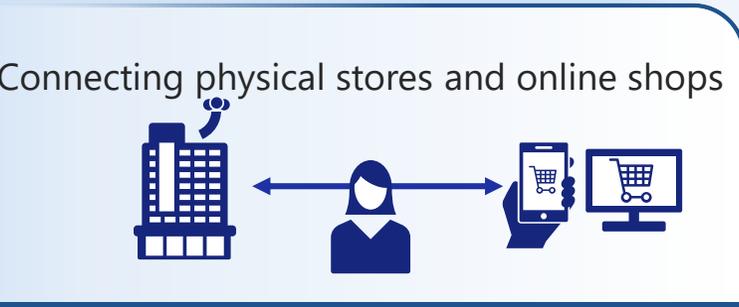
Cross-industry

- Development of new services and profits

Healthcare



Smart City



# Examples of Realization of New Value in NEC Smart Connectivity Business



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