

# DNP Group IR-Day 2024

**DNP**

未来のあたりまえをつくる。

**July 11, 2024**

**Dai Nippon Printing Co., Ltd.**

(1) For Sustained Enhancement of Corporate Value

President Yoshinari Kitajima

(2) Segment Strategy Senior Executive Corporate Officer Mitsuru Tsuchiya

(3) Growth-driving businesses

Optical film Metal masks Corporate Officer Nobuyuki Tomizawa

Photomasks Glass core Corporate Officer Minoru Nakanishi

Battery pouches Senior Corporate Officer Mitsuru Iida

(4) New business

Medical & healthcare Senior Executive Corporate Officer Toshiki Sugimoto

Content & XR communication Senior Corporate Officer Nobuyuki Asaba

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Photomasks   Glass core	Corporate Officer	Minoru Nakanishi
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba

# DNP Group's Basic Management Policy

DNP

Brand Statement

## Creating future standards.

The DNP Group aims to realize a sustainable society, and its corporate philosophy is to connect individuals and society and provide new value. Based on this philosophy, the Group will conduct business activities that create a better future with a long-term view in order to realize a sustainable, better society and more comfortable lifestyles.

Through such initiatives,  
the DNP Group will create sustained business value and shareholder value,

**with an ROE target of 10%, and  
expedite achieving a PBR of more than 1.0X.**

### Business Strategy

- Promote business structure transformation and accelerate concentrated investment in priority business and new business linked to the resolution of social issues and megatrends.
- Transform risks in a changing business environment into opportunities for growth through the evolution and cultivation of core technologies.

### Financial Strategy

- Create funding for investment in growth through cash flow generated through business activities, in addition to maximization of efficiency of funds including acceleration of the reduction of assets held.
- Plan the largest acquisition of treasury shares in DNP's history with the aim of improving capital efficiency.
- Seek to further enhance shareholder returns conscious of indicators such as EPS while maintaining stable finances for sustained corporate activity.

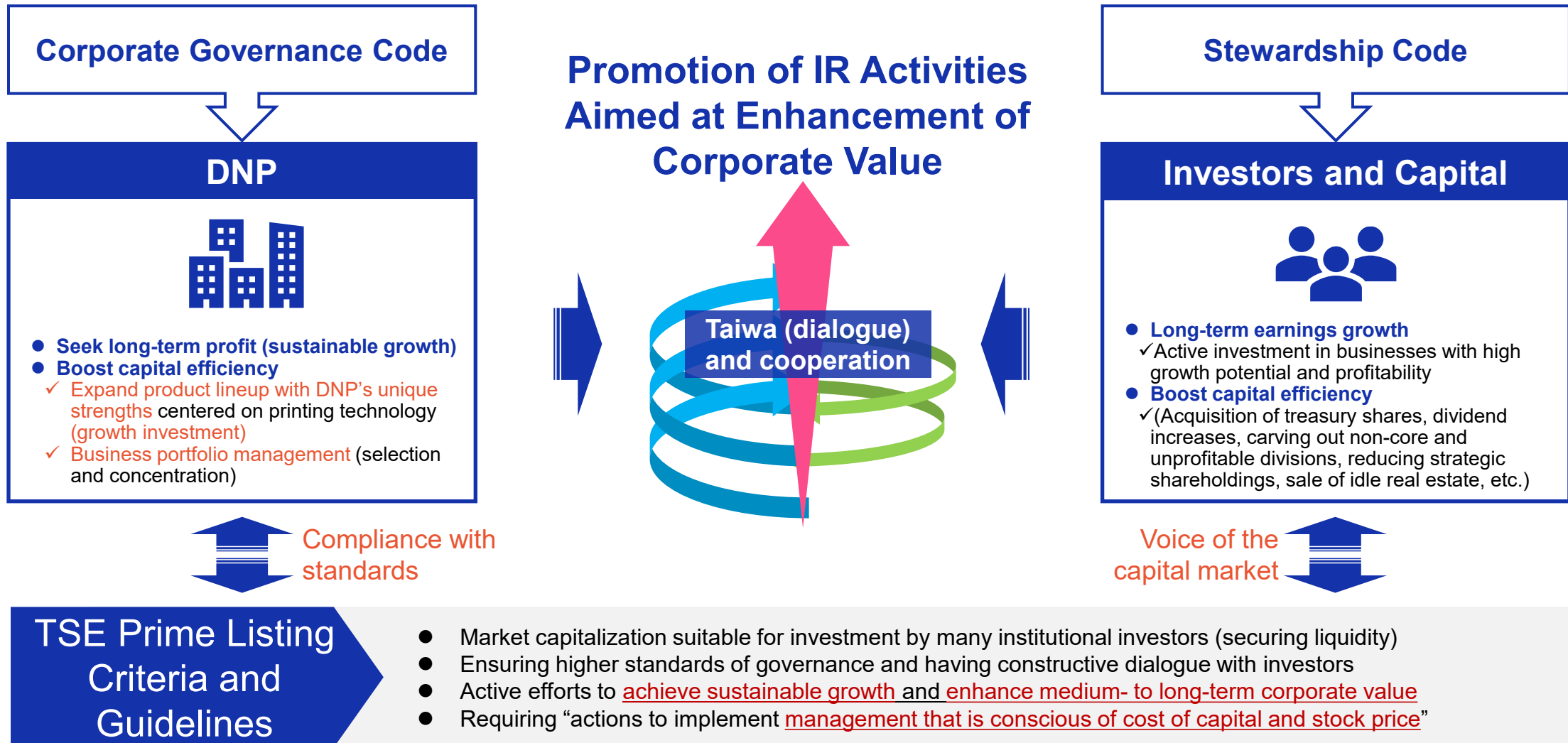
### Non-Financial Strategy

- Expand investment in people based on the Human Capital Policy.
- Enhance intellectual capital utilizing DNP's unique strengths and external partnerships.
- Contribute to the realization of a decarbonized society, a recycling-oriented society, and a society in harmony with nature.



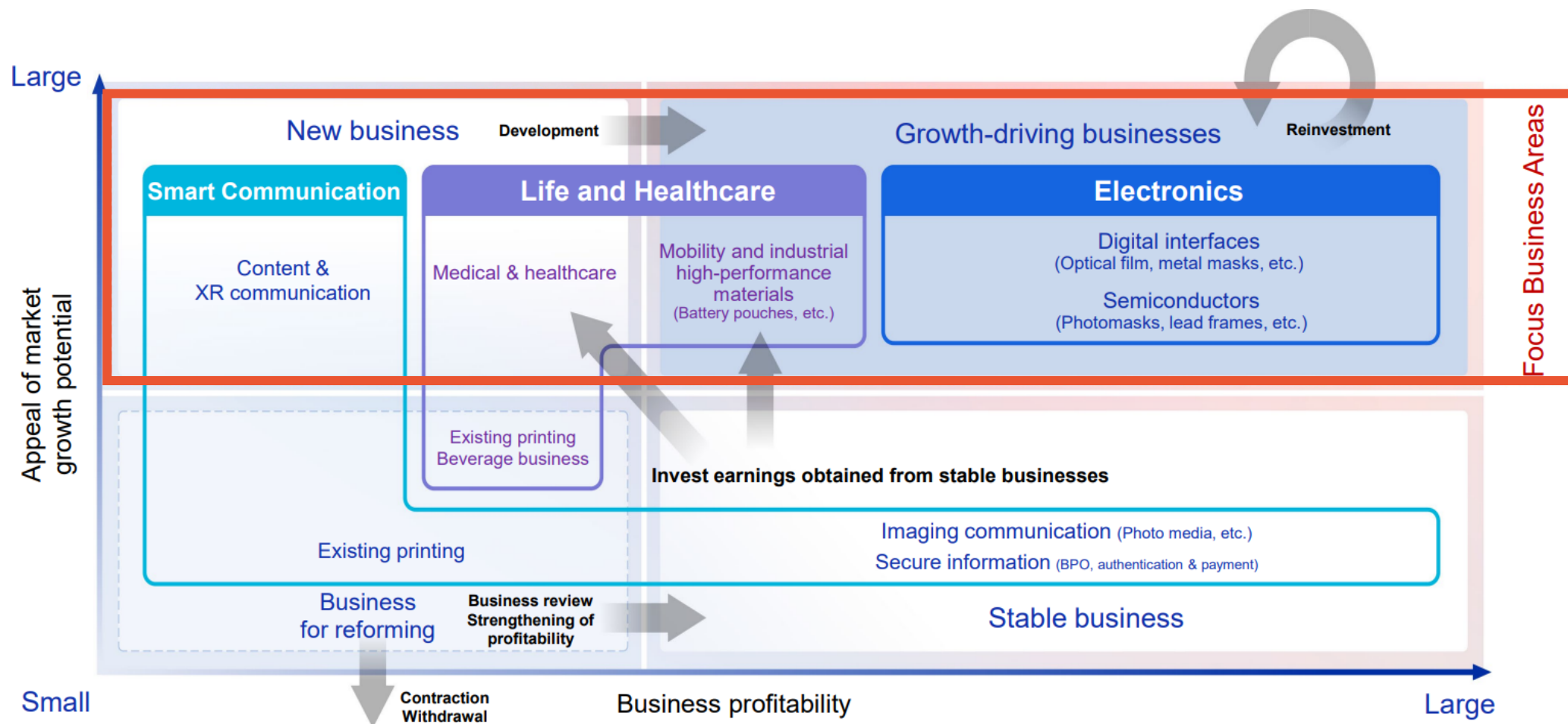
# For Sustained Enhancement of Corporate Value

**DNP**



# Business Portfolio Positioning of Each Segment

**DNP**



Promote concentrated investment and business structure transformation into focus business areas made up of growth-driving businesses and new business with the aim of building a business portfolio resilient to changes in the business environment

(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
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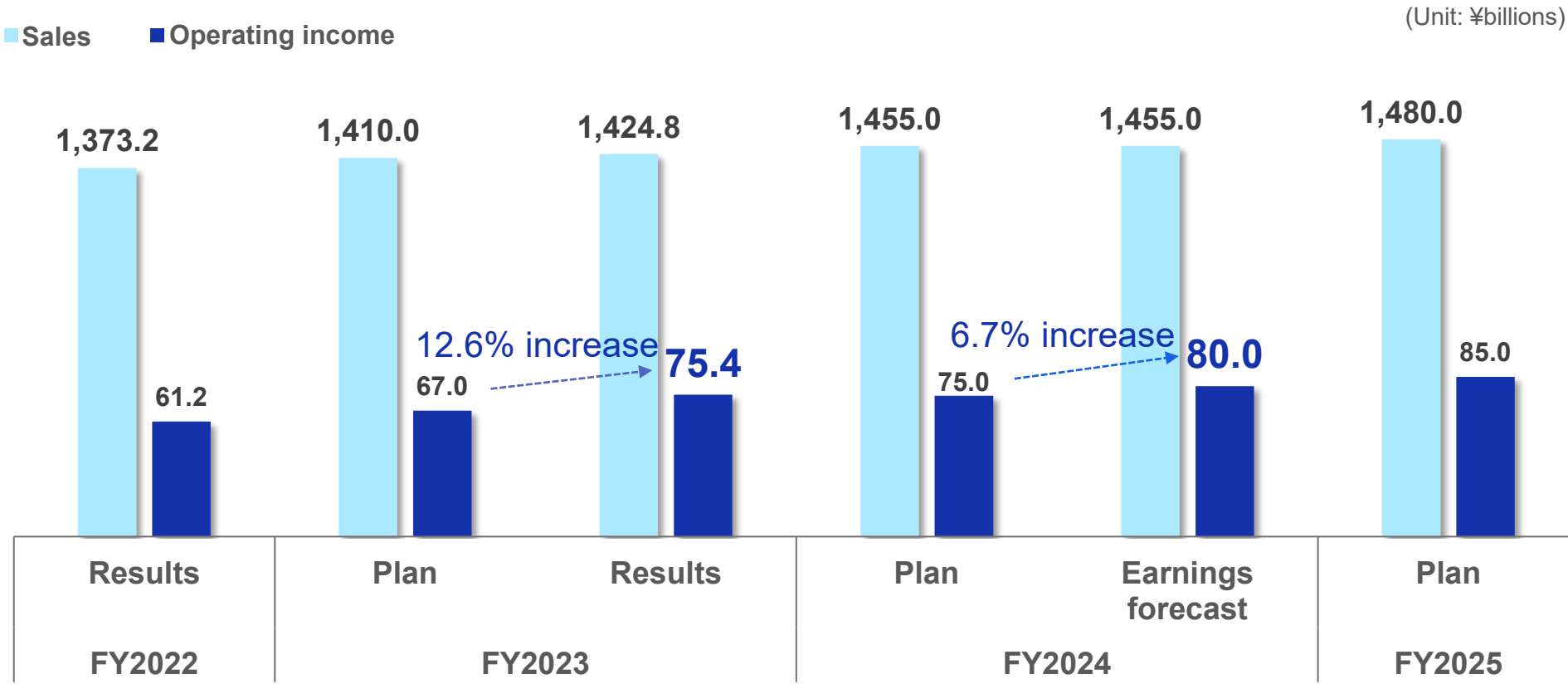
Battery pouches	Senior Corporate Officer	Mitsuru Iida
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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
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# Overview of Financial Results for FY2023: Sales and Operating Income **DNP**



ROE	7.9%	8.3%	9.8%	Achieve 8% or more including asset sales
PBR	0.9X		1.0X	

# Progress with Medium-term Management Plan: Investment in Focus Business Areas, Etc.

Growth investment and infrastructure development investment:

390 billion yen or more (cumulative amount for FY2023-FY2027)

Promote capital investment, global expansion and consideration of external alliances centered on focus business areas.

FY2023 to 2027

Main items of investment in FY2023

Focus business areas and growth investment

260 billion yen or more



Business investment

- Mass production of nano-imprinting through capital and operating alliance and joint investment with SCIVAX Corporation
- Strategic business alliance with CMIC Holdings in the field of medical & healthcare, and made CMIC CMO a subsidiary
- Made Hacosco, which develops XR and “brain tech,” a group company
- Entered into capital and business alliance with A\*Quantum Inc., which develops quantum computer software
- Made UBE Scientific Analysis Laboratory, Inc. (USAL), a material analysis company, a consolidated subsidiary.

Capital expenditures

- Installed facilities at the Mihara East Plant (Hiroshima Prefecture) for verification of large etched metal mask products
- In process of installing new large metal mask production line at Kurosaki Plant (Fukuoka Prefecture)
- Expanded photomask production line at D.T. Fine Electronics’ Kitakami Plant (Iwate Prefecture)
- Increased capacity of middle-end photomask production line, etc. at the Kamifukuoka Plant (Saitama Prefecture)

Results  
50.3 billion yen

(Previous year: 32.3 billion yen)

Infrastructure investment (Including updating facilities, etc.)

Investment in establishment of infrastructure, etc.  
130 billion yen or more



Capital expenditures

- Achieved cost reductions and improvements in operational efficiency through the introduction of an indirect material procurement system
- Enhanced the competitiveness of secure information, strategic packaging products, and others

Results  
34.0 billion yen

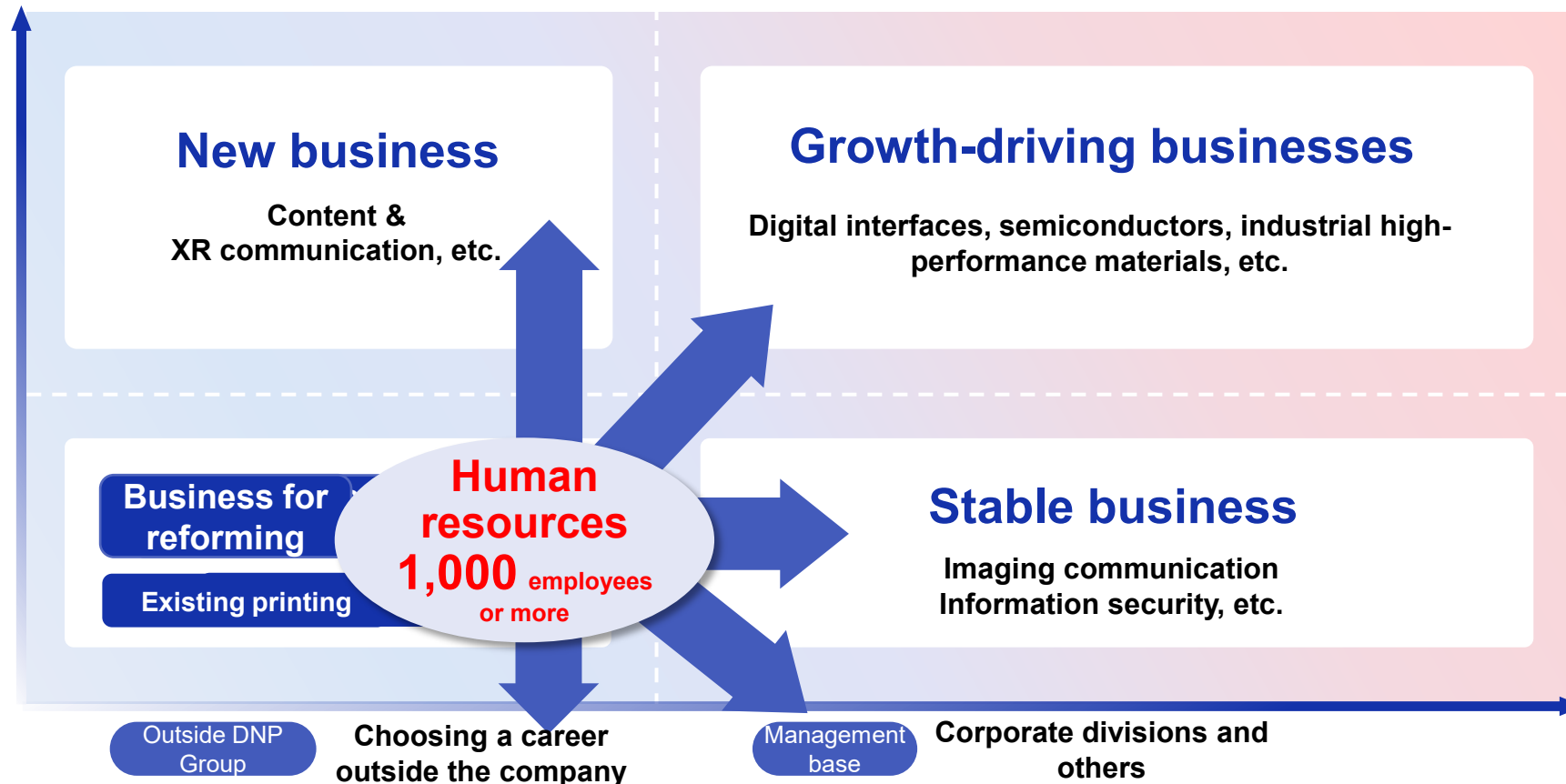
(Previous year: 46.6 billion yen)

# Medium-term Management Plan: Structural Reform of Existing Printing Business

**DNP**

## Reallocation of Management Resources (FY2020–FY2023)

Reallocation mainly to growth areas after implementing reskilling from existing printing

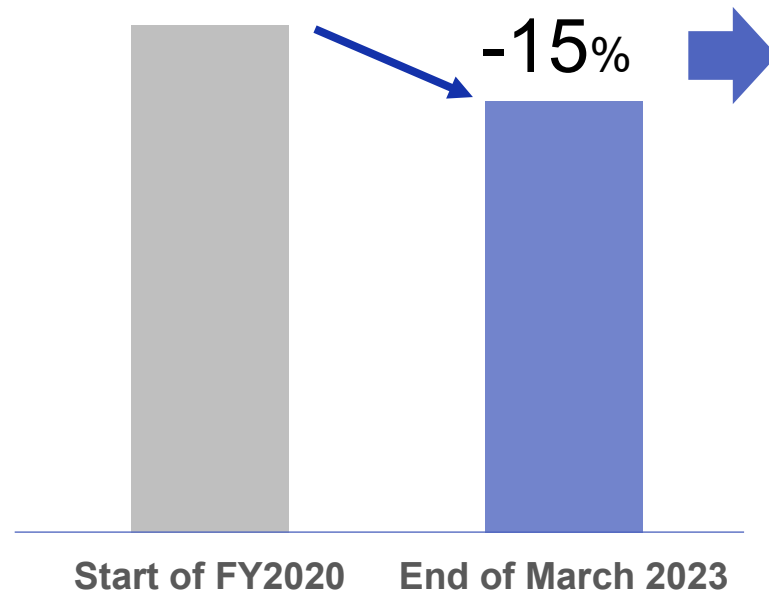


## Medium-term Management Plan: Structural Reform of Existing Printing Business

**DNP**

**Focused on improving profitability through reorganization of manufacturing sites**

**Promote structural reform of existing printing businesses  
by reorganizing locations and closing or selling plants**

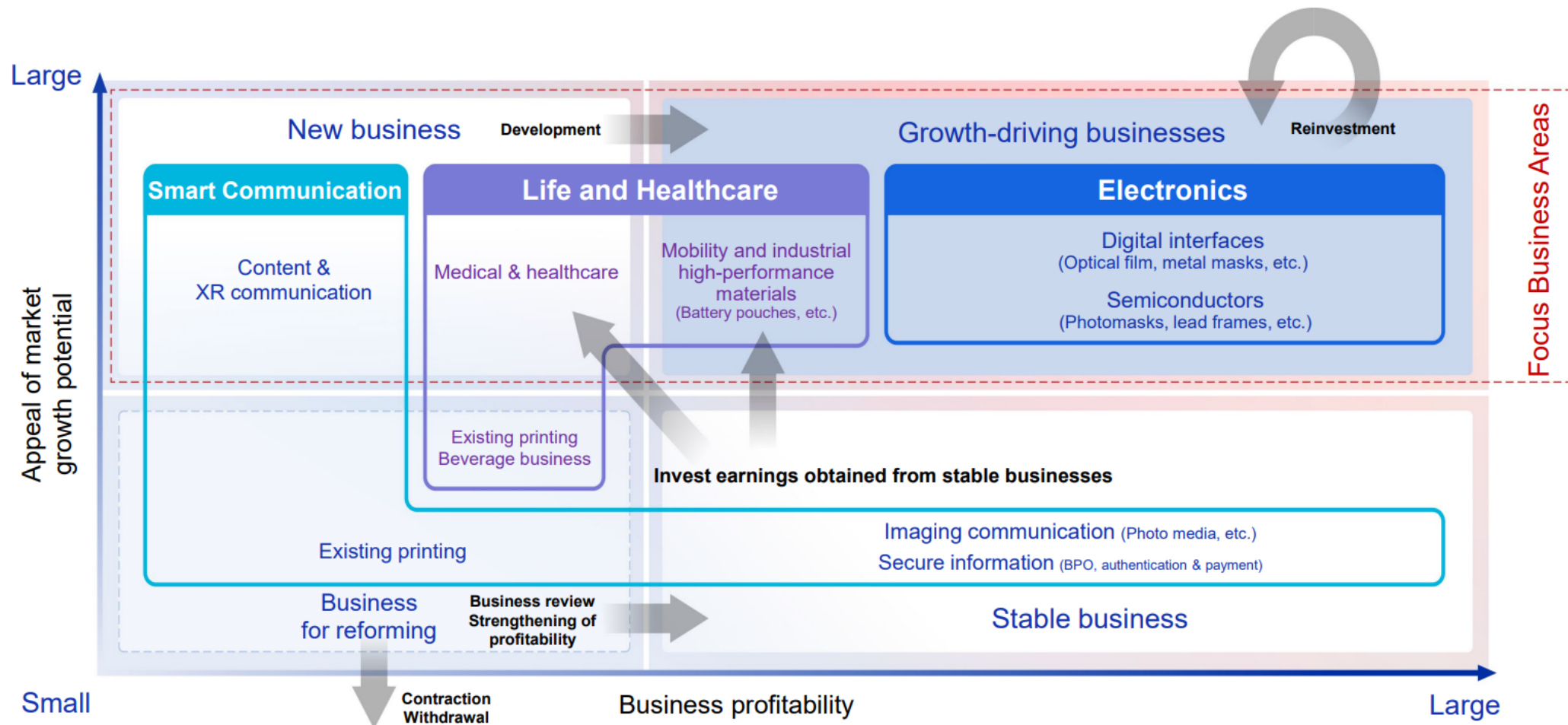


**Reduced** manufacturing locations by  
**about 15% over 4 years**

**Generated over 20 billion yen  
in cash** through asset sales

# Business Portfolio Positioning of Each Segment

DNP



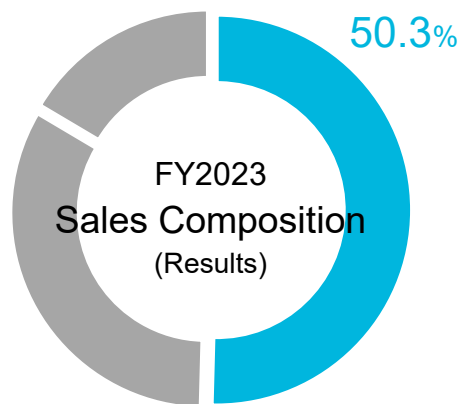
Promote concentrated investment and business structure transformation into focus business areas made up of growth-driving businesses and new business with the aim of building a business portfolio resilient to changes in the business environment



# Smart Communication (1) Business Content



**DNP**



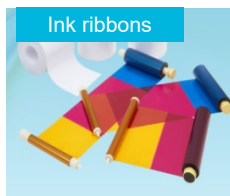
**FY2023 result**

Sales: 719.4 billion yen  
 Operating income 26.1 billion yen  
 Operating income margin: 3.6%

## Sales in parentheses

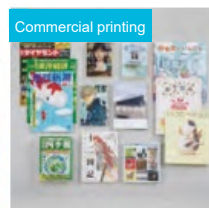
### Imaging communication

(105 billion yen)



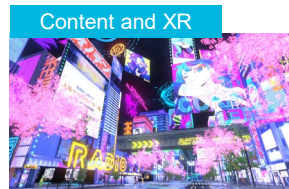
### Marketing

(130 billion yen)



### New business/ Other

**Approx. 22 billion yen**



### Information Security

(208 billion yen)

#### BPO



#### Smart cards and magnetic cards

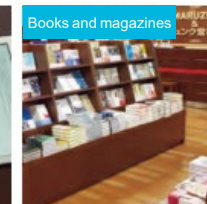
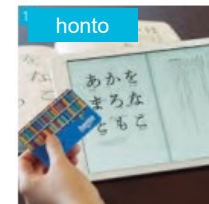


#### Authentication / security



### Publishing

(255 billion yen)



# Smart Communication (2) Market Environment



**DNP**

Main Businesses		Market Trends		Market Outlook* (CAGR)
Imaging communication	Dye-sublimation thermal transfer printing media for photo prints		<ul style="list-style-type: none"> <li>Although demand declined in FY2020 due to the impact of COVID-19, it recovered from FY2021 onward.</li> <li>Increase in dry type including dye-sublimation thermal transfer printing media for photo prints due to switching from the silver halide method.</li> </ul>	+4% (2022–2027)
Information security	BPO		<ul style="list-style-type: none"> <li>The market is expected to expand against a backdrop of work style reform and DX promotion due to labor and human resource shortages.</li> <li>Increase in the need for services that combine human operations with digital technology.</li> </ul>	+3% (2024–2027)
	Smart cards and magnetic cards		<ul style="list-style-type: none"> <li>Although the percentage of cashless payments has increased to over 35% due to the penetration of QR code payments, card payments still account for over 80% of the total, making them the mainstay of the shift to cashless payment.</li> </ul>	+1% (2022–2026)
Marketing	–		<ul style="list-style-type: none"> <li>Although the paper media market remains large at 1.7 trillion yen, it will continue to shrink slowly due to the progress of digitization. The digital marketing market will continue to expand.</li> </ul>	Paper media: -1.5% (2023 vs. 2022)
Publishing	Books and magazines		<ul style="list-style-type: none"> <li>The paper media market for both magazines and books is expected to continue shrinking.</li> <li>Online bookstores and the e-book market are growing.</li> </ul>	Paper media: -5% (2023–2028)
New business	Content & XR communication		<ul style="list-style-type: none"> <li>Overseas demand for comics, anime, and games originating in Japan will grow, and the market for content development such as merchandise and services will be active.</li> <li>In addition to the demand for XR in the area of extraordinary experiences, utilization in various industries such as education and training is increasing.</li> </ul>	Expanding

\* Market outlook is DNP forecasts based on various surveys

# Smart Communication (3) Segment Strategy



**DNP**

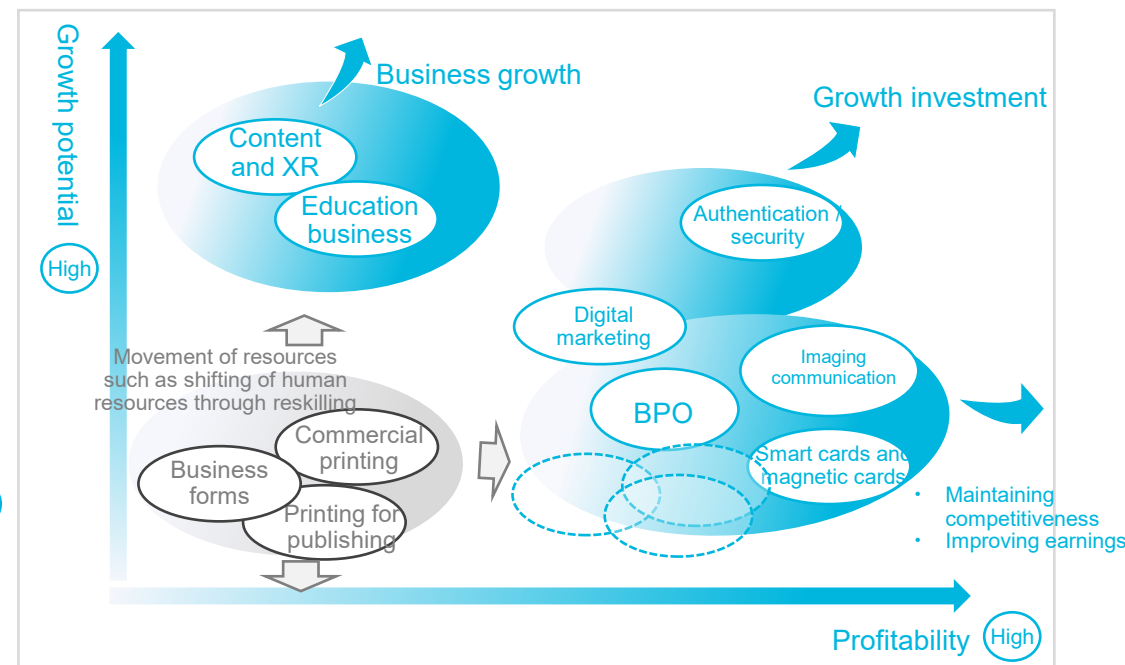
## ■ Main Business Strategies

Main Business Segments		Strategy
Imaging communication	Dye-sublimation thermal transfer printing media for photo prints	Aim to achieve a global market share of 70% or more by developing applications tailored to regional characteristics and expanding sales.
	Ink ribbons for ID cards	Capture demand for national ID cards in emerging countries, aiming for a 70% share of the global market for sublimation ribbons for ID cards.
Information Security	BPO	Expand the scope of business from outsourcing of some operations to business reform with digitalization and support for reform.
	Smart cards and magnetic cards	Maintain Japan's top share by strengthening competitiveness, with expanding high value-added products such as environmentally friendly products and more.
New business	Content & XR communication	Accelerate IP content development in Japan and overseas by applying information processing and conversion technologies. Develop and implement common services for XR Communication® according to solutions for regional and corporate issues.

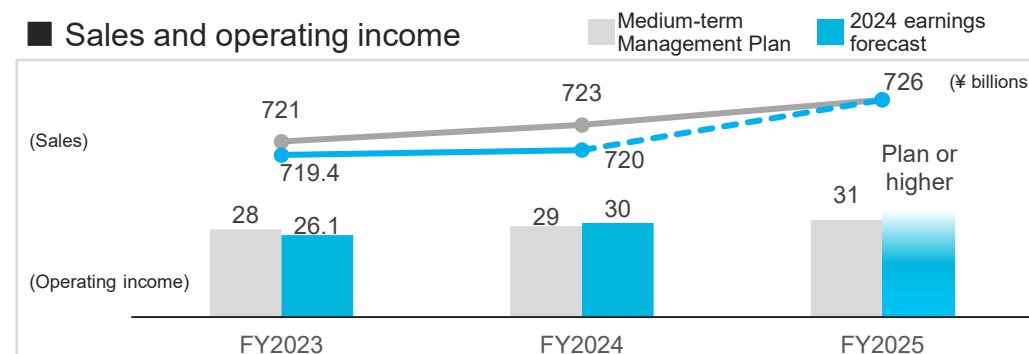
✓ Raise the level of profits mainly by expanding the dye-sublimation thermal transfer printing media with the leading global market share to emerging countries, etc., and by strengthening competitiveness and improving profitability of smart cards and magnetic cards, with the leading market share in Japan

✓ Since the market for paper-based printed materials is expected to shrink, optimize assets by shifting human resources to growth business and stable business through reskilling and reorganizing manufacturing sites

## ■ Image of Portfolio Evolution



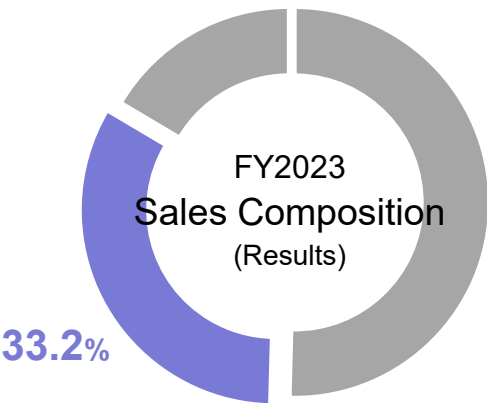
## ■ Sales and operating income



# Life & Healthcare (1) Business Content



**DNP**



**FY2023 result**

Sales: 472.3 billion yen

Operating income 13.3 billion yen

Operating income margin: 2.8%

## Sales in parentheses

**Mobility and industrial high-performance materials (Approx. 75 billion yen)**

Battery pouch

Photovoltaic modules

Decorative films

**Packaging (Approx. 230 billion yen)**

Filling systems

Functional packaging materials

**Beverage business (Approx. 56 billion yen)**

**Medical & healthcare (Approx. 42 billion yen)**

Pharmaceuticals business

Packaging for medical products and pharmaceuticals

**Living spaces (Approx. 62 billion yen)**

Interior materials

Exterior material

**Other (Approx. 7 billion yen)**

## Life & Healthcare (2) Market Environment



**DNP**

Main Business Segments		Market Trends		Market Forecast (CAGR)*1
Mobility and industrial high-performance materials	Battery pouch		<ul style="list-style-type: none"> <li>The trend toward electrification of automobiles will remain unchanged over the medium to long term, and demand is expected to increase mainly in the US as automakers shift to in-house battery manufacturing (pouch type).</li> </ul>	EVs: +13%*2 (2023–2030)
	Photovoltaic modules		<ul style="list-style-type: none"> <li>The global market for solar power generation systems will grow 2.5x from 2020 to 2030.</li> <li>Demand is growing in the US, EU, and China, due to policy initiatives, etc.</li> </ul>	Global market for power generations systems: +10% (2020–2030)
	Automotive decorative films		<ul style="list-style-type: none"> <li>There are expectations for expansion of exterior film, especially for use as a substitute for paint, amid growth in high-end design products for both interior and exterior applications.</li> </ul>	Expanding
Medical & healthcare	—		<ul style="list-style-type: none"> <li>Stable growth is expected, with the size of the global pharmaceutical market expected to expand from 141 trillion yen in 2018 to 196 trillion yen in 2030.</li> </ul>	Global market for pharmaceuticals +2.8% (2018–2030)
Packaging	—		<ul style="list-style-type: none"> <li>The global market for soft packaging is growing (approx. 40 trillion yen in 2023), and growth is expected in Asian markets and for environmentally friendly products in the future.</li> </ul>	Global market for soft packaging: +4.7% (2024–2030)
Living spaces	—		<ul style="list-style-type: none"> <li>Domestic housing starts are expected to continue to decline.</li> <li>Overseas demand is sluggish at present, but growth will continue over the medium to long term due to population growth.</li> </ul>	Japan: -1% (2024–2028) Overseas: +3% (2023–2029)
Beverage business	—		<ul style="list-style-type: none"> <li>Overall business conditions recovered after COVID-19, and demand, including inbound demand, remained strong.</li> </ul>	+1–2% (2024–2026)

\*1 Market outlook is DNP forecasts based on various surveys

\*2 Total for EVs, PHEVs and HEVs

# Life & Healthcare (3) Segment Strategy

## Main Business Strategies

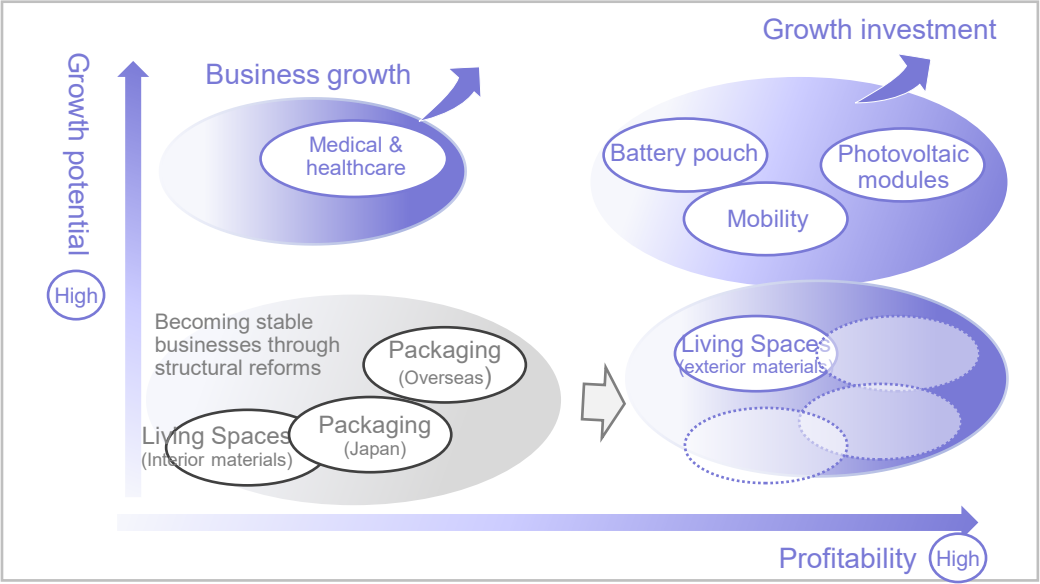
Main Business Segments		Strategy
Mobility and industrial high-performance materials	Battery pouch	Despite the current softening of the market for automotive applications, continue to make the necessary investments to keep with the trend of medium- to long-term growth.
	Photovoltaic modules	Leverage high reliability and high quality, and consider introduction of new facilities to meet increasing demand in the US and Europe.
	Mobility	Globally expand differentiated products for exterior applications by combining core technologies.
Packaging	Japan	Reduce costs by switching to low-cost materials and improving delivery efficiency, and promote passing on the impact of price hikes of raw materials, etc. on to customers.
	Overseas	Accelerate provision of mono-materials and aseptic filling systems to overseas customers.
Living spaces	Interior materials	Promote operational efficiency and optimization of manufacturing sites, and develop customers and business partners, including overseas.
	Exterior material	Expand sales areas to Asia, China and Europe through a partner strategy, in addition to expanding into infrastructure and exterior wall applications.
New business	Medical & healthcare	Continue growth in APIs, formulations and packaging by expanding DNP's value chain in an industry with a horizontal division of labor.

- ✓ Consider both business investment and M&A in line with market growth in the mobility and industrial high-performance materials business, which is a growth driver
- ✓ Accelerate overseas development of products in which we have strengths in packaging and living spaces

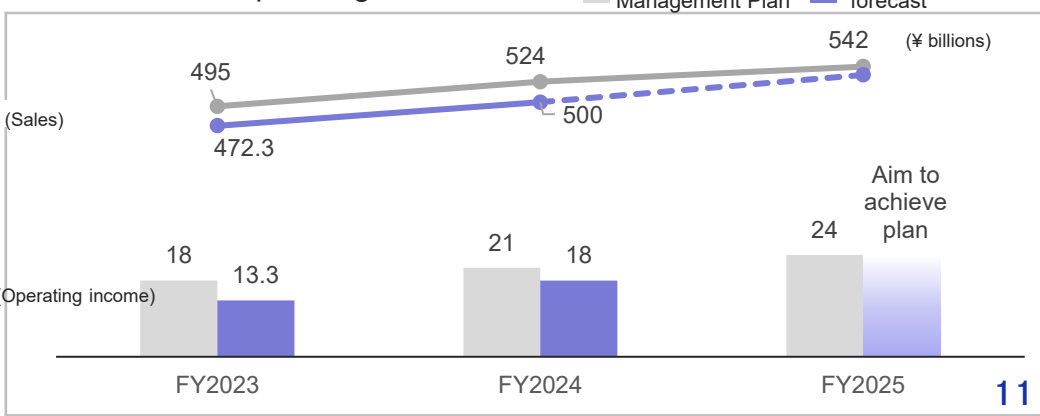


DNP

## Image of Portfolio Evolution



## Sales and operating income

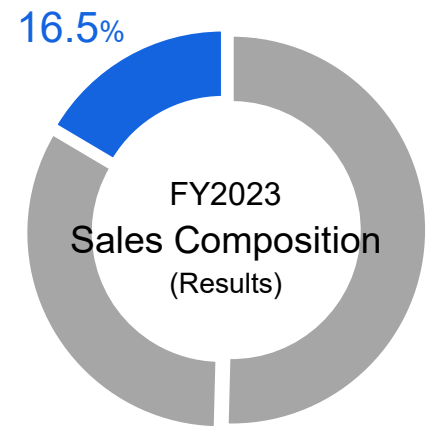




# Electronics (1) Business Content

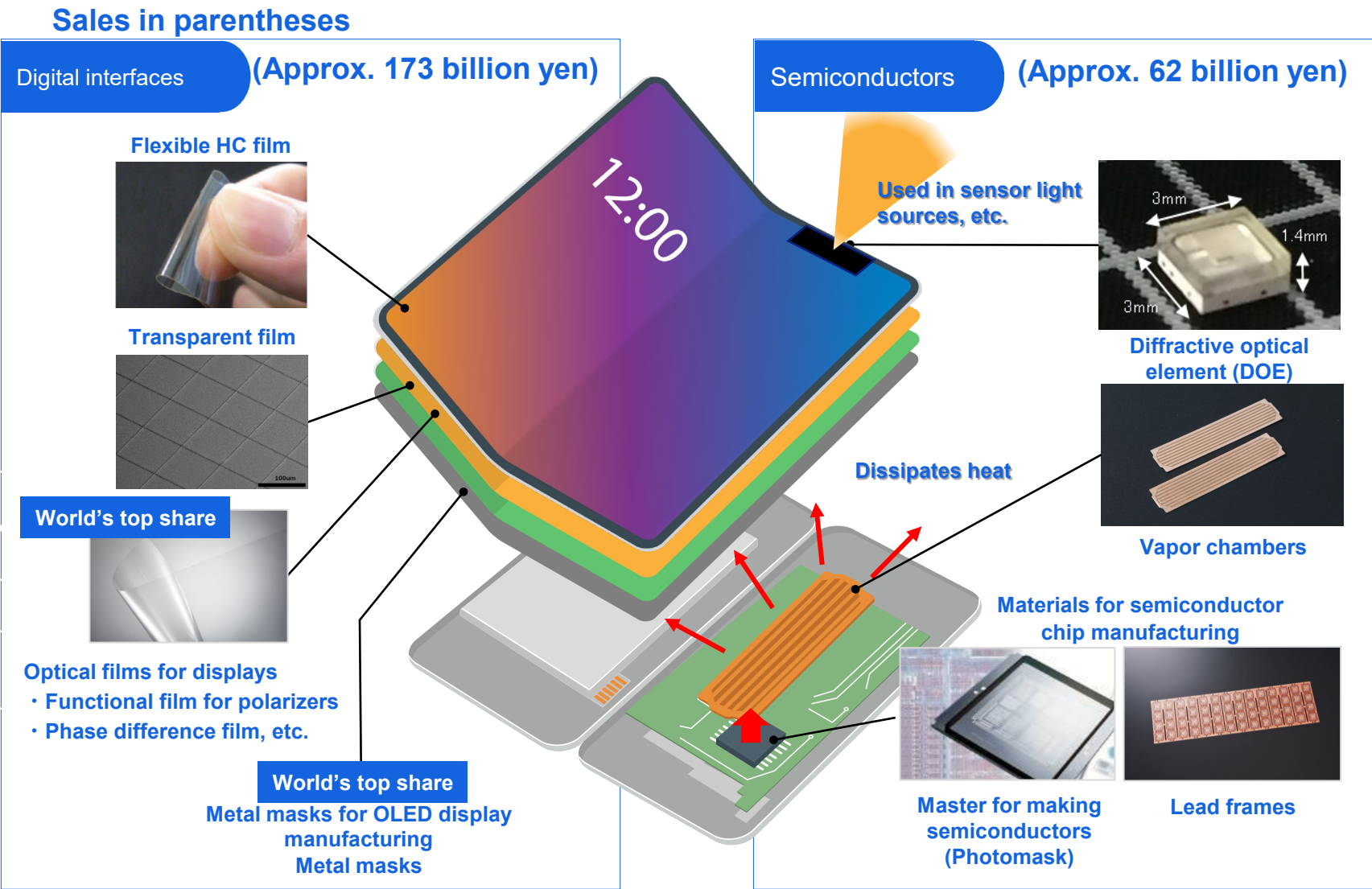


**DNP**



## FY2023 result

Sales: 235.3 billion yen  
Operating income 58.1 billion yen  
Operating income 24.7% margin:



# Electronics (2) Market Environment



DNP

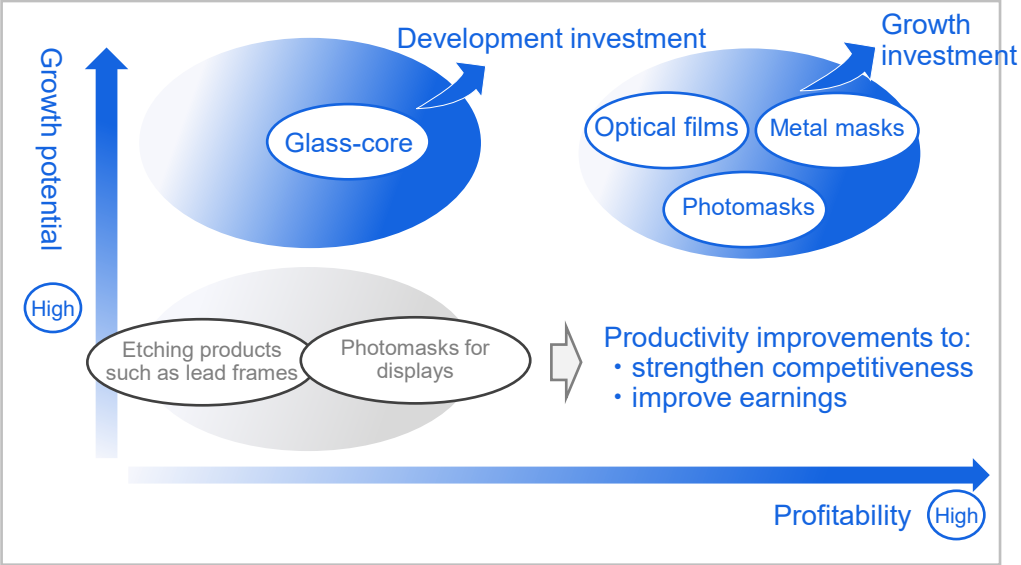
## Market Environment and Strategies

Main Business Segments		Market Trends		Market Outlook (CAGR)*
Digital interfaces	Optical films	↗	• Demand remained strong, mainly due to an increase in area shipped resulting from a shift to larger panel sizes for TVs.	+3.2% (2023–2030)
	Metal masks for OLED display manufacturing	↗	• Demand continues to steadily increase due to expanded adoption of OLEDs for smartphones.	Smartphones: +6% Tablets and notebook PCs: +40% (2023–2030)
Semi-conductors	Photomasks	↗	• In addition to demand for product development, the market is expected to grow significantly in the medium to long term due to increased demand in the semiconductor market for logic and memory applications for generative AI.	External sales market +8.1% (2020–2027)
	Lead frames	↗	• Although recovery in demand for automotive, telecommunications, and consumer product applications has been delayed, the market is expected to grow over the medium to long term.	+6.9% (2022–2029)

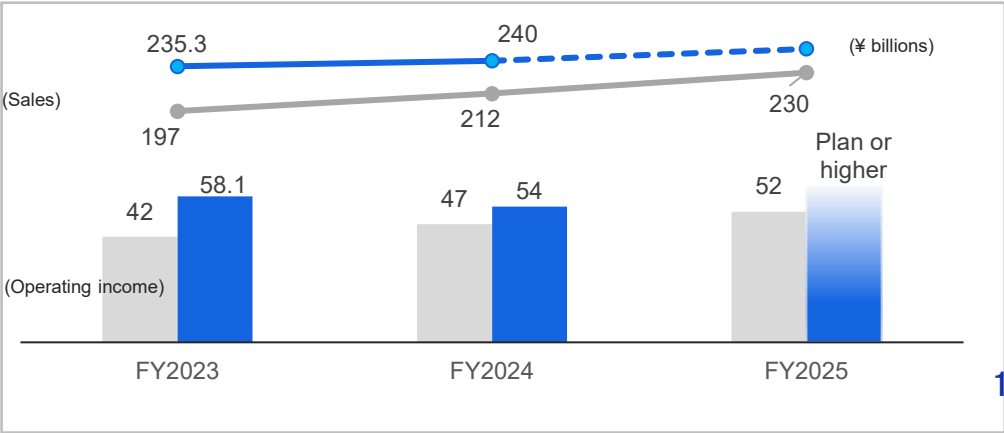
\* Market outlook is DNP forecasts based on various surveys

Concentrate investment in businesses with high social needs and in which DNP has a high market share, to achieve sustainable business expansion that exceeds the market growth rate

## Image of Portfolio Evolution



## Sales and operating income





(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
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(2) Segment Strategy	Senior Executive Corporate Officer	Mitsuru Tsuchiya
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(3) Growth-driving businesses

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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
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# Optical Films

**DNP**

未来のあたりまえをつくる。

# Business Overview

**DNP**

## Optical films for displays

Providing optical films with diverse functions by utilizing our proprietary optical design and converting technologies

### Main Products

- Anti-reflection (AR) film, anti-glare (AG) film
- Retardation film



Optical design technology is used to control light reflection and reduce glare in lighting and other applications

### Trends

- Increased size of TVs and other displays
- Increased scope of use, higher functionality
  - Low reflection
  - Anti-glare and high definition
  - Scratch resistant
  - Foldable

### DNP's Solutions

**Optical design technology to control light, and material and coating technology**



**Top share of the global market for optical films for displays\***

### Impact on Society

- Provides displays with more vivid colors
  - Expanded scope of use of devices and enhanced usability
- ➡ **Realizing comfortable lifestyles**

\* In the case of anti-reflection film and anti-glare film used on the surface of displays

# Functions and Applications of Main Products

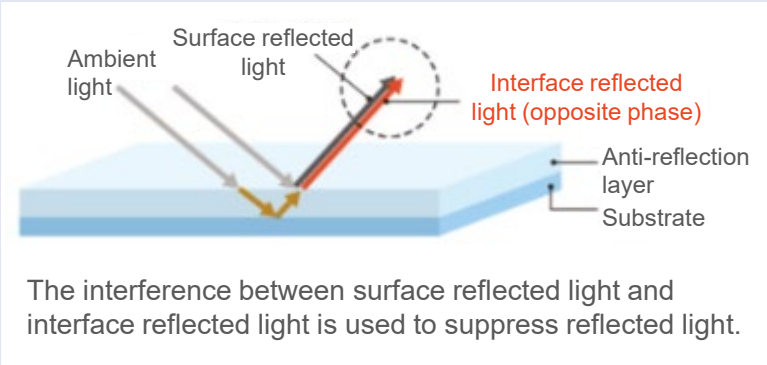


Optical film used on the top surface of displays for TVs, PCs, tablets, and smartphones  
A rich lineup of products with optical design and various functions tailored to the usage environment

## Anti-Reflection (AR) Film



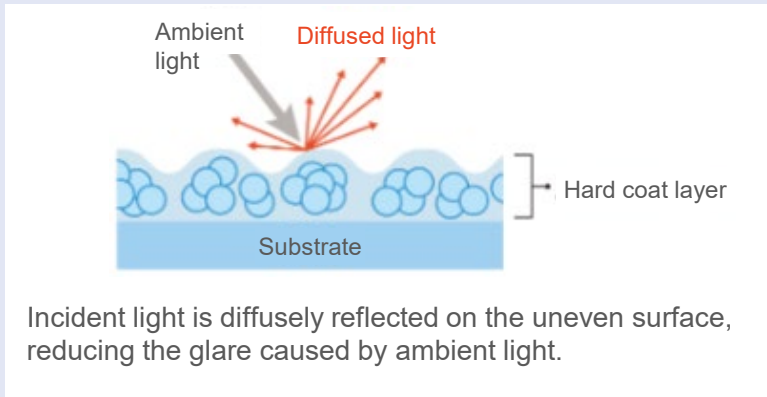
No AR film      With AR film



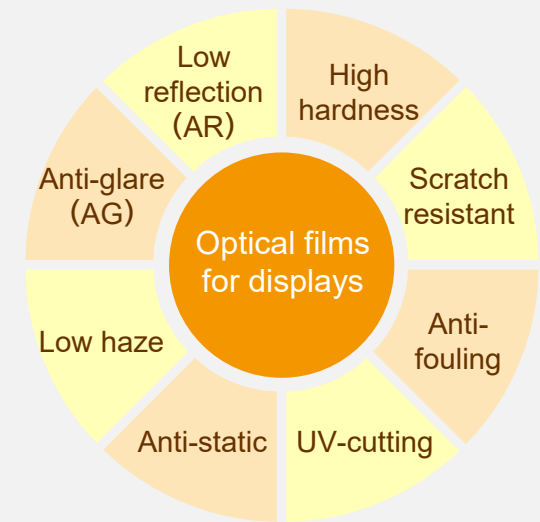
## Anti-Glare (AG) Film



Conventional AG      High anti-glare AG



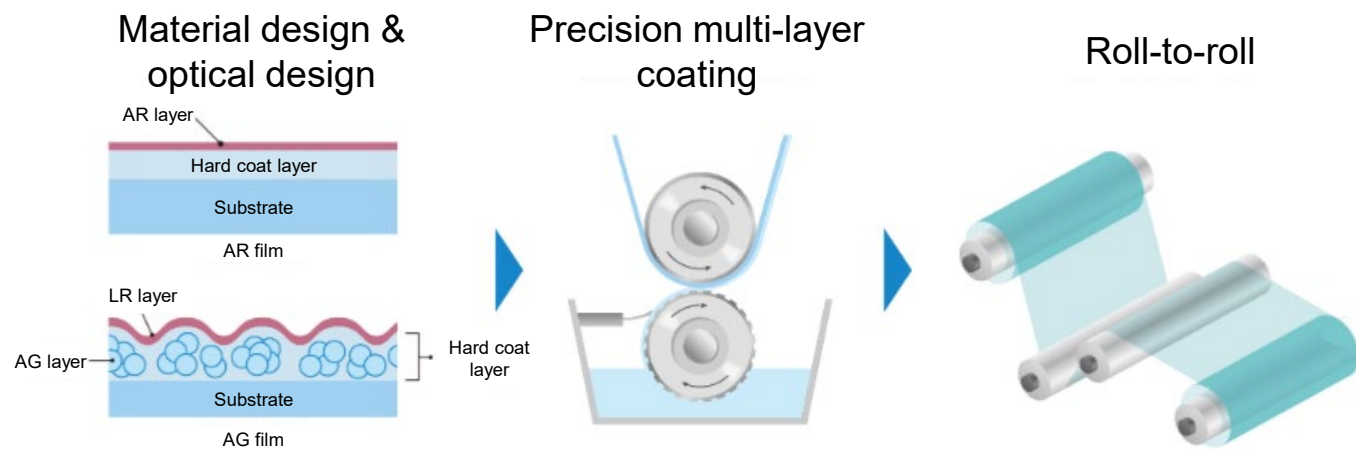
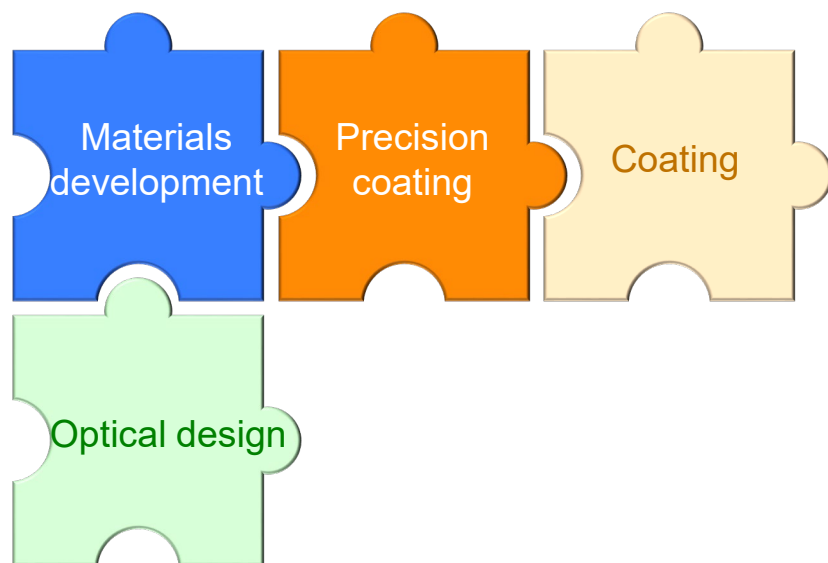
Given various functions



## DNP's Basic Technologies

### Technology for Larger Sizes and High Functionality Using Clean Coating Centered on Proprietary Optical Design Technology

DNP's core technologies



This is a **precision coating technology** derived from coating technology in which inked materials are thinly and uniformly applied to cover the surface of a substrate.

**Optical film with diverse functions** was created by deepening **optical design** and **materials development**.

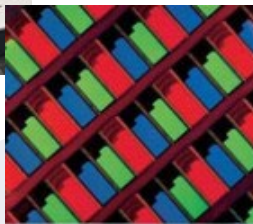
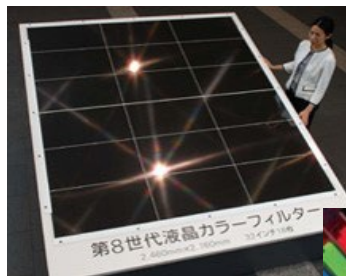
# History of DNP's Display Business

Contributing to the development of display technology from research and development to mass production to realize comfortable lifestyles Providing new value for “displays of the future”

- Shadow masks for cathode-ray tubes



- Liquid crystal display color filters



- OLED metal masks



“Displays of the future”

- OLED retardation film



- Low reflection and anti-glare film for liquid crystal displays

- Back plates for plasma display panels, surface films, electromagnetic shielding, near-infrared filters

- Projection screens



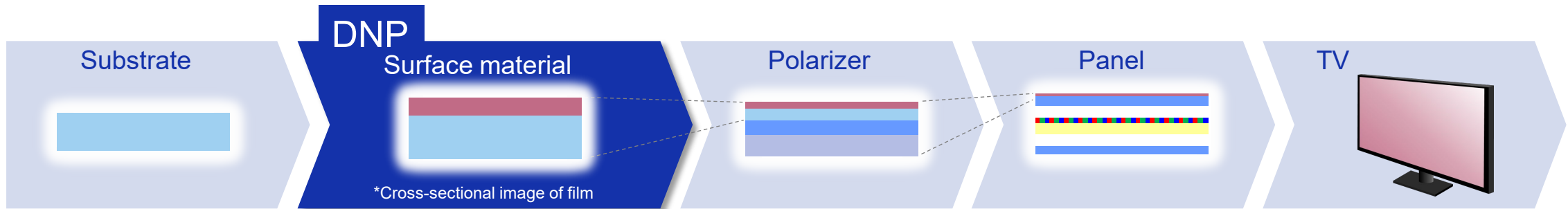
# Supply Chain

Example) Optical film for polarizers

**DNP**

## ▶ Optical film for polarizers on liquid crystal displays (LCDs)

- We provide optical films for polarizers to TV, panel, and polarizer manufacturers worldwide



## Production sites



Mihara Plant



Okayama Plant

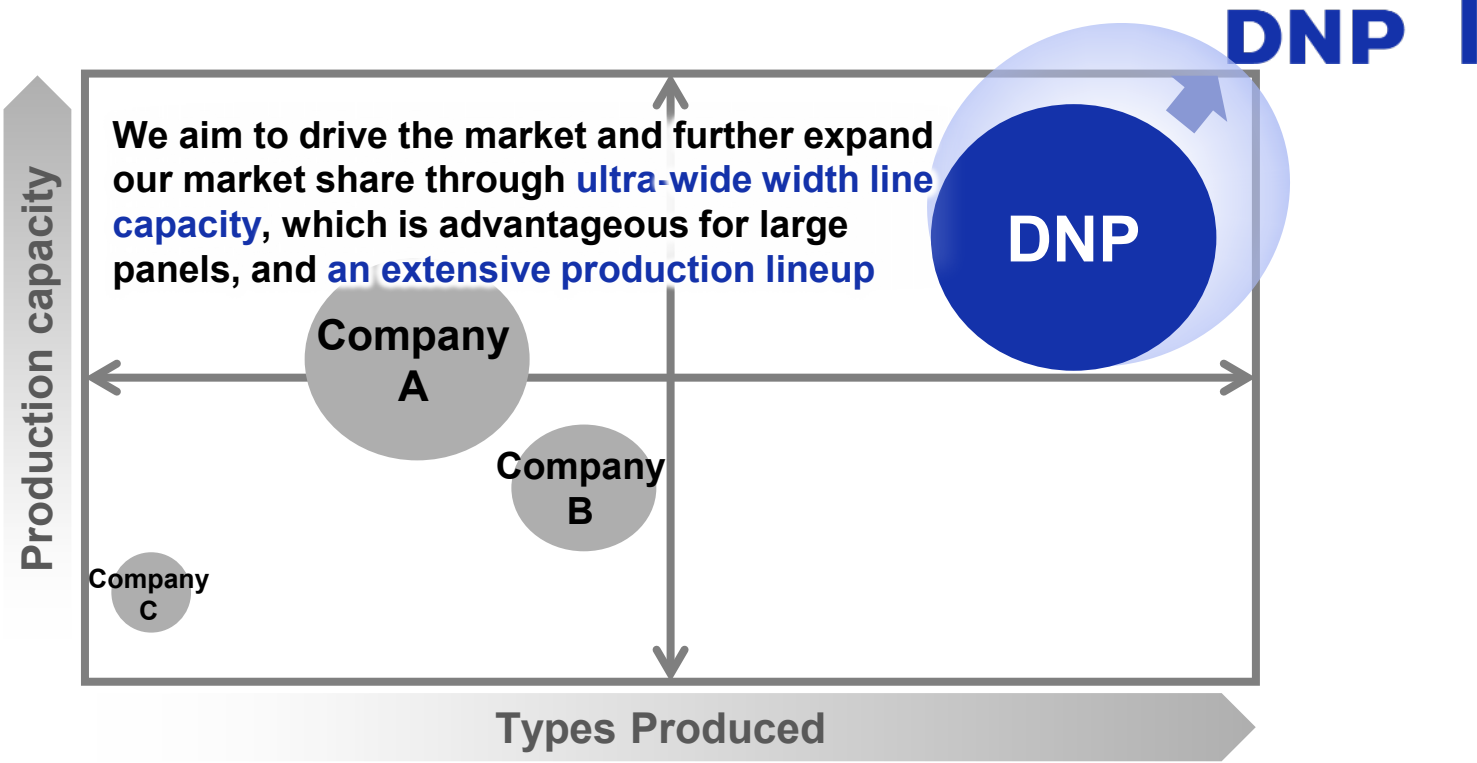
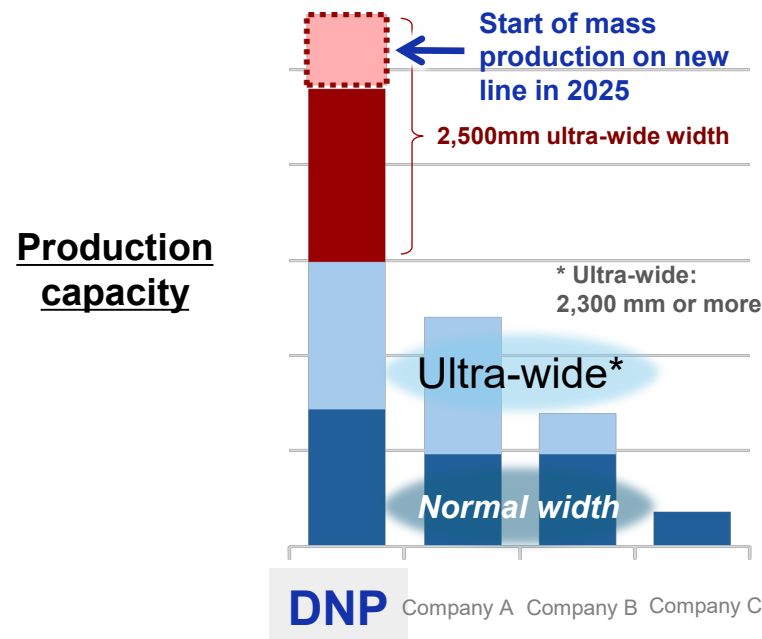


Kashiwa













## Development site

**Expanded production capacity of ultra-wide optical film supporting up to 2,500 mm (Mihara Plant, scheduled to commence operation in FY2025)**

# Competitive Environment



**Types Produced**  
(Mass production track record)

Substrate	TAC				Acrylic				PET <small>Mainstream for large TVs</small>			
	AG	AGLR	CHC	CHCLR	AG	AGLR	CHC	CHCLR	AG	AGLR	CHC	CHCLR
Type												
DNP	●	●	●	●	●	●	●	●	●	●	●	●
Company A	●	●	●	●								
Company B	●	●	●	●	●	●						
Company C			●									

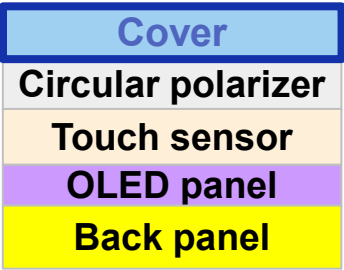


► Cover film for foldable displays

■ We have developed films with high hardness and excellent flexibility through optimal selection of substrates and ink design and formulation

	2019	2020	2021	2022	2023	2024	2025
Foldable devices	Inner/outer bending	Clamshell		Slidable		Rollable	
		Notebook		Multi-hold			

\* Estimate by DNP based on various materials

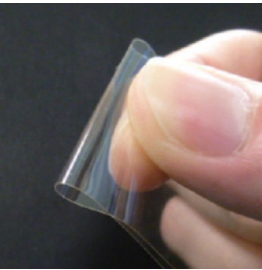


Layer composition

Cover film

Thin retardation film

Cover Film for Foldable Devices



- Achieving both “hard and foldable”
- Scratch resistance close to that of glass
- Functions such as anti-static and anti-fouling properties can be added

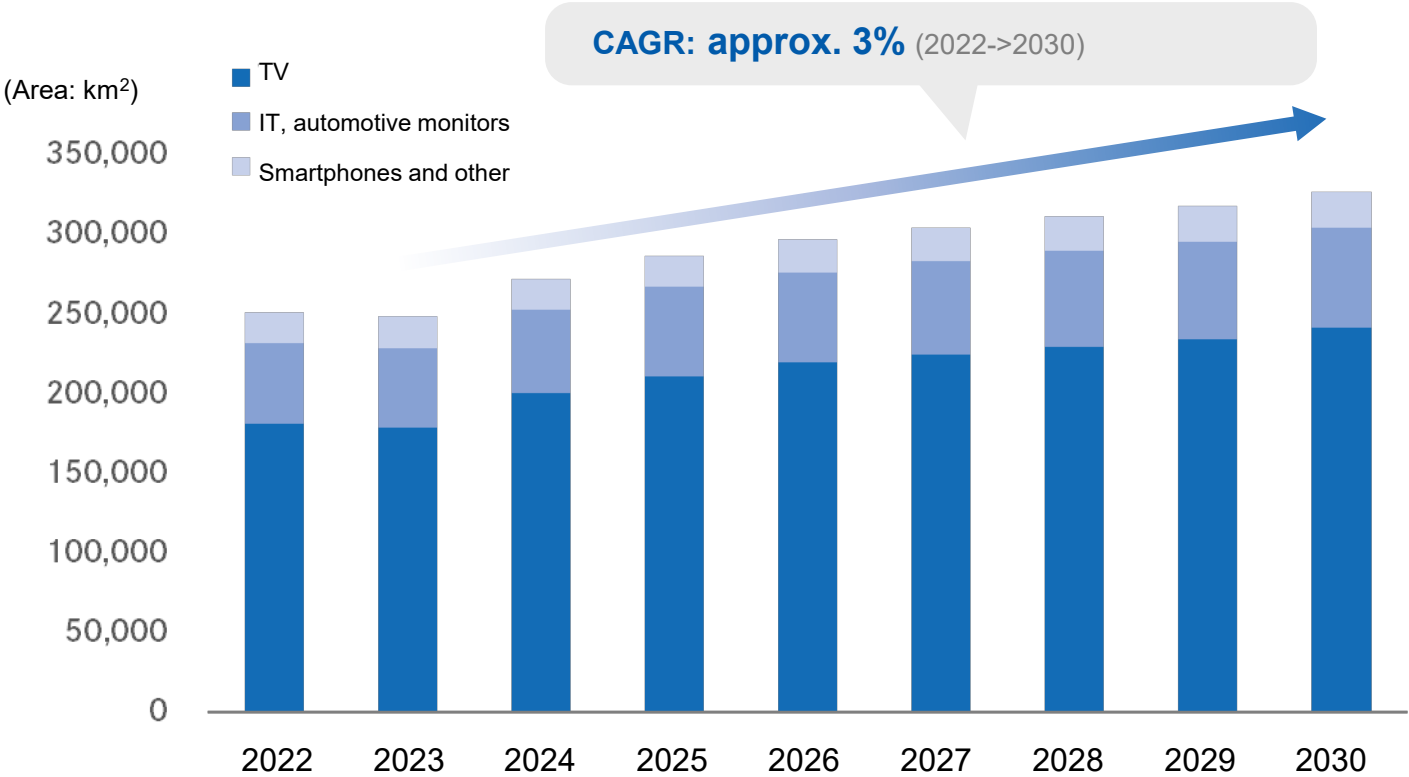
- ▶ **Technology for larger sizes and high functionality, optical design to control light, and material and coating technology**
- ▶ **In-line multilayer coating production equipment for products with high functionality and high quality**
- ▶ **Extensive patents and know-how related to materials, manufacturing methods and products**
- ▶ **Ability to provide a stable supply of high-quality products while pursuing high productivity**
  - **World's largest\* ultra-wide 2,500 mm line for surface treatment films for displays**
  - **Roll-to-roll production in a clean environment**

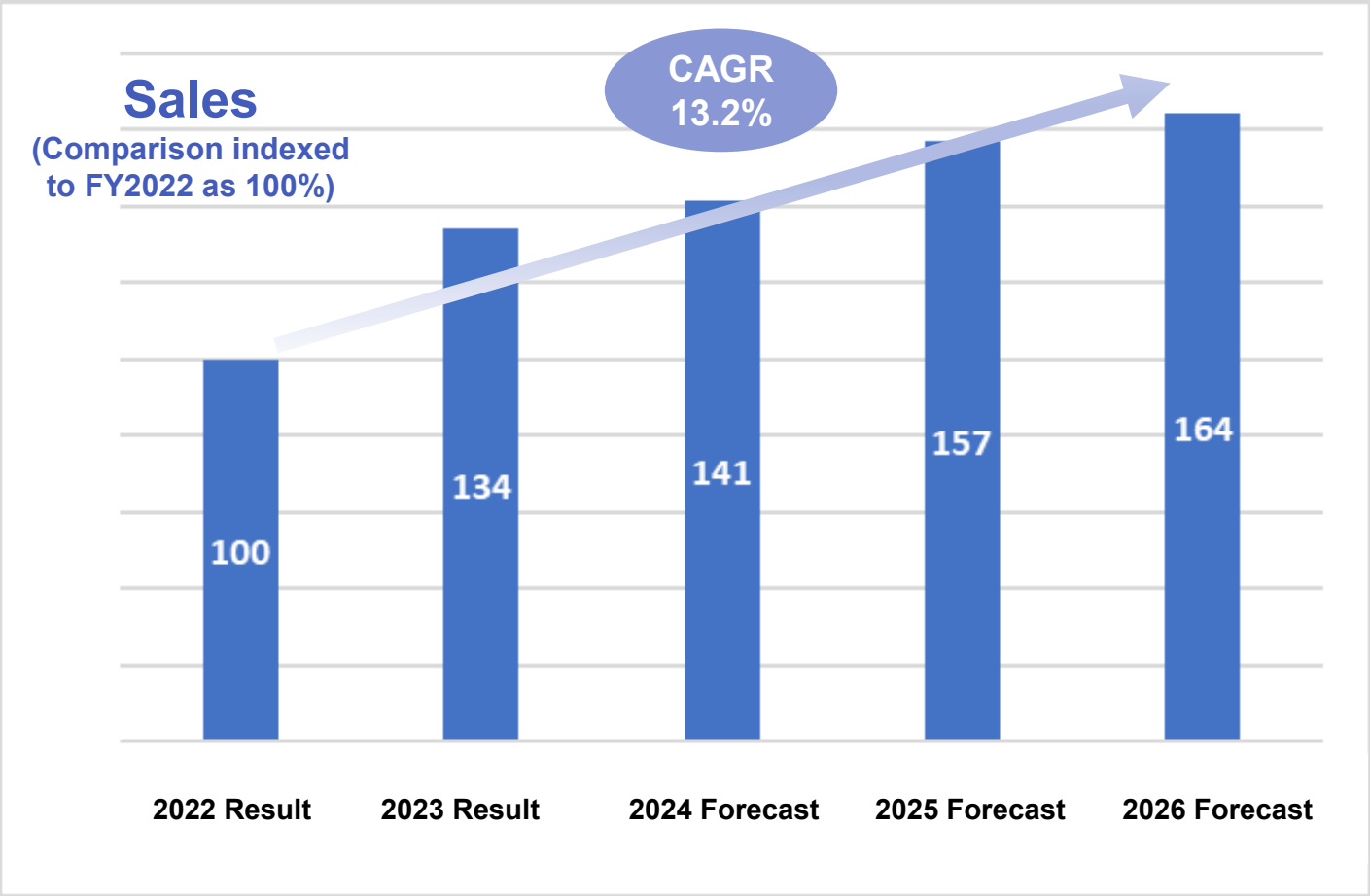
\* Fuji Chimera Research Institute, Inc.  
2023 Current status and future outlook for display-related markets.

# Market Environment

The display market is expected to grow at a CAGR of about 3%, against a backdrop of the trend toward larger TVs

Outlook for the Global Display Demand





Growth rate exceeding market growth rate

# Metal Masks

**DNP**

未来のあたりまえをつくる。

# Business Overview

DNP

## OLED Metal Masks

Providing metal masks for thinner, lighter, higher resolution, and larger OLED displays

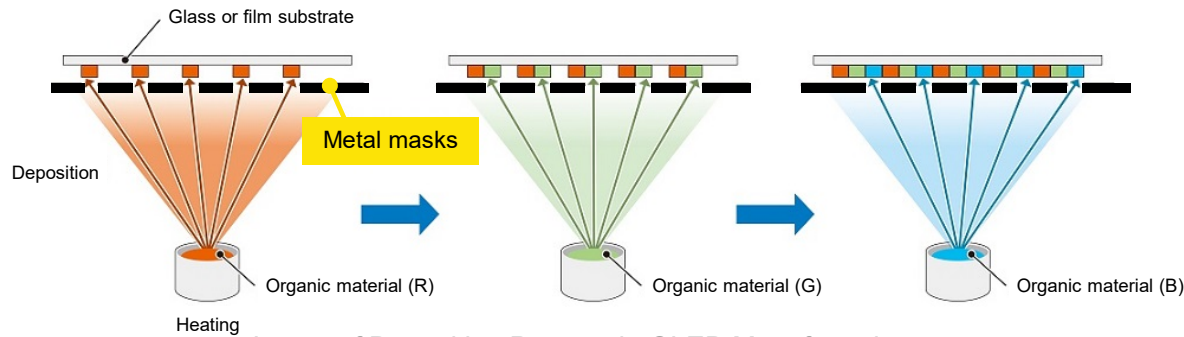


Image of Deposition Process in OLED Manufacturing



Image of an OLED display manufactured using metal masks

### Trends

- Increasing demand for smartphones
- Increasing use in small and medium devices
  - Smartwatches
  - Tablets
  - Notebook PCs
  - Automotive

### DNP's Solutions

High-definition metal masks are manufactured using proprietary photolithography and etching processing technologies

**DNP has obtained the top global market share centered on smartphones**

### Impact on Society

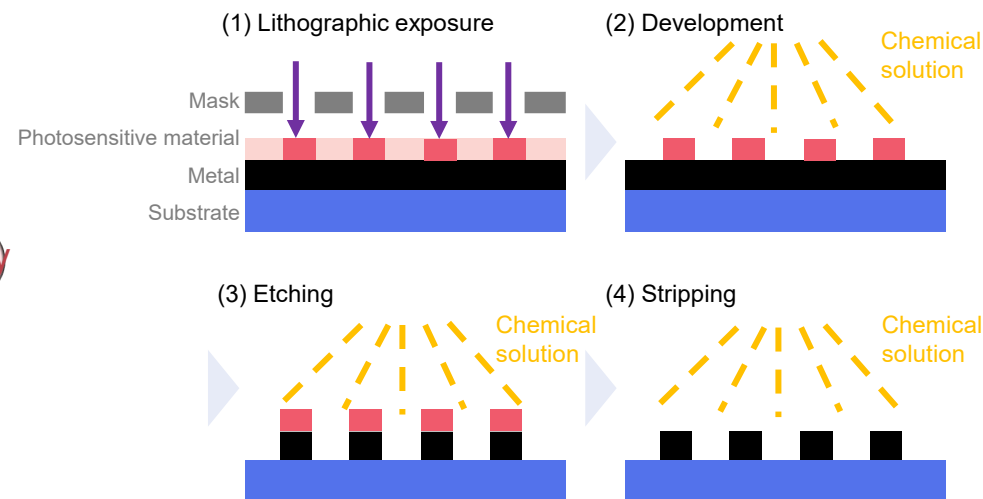
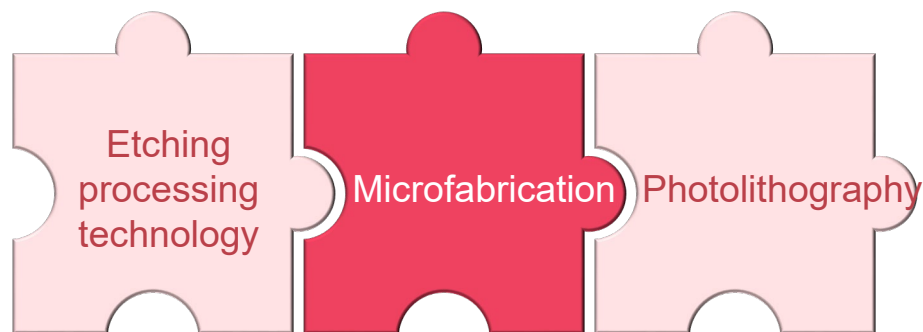
- Realization of thinner, lighter and higher resolution displays
- Expansion of possibilities for new applications using flexible shapes

➡ Realizing comfortable lifestyles

## DNP's Basic Technologies

### Proprietary photolithography and etching processing technologies for realizing high-definition microfabrication

#### DNP's core technologies



Metal masks created by the technology of making “printing stamps”

In order to print more beautifully and clearly, we have refined the technology of making “plates” and improved it into a high-precision “microfabrication” technology.

Metal masks require a high level of precision in the positioning and size of holes.

DNP's highly accurate photolithography technology and **wet etching technology** for **metal** are major strengths.

- ▶ **High-precision photolithography and etching processing technologies**
- ▶ **Superior technological development capabilities**
- ▶ **Extensive patents and know-how related to materials, manufacturing methods and products**
- ▶ **Ability to provide a stable supply of high-quality, high-definition products**

DNP began developing metal masks in 2001.

The company contributed to the development of OLED displays from their infancy to widespread use.



## Business Strategy

### ▶ Invested approximately 20 billion yen to expand production capacity

- Kurosaki Plant (Fukuoka Prefecture) production line began operation in May 2024
- It supports 8th generation glass substrates with high production efficiency

\* DNP news release dated June 12, 2024

- Acting in anticipation of the need for larger OLED displays
- Optimizing Business Continuity Plan (BCP)  
Enabling a backup for the existing production site Mihara Plant (Hiroshima Prefecture)



Kurosaki Plant

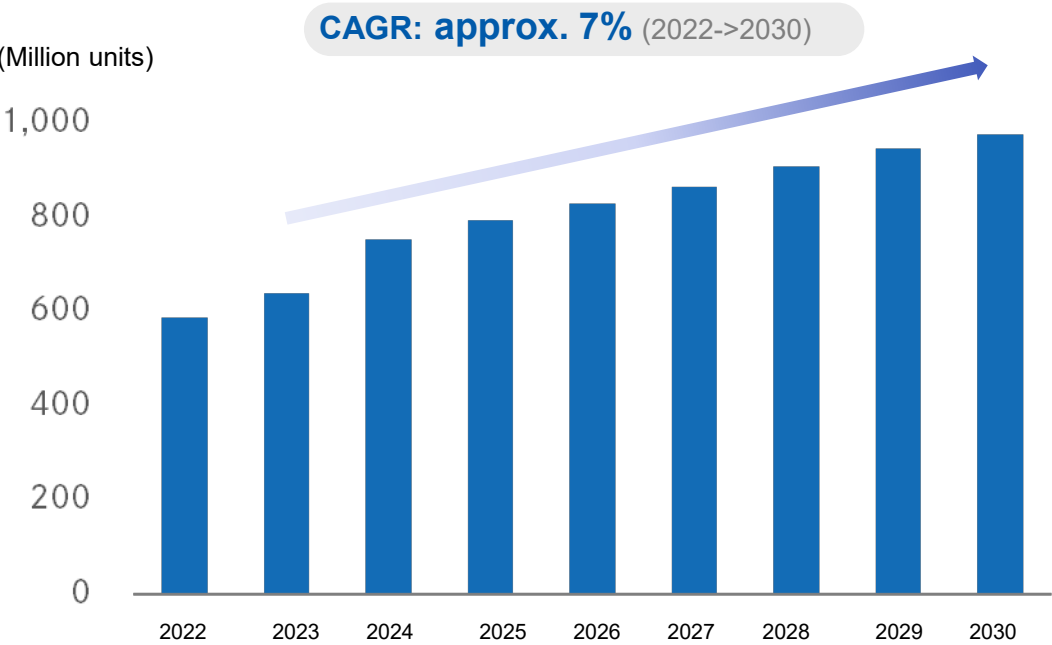


8th generation metal mask (left), 6th generation (center, right)

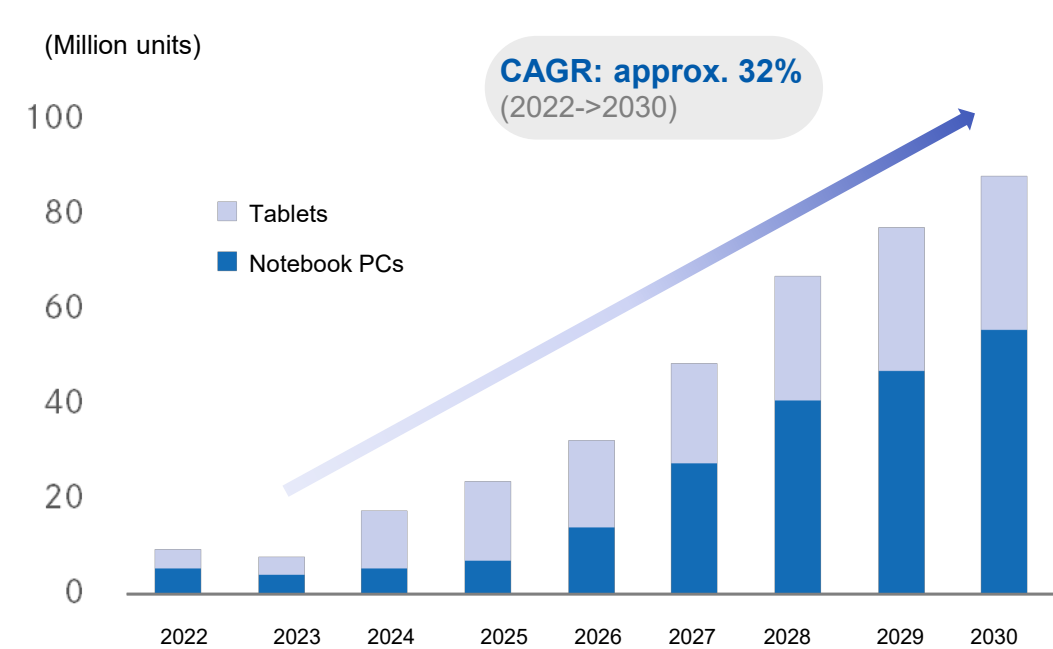
# Market environment

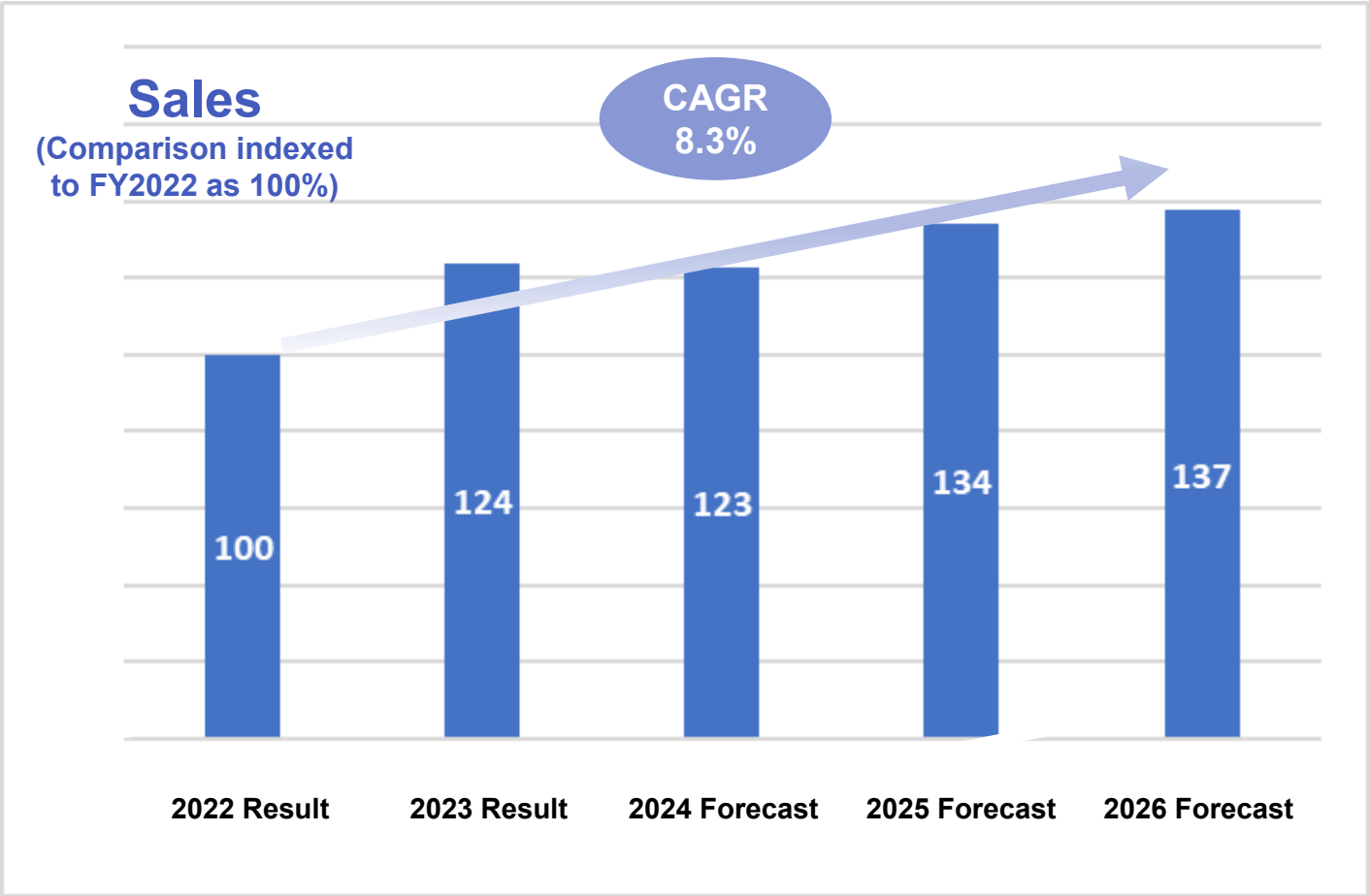
Expanded adoption of OLEDs for smartphones  
Expanded use in tablets and notebook PCs expected in the future

OLED Demand Forecast for Smartphone



OLED Demand Forecast for Notebook and Tablet





(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
-----------	--------------------

(2) Segment Strategy	Senior Executive Corporate Officer	Mitsuru Tsuchiya
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(3) Growth-driving businesses

Optical film   Metal masks	Corporate Officer	Nobuyuki Tomizawa
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Photomasks   Glass core	Corporate Officer	Minoru Nakanishi
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Battery pouches	Senior Corporate Officer	Mitsuru Iida
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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
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# Photomask (For semiconductors)

**DNP**

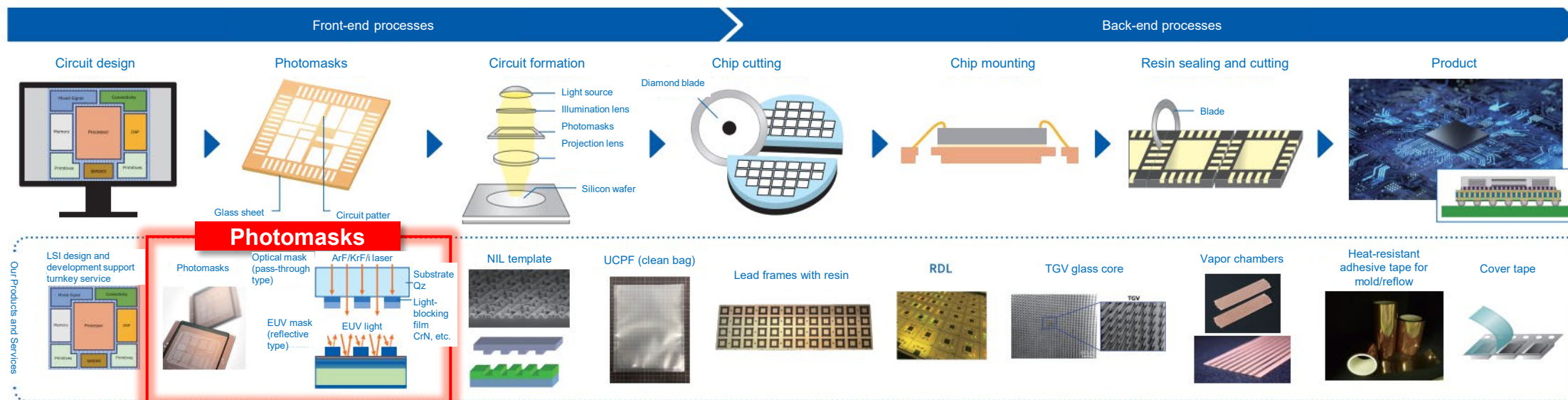
未来のあたりまえをつくる。

# Business Overview

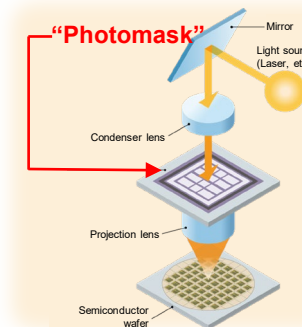
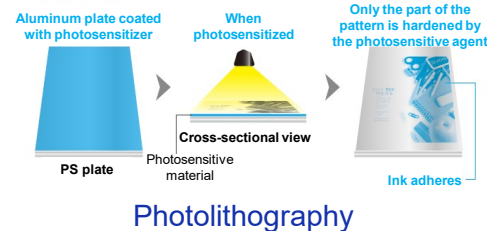
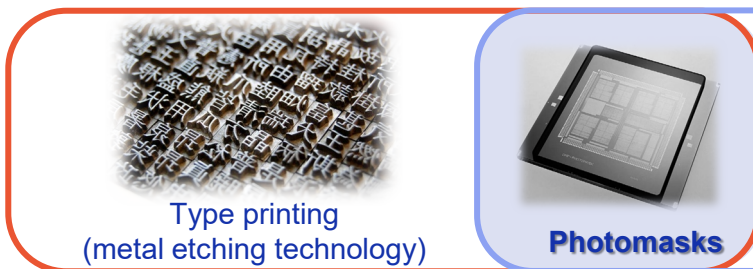
DNP

## ■ Semiconductor Business: Photomasks (Semiconductor Front-end Processes)

### DNP's Semiconductor-related Products and Services



### ◀ DNP basic technologies and photomasks “Why is a printing company handling photomasks?”



### What is a photomask?

- Used to transfer circuits onto semiconductor wafers
- A structure with a precise circuit pattern formed on the glass surface, it is an important component **essential for semiconductor manufacturing.**

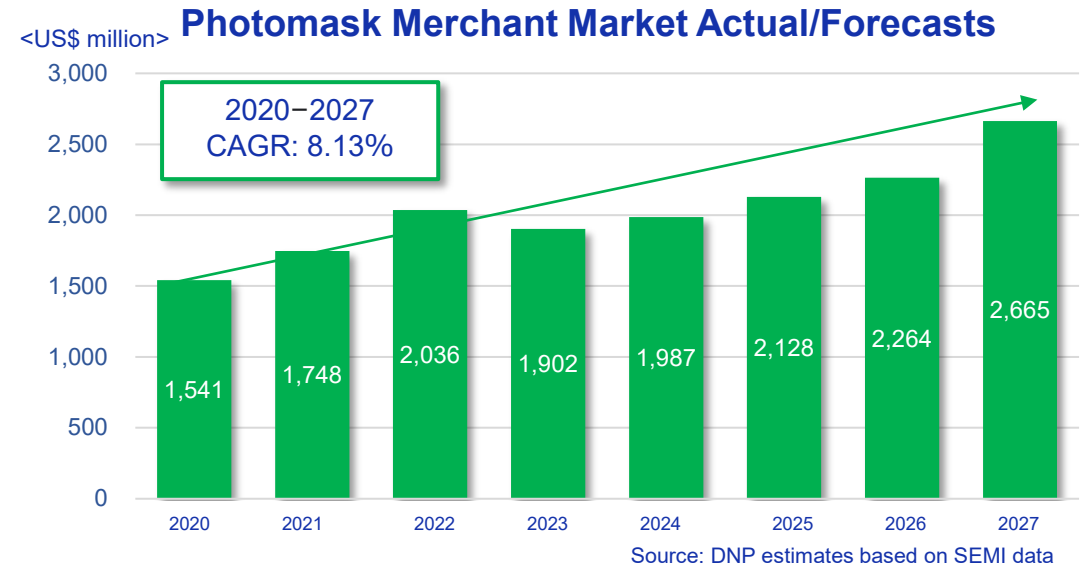
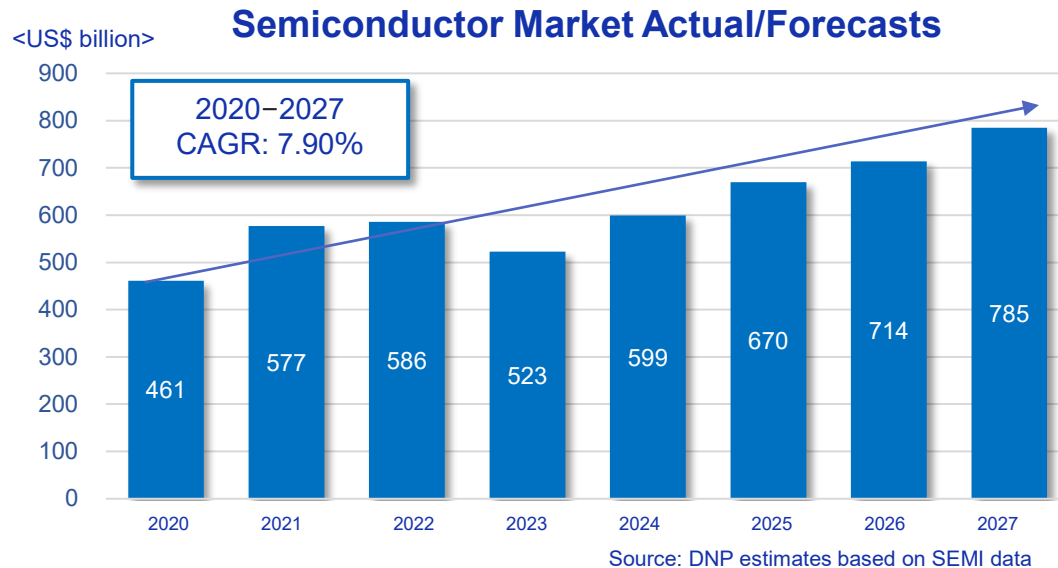
Core products in the “Semiconductor Business,” a focus business area of DNP

# Business Environment

DNP

## ■ Market Trends

- The photomask market can be roughly divided into the “Captive” market, which targets semiconductor manufacturers’ in-house production, and the “Merchant” market, which targets semiconductor manufacturers that do not have their own in-house production divisions



- The semiconductor market is forecast to expand at a CAGR of 7.9% from 2020 to 2027, driven by growth in AI-related technologies and automotive applications.
- The photomask merchant market is expected to grow at a CAGR of 8.13% from 2020 to 2027, surpassing the semiconductor market, due to strong capital investment by semiconductor manufacturers, backed by the forecast growth of the semiconductor market and aggressive attraction of semiconductor manufacturers in various countries.
- DNP’s photomask business is targeting the “merchant market” for the time being  
▶ Going forward, DNP will expand its business into the captive market with new products

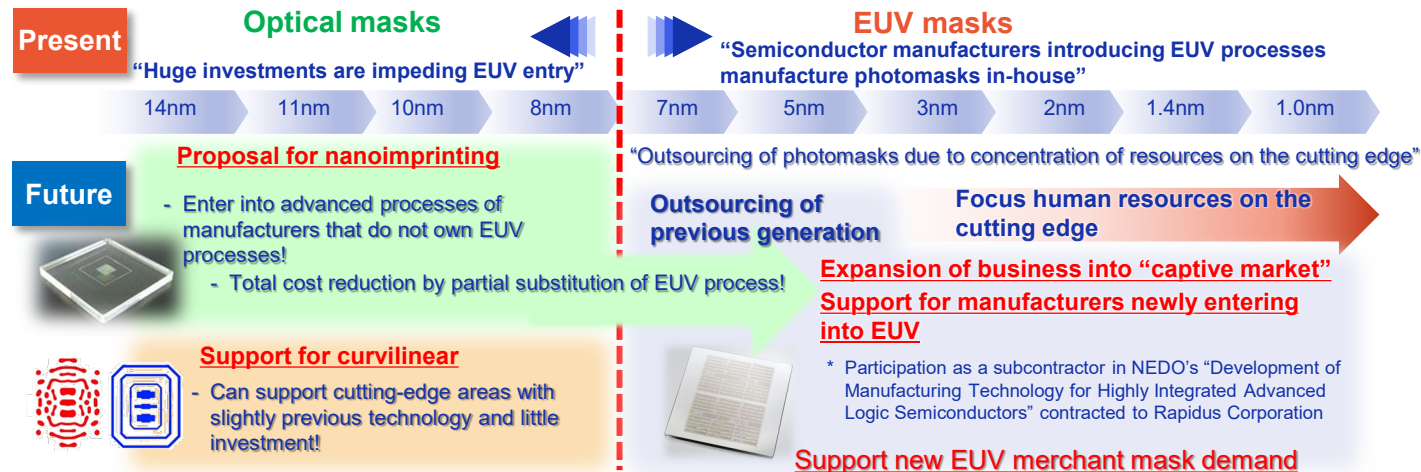


# Business Strategy

**DNP**

## Strengthen ability to address EUV/advanced fields

### Advanced Processes and DNP's Initiatives

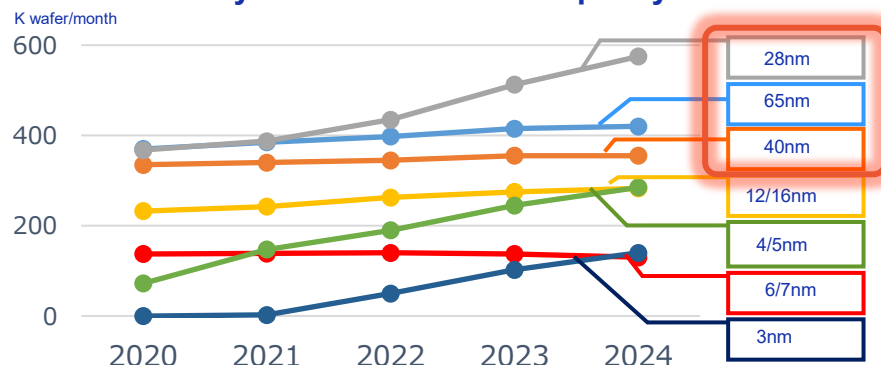


### Strengthen ability to address EUV/advanced fields

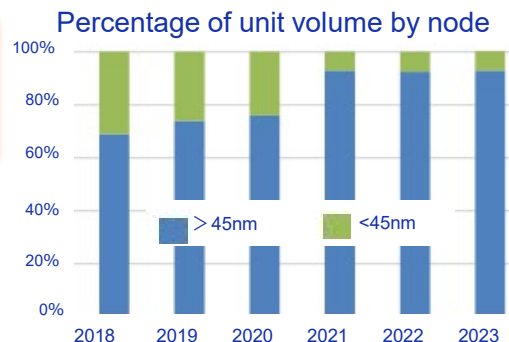
- **Accelerate development of masks for EUV**
  - Increase number of multi-beam mask writers
  - Complete 3nm node development
  - Start 2nm node development
- **Promote development of proprietary nanoimprint technology**
  - Increase in inquiries from various customers
  - Support each customer's development
- **Accelerate curvilinear development**
  - Increase in inquiries from various companies

## Strengthen support for volume zones

### Foundry Wafer Production Capacity



### Photomask Merchant Market



### Expansion of production capacity for volume zone

- **Investing in middle-end**
  - Coming online from FY2023 to FY2025

### Production capacity

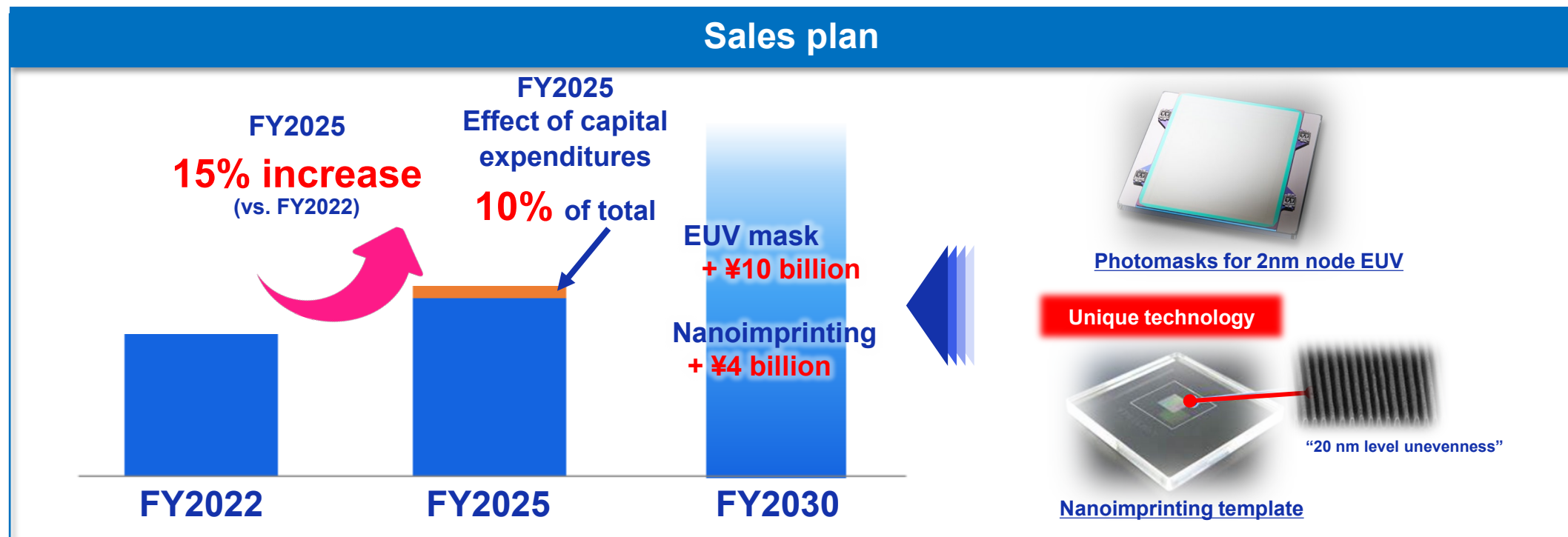
- 2025: **120%** (vs. 2022)

**Size of investment ¥20 billion (FY2023 to FY2025)**

# Business Roadmap

DNP

## ■ Photomasks



## ■ Photomasks

As a core product of DNP's Semiconductor Business, continue active investment to:

- accelerate development of photomasks for EUV and proprietary nanoimprint technology / expand into cutting-edge areas through commercialization; and
- capture the volume zone that continues to expand with the plan to surpass the semiconductor market

# Glass Core(Advanced Mounting Materials)

**DNP**

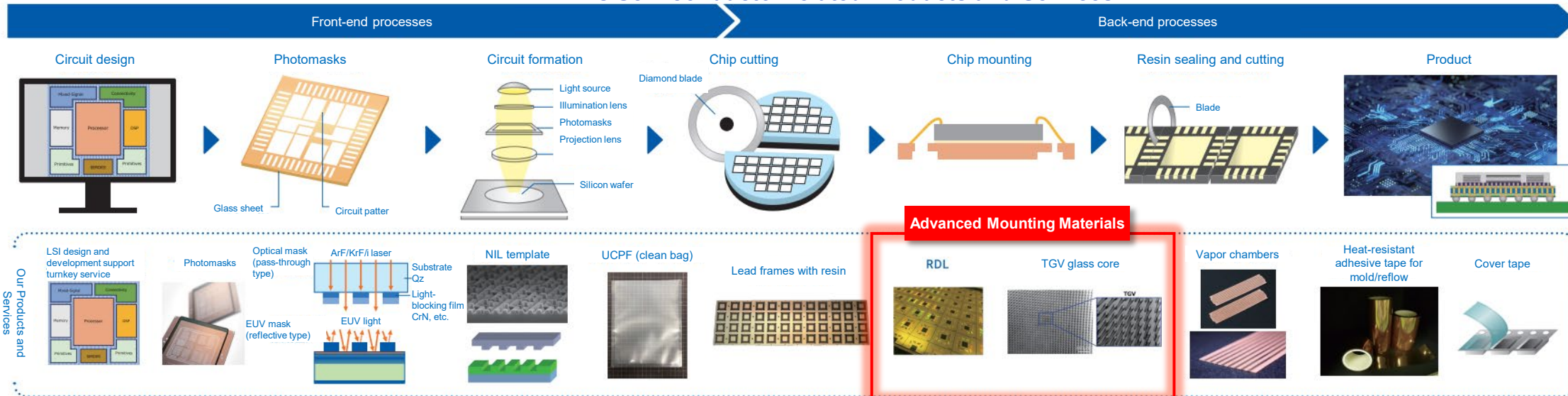
未来のあたりまえをつくる。

# Business Overview

**DNP**

## ■ Semiconductor Business: Advanced Mounting Materials – Glass Core (Semiconductor Back-end Processes)

### DNP's Semiconductor-related Products and Services



### DNP's Basic Technology and Advanced Mounting Materials for Semiconductors

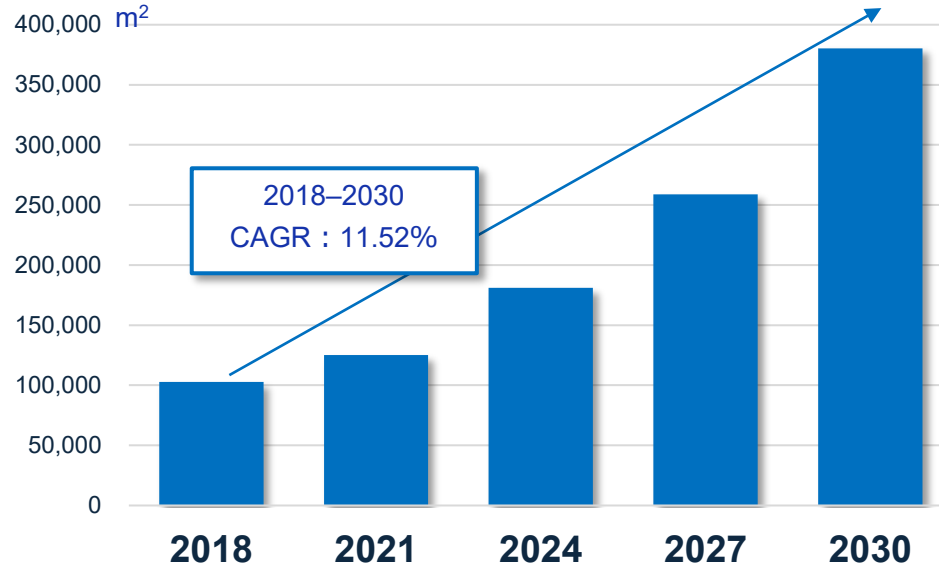


- New advanced mounting materials in the “Semiconductor Business,” a focus business area of DNP
- Expansion from the existing “lead frames” business to the advanced mounting area—new businesses that drive growth in the next generation

## ■ Market Trends

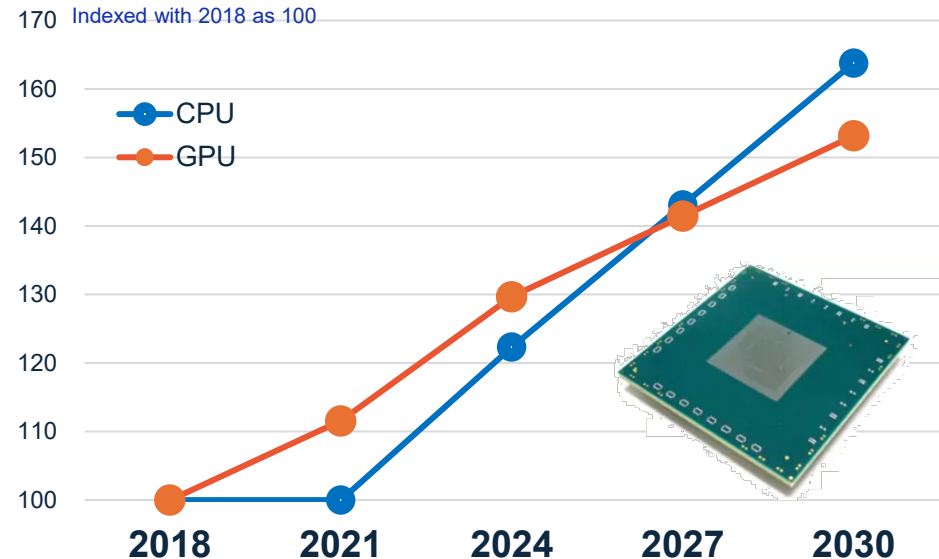
- Against the backdrop of advances in AI and the expansion of chiplets, mounting substrates for advanced devices continue to grow in size
- Glass core demand is expected to increase as “warpage and flatness” become an issue with larger substrates
- Server applications will progress the most with the increase in size of mounting substrates, which is behind the growth in glass core demand
- DNP's business target is the market for advanced mounting substrates for high-performance devices (CPUs/GPUs) used in servers

Quantity Forecast of Advanced Mounting Substrates for Servers  
(Area Basis)



Source: Estimate by DNP based on various materials

Forecast of Average Advanced Mounting Substrate Size for Servers



Source: Estimate by DNP based on various materials

- Total area of advanced mounting substrates for servers is projected to expand at a CAGR of 11.52% from 2018 to 2030
- The glass core market is expected to expand in proportion to the increase in the size of advanced mounting substrates (= package size)

# Business Roadmap

DNP

## ■ Advanced Mounting Materials

### Sales plan

- “Market Expectations”  
“Semiconductor of the Year 2023”  
Awarded the grand prize in the electronic materials for semiconductors category
- Capital expenditure underway
- Dialogue with multiple customers underway

第29回

¥30 billion

Small scale production

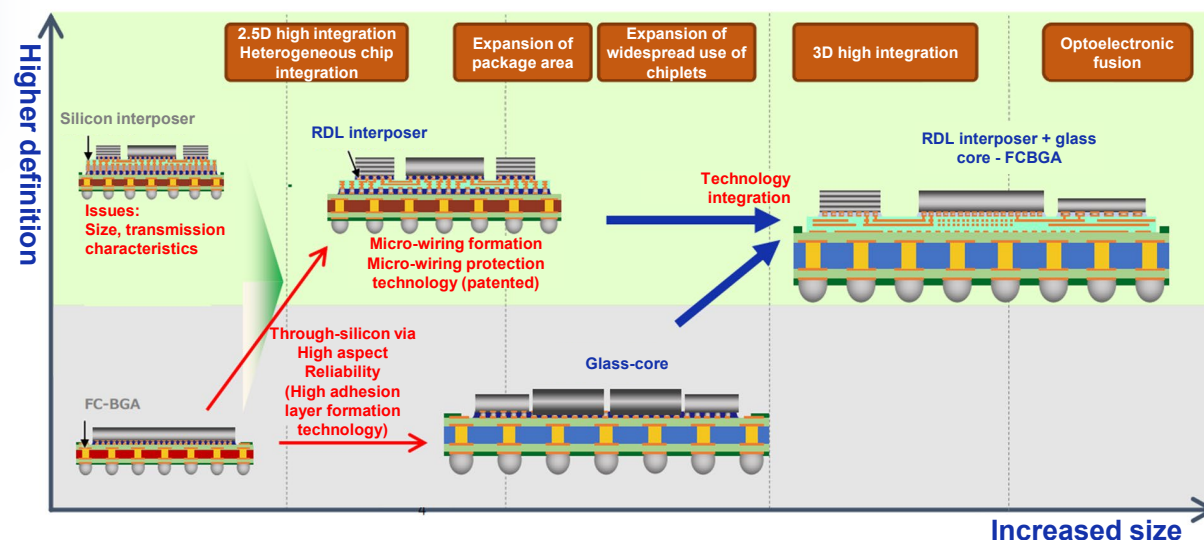
Mass production

FY2026

FY2027

FY2030

### DNP's Advanced Mounting Substrates roadmap



## ■ Advanced Mounting Materials

- Leveraging our strengths in combining existing business technologies and collaborating with supply chain companies
- Introducing glass cores and related “RDL interposer” products into the high-growth area of advanced mounting
- Glass cores and RDL interposers will add a new portfolio of “Advanced Mounting Materials” to DNP’s “Semiconductor Business” and are expected to grow significantly as new businesses that will drive growth in the next generation.

(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
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(2) Segment Strategy	Senior Executive Corporate Officer	Mitsuru Tsuchiya
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(3) Growth-driving businesses

Optical film    Metal masks	Corporate Officer	Nobuyuki Tomizawa
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Battery pouches	Senior Corporate Officer	Mitsuru Iida
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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
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# Battery Pouches

**DNP**

未来のあたりまえをつくる。



- 1. Battery Pouches**
- 2. Electric Vehicle (EV, PHEV) Market Trends**
- 3. Battery Pouches Business Plan**
- 4. Battery Pouches Business Strategy**
- 5. Other Products from Industrial High-Performance Materials**
  - Photovoltaic module components**

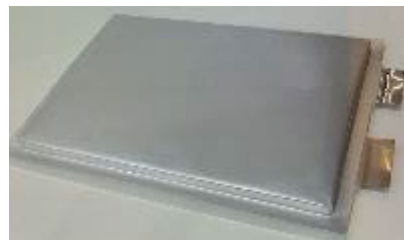
# What Are Battery Pouches?

DNP

## ◆ Product image



- Battery cell

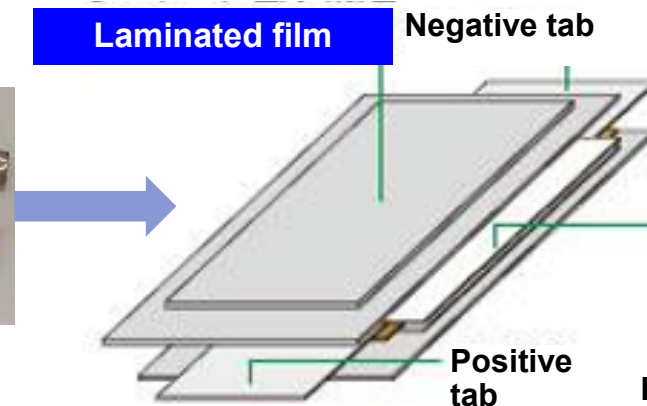


## ◆ Product lineup



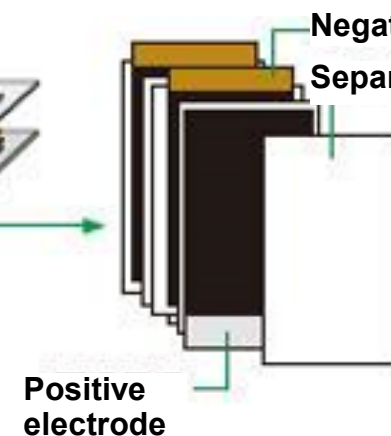
### - Laminated cell structure

Laminated film



### - Laminated electrode

Negative electrode  
Separator



Positive  
tab

Positive  
electrode

## ◆ Functions required of pouches

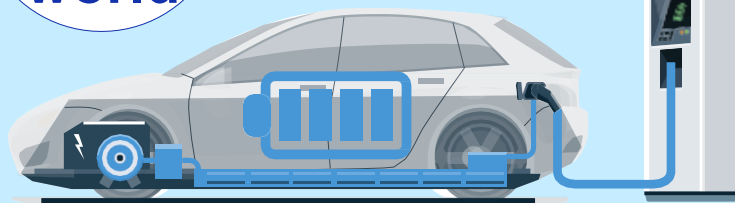
- To prevent electrolyte leakage  
High sealing and airtightness
- To prevent water from entering from outside  
High water vapor barrier property
- To increase battery capacity  
High moldability
- To support high voltage and large batteries  
High insulation
- To ensure stable operation in harsh environments  
Heat resistance and stability at high temperatures

# Products Boasting Leading Share

**DNP**

**No.1 in  
the  
world**

Battery pouches for  
lithium-ion batteries



Optical films for  
displays



(Viewing angle control film)



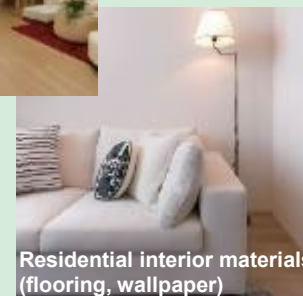
Recording materials for  
sublimation transfer



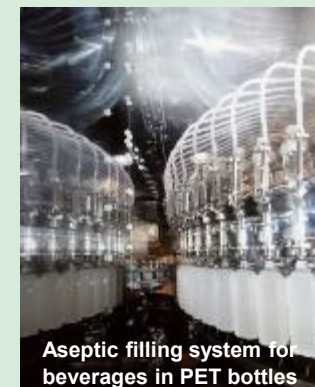
**No.1 in  
Japan**



Contactless IC card  
(Top share in Japan for  
financial IC cards, etc.)



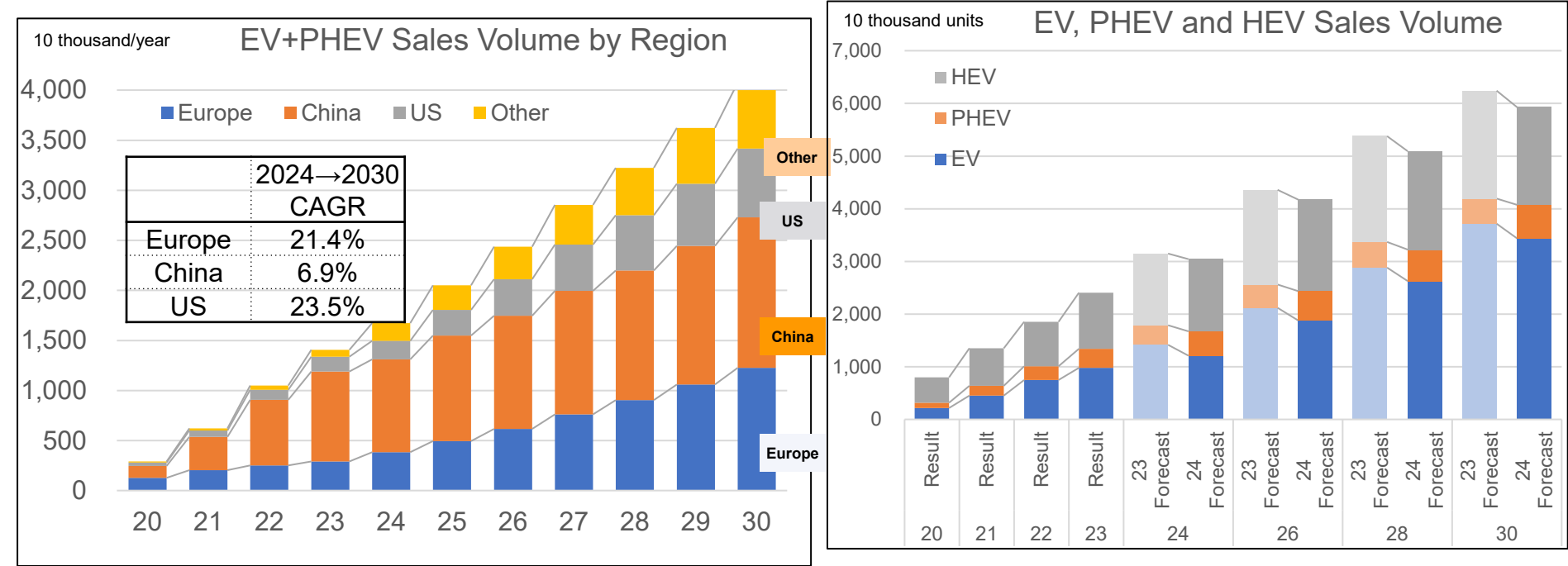
Residential interior materials  
(flooring, wallpaper)



Aseptic filling system for  
beverages in PET bottles

# Electric Vehicle (EV, PHEV) Market Trends

DNP



[Revised ratio of estimated volume compared to last year]

	2024	2026	2028	2030
EV	-27%	-24%	-21%	-20%
PHEV	18%	15%	11%	12%
HEV	12%	11%	12%	10%

EVs revised downward, but PHEVs and HEVs revised upward

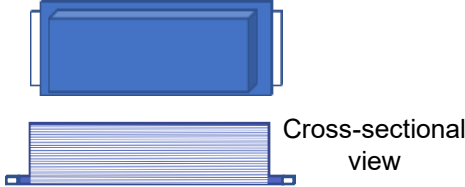
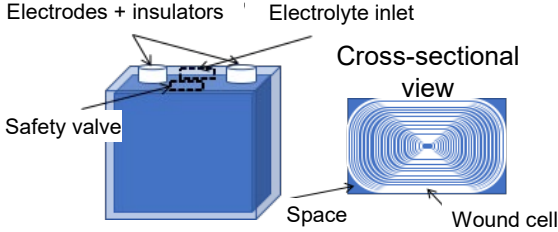

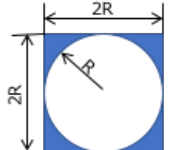
Companies are shifting from an EV-centric strategy to a diversified strategy of PHEV and HEV.

Source: DNP's forecasts based on Global Data, MarkLines/national policies, automaker press releases, etc.

- **The major trend of electrification of automobiles (EVs and PHEVs) remains unchanged.**  
However, electrification is expected to progress from multiple angles, including HEVs and PHEVs, and the shift to EVs will continue until EV recharging facilities are in place, the number of models increases, and prices become more affordable.
- **Although growth of EVs is slowing down, HEVs and PHEVs are expected to grow and contribute a certain amount to the growth of pouches.**  
2025: Approx. 13.5 million EVs, approx. 4.6 million PHEVs, approx. 17.2 million HEVs, EV+PHEV ratio of approx. 19%  
2030: Approx. 30 million EVs, approx. 5.3 million PHEVs, approx. 21.5 million HEVs, EV+PHEV ratio of approx. 35%

# Comparison of Three Battery Types Applied in Automotive Applications **DNP**

[Overview] Pouch-type batteries, which are lightweight, have a low risk of contamination, and do not require a complex BMS, are widely used in automotive applications.

	Pouch	Prismatic	Cylindrical
			
Cell	Few parts, <b>low cost</b>	Many parts, <b>high cost</b>	Standardized, general purpose, <b>low cost</b>
Internal structure	Stacked / vacuum sealed	Wound / space in the corners of the container	Wound
Specific energy density by weight	<b>Light</b> : 200-300 Wh/kg	<b>Heavy</b> : 80-240 Wh/kg	Light : 200-300 Wh/kg
Airtightness	PP resin seal	Welded	Clamped
Safety valve structure	Sealing parts	Partial metal notching process	Resin parts
Countermeasures against foreign contaminants in container	Produced in a clean environment. Cleaning process not required	Cleaning process after metal processing	Cleaning process after metal processing
Advantages and disadvantages of modularization	<p><b>[Advantages]</b></p> <ul style="list-style-type: none"> <li>- Thin, large-area cell structure provides excellent heat dissipation efficiency.</li> <li>- Easy cell insertion in production process</li> <li>- Easier electrolyte filling and degassing than Prismatic</li> </ul> <p><b>[Disadvantages]</b></p> <ul style="list-style-type: none"> <li>- Rigidity required for module structure.</li> </ul>	<p><b>[Advantages]</b></p> <ul style="list-style-type: none"> <li>- Rigidity of battery cell allows simplification of module structure.</li> </ul> <p><b>[Disadvantages]</b></p> <ul style="list-style-type: none"> <li>- There are empty spaces inside the battery cell, which is disadvantageous in terms of energy density by volume.</li> <li>- Electrolyte injection and electrolyte penetration takes time in the production process.</li> </ul>	<p><b>[Advantages]</b></p> <ul style="list-style-type: none"> <li>- Low load per cell</li> </ul> <p>Approx 6,000 cells in one EV</p> <p><b>[Disadvantages]</b></p> <ul style="list-style-type: none"> <li>- Advanced BMS required (BMS: Battery management system)</li> </ul>  <p>21.5% empty space is created when cylinders are combined to form modules</p> $1 - \frac{\pi R^2}{(2R)^2} = 1 - \frac{\pi}{4} = 21.5 \%$

# Battery Systems Used by Each Automaker

**DNP**

	OEM	Battery System	Suppliers
Europe OEM	VW	Prismatic	Northvolt/SDI/GUOXUAN
		Pouch	LGES / SKon
	BMW	Prismatic	CATL / SDI / LG
		Cylindrical	CATL/AESC
	Mercedes-Benz	Pouch	SKon / Farasis / AESC
	Audi	Pouch	LGES
		Prismatic	SDI
	REANULT	Pouch	LGES/AESC
		Prismatic	CATL
	VOLVO	Pouch	LG
		Prismatic	SDI
China OEM	BYD	Prismatic	BYD
		Pouch	BYD
	BAW	Pouch	SKon / Farasis
		Prismatic	CATL
	SAIC Motor	Prismatic	CATL
	BEELY AUTO	Prismatic	CATL / GUOXUAN
US OEM	CHERY	Prismatic	CATL / GUOXUAN
	GM	Pouch	LGES, Ultium (GM x LG JV)
		Cylindrical	SDI
	Ford	Pouch	Skon, BluOval (Ford x SK JV)
	Stellantis	Prismatic	SDI
		Pouch	LGES (Stellantis x LG JV)
	Tesla	Cylindrical	Panasonic / LG
		Prismatic	CATL/BYD

	OEM	Battery System	Suppliers
South Korea OEM	Hyundai	Pouch	LGES-JV / SKon-JV
	Kia	Pouch	LGES-JV / SKon-JV
Japan OEM	Toyota	Prismatic	Panasonic / CATL BYD / Blue Energy
		Pouch	LG
	Nissan	Pouch	AESC
		Prismatic	CATL
	Honda	Pouch	Honda-LGES JV
		Prismatic	Panasonic / CATL Blue Energy



ID.4 (EV)

120,000



Ioniq 5 (EV)

98,000



Nissan Sakura (EV)

37,000



Mustang Mach-E (EV)

67,000



Megane (EV)

44,000

Use of pouches is progressing due to joint ventures with battery manufacturers

2023 sales volume

Typical car models using pouches



# Rapidly Expanding Automotive Battery Plants in North America

Pouch specifications, battery plants and operation schedules

Prepared by DNP based on press releases and other materials from automakers and battery manufacturers

**DNP**

Manufacturer	Location and Battery Type		Max Capacity (GWH)	Assumed OEM	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LGES	Michigan		5	276	GM	5GWH								
LGES (Dedicated Toyota line)	Michigan		20		Toyota				Start of operation		20GWH			
Ultium (LGES-GM JV)	Ohio	Plant 1	42		GM		Start of operation		42GWH					
	Tennessee	Plant 2	52		GM		Start of operation		52GWH					
	Michigan	Plant 3	50		GM			Start of operation		50GWH				
LGES-Honda JV	Ohio		40		Honda				Start of operation		40GWH			
LGES-Stellantis JV	Ontario (Canada)		49		PSA-Chrysler				Start of operation		49GWH			
LGES-Hyundai JV	Georgia		30		Hyundai				Start of operation		30GWH			
SKon	Georgia	Plant 1	10	186	Ford · VW		Start of operation		10GWH					
		Plant 2	12		Ford · VW			Start of operation		12GWH				
Blue Oval (SKon-Ford JV)	Tennessee		43		Ford				Start of operation		43GWH			
	Kentucky	Plant 1	43		Ford				Start of operation		43GWH			
		Plant 2	43		Ford			Delayed	Start of operation		43GWH			
SKon-Hyundai JV	Georgia		35		Hyundai				Start of operation		35GWH			
AESC	Tennessee		18	48	Renault, Nissan, Mitsubishi, others	3GWH				18GWH				
	Kentucky		30		Nissan, Daimler, Mazda				Start of operation		30GWH			

Major battery manufacturers, beginning full-scale operation of plants in 2023 and beyond, expect to increase volume by operating new plants in 2025 to 2026.

# Rapidly Expanding Automotive Battery Plants in North America

Start of plant operations concentrated in 2025

Pouch specifications, battery plants and operation schedules

Prepared by DNP based on press releases and other materials from automakers and battery manufacturers

**DNP**

Manufacturer	Location and Battery Type		Max Capacity (GWH)	Assumed OEM	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LGES	Michigan		5	GM	5GWH									
✓ LGES (Dedicated Toyota line)	Michigan		20	Toyota					Start of operation		20GWH			
✓	Ohio	Plant 1	42	GM		Start of operation			42GWH					
✓	Tennessee	Plant 2	52				Start of operation		52GWH					
	Michigan	Plant 3	50				Start of operation		50GWH					
✓	Ohio		40	Honda					Start of operation		40GWH			
	Ontario (Canada)		49	PSA-Chrysler					Start of operation		49GWH			
✓	Georgia		30	Hyundai					Start of operation		30GWH			
✓	Georgia	Plant 1	10	Ford · VW		Start of operation		10GWH						
		Plant 2	12	Ford · VW			Start of operation		12GWH					
	Tennessee		43	Ford					Start of operation		43GWH			
✓	Kentucky	Plant 1	43	Ford					Start of operation		43GWH			
		Plant 2	43	Ford				Delayed	Start of operation		43GWH			
✓	Georgia		35	Hyundai					Start of operation		35GWH			
	Tennessee		18	Renault, Nissan, Mitsubishi, others	3GWH					18GWH				
	Kentucky		30	Nissan, Daimler, Mazda					Start of operation		30GWH			

Toyota and Honda will begin to use pouches

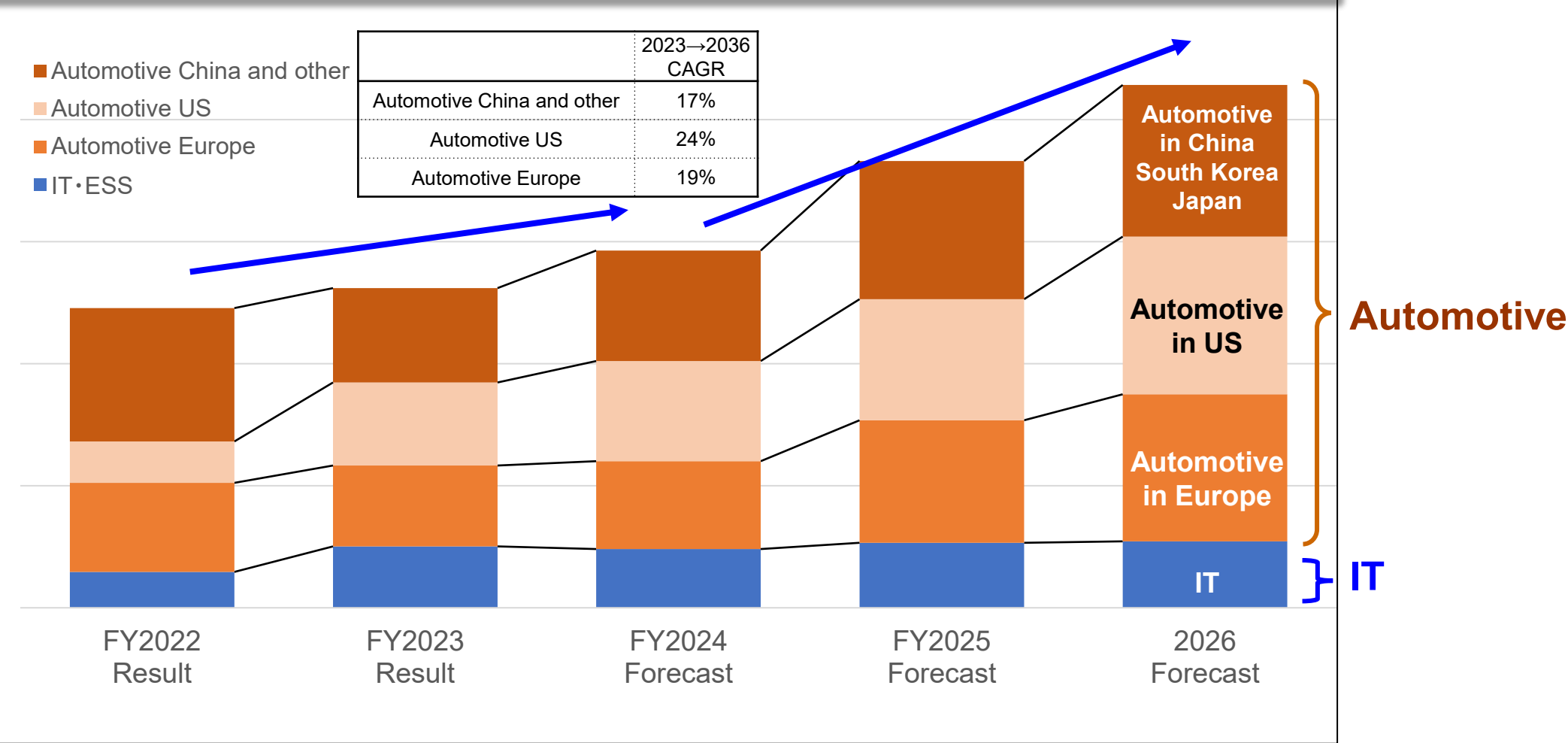
Major battery manufacturers, beginning full-scale operation of plants in 2023 and beyond, expect to increase volume by operating new plants in 2025 to 2026.



# BP (Battery Pouch) Business Plan

DNP

Until 2020: Expansion mainly in IT applications (smartphones, tablets, notebook PCs, etc.)  
2022–2024: Although EV demand in Europe and the US, it slowed (due to factors such as charging infrastructure, vehicle prices, and few vehicle models)  
From 2025: Growth of electric vehicles (EV, PHEV, HEV) is expected



# Further Enhance Competitiveness of BP (Battery Pouch) Products

**DNP**

Use industry channels to anticipate market needs  
and further strengthen DNP's core competence

Maintain and expand status of “industry leader in pouches” with high quality and high reliability cultivated over many years

## [Production technology]

Quality and reliability refined over many years of manufacturing

- In-house equipment development consistent with proprietary development processes  
: All produced at DNP's in-house development facilities  
Process adaptability, prevention of know-how leakage
- Promote high productivity, high yield, and automation

## [Product development]

Pursuit of functionality through in-house design

- Materials development: In-house design, alliances with materials manufacturers  
Process development: Improving characteristics through the use of proprietary processes
  - ▷ Further enhance long-term durability and reliability
  - ▷ High performance pouches (insulation, heat resistance, moldability, etc.)
  - ▷ Quickly support next-generation batteries (semi-solid-state, all-solid-state, etc.)

## [Response to competition]

Secure barriers to entry for products and technologies

- Hold numerous patents to restrict competitors from entering the market (more than 500 rights held)
- Confidentiality of manufacturing know-how (in-house production of manufacturing equipment, etc.)
- Development and production of strategic materials in collaboration with materials manufacturers

## [Response to customers]

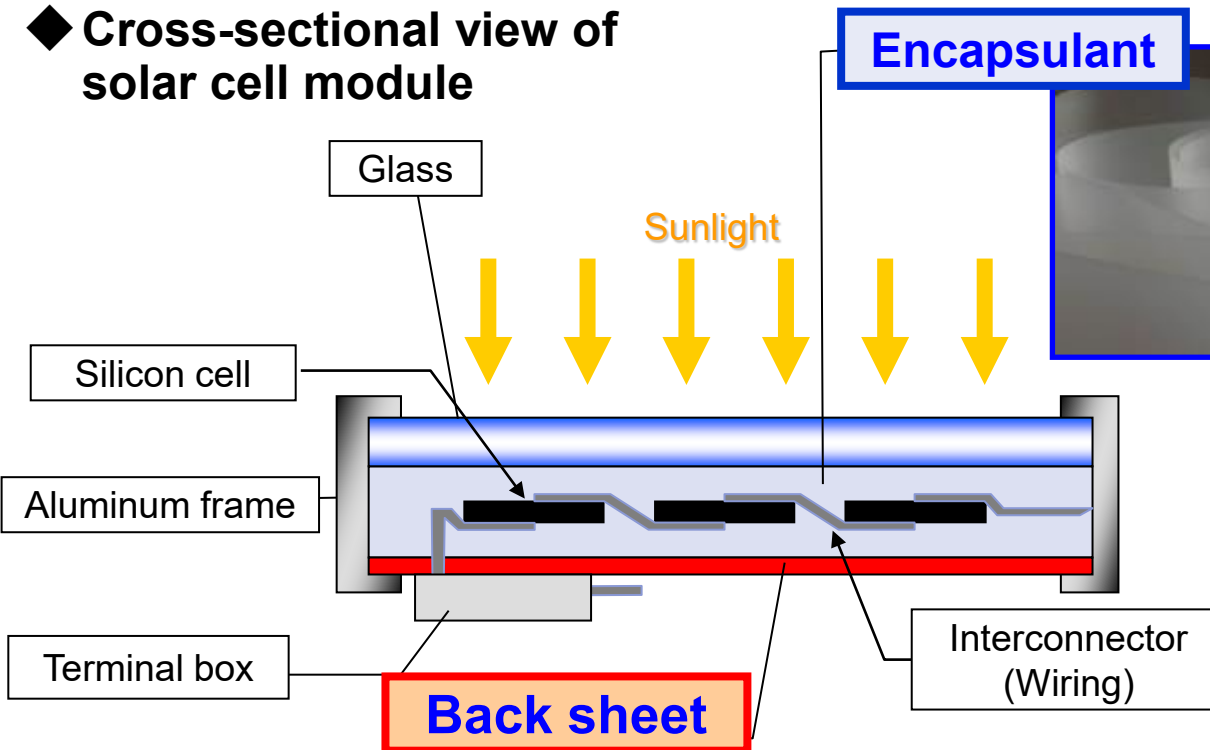
Strengthen relationships with strategic customers, local production

- Strengthen relationships with global EV battery manufacturers
- Automotive: Secure supply volume for automotive battery manufacturers  
Strengthen relationships with automobile manufacturers (OEMs)
- IT applications: Strengthen relationships with influential customers
- Promote local production to address policies specific to various countries

# Solar Panel Related Products

DNP

## ◆ Cross-sectional view of solar cell module



Encapsulant

<Features>

- Seals and protects solar cells
- **Long-term durability of 20 to 30 years**
- Transparency, adhesion and lamination properties



Back sheet

<Features>

- Protects solar cells from the external environment
- **Long-term durability of 20 to 30 years**
- Weather resistance, water vapor barrier properties, insulation resistance



Reflective sheet

<Features>

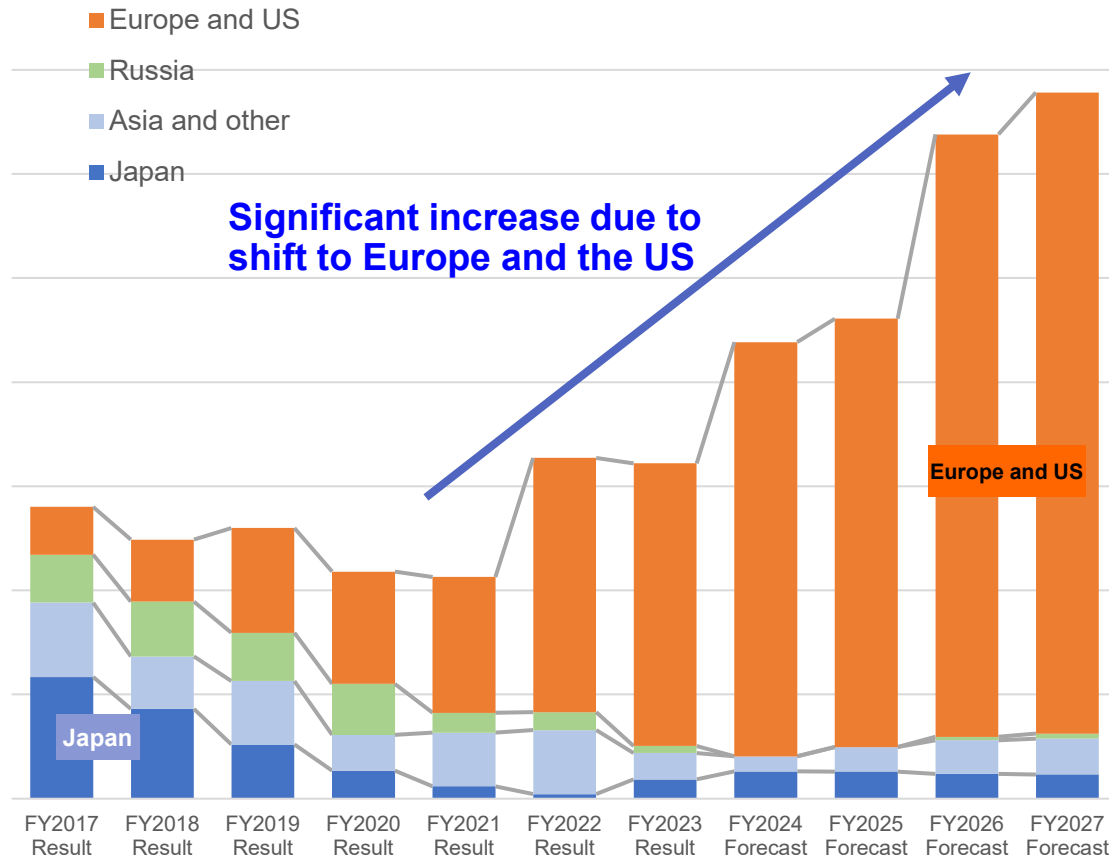
- High reflectivity improves power generation
- Expected to improve power generation over an extended period of time due to excellent antifouling properties



# Solar Panel (PV) Related Business Plan

**DNP**

## Photovoltaic Cell Components Business Plan



While domestic PV manufacturers are withdrawing from in-house manufacturing, DNP has succeeded in shifting to Europe and the US, leveraging its high reliability and high quality.

- Significant sales increase expected

Expect to double the 2021 level in 2024.

- Facility expansion plan

New facilities will be installed in 2025 to increase production capacity

- ✓ Build a production system to meet robust demand in the US
  - Acceleration of PV installation due to the Inflation Reduction Act (IRA)
  - Decrease in competitiveness of Chinese products (strengthened safeguards)
- ✓ Respond to increasing demand in Europe
  - Formulation of EU Solar Strategy.
  - Target 600 GW in new installations by 2030

(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
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(2) Segment Strategy	Senior Executive Corporate Officer	Mitsuru Tsuchiya
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(3) Growth-driving businesses

Optical film    Metal masks	Corporate Officer	Nobuyuki Tomizawa
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Photomasks    Glass core	Corporate Officer	Minoru Nakanishi
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Battery pouches	Senior Corporate Officer	Mitsuru Iida
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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
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Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
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# Medical and Healthcare

**DNP**

未来のあたりまえをつくる。

## DNP's Medical and Healthcare Business



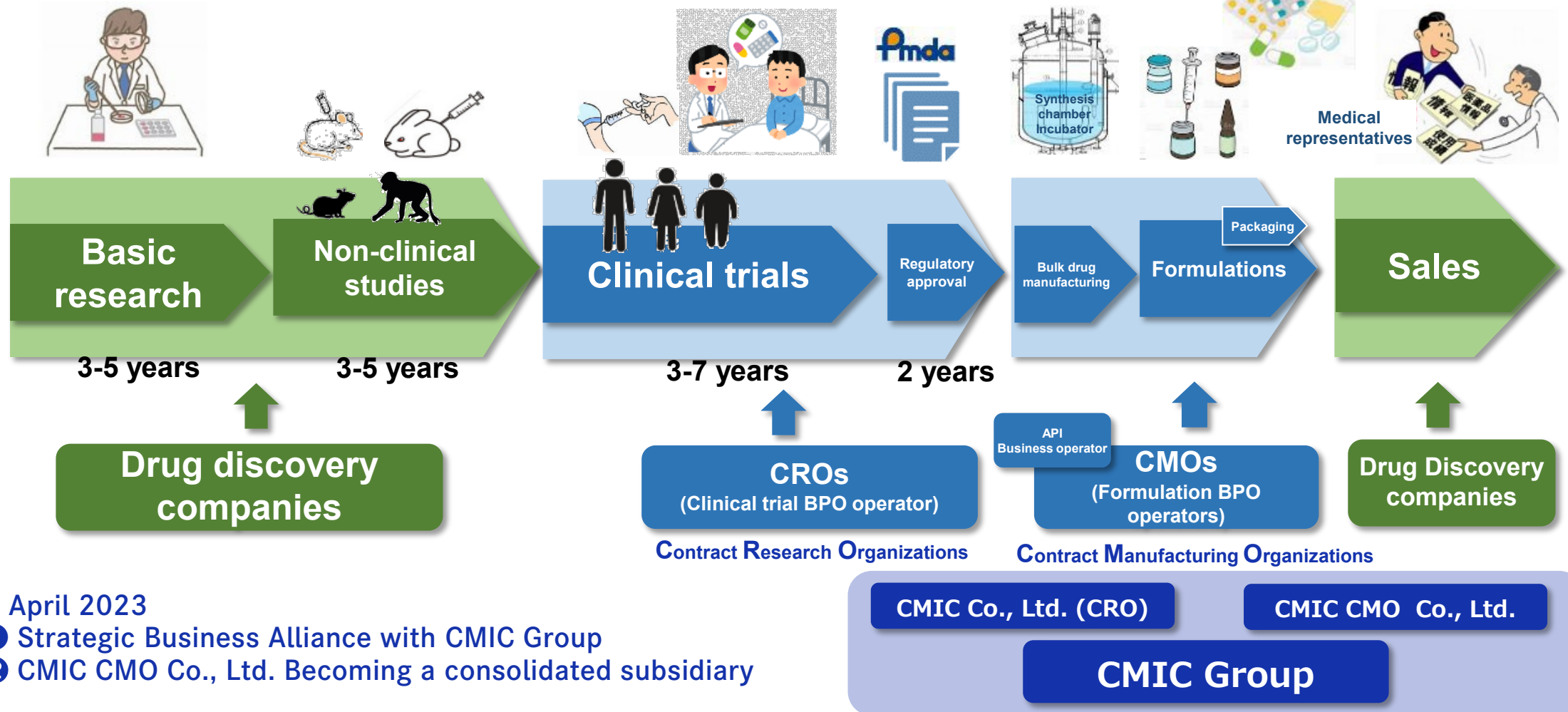
Commercial on DNP's initiatives in the medical area  
“DNP is manufacturing capsule medicine?”

# Business Flow of the Pharmaceutical Industry, Development, Manufacturing, and Sales

~ Increasing “Horizontal Division of Labour” in the Pharmaceutical Industry

**DNP**

Continuous Increase of Business Outsourcing  
except drug discovery and sales



■ April 2023

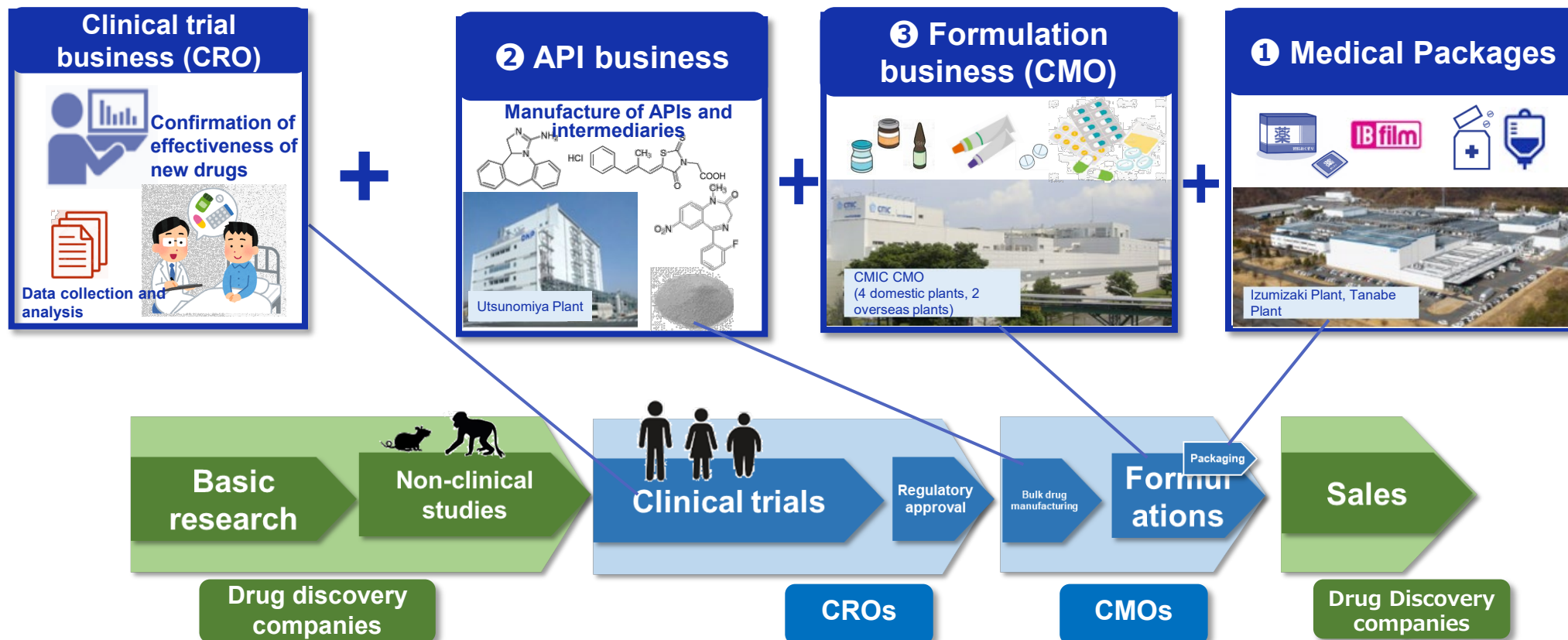
- ① Strategic Business Alliance with CMIC Group
- ② CMIC CMO Co., Ltd. Becoming a consolidated subsidiary



# Overview of DNP's Medical and Healthcare Business

**DNP**

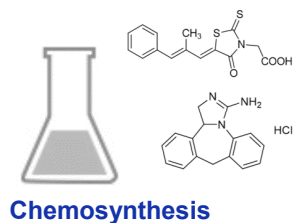
Outsourcing for pharmaceutical companies is positioned as the core of DNP's business



Outsourcing is progressing

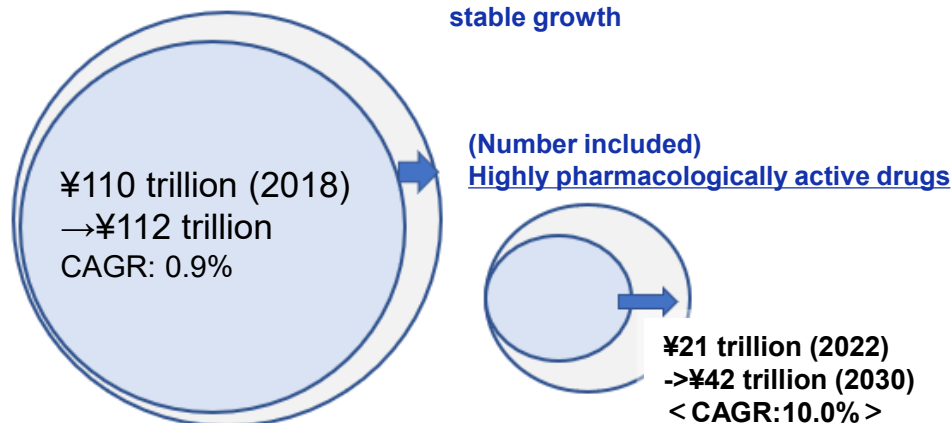
# Medical and healthcare area is expected to develop and expand in the future **DNP**

: In particular, stable growth is expected in the **pharmaceutical market** on a global scale



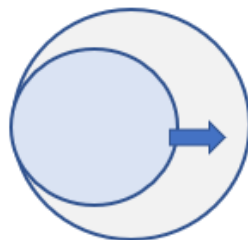
## Small molecules

Large and major market Mature, but  
stable growth



## Biopharmaceuticals

Market is expected to expand  
Large **capital expenditure burden**



¥30 trillion (2018)  
→¥70 trillion (2030)  
CAGR: 7.3%

## Cellular medicine

¥950 billion (2021)  
→¥4.4 trillion (2026)  
<CAGR:47.6%>

**2018**  
Global market for  
pharmaceuticals  
**Total value:**  
**¥141 trillion**



**2030**  
Global market for  
pharmaceuticals  
**Total value:**  
**¥196 trillion**

### Source 1:

“Study on Issues for Industrialization Related to Pharmaceuticals, Regenerative Medicine, Cell Therapy, and Gene Therapy, and on Initiatives Required to Resolve These Issues” Arthur D. Little

URL: [https://www.kantei.go.jp/jp/singi/kenkouiryou/siryou/pdf/r01hosei\\_iyakukanren-sangyouka\\_saisei02.pdf](https://www.kantei.go.jp/jp/singi/kenkouiryou/siryou/pdf/r01hosei_iyakukanren-sangyouka_saisei02.pdf)

### Source 2:

WorldPreviewReport Final 2021

URL: <https://www.scribd.com/document/578590998/WorldPreviewReport-Final-2021#>

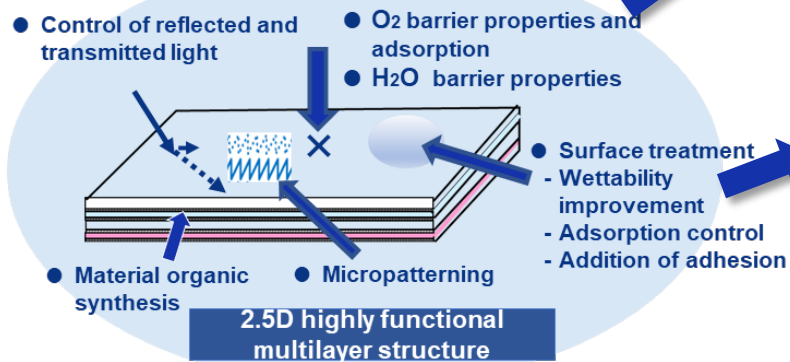
### Source 3:

Global Biosimilars Market Expected to Grow at a CAGR of 24.7% from 2022 to 2031

URL: <https://www.report.jp/biosimilars-market-by-type-human/>

# ① Medical Packages

**DNP**



**Optical films business**

**Food packages business**



**Battery pouches business**

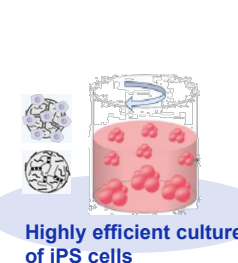
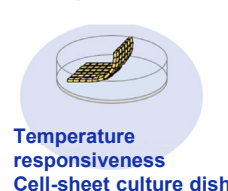


“2.5D high-functional multilayer structure” realized by “Printing Technology”

**Medical packages business**



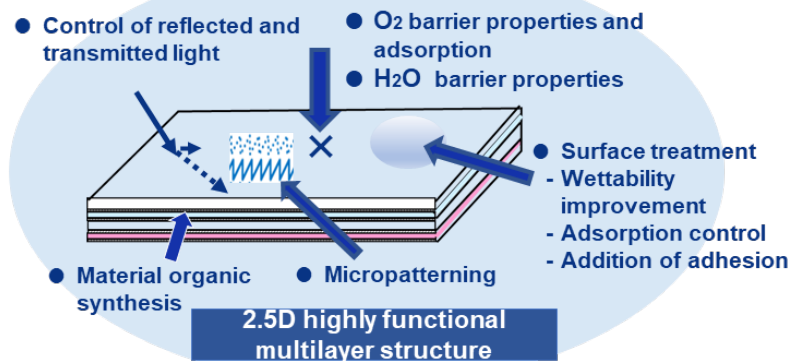
## ■ Next-generation pharmaceutical business



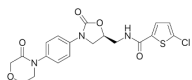
## ■ Value-added pharmaceutical development “Change of dosage form” through high-performance packaging



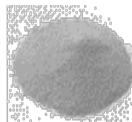
## ② API Business



**In-house development & manufacturing of key materials**



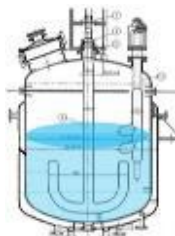
Chemosynthesis



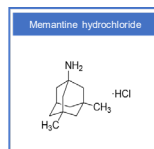
**Organic chemical synthesis of APIs**



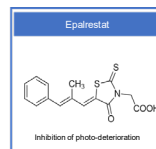
Synthesis chamber



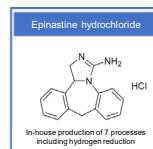
**DNP**



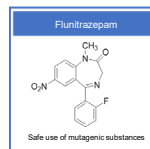
Alzheimer's disease drug



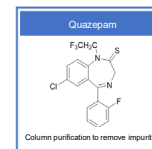
Diabetes drug



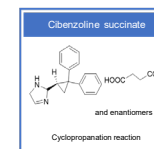
Anti-allergic drug



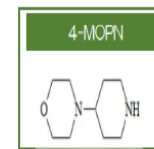
Insomnia drug  
Anesthetic



Drug to improve sleep disorders



Arrhythmia drug



Anticancer drug  
New drug intermediate

### ■ Process development & manufacturing of generic APIs

(Aiming to bring products to market at the timing of patent expiration)

### ■ Future direction

- (1) Development of APIs for highly pharmacologically active drugs (anti-cancer drugs)
- (2) Establishment of integrated manufacturing process from APIs to drug formulation (coordination with CMIC CMO)



### ③Formulation Business

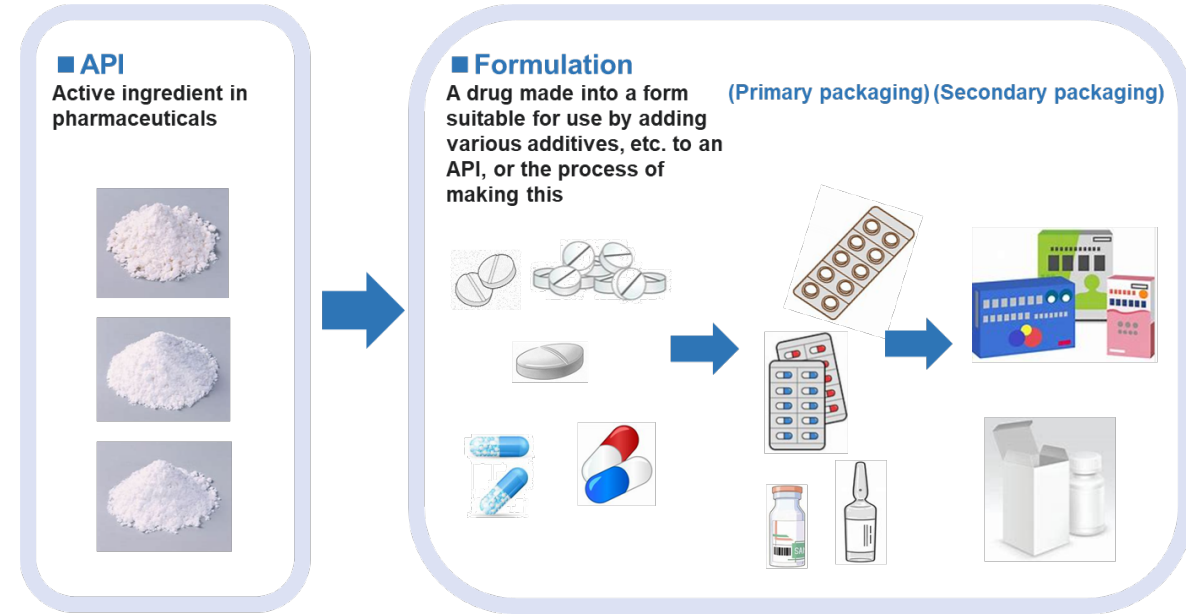
**DNP**

#### ■ Made CMIC CMO a subsidiary in April 2023

- ◎ One of the core businesses of **CMIC HOLDINGS Co., Ltd.**, Japan's largest **BPO provider\*** for drug discovery companies along with **CMIC Co., Ltd.**, which operates a **CRO business**

#### ■ CMIC CMO Co., Ltd.

- ◎ Third largest CMO operator in Japan
- ◎ 6 manufacturing sites
  - Japan: Toyama Plant, Shizuoka Plant, Ashikaga Plant, Nishine Plant
    - : More than 300 products contracted by more than 50 pharmaceutical companies
  - Overseas: South Korea Plant, USA Plant
- ◎ Synergies with DNP
  - DNP owns the API process, which is the front-end of drug formulation
    - : DNP Fine Chemicals Utsunomiya Co., Ltd.
  - The development and manufacture of packaging materials essential for drug formulation is a focus business area of DNP
  - DNP's production technology can be applied to the testing process for formulations, etc.



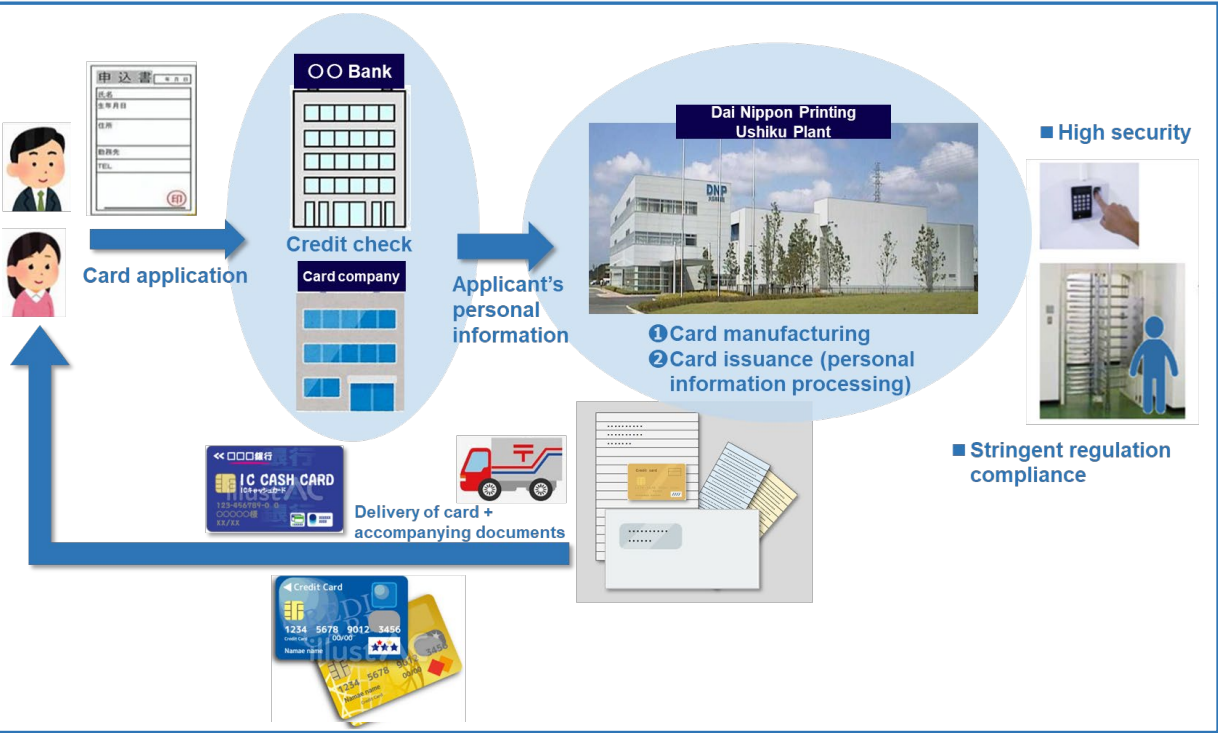
The business of “**BPO (Business Process Outsourcing)**” is not an uncommon form of business for DNP, which provides business processes for many pharmaceutical companies.

- ➔ BPO business is one of DNP's distinctive business forms, as shown in “**smart cards and magnetic cards business**” on the next page.

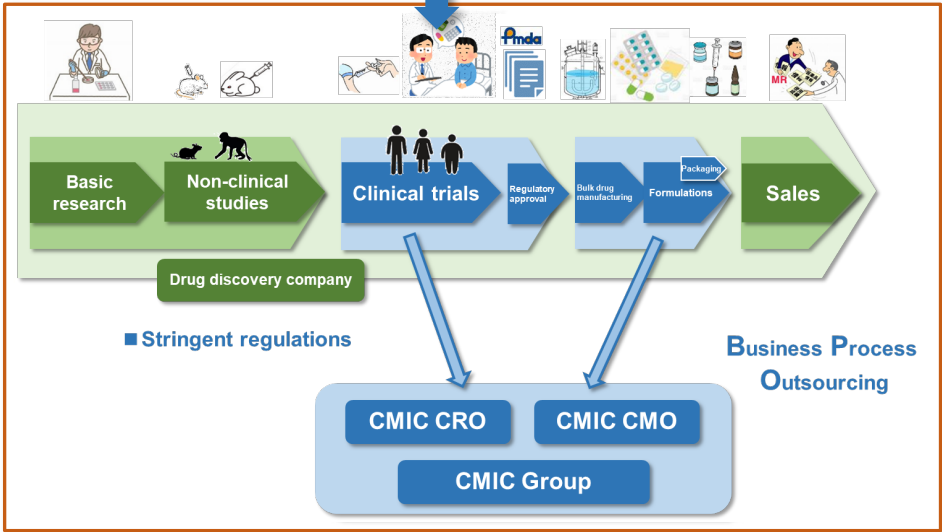
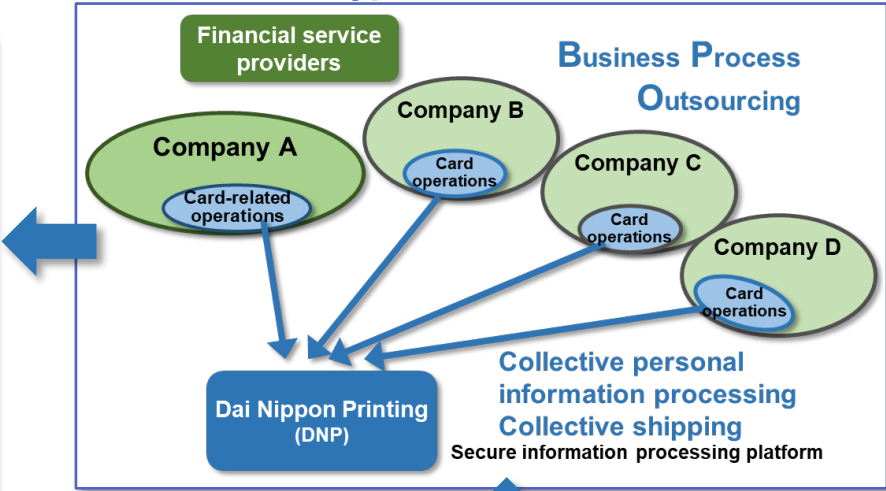
# Similarity between DNP's Smart Cards and Magnetic Cards Business and Pharmaceutical BPO Business (CRO, CMO)

**DNP**

■ Until the “card” arrives in the customer’s hands



The “smart cards and magnetic cards business” is a typical BPO business

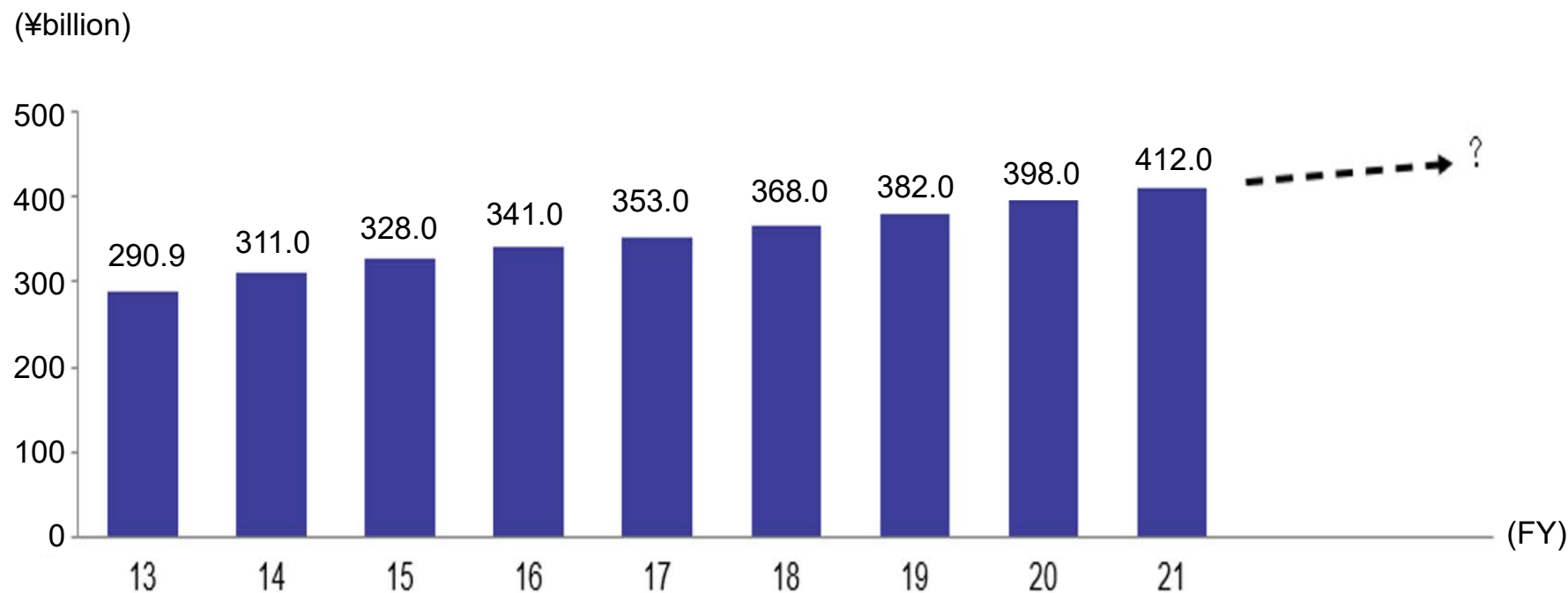


Different industries, but similar business models ➡

# Trends in the Size of the CMO Market in Japan

The Japanese CMO market has been growing at a rate of about 3-5% per year until now

Trends and Forecasts of the Size of the Pharmaceutical Contract Manufacturing Market in Japan



### ③Formulation Business

## CMIC CMO's Formulation Plants

**DNP**





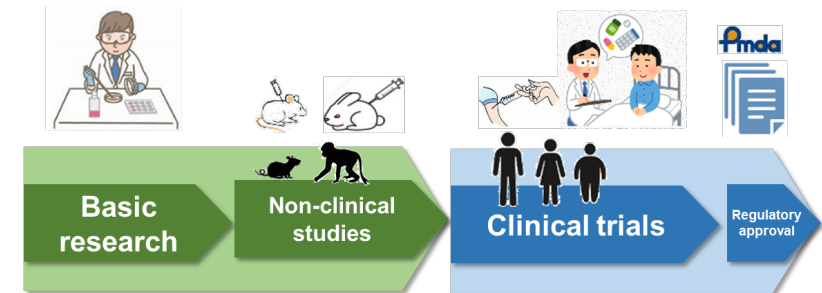
## ④ Other Businesses

**DNP**



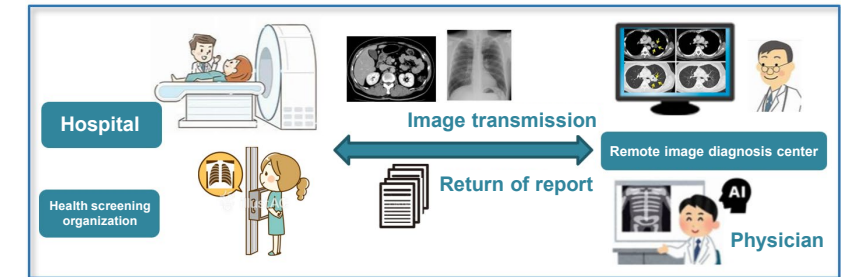
### ■ Participation in CRO business (clinical trial support business)

- ◎ Part of collaboration with CMIC Group
- ◎ Promotion of DX and globalization of labor-intensive CRO operations



### ■ Diagnostic imaging business

- ◎ Start of outsourcing business of radiographic image interpretation services for hospitals and health screening organizations.
- ◎ Using in conjunction with AI diagnostic tools to validate the effectiveness of AI diagnostic imaging
- ◎ In the future, there are plans to make effective use of the system in clinical trial operations

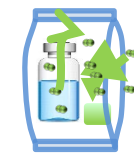


### ■ Value-added pharmaceutical development

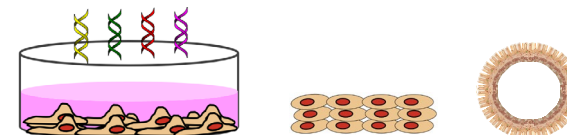
- ◎ CMIC's formulation technology combined with DNP's packaging technology
  - ➔ Aiming to significantly improve the shelf life of drugs and change their dosage forms
- ◎ Liquid distribution of powdered anticancer drugs is a major target

### ■ Next-generation pharmaceutical business

- ◎ Highly efficient cultivation of iPS cells
  - ➔ Development of organoids and their application to drug discovery testing processes...
- ◎ Development of high-efficiency cell culture components, testing equipment, etc.



Quality Degradation Factor	Solution
Oxygen	Additives, oxygen absorber packages
Heat	Thermal insulation packages
Light	Light-shielding packages
Hydrolysis	Non-aqueous solvation, dehydrated packages
Impact	Impact absorbing packages

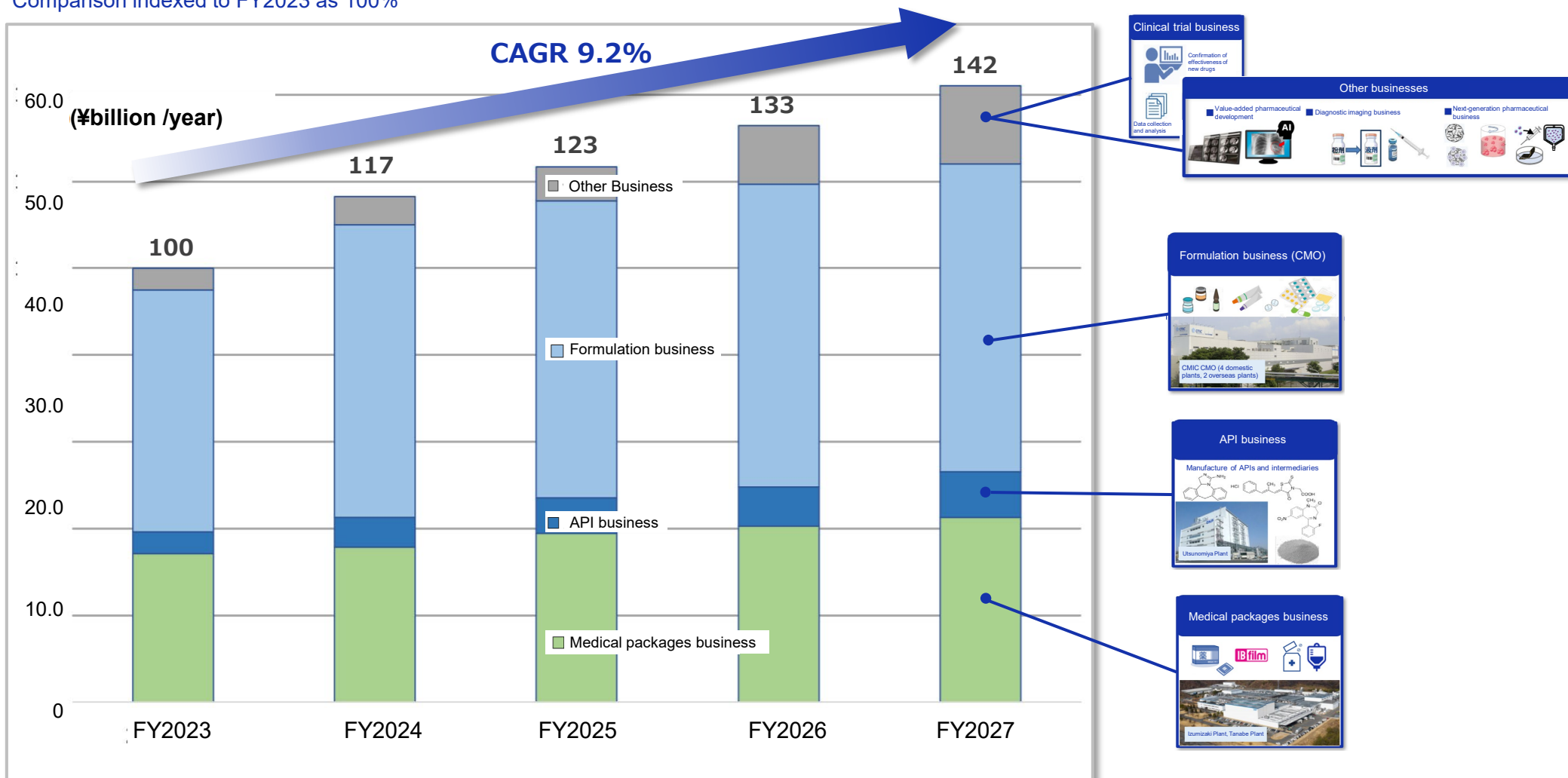


## Revenue Plan

# DNP

## Revenue Plan for the Medical and Healthcare Business

Comparison indexed to FY2023 as 100%



(1) For Sustained Enhancement of Corporate Value

President	Yoshinari Kitajima
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(2) Segment Strategy	Senior Executive Corporate Officer	Mitsuru Tsuchiya
----------------------	------------------------------------	------------------

(3) Growth-driving businesses

Optical film   Metal masks	Corporate Officer	Nobuyuki Tomizawa
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Photomasks   Glass core	Corporate Officer	Minoru Nakanishi
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Battery pouches	Senior Corporate Officer	Mitsuru Iida
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(4) New business

Medical & healthcare	Senior Executive Corporate Officer	Toshiki Sugimoto
----------------------	------------------------------------	------------------

Content & XR communication	Senior Corporate Officer	Nobuyuki Asaba
----------------------------	--------------------------	----------------

# Content & XR Communication

**DNP**

未来のあたりまえをつくる。

# “New Business” that Began from the “Passionate Desire” of Employees

**DNP**

In 2016, based on a suggestion from a self-initiated “Otaku Project” of our employees, we began joint operation of the “Tokyo Anime Center” with the Association of Japanese Animations. This initiative has led to the promotion of a variety of consumer-oriented services with content at the core, as voluntary projects.

2016

Launch of new business creation project on the theme of otaku culture



DNPクリエイター共創サービス  
**FUN'S PROJECT**

2017.10

Consumer Service  
“Tokyo Anime Center”  
launched in Ichigaya



Tokyo Anime Center  
**東京アニメセンター**

2021.4

Consumer Service  
Reopened in Shibuya



XR Communication  
Virtual Miyashita Park



2024.4

Consumer Service  
Expanded to  
San Francisco



XR Communication  
Virtual Akihabara



### Vision

**We will communicate content in the most appropriate form, create new value, support comfortable lifestyles, and nurture enriched culture.**

### Mission

**With information processing and conversion technologies at its core, we will create communication models that merge the real and virtual, connecting people and society and delivering “new experiential value” to the world.**

### Value

- **Network with diverse content holders and creators around the world**
- **Proven track record and reliability in high-definition image processing technology and copyright processing**
- **Ability to integrate and optimize business processes using authentication technology and technology for processing large volumes of data**

**Applying these strengths, we will create a new economic sphere by seamlessly connecting the real and virtual in a safe and secure manner.**

# Content & XR Communication: Basic Functions

To realize our vision, we will promote our business with the following three basic functions.

\*XR: eXtended Reality

## Content & XR Communication: Basic Functions

### 1. Producing Content (Converting content value)

**Bonding with Your Favorite,  
Delivering to the World**

**Expansion of content utilization business**  
“Producing a diverse range of media”

**Global business expansion**  
“Overseas expansion of Japanese content”

### 2. XR Communication® (Value creation through fusion of the real and virtual)

**Social implementation as future infrastructure**

**Community-linked XR Service**  
“PARALLEL CITY®”

**XR marketing for enterprises**  
“PARALLEL SITE®”

### 3. Common infrastructure for content and XR areas

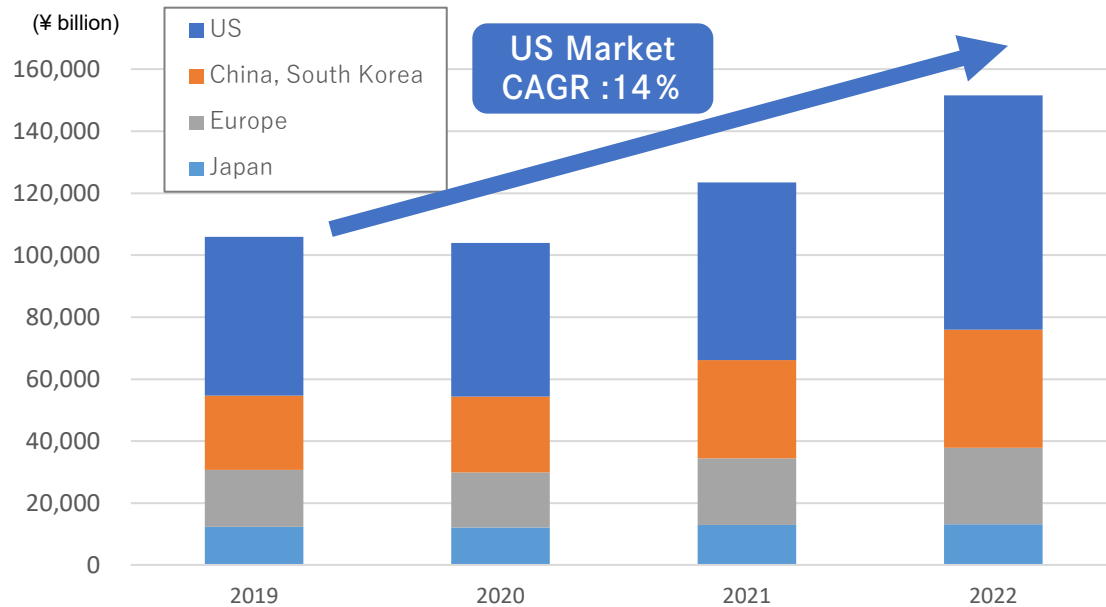
“Content planning/production/development,” “authentication/security,” “e-commerce,” “BPR/BPO”



# 1-1. Content Market Growth and the Structure

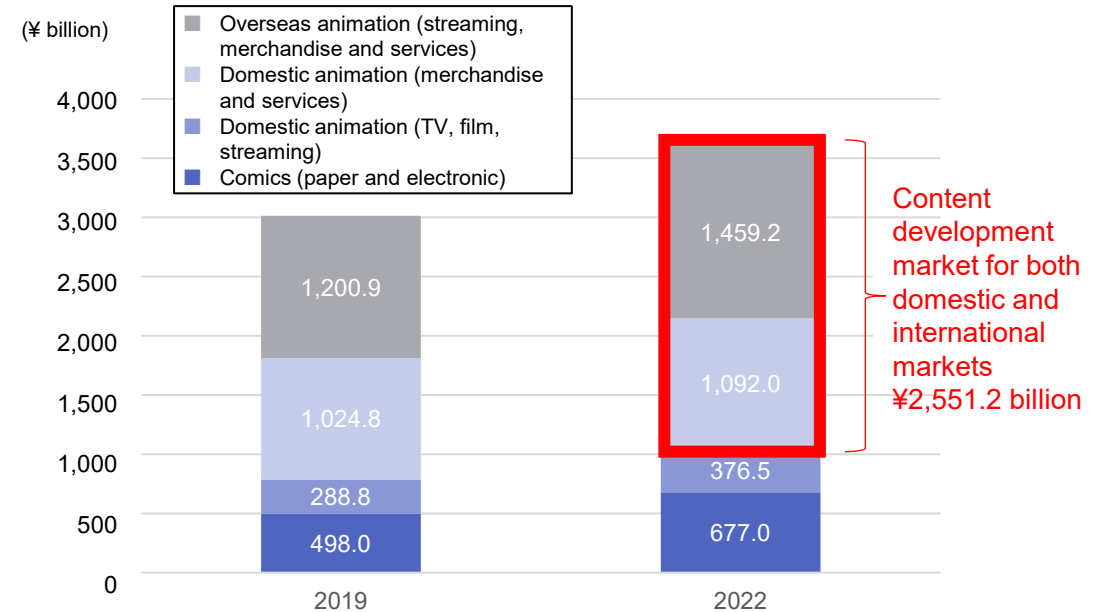
The size of the overseas content market has doubled in the last decade, with anime and console games showing remarkable expansion. North America is the largest market, growing at a CAGR of 14% since 2019. Secondary content development (merchandise, services, etc.) based on IP created in Japan is expanding, accounting for a large percentage of the domestic and international market.

Trends in the Size of the Overseas Content Market



Source: HumanMedia, "Japan and World Media Content Market Database"

Structure of Content Originating in Japan



DNP research



## 1-2. Producing Content

We will expand the range of our business by applying DNP's strengths in information processing and conversion technologies and software and hardware development capabilities to the development of diverse media in response to changes in the environment and consumer needs. We will also focus on countries and regions with large demand and expand the successful Japanese model globally.

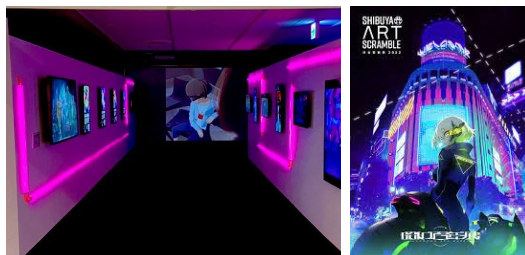
### 1. Producing Content (Converting Content Value)

#### Bonding with Your Favorite, Delivering to the World

##### Expansion of content utilization business

"Producing a diverse range of media"

Expanding self-organized entertainment business with exhibitions, events, and merchandise at its core.



Development and provision of game machines based on DNP technology



Overseas expansion of successful Japanese model

Manga and anime exhibitions

Sales of original merchandise

Provision of amusement game machines

##### Global business expansion

"Overseas expansion of Japanese content"

Overseas expansion of merchandise, services, and events originating from Japan

Starting with expansion in North America

Tokyo Anime Center  
**東京アニメセンター**  
San Francisco



Events with exhibits in North America (FY2023 results)

Anime Expo  
@Los Angeles

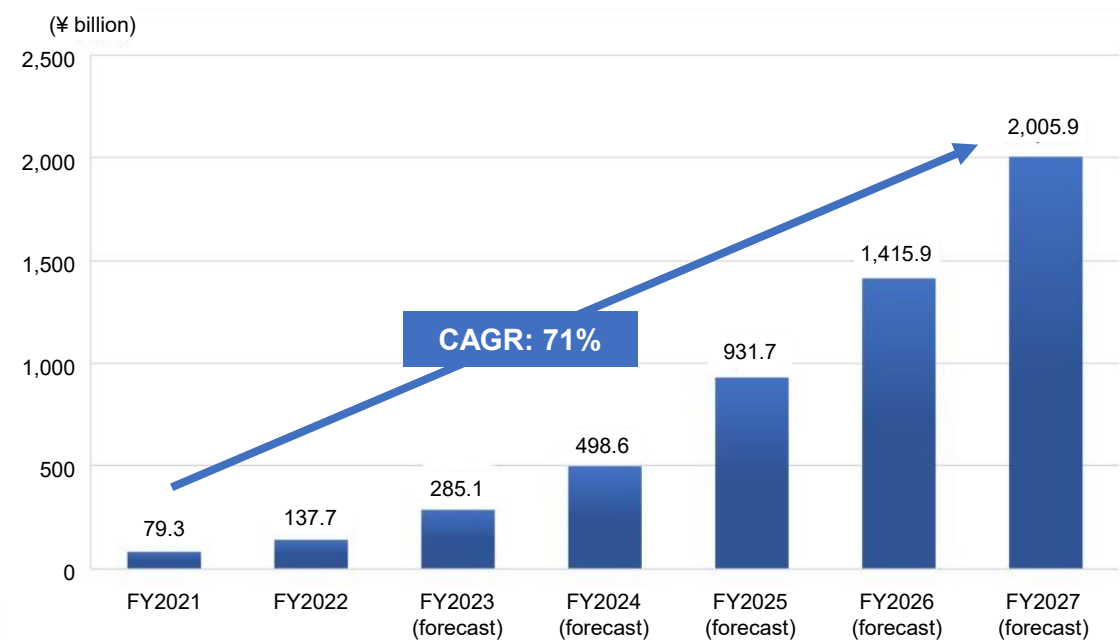
New York  
Comic con

Anime Matsuri  
@Houston

# 2-1. XR Communication Market Growth

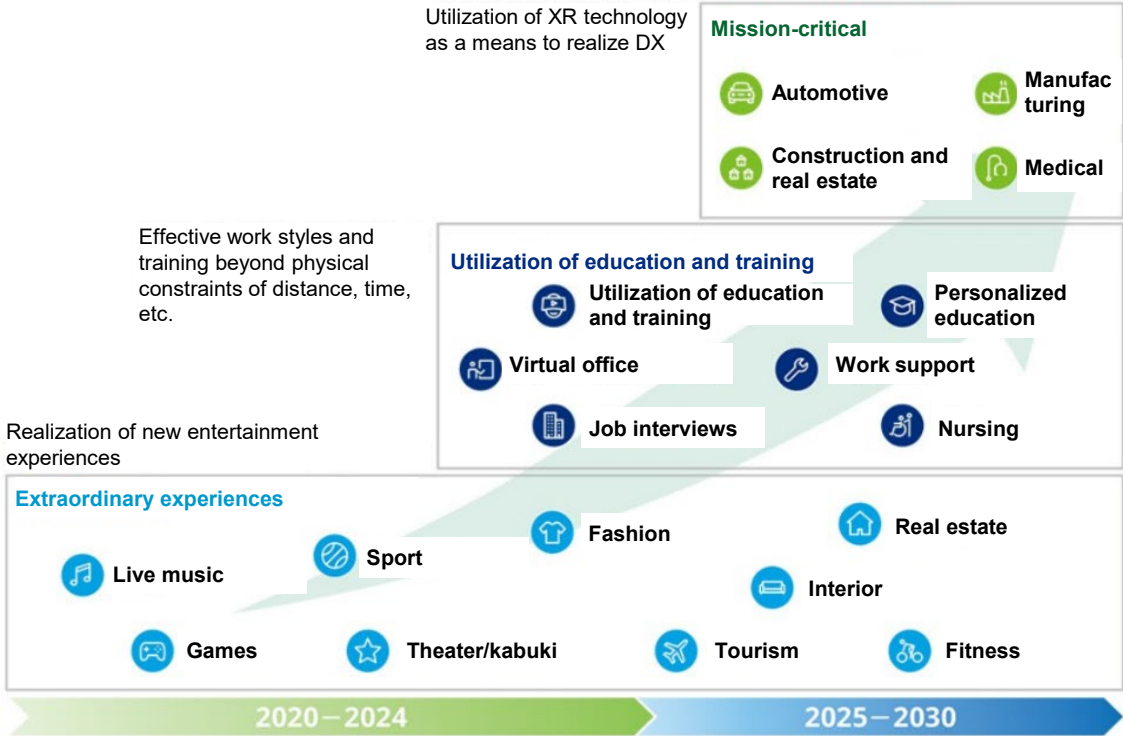
The domestic market for XR and metaverse is expected to grow at a CAGR of 71% until 2027, reaching a value of ¥2 trillion. It is expected to be used in a widening range of areas, from “extraordinary experiences” such as entertainment to “educational and training applications” and “mission-critical” applications.

Domestic Market for XR and Metaverse



Source: Yano Research Institute Ltd., “The Metaverse Market 2023”

Scenarios for Expansion of Areas Utilizing XR and Metaverse



Source: Prepared by Deloitte Tohmatsu Consulting

## 2-2. Promotion of XR Communication

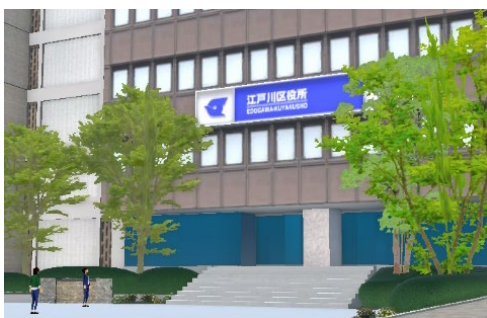
By combining DNP's authentication security, BPO, and DX solutions to provide a total service, we aim to solve community issues and create new experiential value for corporate marketing and social implementation.

### 2. XR Communication (Value creation through fusion of the real and virtual)

#### Social implementation as future infrastructure to create a new economic sphere

##### Community-linked XR Service "PARALLEL CITY®"

"Metaverse Government Office"  
with no need to visit in person



Start a demonstration project to solve various issues faced by local governments (Edogawa City)

Educational metaverse



Develop an initiative to create places for children who are not attending school or need Japanese language instruction (Tokyo Metropolitan Government)

##### XR marketing for enterprises "PARALLEL SITE®"

Marketing events



Various communication measures with consumers such as events and seminars

Corporate events

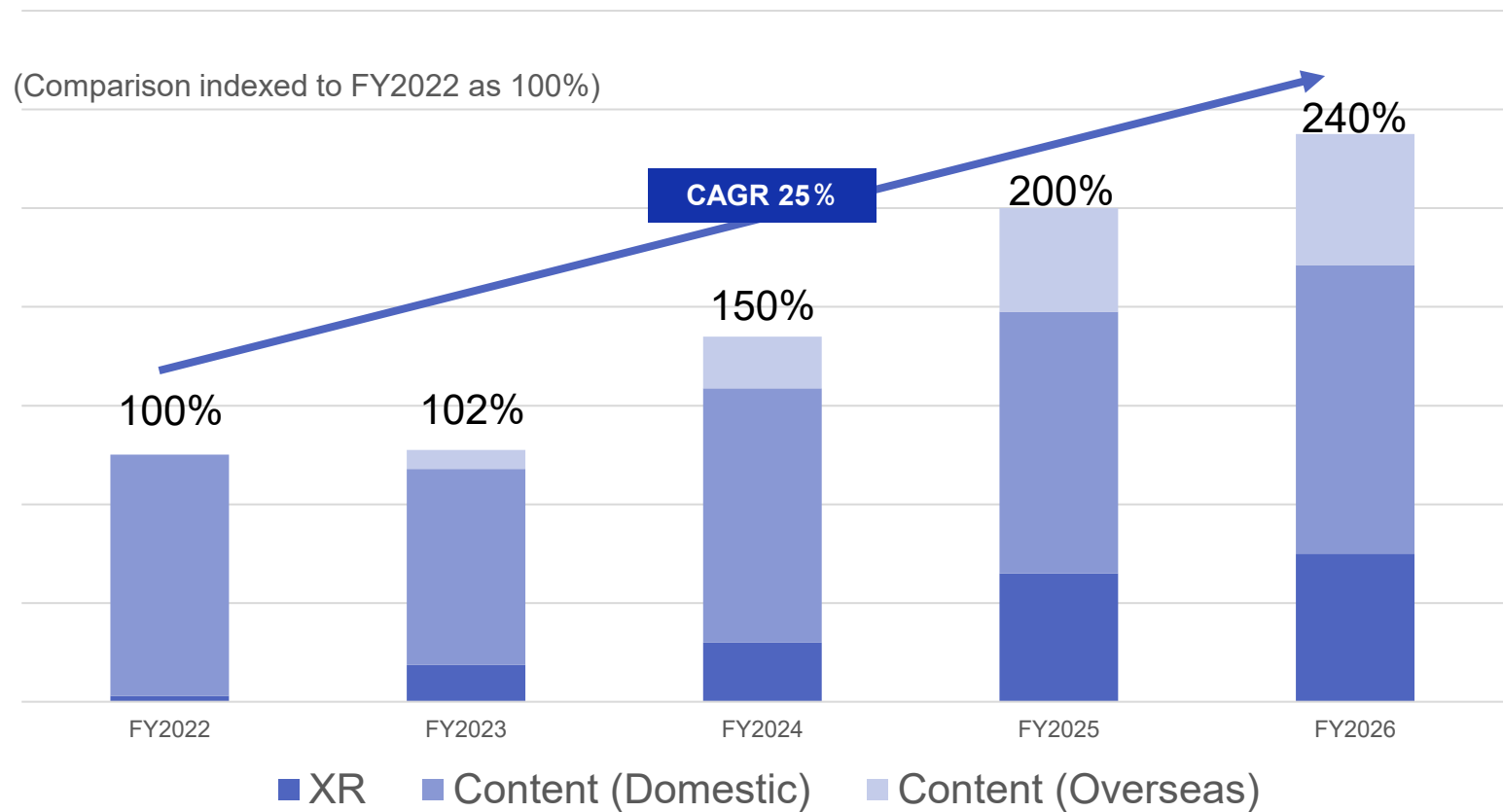


Large-scale events that bring together employees from various locations for discussion

# Business Targets

In the business for the content and XR communication area, DNP aims to expand sales to 240% of the FY2022 level by FY2026.  
We will actively invest in content, and invest in and collaborate with co-creation companies in order to expand our business.

Sales: Performance and Medium Term Plan



未来のあたりまえをつくる。

**DNP**

## Disclaimer

The earnings forecasts, medium-term management targets, and other forward-looking statements contained in these materials represent DNP's judgement of the current outlook based on information available at the time of preparation, and involve potential risks and uncertainties.

Actual performance may therefore differ materially from these forward-looking statements due to changes in the various assumptions on which they are based.

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