## BUSINESS STRATEGY BY SEGMENT

Life & Healthcare

436.7

14.3

2021

Sales (¥ billion)

500

400

300

200

100

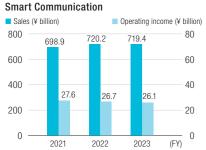
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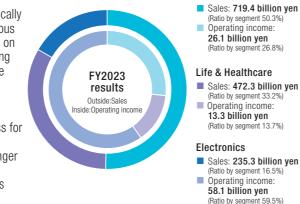
## **Key Strategies by Segment**

DNP is one of the world's largest comprehensive printing companies, providing indispensable value to tens of thousands of clients and consumers both domestically and internationally through a diverse range of products and services across various business fields. Since its founding in 1876, DNP has developed strengths based on cutting-edge printing processes of the times. In the 1950s, DNP began expanding its business domain through "expansion printing," applying and developing these strengths, which has led to the current structure of its business segments.

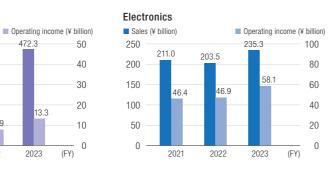
In the Medium-term Management Plan for fiscal 2023 to fiscal 2025, the products and services in each segment are classified into four categories: "growth-driving businesses," "new business," "stable business" and "business for reforming." This classification is based on two axes: growth potential/ attractiveness of the market, and business profitability, toward building a stronger business portfolio. The plan aims to accelerate concentrated investment and business structure transformation in focus business areas. By doing so, DNP is committed to generating additional value and creating a better future.

### ✓ Three-year performance by segment





**Smart Communication** 



\* Beverages, which was a separate segment in fiscal 2021 and fiscal 2022, has been included in Life & Healthcare since fiscal 2023.

This segment includes imaging communication, where we boast the top global market share in dve-sublimation thermal transfer printing media; information security, where we offer solutions such as Business Process Outsourcing (BPO) and authentication security; content & XR communication, a new area; and other domains such as marketing, publishing and education. By combining information (I) technologies such as project planning and design, and information processing with printing (P) technologies such as plate making, printing Communication and binding, and deepening collaboration with domestic and international partners, this segment aims to contribute to well-being lives.

472.3

2023

451.3

2022



Smart

Segment O Provide new customer experience value by utilizing high-definition image processing technology, as well as the capability to securely deliver large values of it is to be a securely deliver large values of it is to be a securely deliver large values of it. optimize business processes

O Accomplishments and trust such as dye-sublimation thermal transfer photo media products with the world-leading share and smart cards for financial institutions with the leading share in Japan



Dve-sublimation thermal transfer









Dve-sublimation



"Ki-Re-i" ID photo

Education



Content & XR communication



Digital marketing



Commercial printing



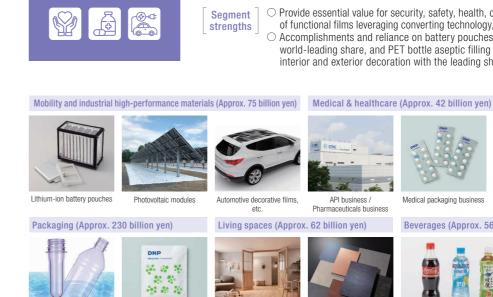


Books and magazines (book sales and related services)



#### Authentication / security





Life &

Healthcare



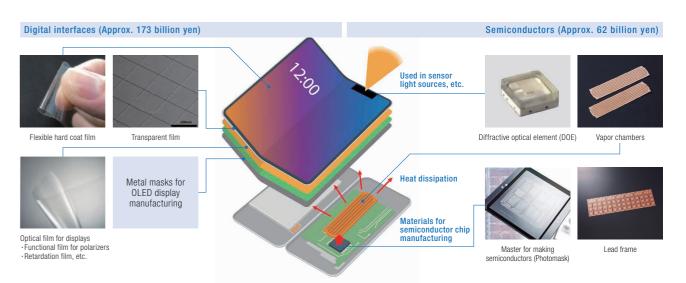


Aseptic filling Functional packaging

# Electronics



O Develop industry-leading products leveraging large surface area functionalization technology, Segment micro and nano modeling technology, optical control technology, etc. strengths O Accomplishments and trust from products with a world-leading share in areas such as metal masks for OLED displays and optical films for displays



This segment includes the mobility and industrial high-performance materials business, represented by the world's leading share of battery pouches for lithium-ion batteries, and automotive interior and exterior decorative materials, as growth-driving businesses. It also focuses on strengthening the medical & healthcare business, which includes bulk pharmaceutical manufacturing and medical packaging, as a new business. Additionally, it operates the packaging business, with a leading domestic market share in aseptic filling systems for PET bottles, as well as environmentally friendly packaging; the living spaces business, offering products for household interior and exterior decoration, also holding a top domestic market share; and the beverages business. Alongside investing in focus business areas, this segment will also promote the global expansion of existing businesses.

Segment ] O Provide essential value for security, safety, health, comfort and the environment with a variety of functional films leveraging converting technology, our unique material processing technology • Accomplishments and reliance on battery pouches for lithium-ion batteries with the world-leading share, and PET bottle aseptic filling systems and products for household interior and exterior decoration with the leading share in Japan



This segment includes the digital interface business, featuring optical films for displays\* and metal masks for manufacturing organic light-emitting diode (OLED) displays, both of which hold the world's top market share; and the semiconductor business, which includes photomasks for manufacturing semiconductor products and lead frames for semiconductor packaging materials, as growth-driving businesses. The segment will concentrate investments in these areas and work to enhance production capacity to stay ahead of expanding global demand. It will also strengthen partnerships with external partners to further expand the value it provides within the global supply chain.

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

**Electronics** 

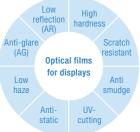
## **Optical Films**

### **Business overview & DNP's strengths**

DNP provides optical films for displays with diverse functions by leveraging our proprietary optical design and converting technologies. From large displays for televisions to those used in laptops, tablet devices, smartphones and automobiles, we offer a diverse range of products tailored to various devices and applications. We anticipate global trends, manufacturer demands and consumer expectations, continually striving to achieve even higher functionality. We have consistently developed anti-reflection (AR) films, anti-glare (AG) films and retardation films, and have introduced the world's widest production equipment for display films. As a result, we have achieved the top global market share in AR and AG films. Moving forward, DNP will continue to provide displays with more vivid colors, expand the scope of use of devices and enhance usability, thereby realizing comfortable lifestyles.

#### DNP's strengths

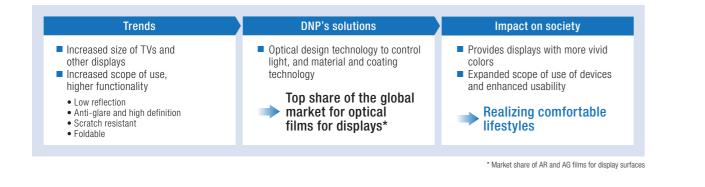
- O Technology for larger sizes and high functionality, optical design to control light, and material and coating technology
- O In-line multilayer coating production equipment for products with high functionality and high quality
- Extensive patents and know-how related to materials, manufacturing methods and products
- O 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



Diverse product lineup enabled by DNP's technology and multifunctionality

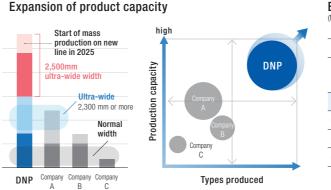


DNP's optical films utilizing optical design technology to control light reflection and reduce glare in lighting and other applications



### Growth strategy

- Aim to drive the market and further expand our market share through the expansion of production capacity and product lineup
- Expand ultra-wide width line capacity, which is advantageous for large displays Accommodate various film substrates
- Capable of handling TAC (triacetylcellulose), acrylic and PET (polyethylene terephthalate) • Utilize DNP's proprietary patents to employ a special PET with low moisture permeability and reduced rainbow effect for large displays

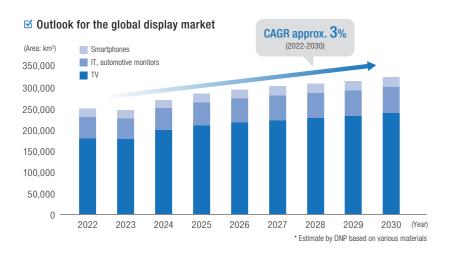


Developing and providing cover film for foldable displays • We have developed films with exceptional hardness and flexibility through optimal selection of substrates and ink design and formulation



#### Market environment

The display market is expected to grow at a CAGR of about 3% in terms of surface area, driven by the trend toward larger TVs, despite limited growth in unit sales.



#### Performance trends and future outlook

- DNP plans to achieve a CAGR of 13.2%, surpassing the market growth rate, by continuing to adapt to the evolving display market through the development of high-value-added products and further increasing its market share with a diverse product lineup.
- We contribute to the development of display technology from research and development to mass production to realize comfortable lifestyles.
- We are providing new value for "displays of the future.

3



#### Expansion of product lineup

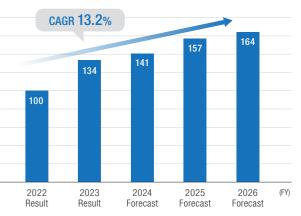
s production track

									vianis	li calli		arger
Substrate	AG AGLR CHC CHCLR			Acrylic				PET				
Туре			СНС	CHCLR	AG	AGLR	СНС	CHCLR	AG	AGLR	СНС	CHCLR
DNP	•	•	•	٠	•	٠	٠	٠	٠	•	•	•
Company A	٠	٠	٠	٠								
Company B	•	٠	٠	٠	•	٠						
Company C			•									

Note: Estimate by DNP based on various materials

2022	2023	2024	2025						
Slidable	9	Rollable							
	Multi-hold								
Cover film for foldable devices									
Achieving both "hard and foldable" Scratch resistance close to that of glass									
4		ctions such as anti-sta i-smudge properties ca							
-									

#### Sales (Comparison indexed to FY2022 as 100%)



**Electronics** 

## **Metal Masks for**

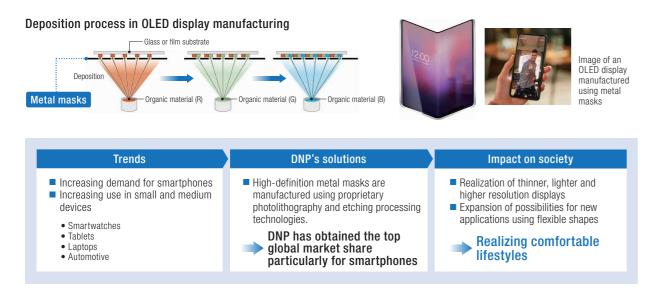
## Manufacturing OLED Displays Digital interfaces

### **Business overview & DNP's strengths**

Metal masks are key components used in the deposition method, which is the current standard for manufacturing small to medium-sized OLED displays. They are essential for forming red, green and blue (RGB) organic materials on glass or film substrates. The adoption rate of OLED displays in smartphones is expected to exceed 50% in 2024, with expanding use in tablets, laptops and automotive devices, contributing to anticipated market growth. DNP began developing metal masks in 2001 by leveraging its proprietary photolithography and etching processing technologies. Having contributed to the OLED display market since its early days, DNP now holds a leading global market share, particularly in the smartphone sector. DNP will continue to contribute to thinner, lighter and higher resolution displays while also developing applications for OLEDs using flexible shapes to enhance comfortable lifestyles.

#### DNP's strengths

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



### Growth strategy

- Invested approximately 20 billion yen to expand production capacity
  - 🗆 Kurosaki Plant (Fukuoka Prefecture) production line began operation in May 2024

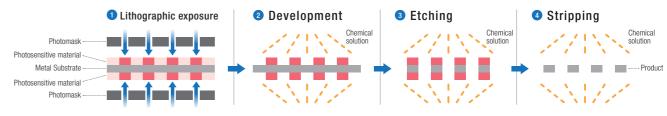


Exterior of the Kurosaki Plant in Fukuoka Prefecture

### Leveraging technological strengths and patent strategies to maintain and enhance global market leadership Proprietary photolithography and etching processing technologies for realizing high-definition microfabrication

- · 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 evolved it into a high-precision "microfabrication" technology.
- · Metal masks require a high level of precision in the positioning and size of holes that allow organic materials to pass through. DNP's highly accurate photolithography technology and wet etching technology for metal are major strengths

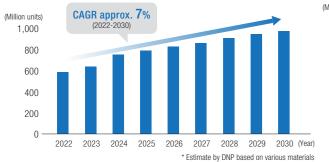
### Conceptual diagram of general photolithography and etching processing technologies



### Market environment

The transition from LCD to OLED displays for smartphones is advancing, with an expected CAGR of approximately 7% from 2022 to 2030.

#### ☑ OLED demand forecast for smartphones



For tablets and laptops, a growth rate of around 32% is forecast.

## ☑ OLED demand forecast for laptops and tablets



### Performance trends and future outlook

- DNP will continue to adapt to changes in the display market and ensure stable supply.
- Through the execution of our growth strategy, we plan to achieve a CAGR of 8.3%, surpassing the market growth rate.

3

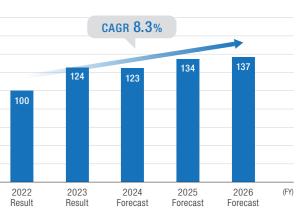


#### □ It supports 8th generation glass substrates with high production efficiency

 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)

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

#### Sales (Comparison indexed to FY2022 as 100)



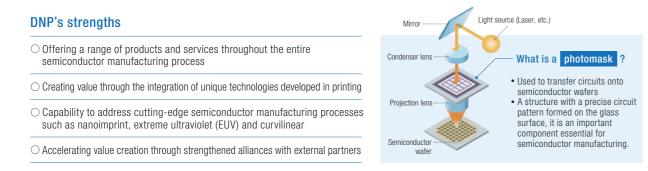
**Electronics** 

## Semiconductor

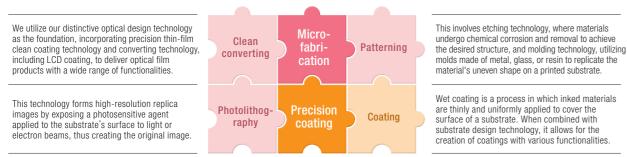
## Production Photomasks Semiconductors

### **Business overview & DNP's strengths**

DNP provides a range of products and services throughout the entire semiconductor manufacturing process. In the front-end process of semiconductor chip production, photomasks play a crucial role. These glass plates function like photographic negatives, using light to transfer intricate circuit patterns onto substrates. DNP combines microfabrication technology, such as plate-making and patterning, to create and accurately transfer intricate patterns onto various substrates, similar to printing stamps, Starting with the successful development of vapor-deposited masks for transistors in 1959, DNP now offers a range of photomasks, achieving patterns at the nanometer (one-billionth of a meter) level and contributing to the evolution of electronics products. In addition to investing in expanding photomask production capabilities both domestically and internationally, we are also strengthening alliances with numerous external partners. This will enable us to further enhance our value contribution to the semiconductor supply chain.



#### Examples of our core technology in Electronics



## Growth strategy

#### Strengthen ability to address advanced fields

### □ Accelerate development of masks for EUV

- · Adapt to further miniaturization of circuit patterns with shorter-wavelength EUV technology
- Increase number of multi-beam mask writers
- · Complete 3nm node development and commence 2nm node development

#### □ Promote development of nanoimprint

- · Form circuit patterns by physically pressing a substrate with fine unevenness
- · Contribute to cost reduction and carbon neutrality by consolidating multiple processes
- Support development as inquiries from various companies increase

#### Accelerate curvilinear development

- · Technology for achieving high precision through interaction by forming complex patterns that are not transferred onto photomasks
- · Respond to increasing inquiries from various companies

#### ✓ Foundry wafer production capacity

#### Expansion of production capacity for semiconductor products in the volume zone

- □ Promote investment in mid-range node semiconductor products
- □ Expand production capacity to 120% of 2022 levels by 2025 through the operation of production facilities from fiscal 2023 to 2025

## 400 200 Ω 2020 2021

(K wafer/month

600

Pre

Future

### Market environment

- 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 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. With vigorous equipment investments from various manufacturers, the merchant market is expected to grow by 8.13% from 2020 to 2027. 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.

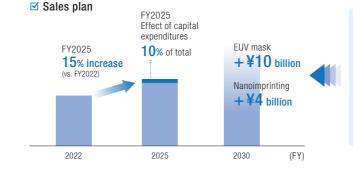


### ☑ Photomask merchant market actual/forecasts



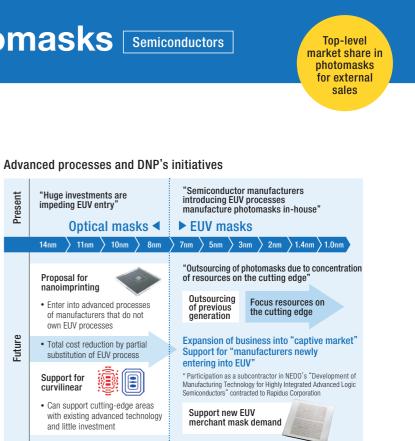


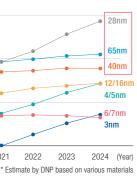
Performance trends and future outlook



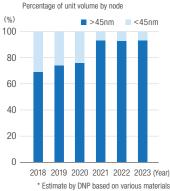


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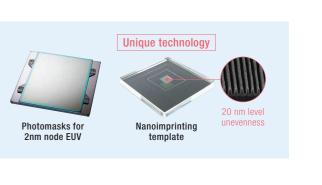




#### ☑ Photomask merchant market



As a core product of DNP's semiconductor business, we will accelerate development of photomasks for EUV and proprietary nanoimprint technology, and expand into cutting-edge areas through commercialization. We will also actively invest to capture the volume zone that continues to expand with the plan to surpass the semiconductor market.



**Electronics** 

## **Glass Core for**

What is a glass core

Core material (organic→glass)

Core substrates using organic materials are used in advanced mounting substrates employed in packages for high-performance devices. In order to

mounting substrates, core substrates made of glass

instead of organic materials are gaining attention.

solve future issues (flatness and warpage) associated with finer wiring and larger size of

### **Business overview & DNP's strengths**

This substrate is used in the back-end chip mounting process of semiconductor manufacturing. DNP, which has a history of manufacturing lead frames for semiconductor mounting with wide line widths, is leveraging its accumulated technology and expertise to advance the development of glass cores for cutting-edge semiconductors with narrow line widths. Currently, substrates that support semiconductor chips are called 'cores,' and resin cores are commonly used. However, with the trend toward finer circuit patterns and larger chips, there is a growing demand for cores with more advanced flatness and reduced warping, making glass an attractive material. This requires the formation of fine, high-density Through Glass Via (TGV) connecting the front and back of the glass. DNP is combining its precision processing technology from photomasks and micro electro mechanical systems (MEMS) products with its expertise in handling thin, large glass used in LCD color filters to realize glass cores. We are accelerating development to drive new growth in this area.

Advanced mounting

Semiconductor chip

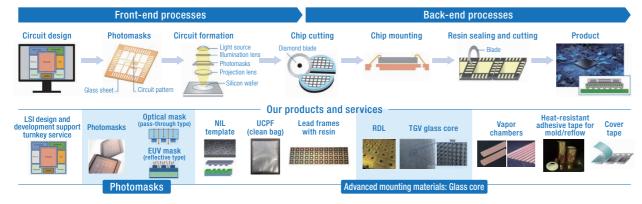
Electronics motherboards

substrate

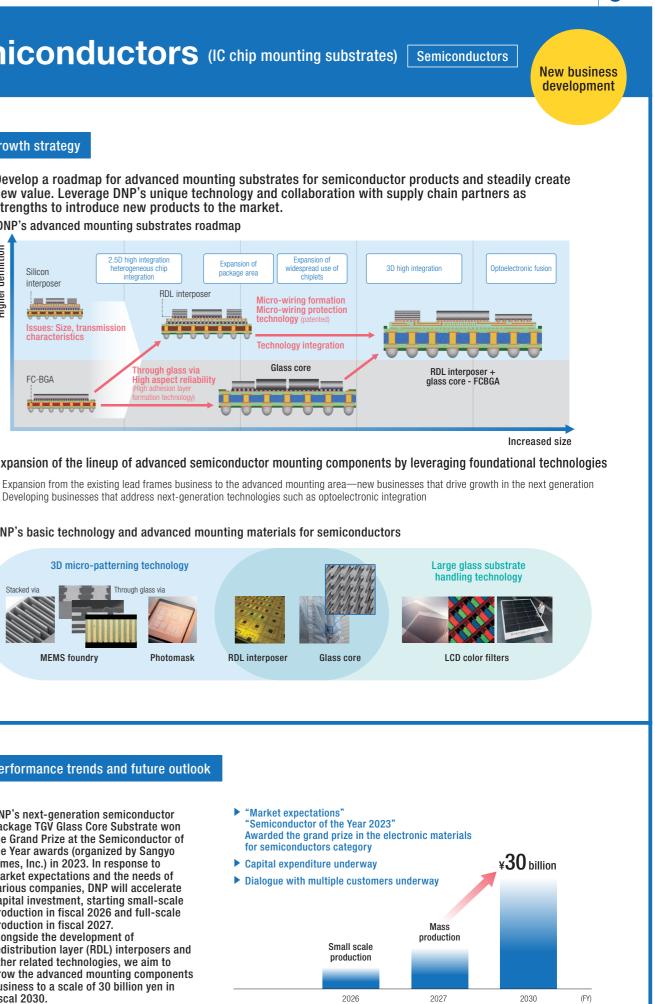
#### DNP's strengths

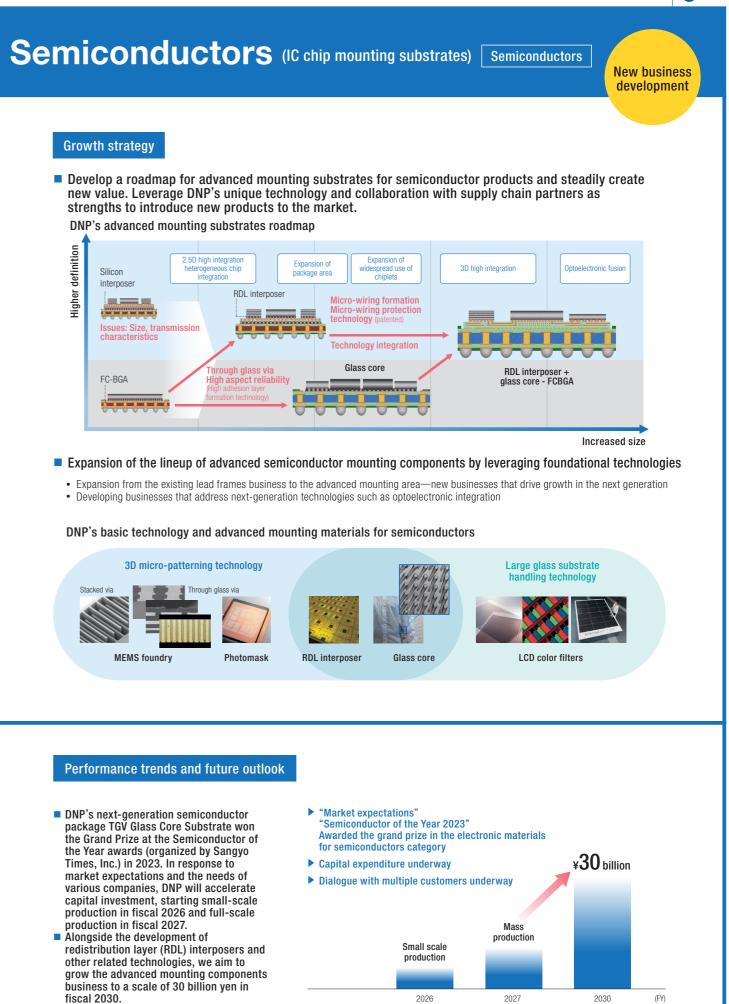
- O Developed a next-generation semiconductor package TGV glass core substrate in March 2023 through the combination of proprietary technologies
- Applied and advanced technologies for handling thin, large glass and precision processing
- O Improved adhesion between glass and metal using a new method developed by DNP, achieving high precision and reliability

#### Semiconductor fabrication process and DNP's semiconductor-related products and services



strengths to introduce new products to the market.

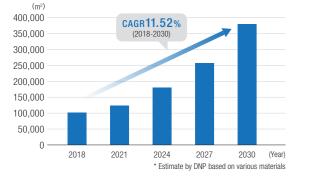


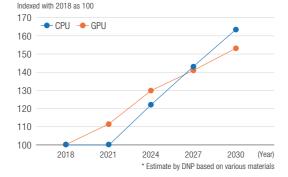


Market environment

- Against the backdrop of advances in AI and the expansion of semiconductor chips, mounting
- substrates for advanced devices continue to grow in size.
- With the trend toward larger substrates, there is a growing demand for glass cores to address issues related to warping and flatness.
- 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) 🛛 🗹 Forecast of average advanced mounting substrate size for servers





40

3

Life & Healthcare

## **Battery Pouches**

### Business overview & DNP's strengths

A battery pouch serves as the outer casing for lithium-ion batteries, designed to protect the internal components. DNP has achieved key features for this product, such as high insulation, superior sealing and airtightness, through its unique combination of technologies. Being a film-type material, it is lighter and more versatile compared to conventional metal can types. Consequently, the market for battery pouches has expanded, particularly for IT devices like smartphones and tablets, as well as for automotive applications such as electric vehicles (EVs). To meet the anticipated growing demand, DNP will increase its production capacity both domestically and internationally. By leveraging its strengths in unique converting technologies and proprietary patents, DNP aims to maintain and strengthen its position as the global leader in market share. Additionally, we will work toward establishing ourselves as the industry's de facto standard and enhancing our presence in the global market.

Product image and product lineup

#### DNP's strengths in realizing essential functions for battery pouches

#### O High sealing and airtightness to prevent electrolyte leakage

- O High water vapor barrier property to prevent moisture ingress
- O High moldability to increase battery capacity
- High insulation to support high voltage and large batteries
- O Heat resistance and stability at high temperatures to ensure stable operation in harsh environments

## +

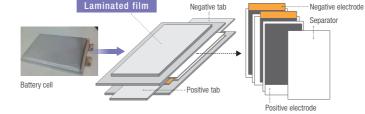
#### DNP's strengths in enhancing competitiveness

#### $\odot$ Global standard

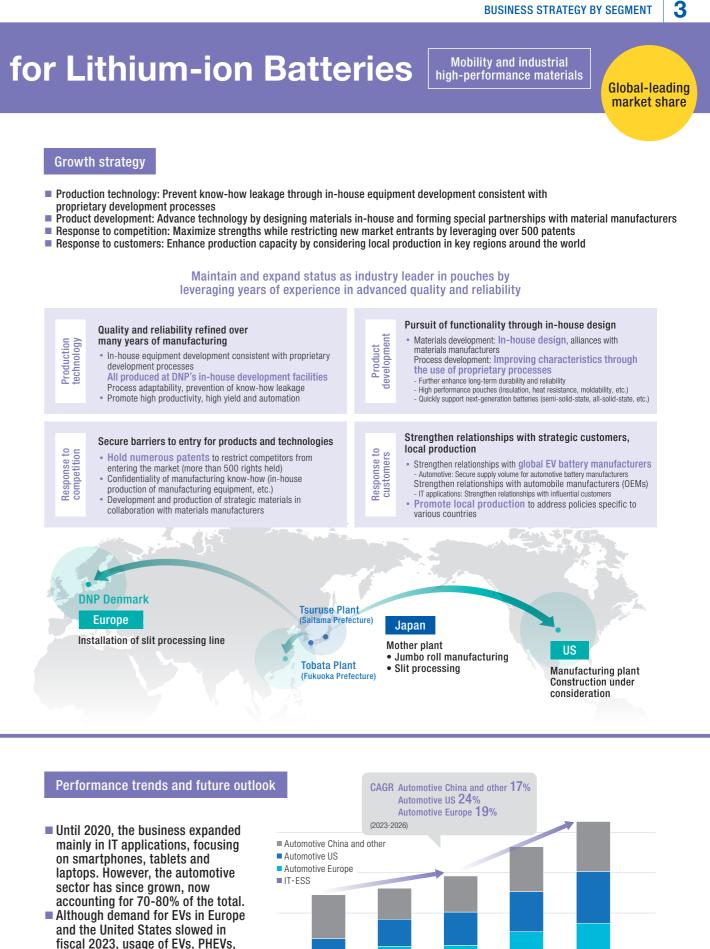
○ Stable track record even for use with large-scale batteries ○ Certified to IATF 16949 automotive quality management systems







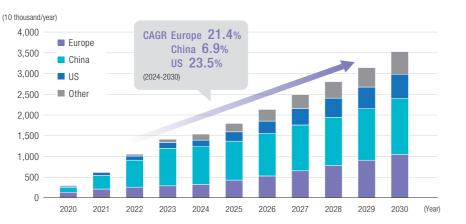
- proprietary development processes



### Market environment

The major trend of automobile electrification is expected to steadily progress, encompassing electric vehicles (EVs), plug-in hybrid vehicles (PHEVs) and hybrid vehicles (HEVs).

#### ☑ EV+PHEV sales volume by region



and HEVs is expected to increase from 2025, with battery pouches

of 15-20%.

projected to grow at an annual rate





Result

2023

Result

2024

Forecast

2025

Forecast



(FY)

2026

Forecast

## **New Business**

Life & Healthcare

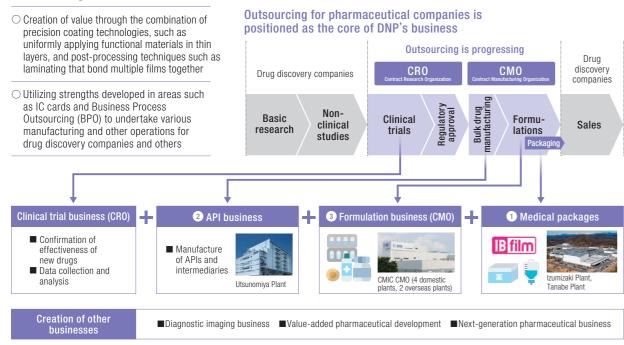
## Medical and

### Business overview & DNP's strengths

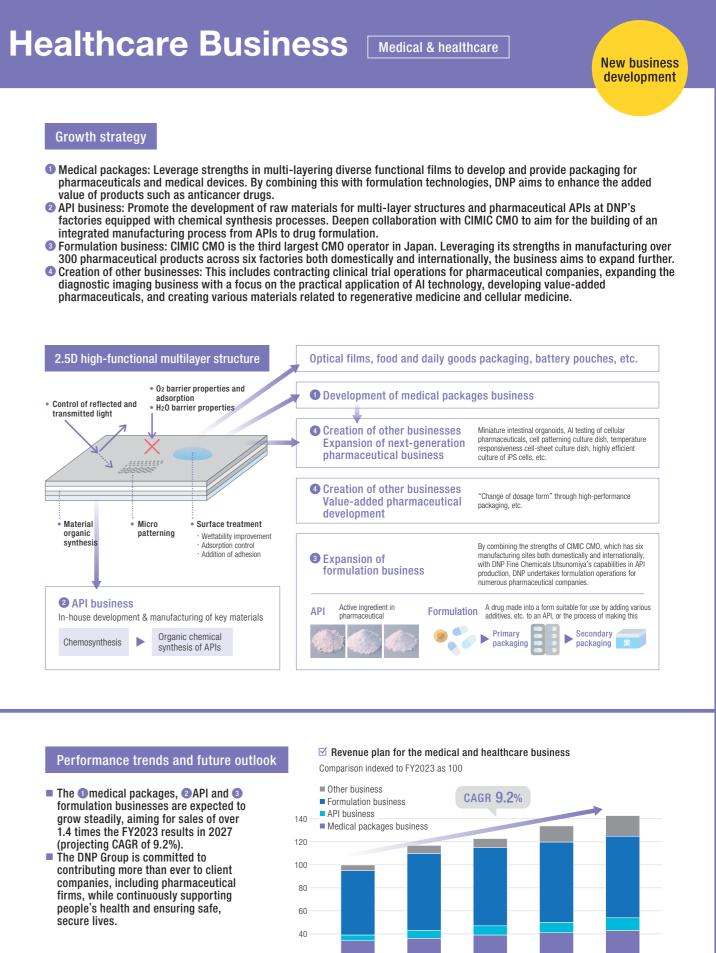
DNP is engaged in a packaging business that utilizes multi-layered films with various functionalities to protect contents from oxygen, water vapor and other elements, thereby extending shelf life, facilitating transportation and making it more user-friendly for a wider audience. Leveraging strengths cultivated since the 1950s, primarily in the packaging sector, DNP is promoting its (1) medical packages business while also focusing on the (2) API business, which started in 2013. The (3) formulation business, acquired through the consolidation of CMIC CMO Co., Ltd. in 2023, is central to DNP's healthcare business, along with the other two businesses. Additionally, the company is enhancing its strengths as a group by advancing businesses such as clinical trial outsourcing and diagnostic imaging. DNP is committed to providing value that contributes to the entire medical supply chain, including projects aimed at further enhancing the added value of pharmaceuticals and those related to regenerative medicine.

#### **DNP's strengths**

#### Overview of DNP's medical and healthcare business



- value of products such as anticancer drugs.



2024

Result

2025

2026

#### Market environment Low-molecular-weight pharmaceuticals Biopharmaceuticals Large and major Market is expected The global pharmaceutical market mature market. to expand is expected to expand from 141 trillion yen yet exhibiting Large capital stable growth expenditure burden in 2018 to 196 trillion yen in 2030. ¥**110 trillion** (201) The weight of low-molecular-weight →¥122 trillion (2 ¥30 trillion (2018) pharmaceuticals manufactured through →¥70 trillion (2030) chemical synthesis is significant, with (CAGR: 7.3%) particularly strong growth expected in highly (Number included) pharmacologically active drugs such as Highly anticancer drugs. pharmacologically Cellular medicine DNP is engaged in pharmaceutical active drugs manufacturing primarily in the ¥21trillion (2022) ¥950 billion (2021) low-molecular-weight pharmaceutical sector $\rightarrow$ **¥4.4** trillion (2026) while also aiming to build businesses in $\rightarrow$ ¥42 trillion (2030) biopharmaceuticals and cellular medicine. 20 (CAGR: 10.0%) (CAGR:47.6%) 2023

\*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/sityou/pdf/r01hosei\_jyakukanren-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/

3

2027

(FY)

## **New Business**

**Smart Communication** 

## **Development of businesses** content production and XR

## such as communication

Content & XR communication

#### **Business overview & DNP's strengths**

The phrase "running a business that contributes to civilization," established at the time of the Company's founding, continues to be upheld today as DNP engages in various businesses that contribute to the cultivation and development of knowledge and culture among people. In this new business under the Medium-term Management Plan, the vision is to communicate content in the most appropriate form, create new value, support comfortable lifestyles, and nurture enriched culture. The mission is to promote communication models that merge the real and virtual, connecting people and society and delivering "new experiential value" to the world through information processing and conversion technologies. The business focuses on advancing content production and developing XR communication, supported by a common foundation comprising three functions. This initiative aims to nurture culture and achieve a comfortable and enjoyable future for all.

#### **DNP's strengths**

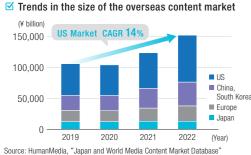
O Network with diverse content holders and creators around the world

**Content & XR communication: Basic functions** 

- Proven track record and reliability in high-definition image processing technology and copyright processing
- O 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.
- Producing content
- 2 XR Communication® ation through fusion of the real and virtual)
- Common infrastructure for content and XR areas 3 "Content planning/production \*RPR/RPO

### Development of the (1) Content production business

- The size of the overseas content market has nearly doubled in the last decade. The expansion of demand is also driven by secondary content developments, such as merchandise and exhibitions based on comics, anime and games. Diverse media consumption styles for enjoying content have become firmly established worldwide.
- DNP is expanding the range of our business by applying our information processing and conversion technologies, and software and hardware development capabilities. In April 2024, we opened the Tokyo Anime Center in San Francisco, building on our domestic operations. We plan to develop various businesses, including exhibitions, events and game equipment development, both domestically and internationally.



#### (¥ billion) 4.000 Content Overseas animation (streaming, merchandise development and services) 3.000 1.459.2 market for both 1.200.9 Domestic animatio domestic and (merchandise and services) 2,000 international Domestic animation 1.092.0 1,024.8 markets (TV, film and streaming) 1.000 ¥2,551.2 billion 376.5 288.8 Comics 677.0 (paper and electronic) 498.0 2022 2019 (Year) DNP research

Structure of content originating in Japan

### Bonding with your favorite, delivering to the world



#### partnership with monoAl

level by FY2026.

technology K.K. to strengthen the foundation of XR communication. Together with our business alliance partners, we will continue to bolster our business promotion system.

DNP aims to expand sales in this

business to 240% of the FY2022

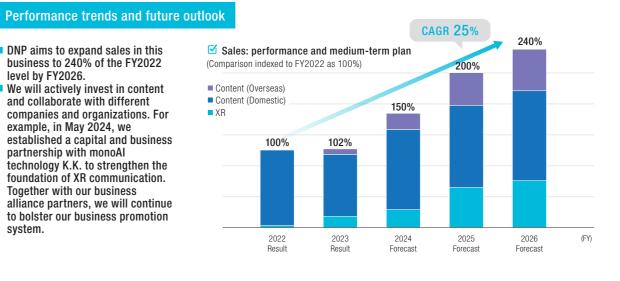
We will actively invest in content

companies and organizations. For

established a capital and business

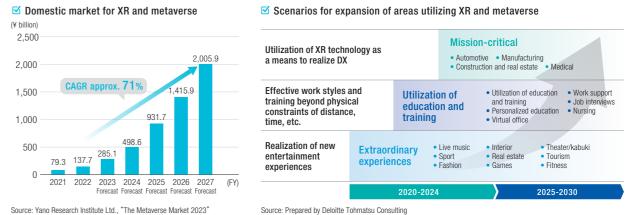
and collaborate with different

example, in May 2024, we



## (2) Development of XR Communication<sup>®</sup> business

- DNP is leveraging Extended Reality (XR) technology to merge real and virtual spaces, enhancing both experiential and economic value for people through its XR Communication business. The domestic market in related areas is expected to grow at a CAGR of 71% until 2027, reaching a value of 2 trillion yen. In addition to entertainment, there is great potential for applications in education, addressing local challenges and corporate marketing.
- initiatives such as the Metaverse Government Office, as well as creating metaverse spaces for children who are unable to attend school or need Japanese language instruction. We also provide support for corporate anniversary events and marketing events.



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

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

# Community-linked XR Service with metaverse

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

Develop an initiative to create places for children who are unable to attend school or need Japanese language instruction (Tokyo Metropolitan Government)

\* The Tokyo Anime Center is a joint operation project between The Association of Japanese Animations and DNP.

#### New business development

DNP is deepening collaborations with many local governments, companies and organizations to expand administrative services through

