

# Business Deployment in the Display Area

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# Overview of the Display Area | Supply Chain in the Display Industry

Components manufacturers

Semiconductors

Camera modules

Display panels

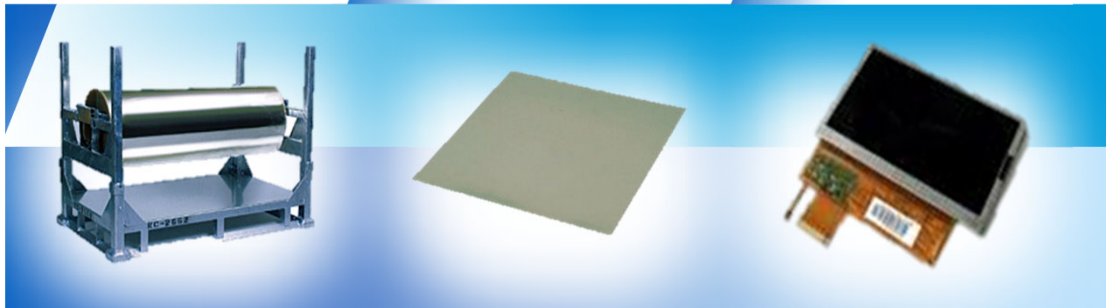
Film manufacturers

Polarizer manufacturers

Display panel manufacturers

EMS\*

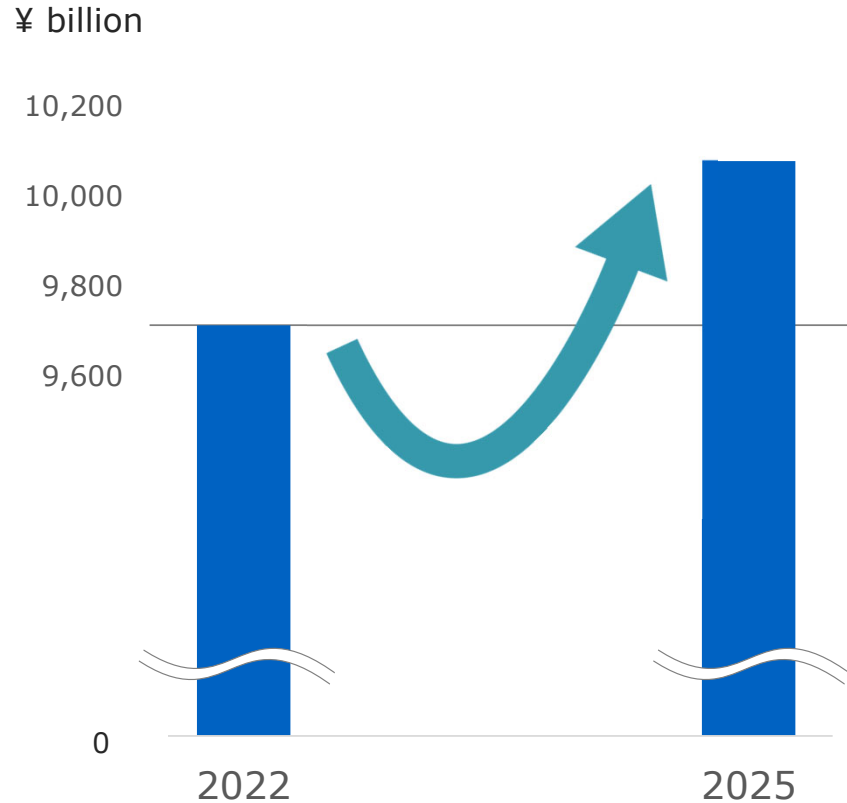
Brand owners



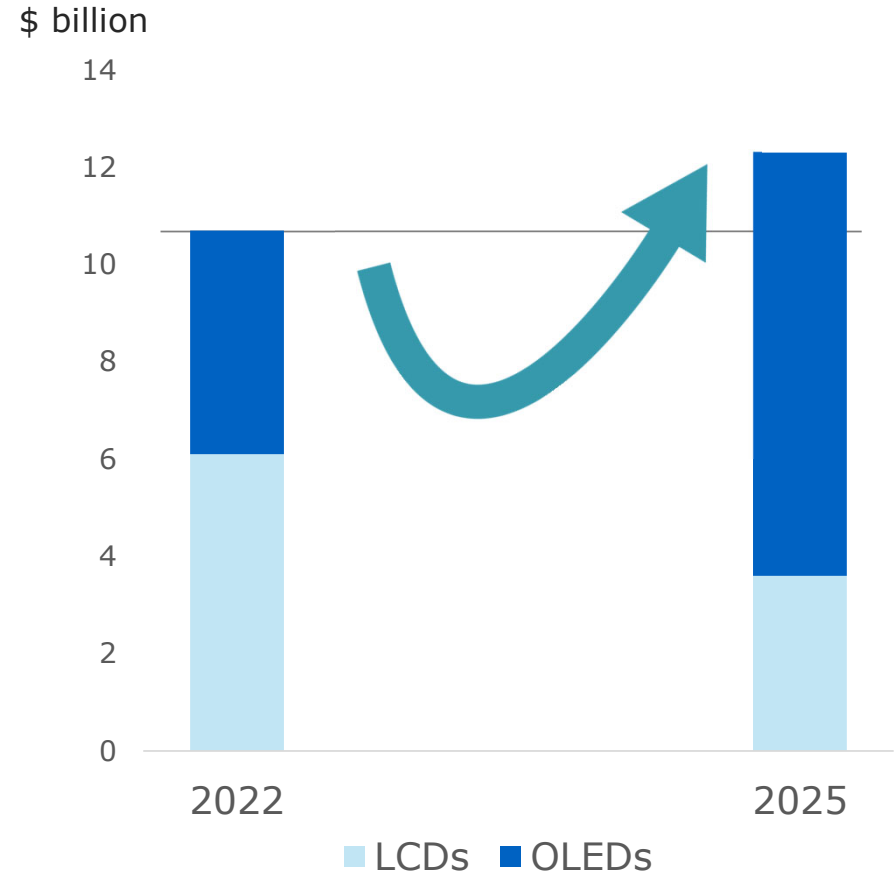
\*Electronics manufacturing services (EMS) companies

# Overview of the Display Area | About the Display Panel Market

## Sales amounts of display panels\*



## Capital investment in display panel\*

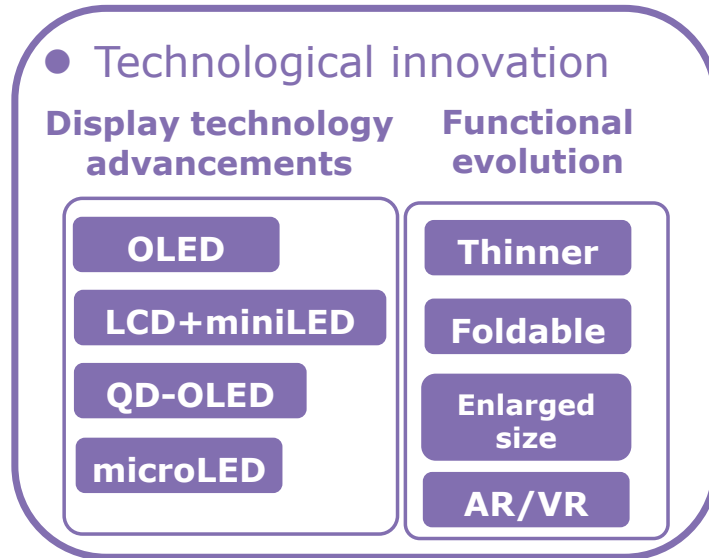


\*Estimated by Konica Minolta

# Overview of the Display Area | Business Opportunities in the Display Panel Market

**Identify a sign of display technological innovation and swiftly deploy businesses in response to “new needs”**

## New needs

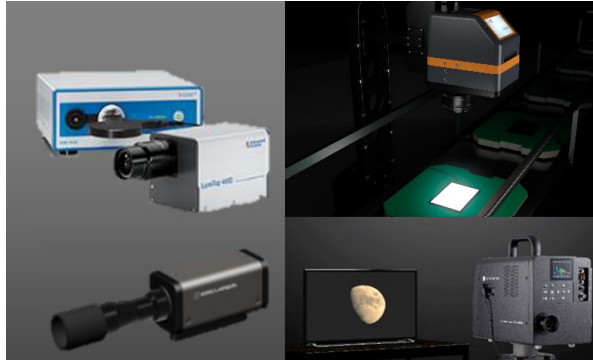


## New capital investment



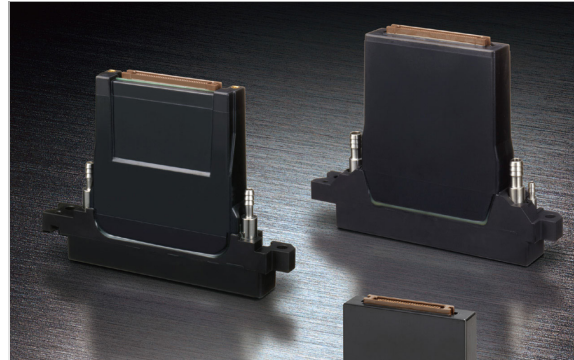
\*Electronics manufacturing services (EMS) companies

# Display-related Business Overview | Customers and Products



**Light source color measurement instruments**

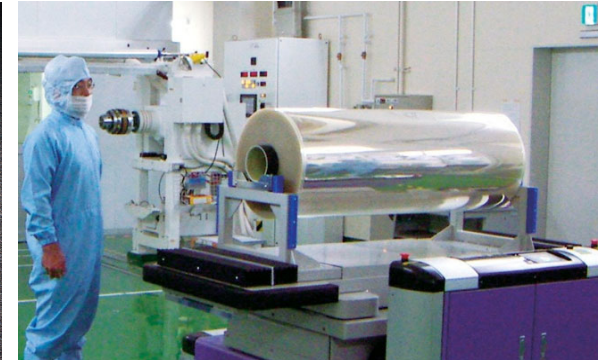
Display panel manufacturers  
Brand owners  
Electronics manufacturing services (EMS) companies



**Inkjet (IJ) printheads**

Equipment manufacturers

IJ printheads for pattern formation  
IJ printheads for thin film formation



**Functional film**

Polarizer manufacturers

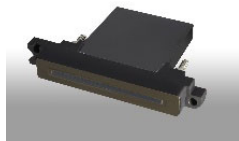
Protective film for LCD polarizers  
Phase difference film

**Target customers**

**Products**

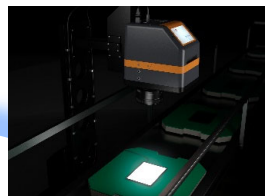


# Display-related Business Overview | Use Case of Displays



## IJ printheads

Pattern formation  
(to apply color filters)  
Thin film formation

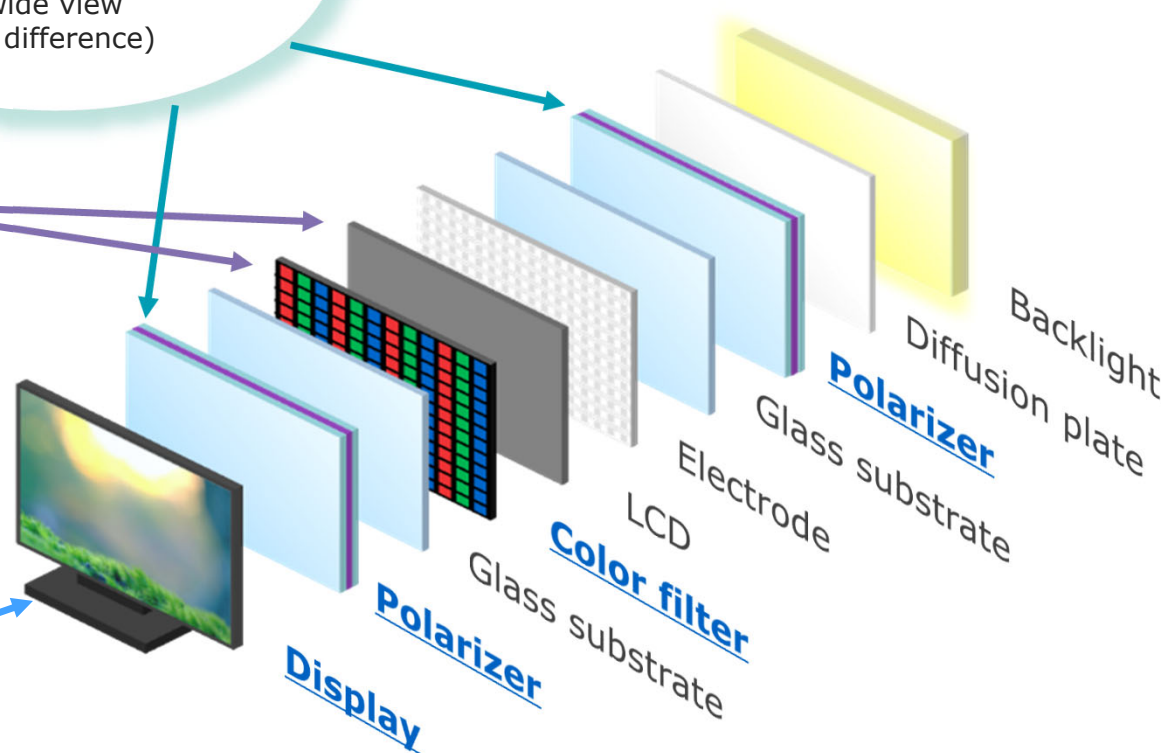


## Light source color measurement instruments

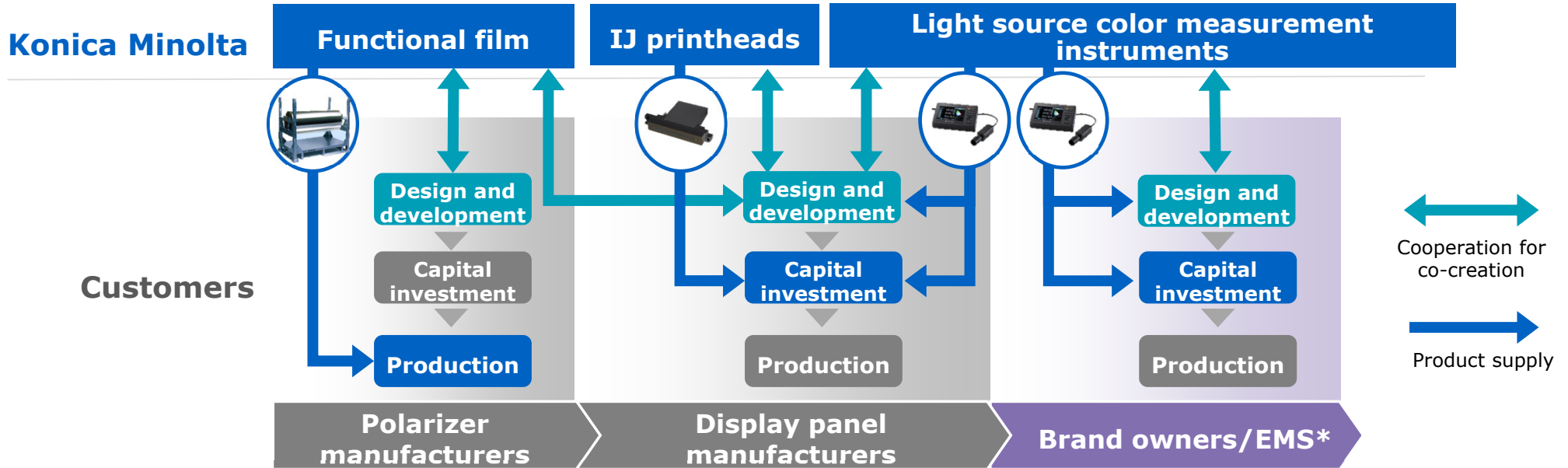
Measurement (luminance, viewing angle characteristics, imaging uniformity, pixel defects)

## Functional film

Polarizer protection  
For wide view  
(phase difference)



**Build a sustainable business model that is not a one-shot deal, starting with co-creation with customers**



## Advantages through cooperation with customers

### Functional film

Coordinate film design with customer polarizer manufacturers and display manufacturers located further downstream

### IJ printheads

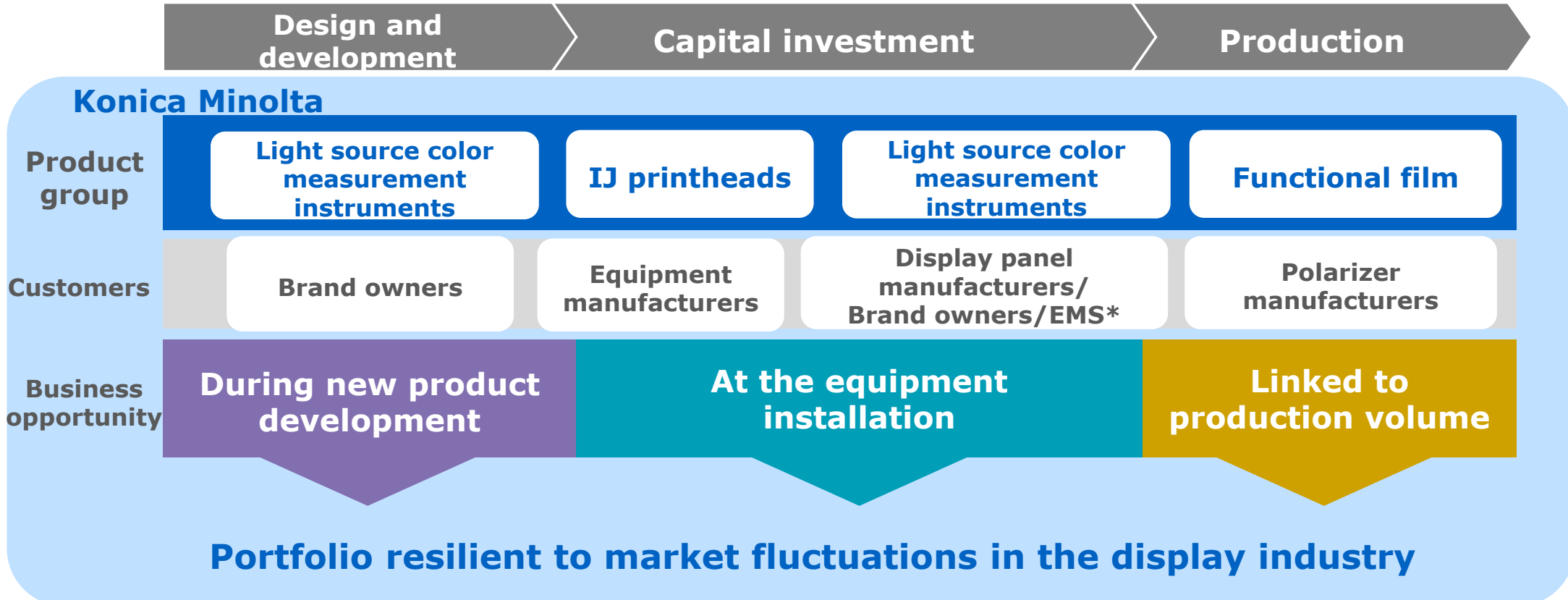
Customize heads and coordinate with inks by working with a development team of display manufacturers

### Light source color measurement instruments

Develop instruments closely with brand owners or EMS\* and then deploy them throughout the entire supply chain

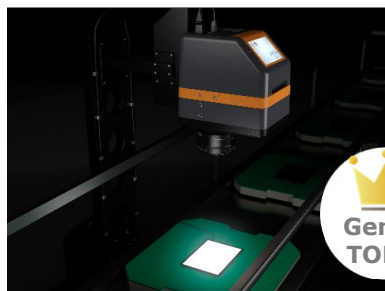
# Display-related Business Overview | Different Business Opportunities

**Deploy multiple businesses with different types of customers and cycles throughout the entire engineering chain in the display industry**

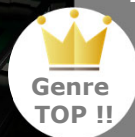


\*Electronics manufacturing services (EMS) companies





**Light source color measurement instruments**

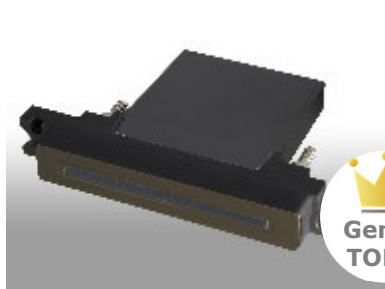


Optical measurement instruments for displays

**Advanced precision and high reliability**

**Measurement at low luminance levels**

**Ultra-high resolution**



**IJ printheads**



IJ printheads for displays

**Chemical resistance**

**Advanced precision and high resolution**



**Functional film**



Phase difference films  
Thin protective films

**Wide, long, thin film**

**Diverse functions added**



Materials



Optics

**Core technologies**



Imaging

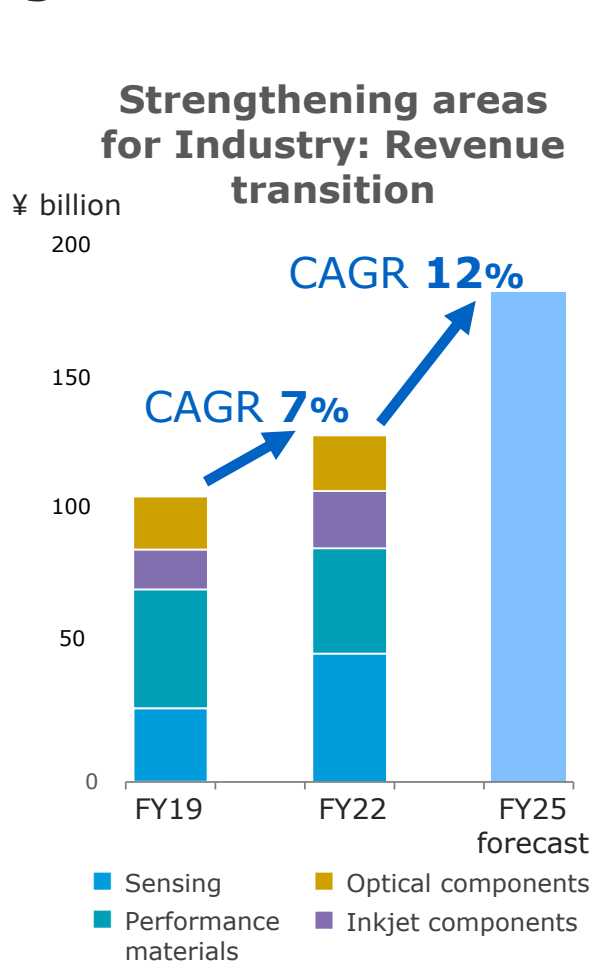


Nano-fabrication

# Medium- and Long-term Strategy

# Medium-term Growth and Cash Allocation to Focus Areas

Accelerating mid-to-long-term growth by investing in focus areas using cash generated from existing high market share areas supporting mid-term growth



¥ billion

		Market scale (SAM)	CAGR	Share
<b>Existing high market share</b>	<b>Object color measurement</b>	56	4%	<b>Medium</b>
	<b>Inkjet for non-industrial use</b>	Approx. 50-60	6%	<b>Medium</b>
	<b>Inkjet for industrial use (incl. for display manufacturing)</b>	Approx. 30-40	8%	<b>High</b>
	<b>Displays</b>			
	● Phase difference and Protective TAC film for small-and medium-size displays	130	2%	<b>High</b>
● Light source color measurement	55	4%	<b>High</b>	
<b>Mid-to long-term focus</b>	<b>Semiconductor manufacturing</b>			
	● Optical components	100	10%	<b>Low Focus area</b>
	<b>Mobility</b>			
	● Automotive Visual Inspection	15	15%	<b>Market creation phase Focus area</b>

Capture market trends and further expand

Cash allocation

Enter markets and expand market share

\*Estimated by Konica Minolta

# Medium- and Long-term Strategy: Light Source Color Measurement Instruments

## Capture the trends of increase in OLED devices and expand businesses

### Market forecasts for OLED applications\*1

From 2022 to 2025

OLED panel market  
Capital investment

CAGR: >20%

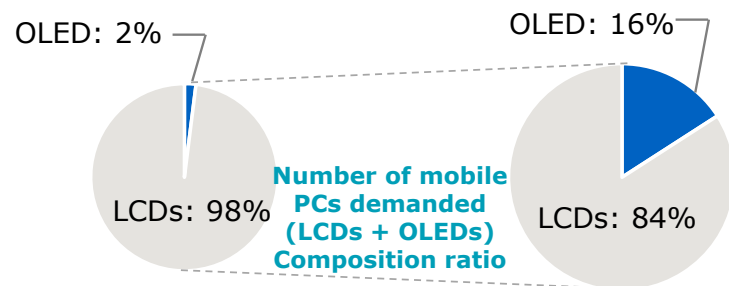
From 2022 to 20230

Number of mobile PC\*2 demanded  
(LCDs + OLEDs)

CAGR: About 3%

Of which OLEDs

CAGR: >30%



### Trends toward OLEDs, such as mobile PCs Increasing applications other than smartphones

Developed instruments that measure at low luminance levels for OLEDs with superior black imaging

Leverage relationships cultivated with our customers to accurately identify the needs



Spectroradiometer  
CS-3000HDR

Display color analyzer  
CA-410

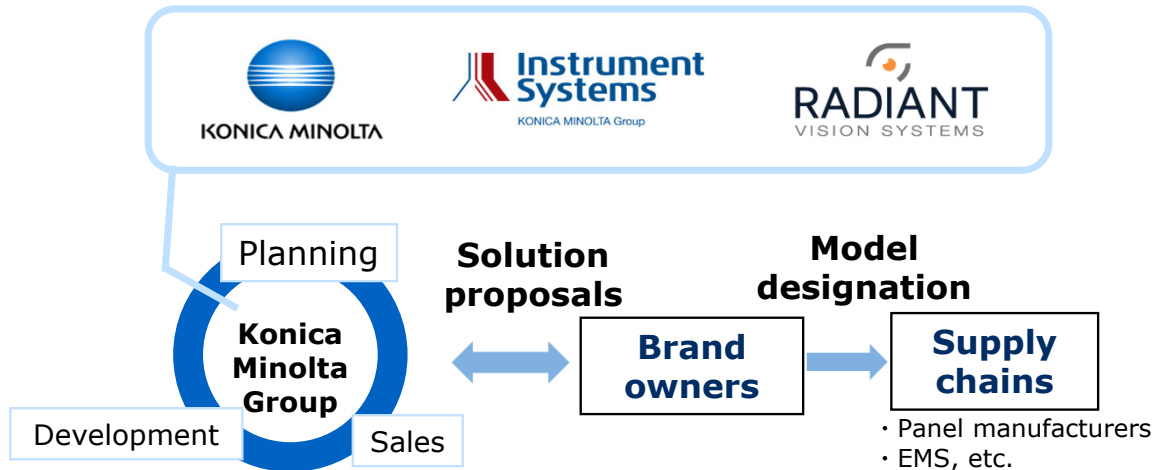


\*1 Estimated by Konica Minolta

\*2 Mobile PCs: Tablets, laptops

# Medium- and Long-term Strategy: Light Source Color Measurement Instruments

Quickly identify demand and develop through relationships with brand owners to ensure our position in the market



Measurement instrument for AR/VR



Imaging photometers  
ProMetric® Y series  
(designed for AR/VR headsets)

Build close ties with brand owners



Quickly identify demand and develop  
**Deploy throughout the entire supply chain to expand sales**

**Display market forecasts for AR/VR\***

From 2022 to 2025

**CAGR: 30~40%**

**Expected to grow beyond 2025**

\*Estimated by Konica Minolta

# Medium- and Long-term Strategy: IJ Printheads

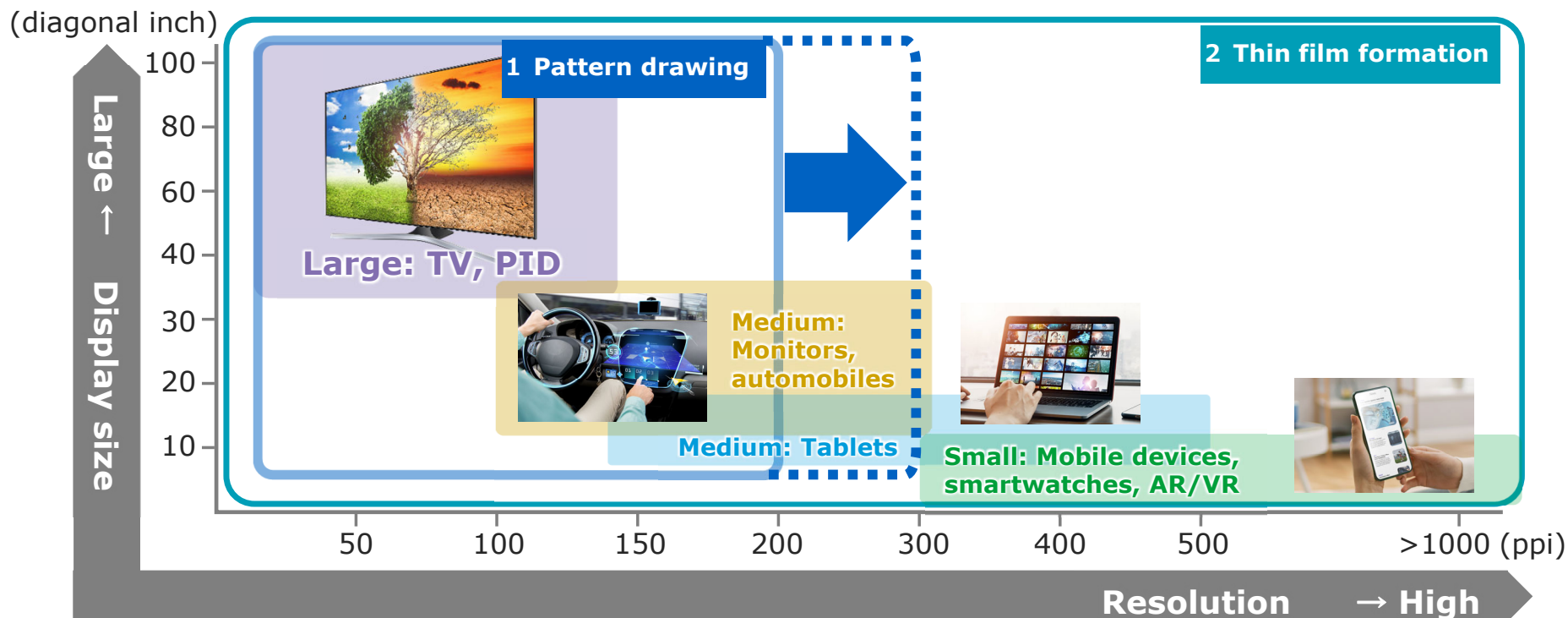
## Customize heads and expand in step with panel advancements

### 1 Pattern drawing

Develop smaller micro-droplet heads in order to support higher resolution

### 2 Thin film formation

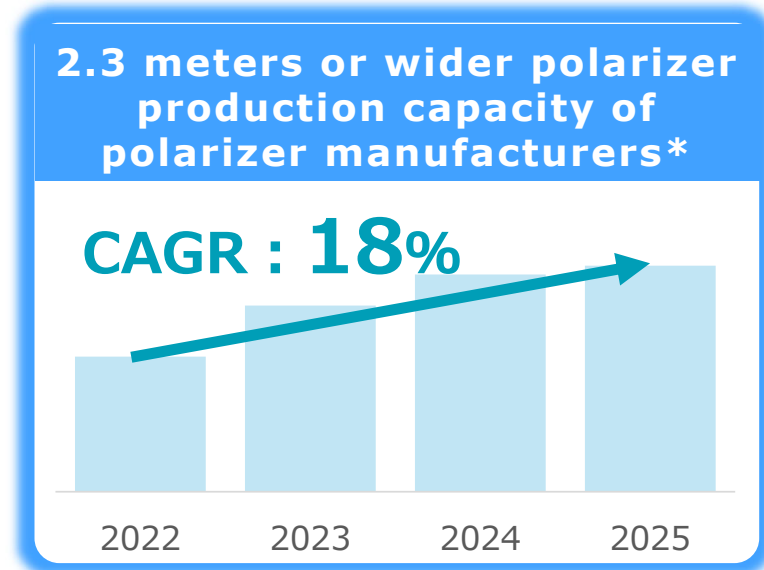
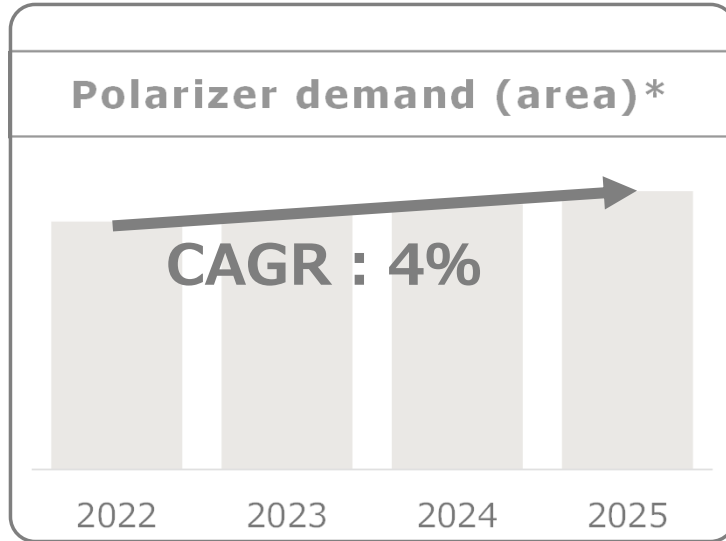
Develop heads compatible with special inks in order to shift from other methods to IJ





# Medium- and Long-term Strategy: Functional Films

Leading polarizer manufacturers are rapidly adopting wider lines in the large display market.



## Reasons for adopting wide lines

A width of 2.5 m allows for efficient production of all 65-inch, 75-inch, and 43-inch products.

Less waste of partially cut-off films

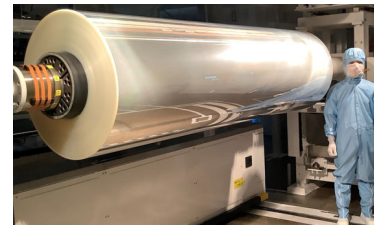
## Ensure the opportunity for shifting to accelerated wide films for large displays to expand market share

New materials that allow for wide films

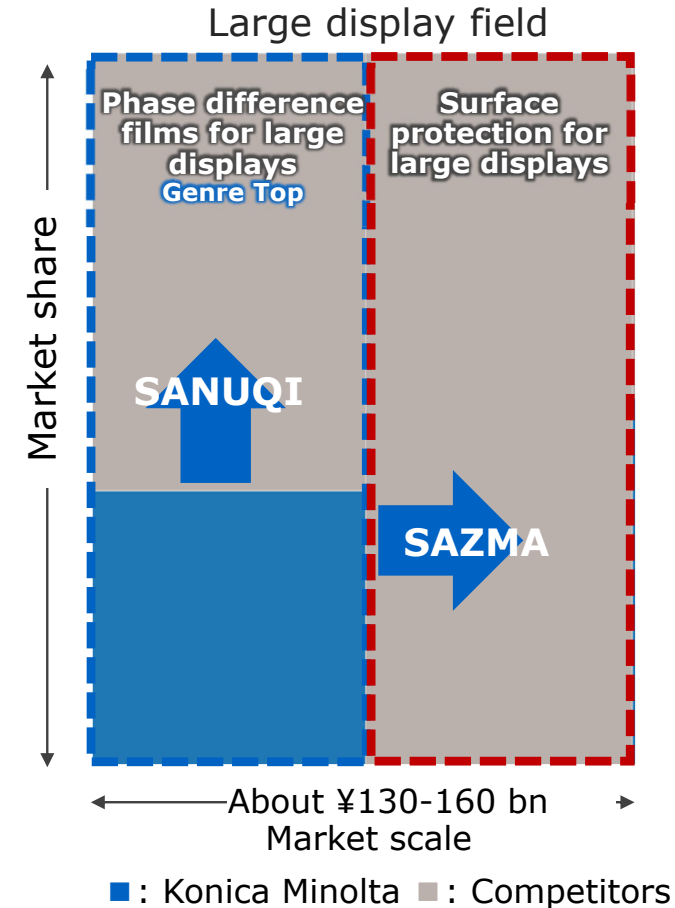
	SANUQI	SAZMA
Material	Cyclo-olefin polymer (COP)	Acrylic
Feature	Well-balanced between phase difference performance and durability	Flexible and high impact resistance

Add a post-stretching line for increased film widths

- ✓ Capture large demand by increasing production capacity
- ✓ Achieve increased film widths with minimal investment



Industry's widest as 2.6 m



## Approach a new market through co-creation with customers and material formulation technology

### Co-creation with customers

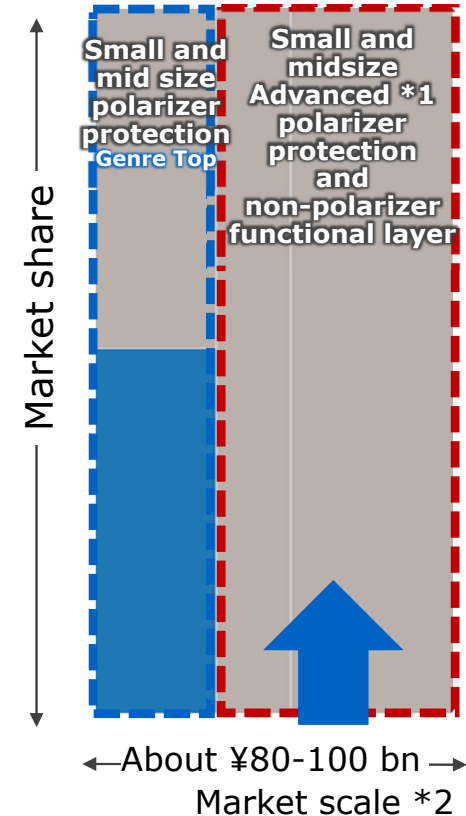
Understand what customers (brand owners) desire to achieve, leading to design and product development that customers are not even aware of

### Material formulation technology

Add various functions using material formulation technology

**Customize functional films for small and mid size applications including ICT**

Small and mid size film area



■ : Konica Minolta ■ : Competitors

\*1: Components supporting high display functionality (e.g., anti-reflection, flexibility, polarized sunglasses compatible)

\*2: Estimated by Konica Minolta

## Film-casting Factory (Kobe)



### Solvent film-casting

#### Advantages

- ✓ **Flexibility in resin selection**  
TAC, COP, acrylic, new resin
- ✓ **Reduced thickness**
- ✓ **High-speed film formation**



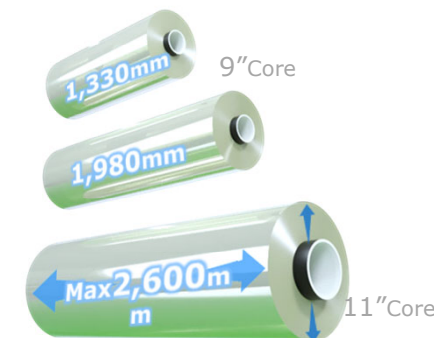
## Offline stretching Factory (Kofu)



### Offline stretching method

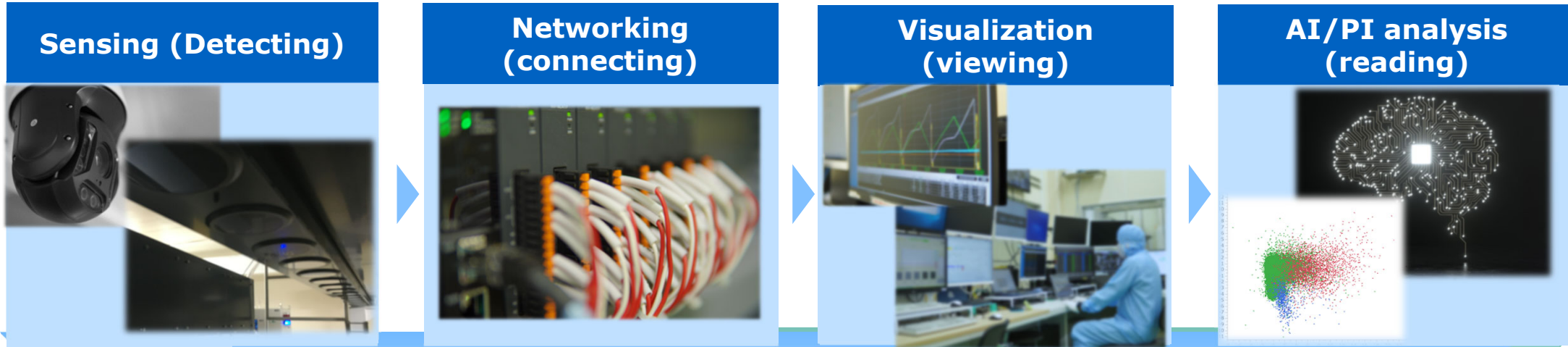
#### Advantages

- ✓ **Flexibility in optical design**  
Simply change stretching conditions
- ✓ **High production capacity**  
Separation of film-casting process and stretching process
- ✓ **Ultra-wide films available**  
Reduced thickness and high stretching



**Solvent film-casting and Offline stretching Method to meet diverse needs speedily and flexibly**

Contribute to improving profitability by our unique DX in production that connects value chains

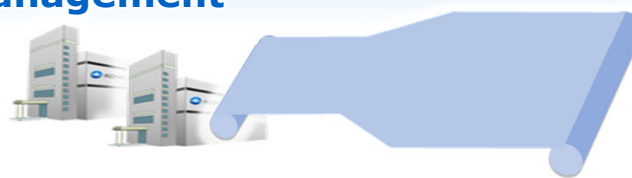


- ✓ Enhance quality through real-time analysis and precision control
- ✓ Prevent failures by detecting signs of defects
- ✓ Save labor through automated control and centralized management

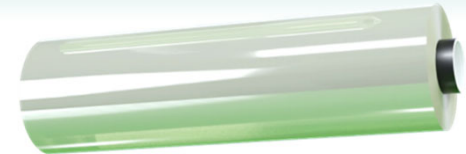
✓ Respond flexibly to customer requests



Solution film-casting



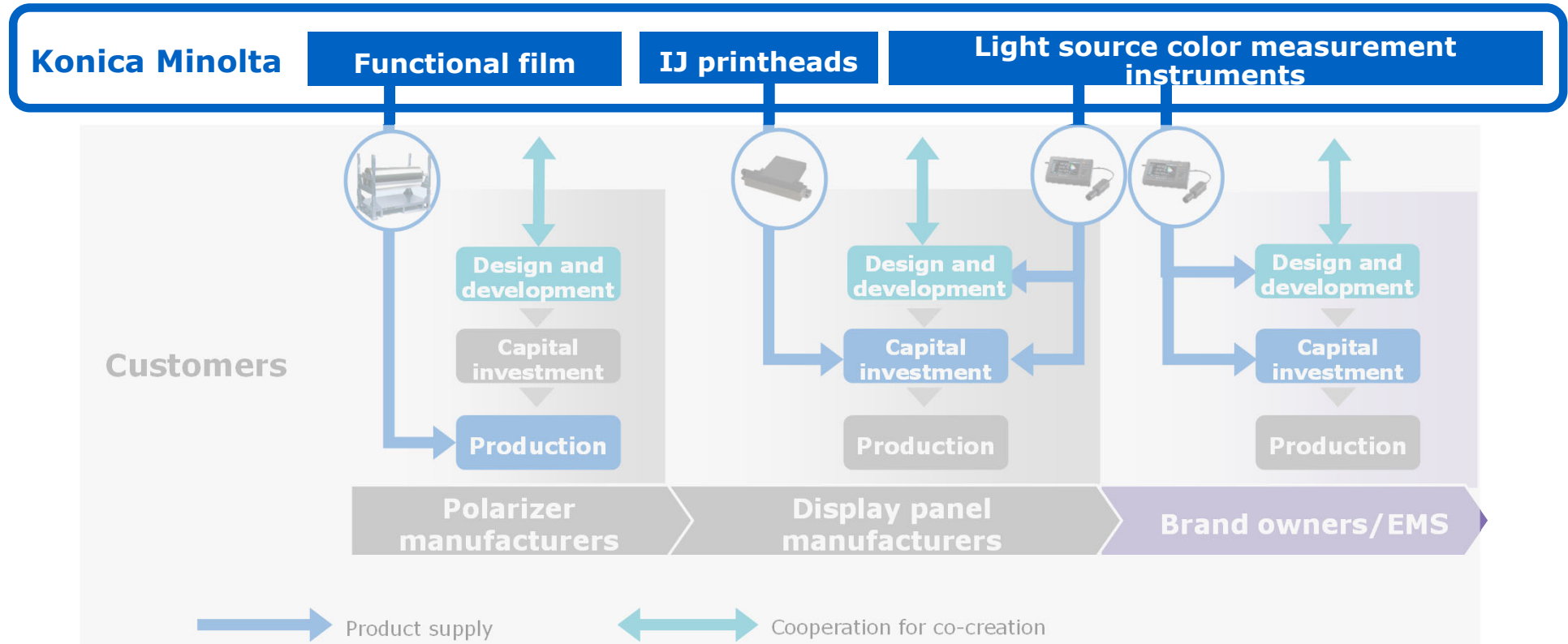
Post-stretching method



Supply/customers

# Collaborative Synergies in the Industry Business

**Build close ties with brand owners in charge of next-generation display development to engage in manufacturing process innovation and next-generation material development**







**KONICA MINOLTA**

**150**

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**YEARS**