METAGROWTH 2026
Technology Briefing

Japan Display Inc.   June 22, 2022

Table of Contents

Note: eLEAP is a provisional name, pending registration. Rælclear is a trademark of JDI.

METAGROWTH 2026
Overall Strategy

Scott Callon
Chairman & CEO

META

"Comprehensive, Overarching" Underscores JDI's Commitment to Transformational Growth

Metaverse Also a JDI Growth Driver

Global No. 1 Technology Leadership to Best Serve Customers and Deliver PersonalTech For A Better World

METAGROWTH in Value Creation

JDI

Displays are a foundational technology for modern society
JDI has unmatched technological capabilities to deliver customer & social value & improve people's lives

① **Global No. 1**
Technology Leadership

② **Market-Leading Technology, Transformational Growth**

③ **GreenTech & Sustainability**

Global No. 1
Technology
Leadership

- **JDI has regained technology leadership in the global display industry with its <u>Global No. 1</u> proprietary technologies, including eLEAP (NextGen OLED), HMO (High Mobility Oxide), Metaverse (Ultra High Resolution), & Rælclear (Transparent Displays)**

- **JDI will further expand its technology leadership to dramatically increase customer & shareholder value**

Note: Rælclear is a trademark of JDI. eLEAP is a provisional name, pending registration.

② **Market-Leading Technology, Transformational Growth**

- **The global display business is a technology industry. JDI is a technology company. So are its customers. Customers' needs are superior technology & cost performance**

- **Support JDI customers' value creation & competitive advantage by delivering proprietary <u>Global No.1</u> technologies such as eLEAP, which has unparalleled cost performance**

- **End participation in commodity competition, leverage JDI's one-of-a-kind, innovative technology to generate radical improvements in profitability & growth**

③

GreenTech & Sustainability

- **Address deeply important global environmental issues via JDI environment positive GreenTech such as eLEAP & HMO, which deliver significant value to JDI's socially conscious customers**

- **Companies exist to serve society. JDI will always run its business to contribute to a sustainable world**

- **JDI is committed to an open corporate culture & supports the growth of each & every employee & their pursuit of <u>Global No. 1</u> excellence**
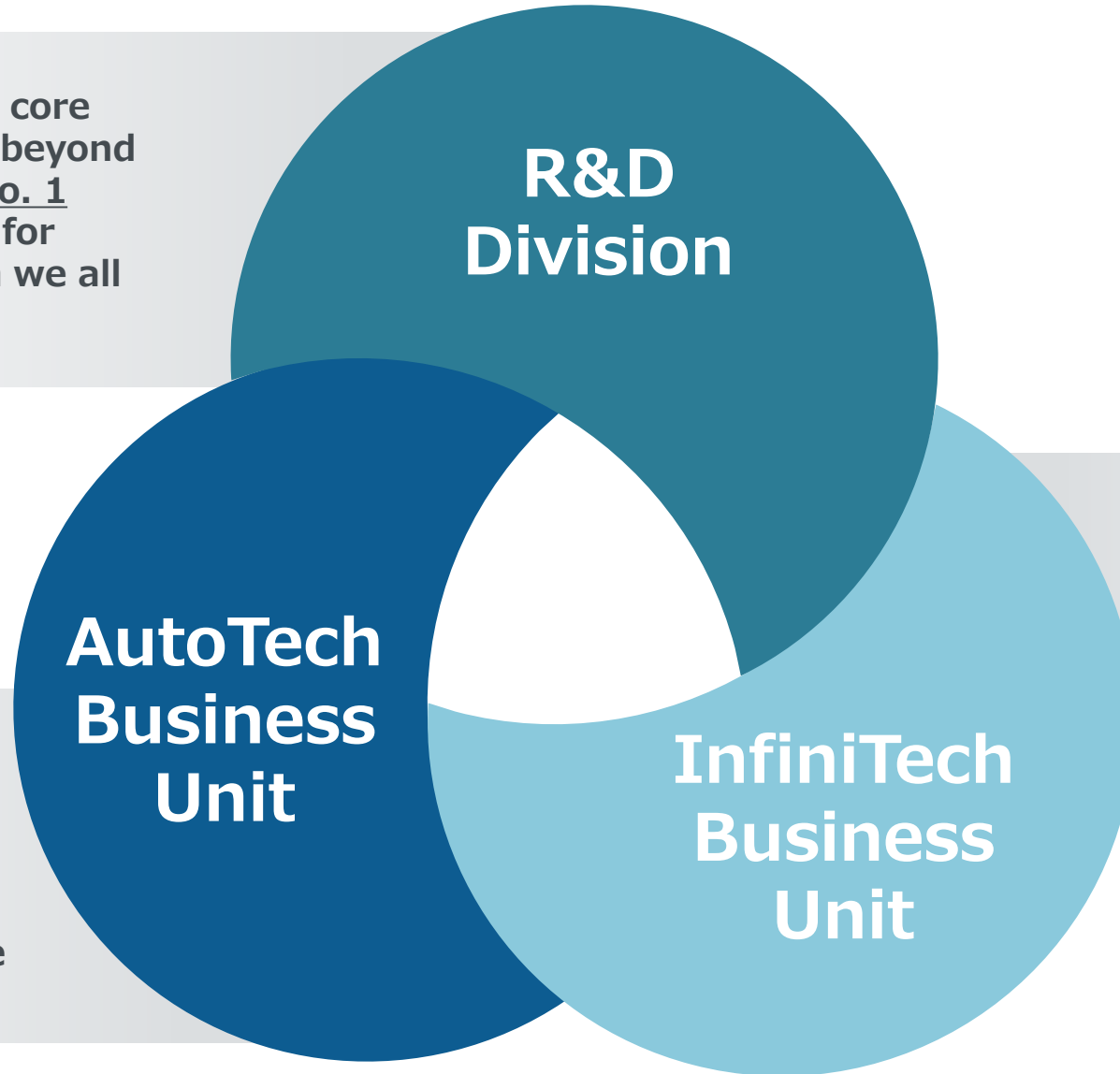
Evolving & deepening JDI's core technology assets above & beyond displays to deliver Global No. 1 technologies that are good for people, society, & the earth we all share

R&D Division

Creating new de facto global technology standards for consumer & industrial devices via game-changing innovations that JDI licenses openly

**AutoTech Business Unit**

Delivering best-in-class quality & technologies that deliver even greater safety & comfort during a once in a 100 years period of revolutionary change in the global automotive industry

InfiniTech Business Unit

AutoTech
Business Strategy

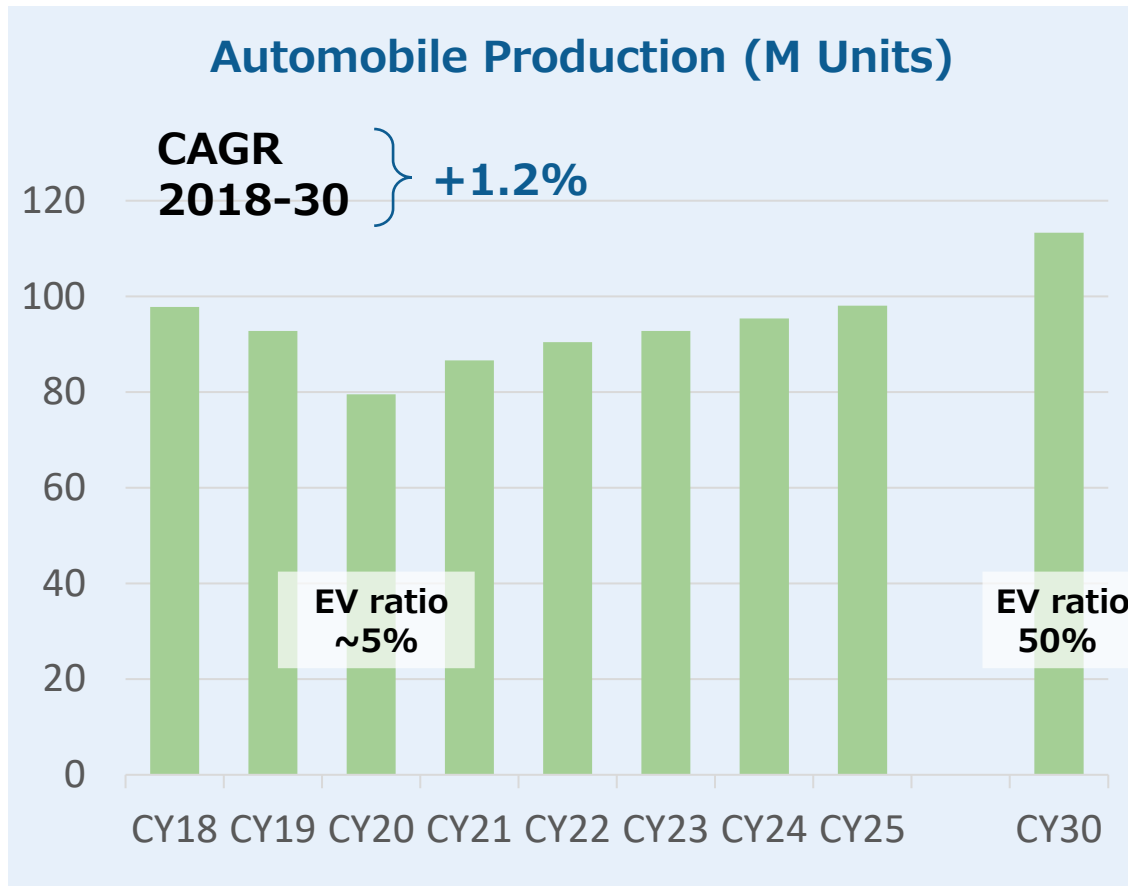**Seiichi Fukunaga**
Executive Officer
Head of AutoTech Business Unit

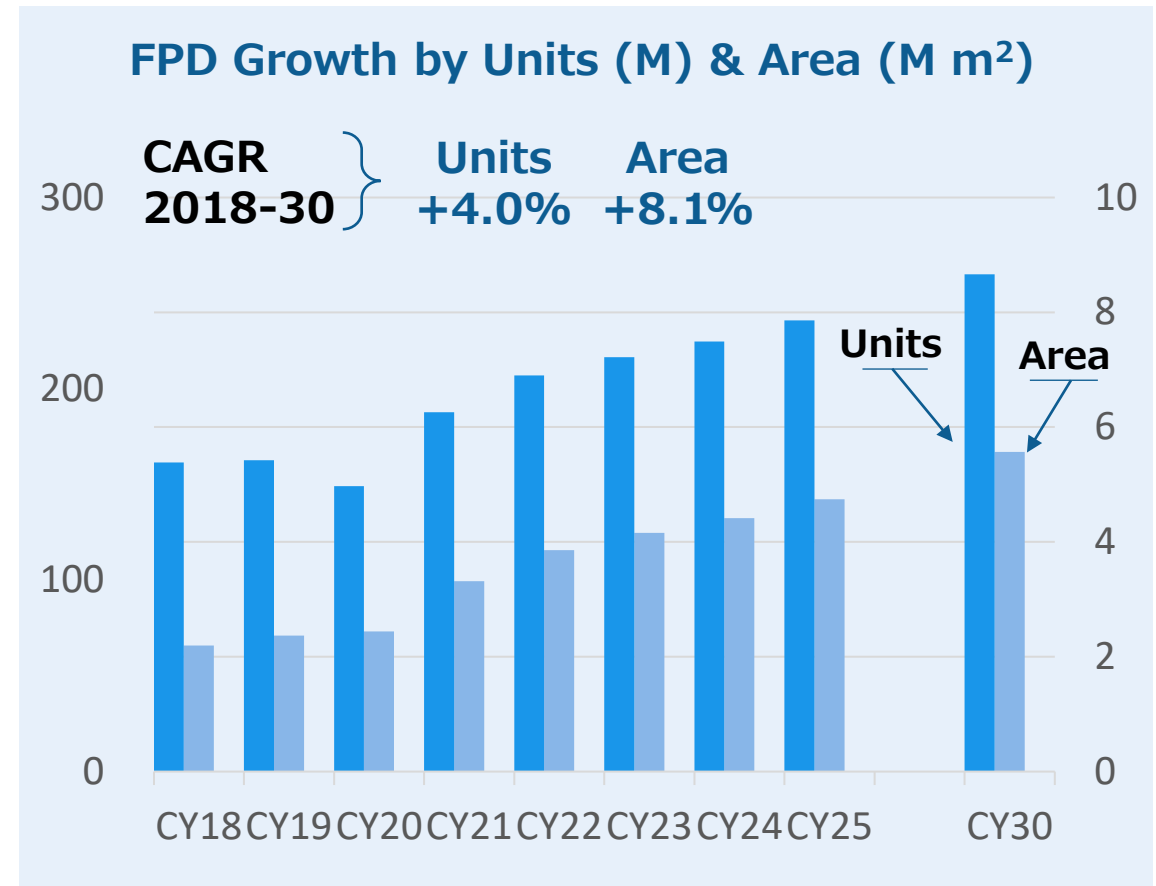# Generate c. 40% of total JDI sales with a highly profitable business model
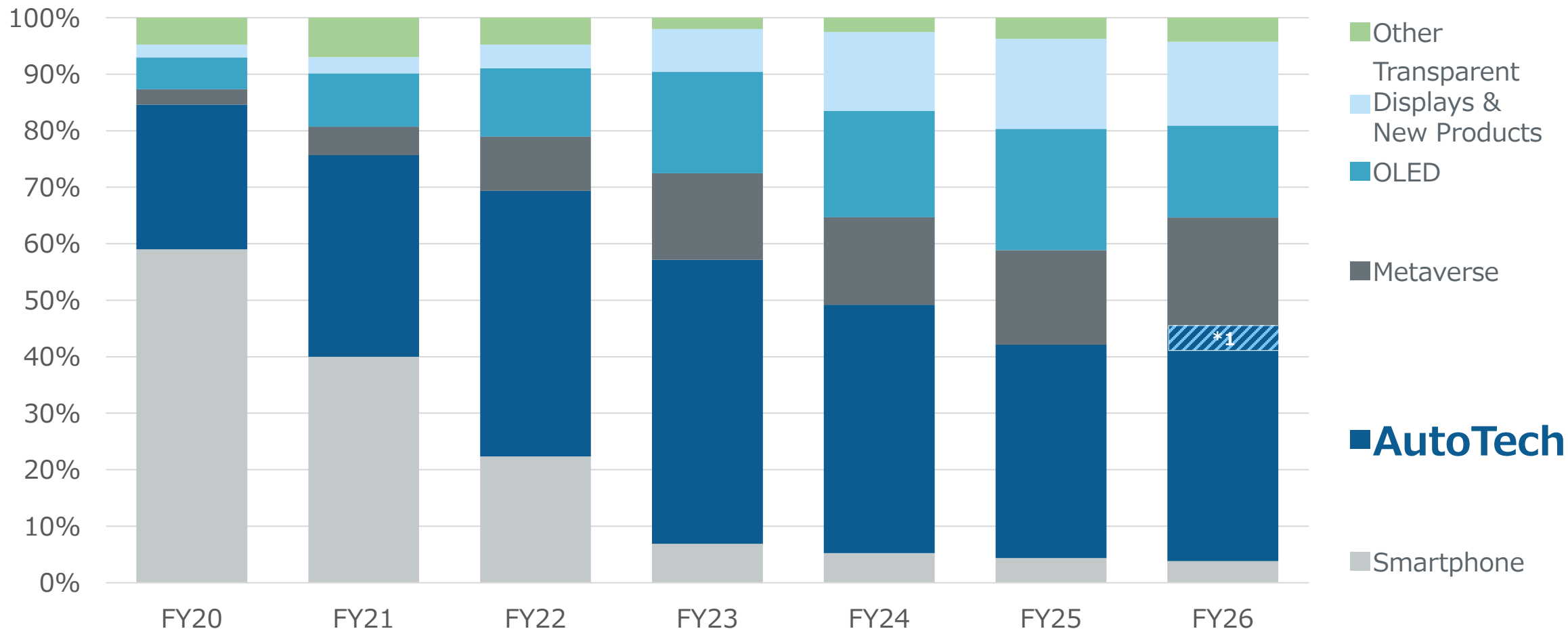
*1: In FY26, c. 5% of eLEAP (OLED) is included in AutoTech

AutoTech | Automotive Display Market Trend

Led by EVs, secular growth in display demand

Automobile Production (M Units)

CAGR 2018-30 } +1.2%

EV ratio ~5%

EV ratio 50%

CY18 CY19 CY20 CY21 CY22 CY23 CY24 CY25 CY30

EV = Battery-powered Electric Vehicles + Plug-In Hybrid Vehicles

FPD Growth by Units (M) & Area (M m²)

CAGR 2018-30 } Units +4.0% Area +8.1%

Units   Area

CY18 CY19 CY20 CY21 CY22 CY23 CY24 CY25 CY30

Source: Yano Research Institute Ltd. (October 2021) for automobile production; JDI estimates for EV ratio. FPD shipments are OMDIA_Small & Medium Display Market Tracker Forecast 4Q21; JDI estimates for CY30

Develop integrated cockpits with best-in-class aesthetics & high value-add via new applications such as JDI's proprietary Privacy View
Enhance passenger comfort & safety with high-end LCDs & eLEAP

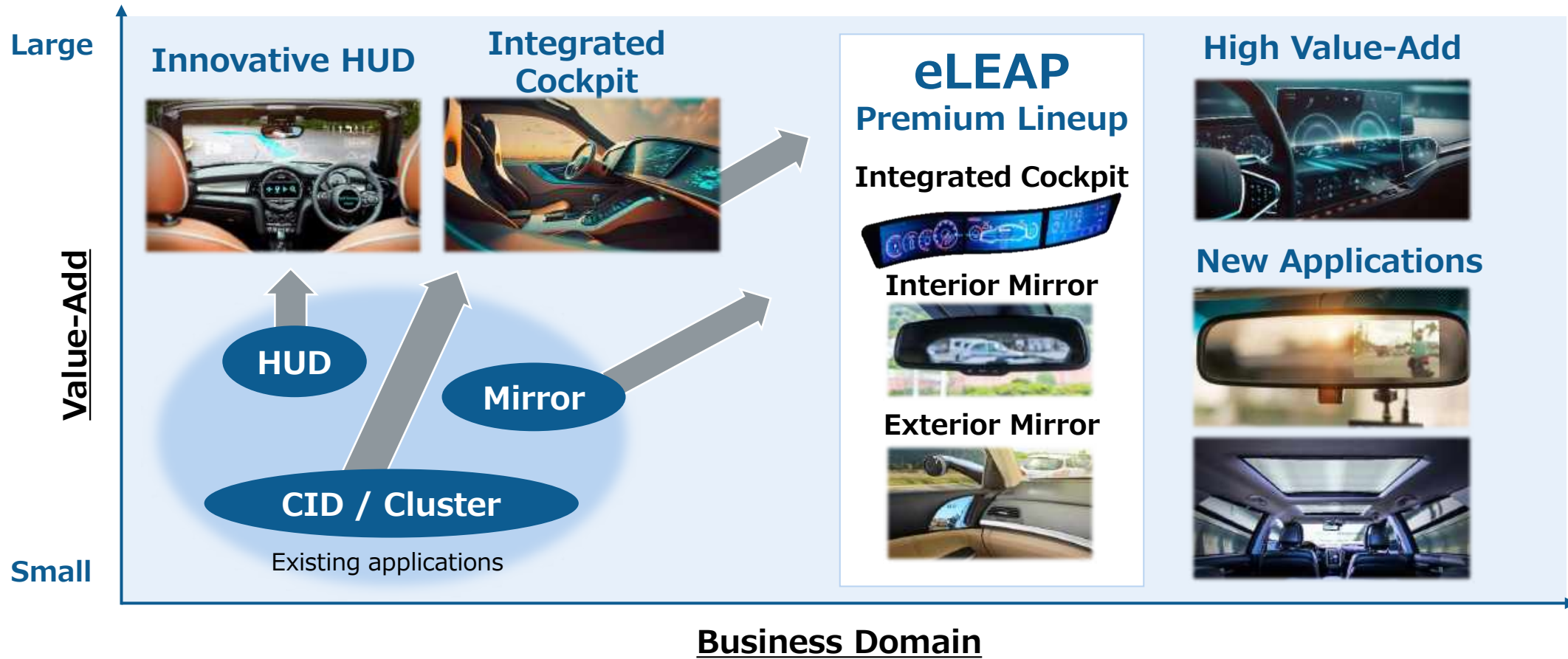Innovate to respond to evolving passenger information needs & interior designs
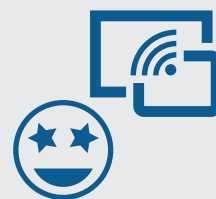
Deliver differentiated customer value with large displays, outstanding image quality, & JDI proprietary tech
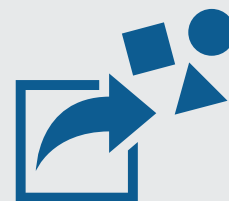
Increase road & passenger safety via innovative HUD & EV-focused, best-in-class integrated cockpit technology

Innovative HUD

Integrated Cockpit

eLEAP
Premium Lineup

Integrated Cockpit

Interior Mirror

Exterior Mirror

High Value-Add

New Applications

Value-Add

Large

Small

HUD

Mirror

CID / Cluster

Existing applications

Business Domain

Lead the EV era with an extensive, leading-edge eLEAP line-up

Improve integrated cockpit & mirror designs with eLEAP free shapes

InfiniTech Business Strategy

Kazuya Iizuka
Executive Officer
Head of InfiniTech Business Unit

InfiniTech Business Strategy

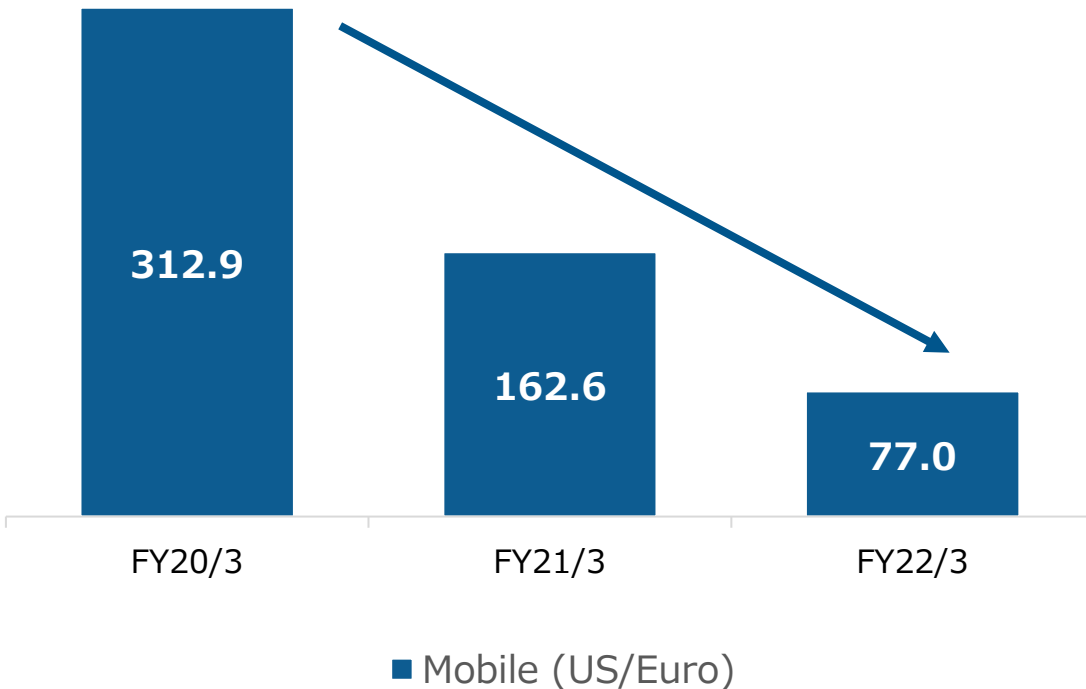|		
1	End Mobile Overconcentration	
2	New Growth Strategy	
3	Growth Drivers	
4	Market Feedback	

1 InfiniTech Business Strategy

End Mobile Overconcentration

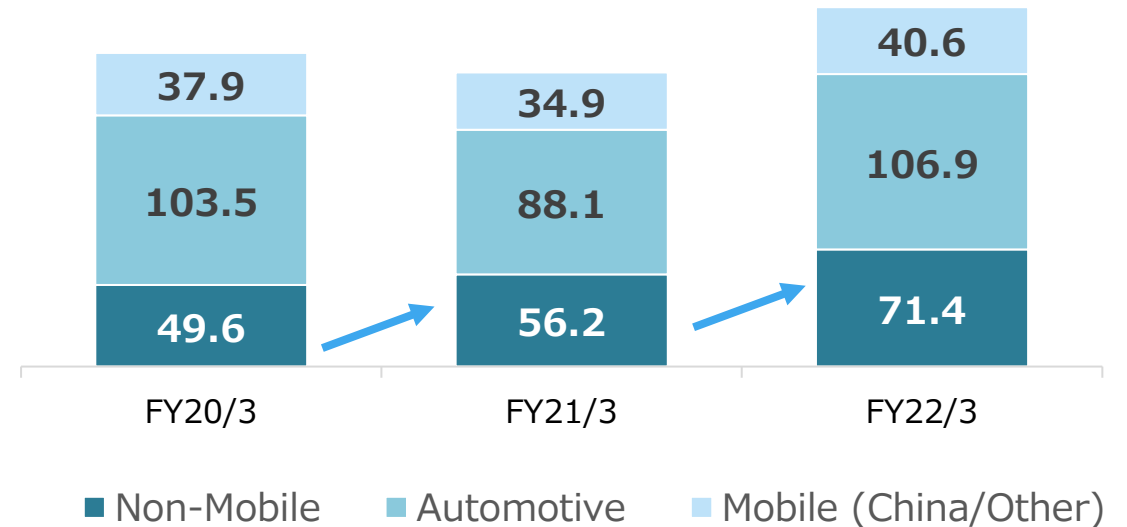# Absorbing sharp decline in Mobile (US/Euro) & growing profitable product portfolio

Sales (Mobile (US/Euro))

(JPY billion)

FY20/3	FY21/3	FY22/3
312.9	162.6	77.0

■ Mobile (US/Euro)

Sales (Excl. Mobile (US/Euro))

(JPY billion)

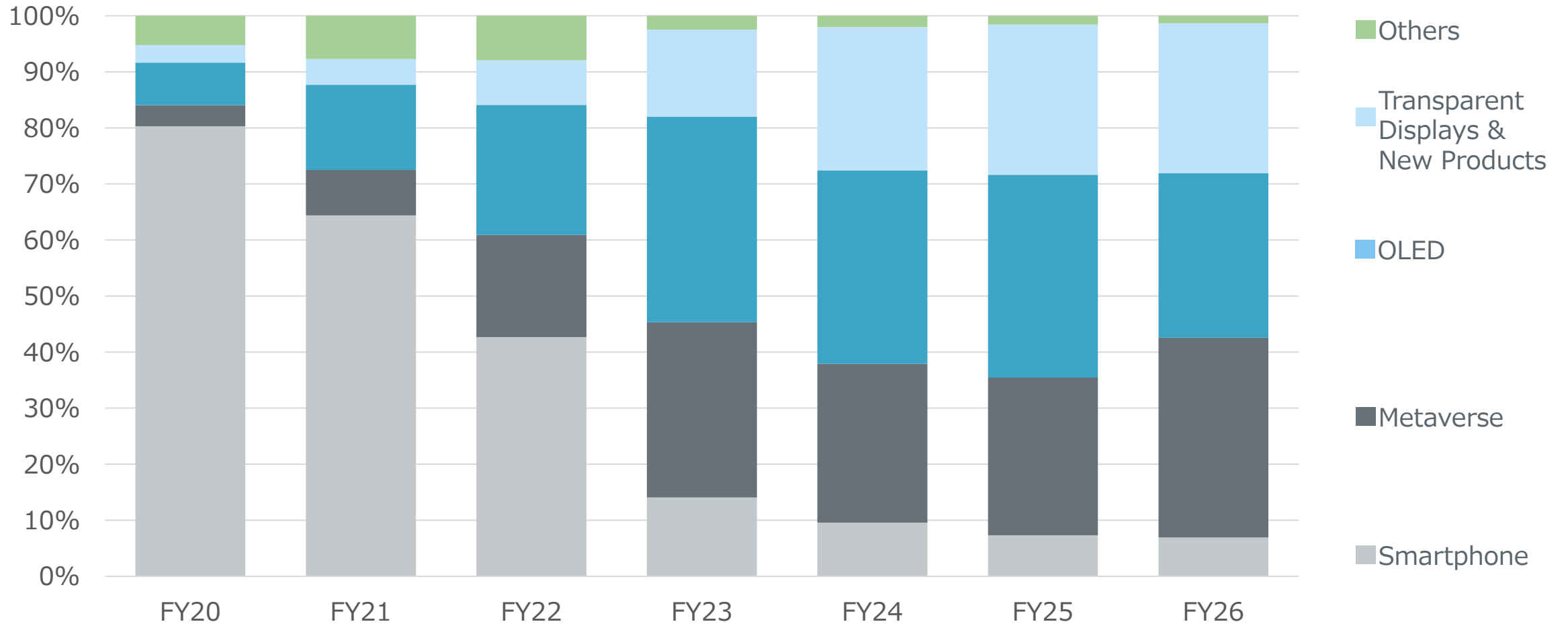|	FY20/3	FY21/3	FY22/3
Mobile (China/Other)	37.9	34.9	40.6
Automotive	103.5	88.1	106.9
Non-Mobile	49.6	56.2	71.4

■ Non-Mobile   ■ Automotive   ■ Mobile (China/Other)
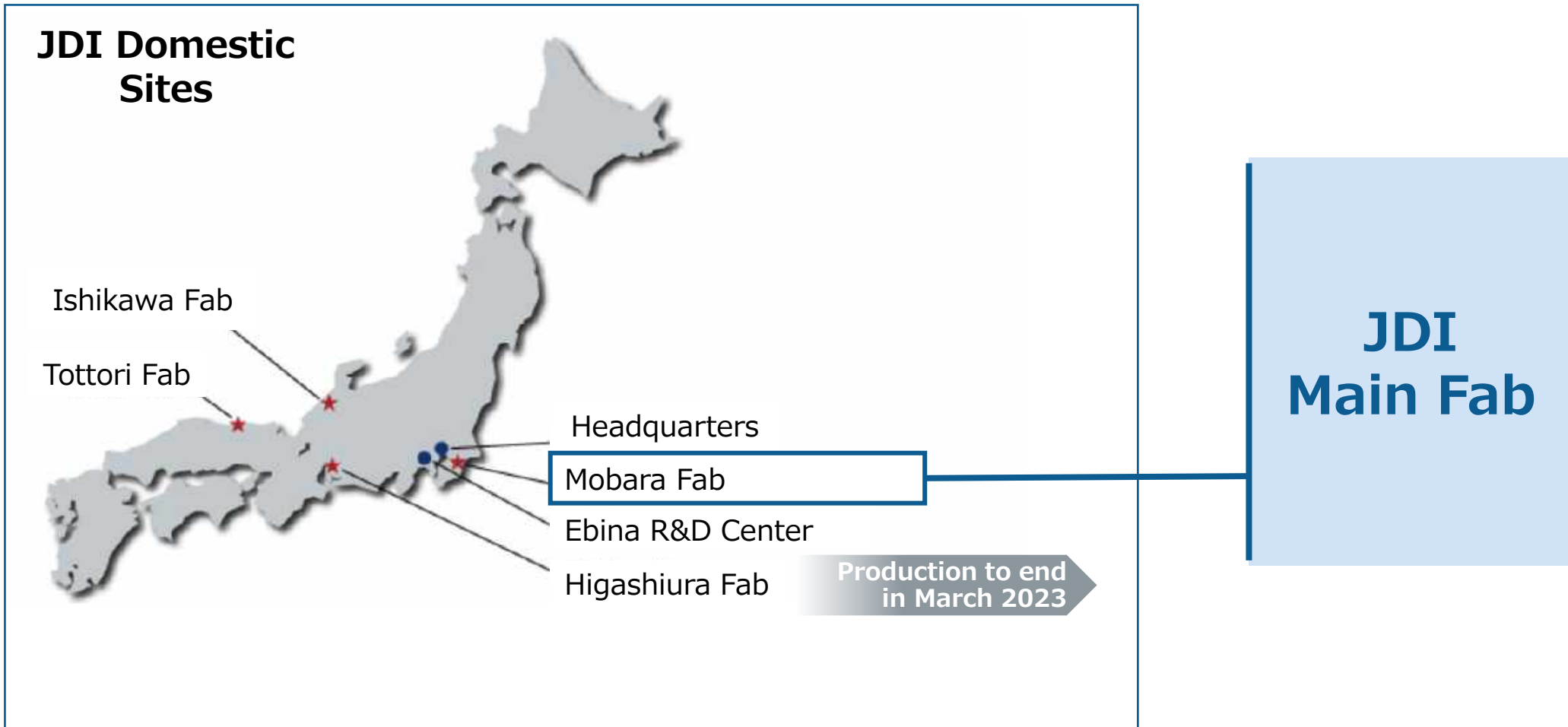
2 InfiniTech Business Strategy

New Growth Strategy

Shrinking low-profit businesses & diversifying & optimizing product portfolio to drive earnings growth & stability

(Sales Breakdown)

Legend:
- Others
- Transparent Displays & New Products
- OLED
- Metaverse
- Smartphone

Consolidating InfiniTech Fabs from 2 to 1

JDI Domestic Sites

Ishikawa Fab

Tottori Fab

Headquarters

Mobara Fab

Ebina R&D Center

Higashiura Fab

Production to end in March 2023

JDI Main Fab

3 InfiniTech Business Strategy

Growth Drivers

JDI's six proprietary growth drivers are all <u>Global No.1</u> technologies that provide significant customer value & dramatically improve JDI's profitability

Customer Value

eLEAP (NextGen OLED)	HMO (High Mobility Oxide)	Metaverse (Ultra High Resolution)	Rælclear (Transparent Displays)
• High brightness, long life, & high resolution • Supports a wide range of shapes & sizes	• Ultra-low power consumption, high resolution, & large display size capability • Foundational technology for G8 & G10 fabs	• Unparalleled sense of reality & immersion • High yields & outstanding quality	• World's highest transparency • Social contribution by enabling more interactive & inclusive communication

4 InfiniTech Business Strategy

Market Feedback

Strong interest from more than 20 customers globally

Pie chart segments:
- Mobile/Wearable, 4
- Auto, 7
- VR, 3
- IT, 7
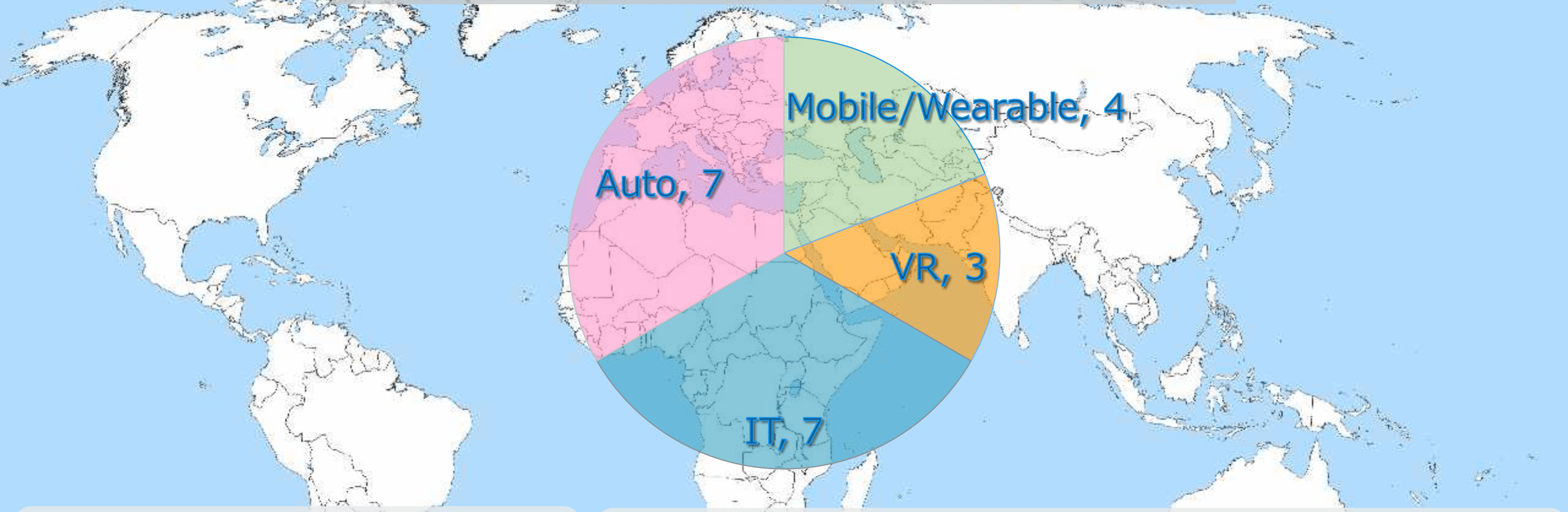
JDI New-Tech Demos (May 2022)

- ◆ Customer A   c. 100 participants
- ◆ Customer B   c. 60 participants
- ◆ Customer C   c. 80 participants

Voice of Customers

- ✓ eLEAP & HMO   "These are game changing solutions."
- ✓ Metaverse   "Looking forward to swift execution of high-res roadmap."
- ✓ Rælclear   "Same transparency as glass." "Can be used everywhere."
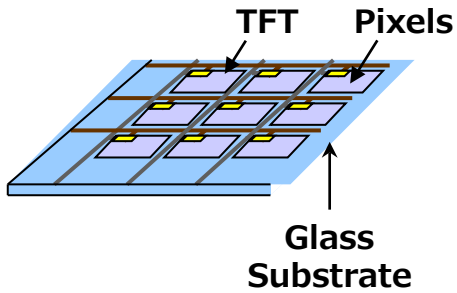   "Wish to participate in development."

JDI

eLEAP (NextGen OLED)
2X Peak Brightness, 3X Lifetime

Noriyuki Hirata
eLEAP Project Champion
InfiniTech Business Unit

eLEAP | Innovation Key Points

Display Manufacturing Process

	Frontend		Backend	Shipment

Frontend

Backplane (Array) Process

LCD: Cell Process

OLED: Frontplane Process

Backend

Module Process

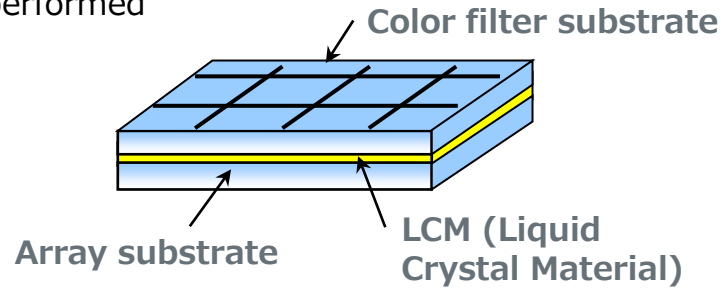**Shipment**

Forming TFTs on Glass substrate

TFT **Pixels**

Glass Substrate

Liquid crystal material is injected & substrate lamination is performed

LCD

Color filter substrate

Array substrate **LCM (Liquid Crystal Material)**

Emission layer deposited on BP substrate **OLED**

Mounting Driver IC, Assembly, Final inspection
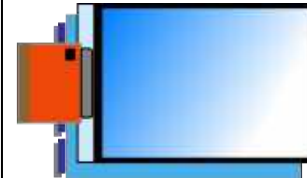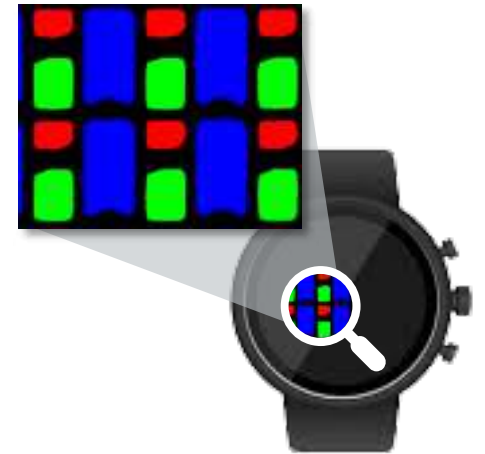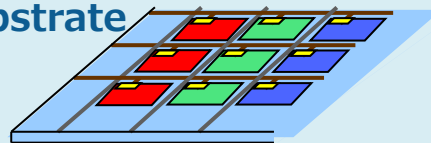
Finished Product

Growth Driver	Backplane Process	Frontplane Process	Module Process	Innovation Points
eLEAP		✓		**OLED & Frontplane Processes**

eLEAP

- **e**nvironment positive
- **L**ithography with maskless deposition
- **E**xtreme long life, low power, & high luminance
- **A**ny shape **P**atterning

2X peak brightness, 3X lifetime with brighter & clearer images, & free shape flexible designs

High Brightness (2X)

Conventional OLED 28% > eLEAP 60%
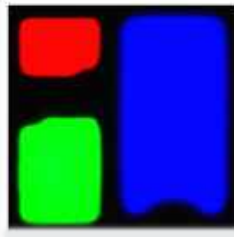
Brightness, vividness, & free shapes unimaginable with existing technology

Long Lifetime (3X)

eLEAP

Lifetime comparison	New	After 1yr	After 3yrs	After 5yrs
	0h	1000h	3000h	5000h
Conventional OLED				
eLEAP				

※ Image assuming luminance deterioration due to 3h / day lighting with brightness equivalent to 600nit

Dominates all current OLED technologies across large addressable market

eLEAP Addressable Market

Conventional OLED development area

Panel Density (ppi) — Panel Size (inch)

FHD, HD, 4K, 8K

VR, Smart watch, Smart phone, Note PC Monitor Auto, TV Monitor·Signage

eLEAP: A new de facto technology standard that will be across-the-board global display industry game changer

Delivers unprecedented value:
- ✓ **Can manufacture free shapes & large displays impossible with conventional OLED**
- ✓ **Eliminates burn-in, OLED's biggest weakness**

eLEAP | HMO | Metaverse | AutoTech | Rælclear | New Tech

eLEAP's maskless OLED deposition is a breakthrough, environment positive production process that eliminates mask cleaning chemicals & will generate 150k tons p.a. of CO2 emissions reduction via deployment at JDI Mobara fab

150k tons of yearly CO2 emissions =
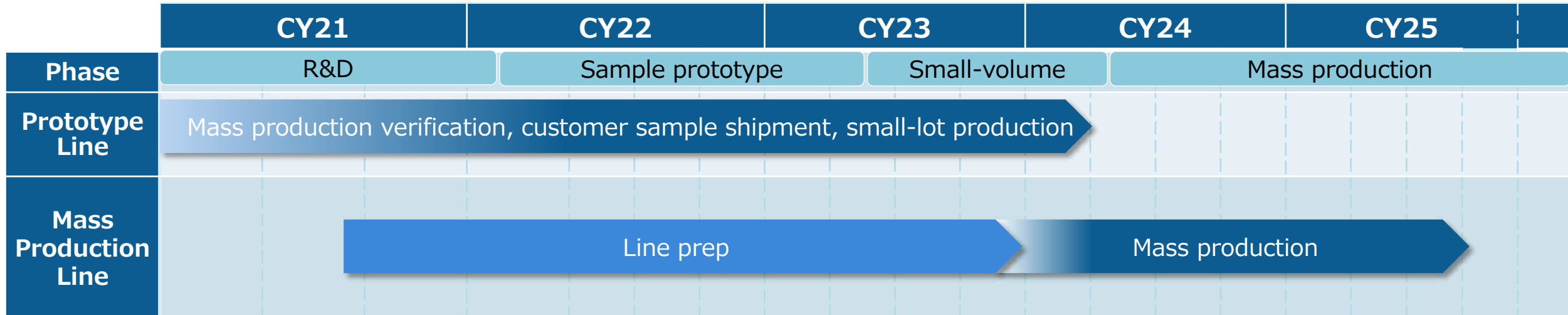
CO2 Absorption Volume of 900k cedar trees

Cedar forest the size of 3.7k Tokyo Domes

CO2 emissions are JDI's calculations based on G6 Mobara production of 30 k sheets/month

eLEAP | Production Roadmap

- **Completed feasibility verification & started prototype production, will ship customer samples within 2022**
  - ✓ Also building out mass-production line – will increase capacity to meet demand
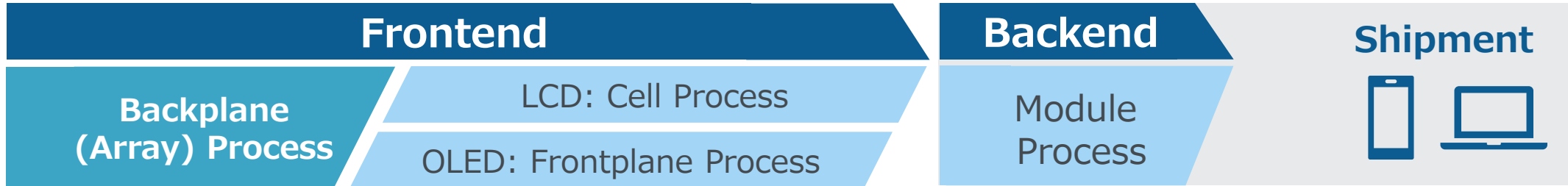- **Will license broadly across industry – best technology for Gen8/Gen10 OLED lines**

	CY21	CY22	CY23	CY24	CY25
Phase	R&D	Sample prototype	Small-volume	Mass production	
Prototype Line	Mass production verification, customer sample shipment, small-lot production				
Mass Production Line		Line prep		Mass production	

Allows for increasing size of high-resolution OLED displays ► Best technology for Gen8/Gen10 OLED lines

Display Manufacturing Process

Frontend

Backplane (Array) Process	LCD: Cell Process
	OLED: Frontplane Process

· Forming TFTs on Glass substrate
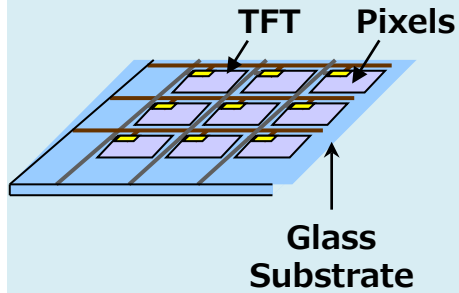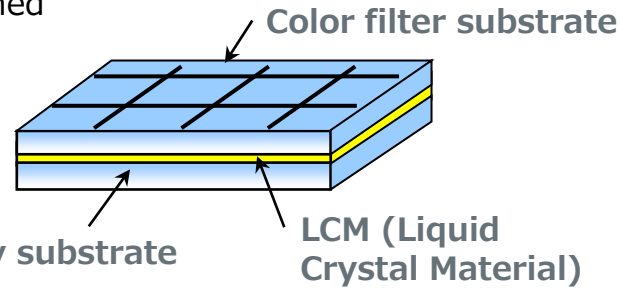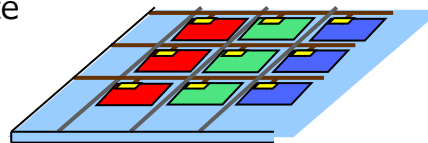
TFT Pixels

Glass Substrate

LCD

Liquid crystal material is injected & substrate lamination is performed

Color filter substrate

Array substrate

LCM (Liquid Crystal Material)

OLED

Emission layer deposited on BP substrate

Backend

Module Process

Mounting Driver IC, Assembly, Final inspection

Shipment

High mobility
Low off leak
Device uniformity
Large size

Drain current — Poly-OS, LTPS, Oxide, a-Si
Low Off-leak
High Mobility
Gate voltage
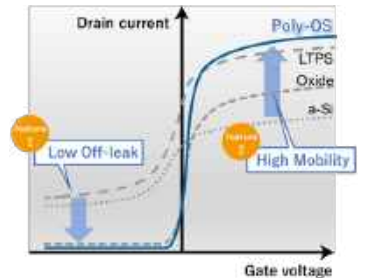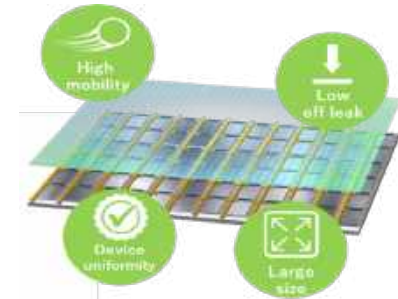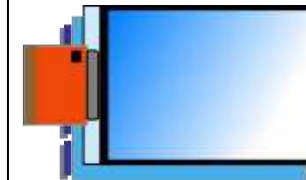
Growth Driver	Backplane Process	Frontplane Process	Module Process	Innovation Point
HMO	✓			**Backplane process (LCD & OLED)**

| eLEAP | **HMO** | Metaverse | Rælclear | AutoTech | New Tech |

A Backplane is a collection of TFTs that control a display's functioning, serving as it's heart, vessels, & nerves,
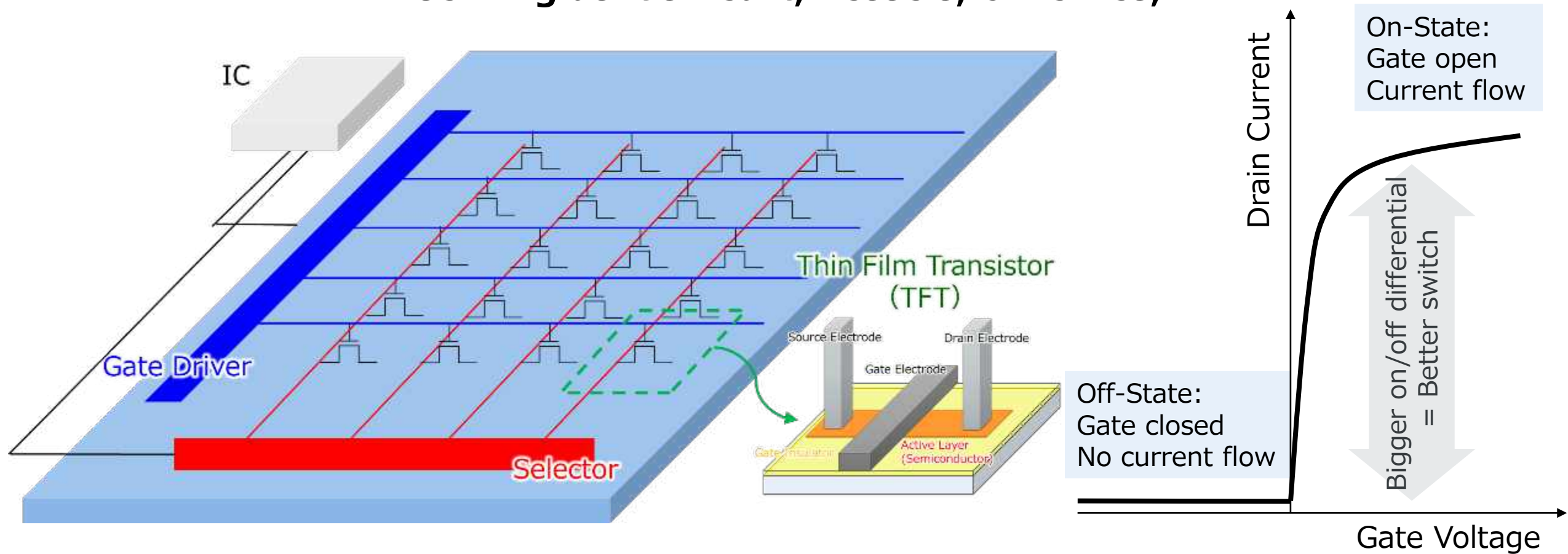
Significantly improves field-effect mobility with standard oxide core structure

Mobility×2

Mobility×2

Conventional

12cm²/V·s

HMO

36cm²/V·s

UHMO
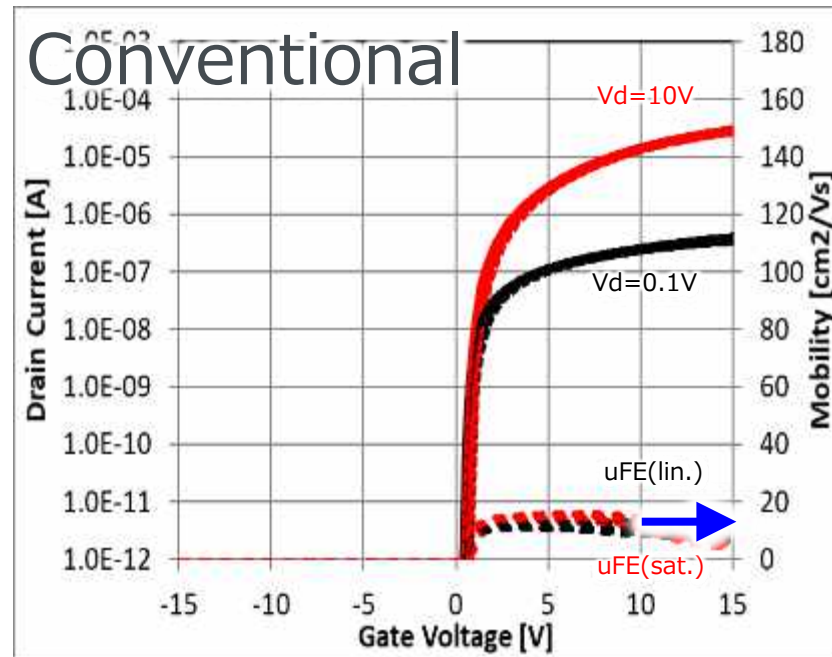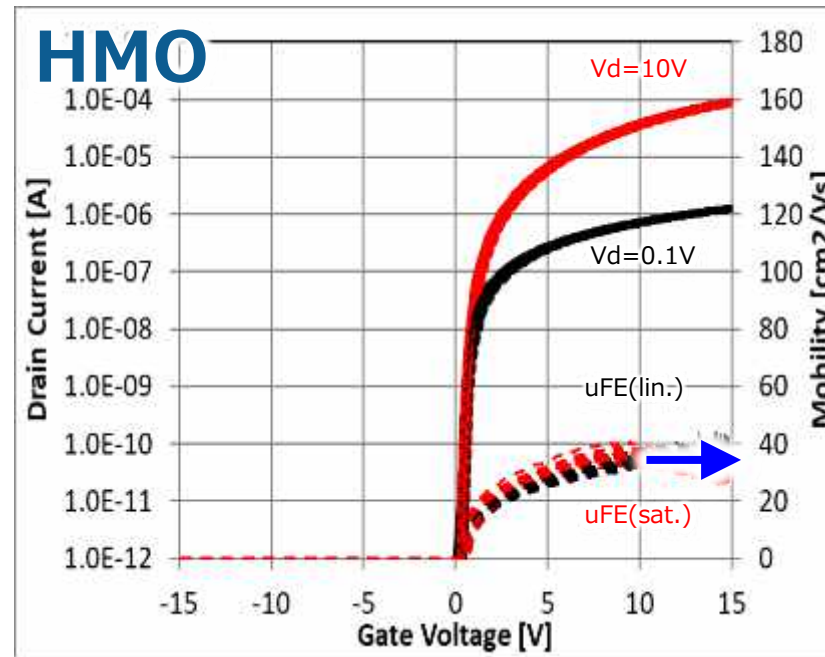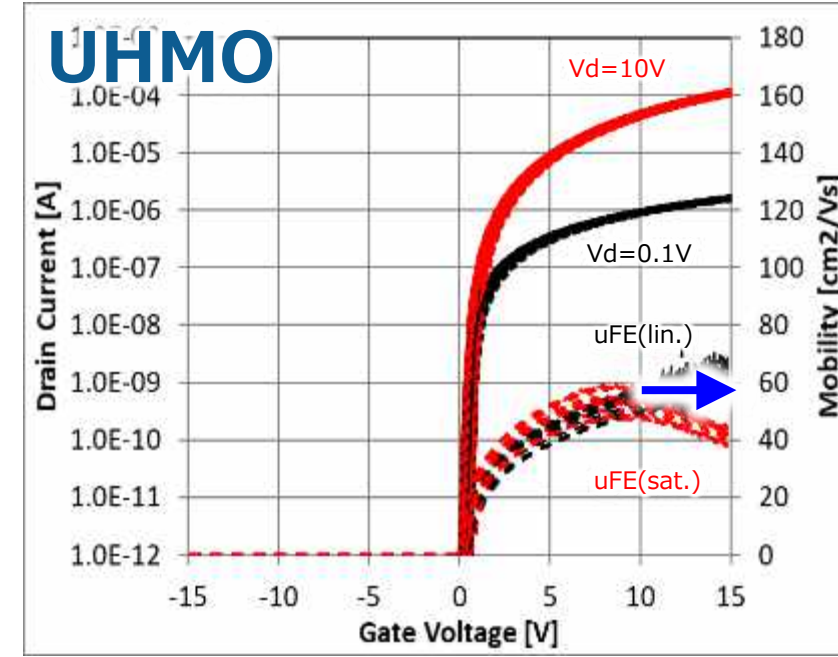
52cm²/V·s

Converting conventional oxide to polycrystalline film leads to significant performance improvements

Low crystallinity ← Amorphous[1] — Nano-crystalline CAAC — Polycrystalline[2] → High crystallinity
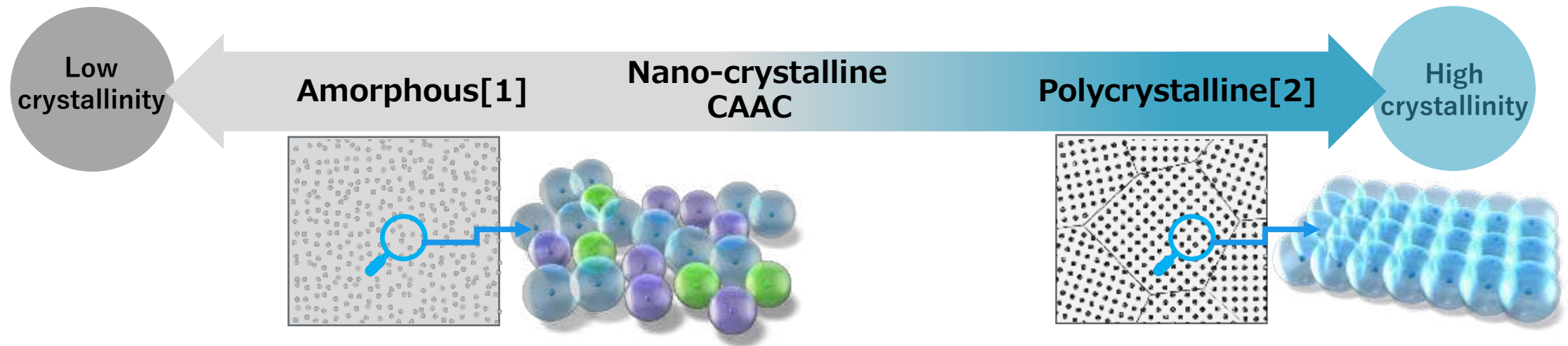
[1] Nature 432, 488(2004)
[2] Polycrystalline membranes developed by Idemitsu Kosan Co., Ltd.
2011 MRS Fall Meeting M6.7
Applied Physics Express 5 (2012) 011102

1 TAOS: Transparent Amorphous Oxide Semiconductor

eLEAP | HMO | Metaverse | Rælclear | AutoTech | New Tech

Only JDI has developed processes that solve polycrystalline oxide's manufacturing challenges
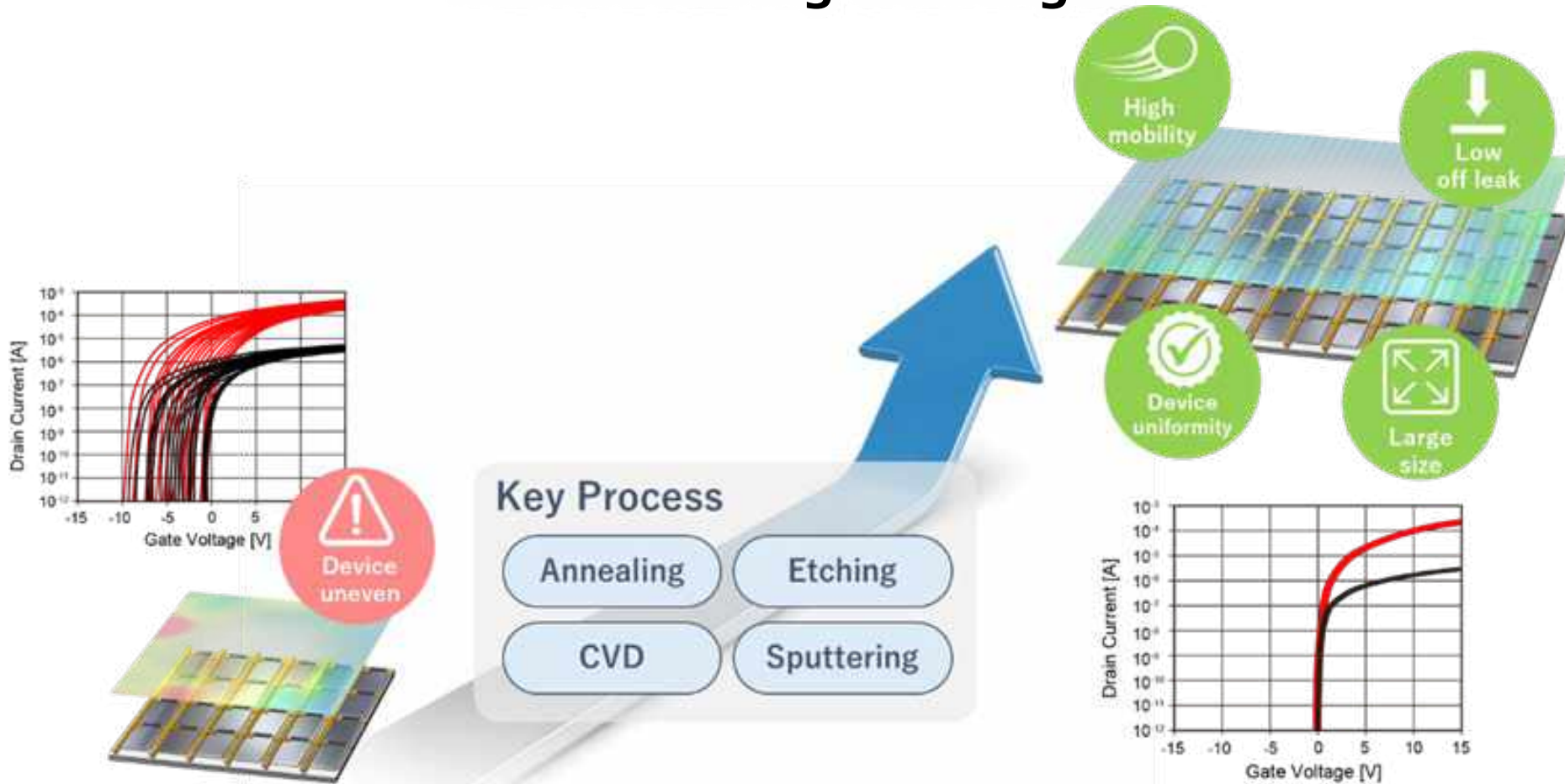
Breakthrough technology that combines high performance & low power consumption to dominate existing backplane technology
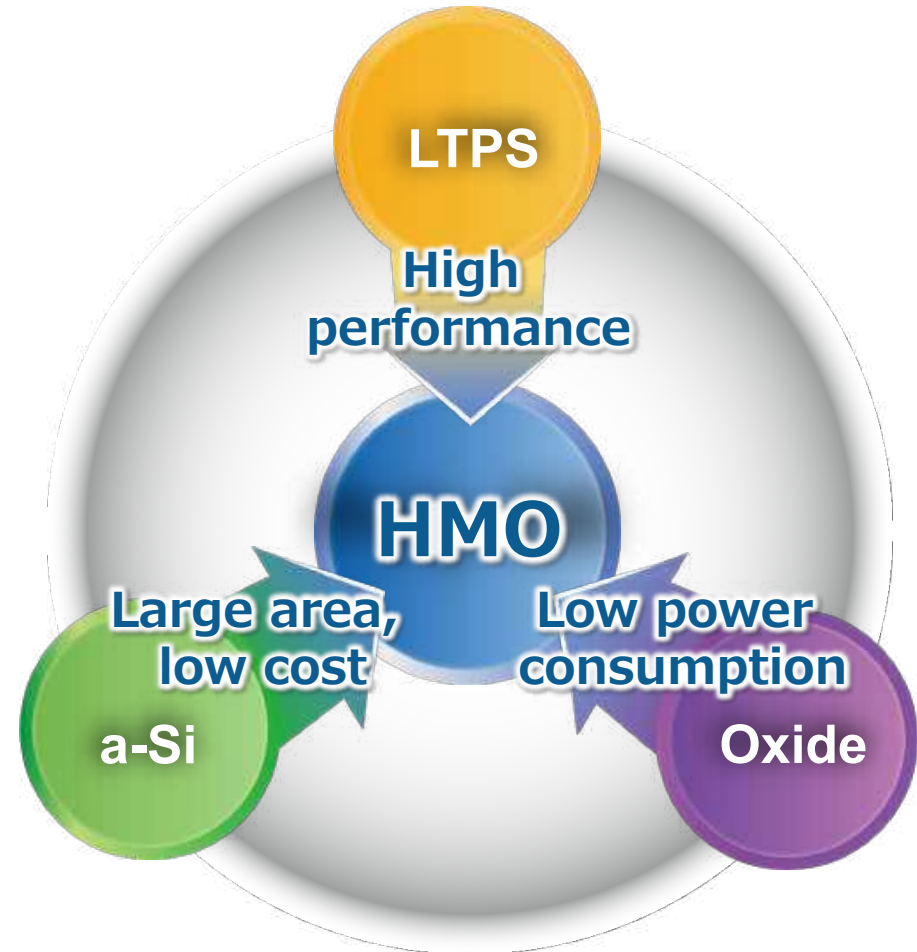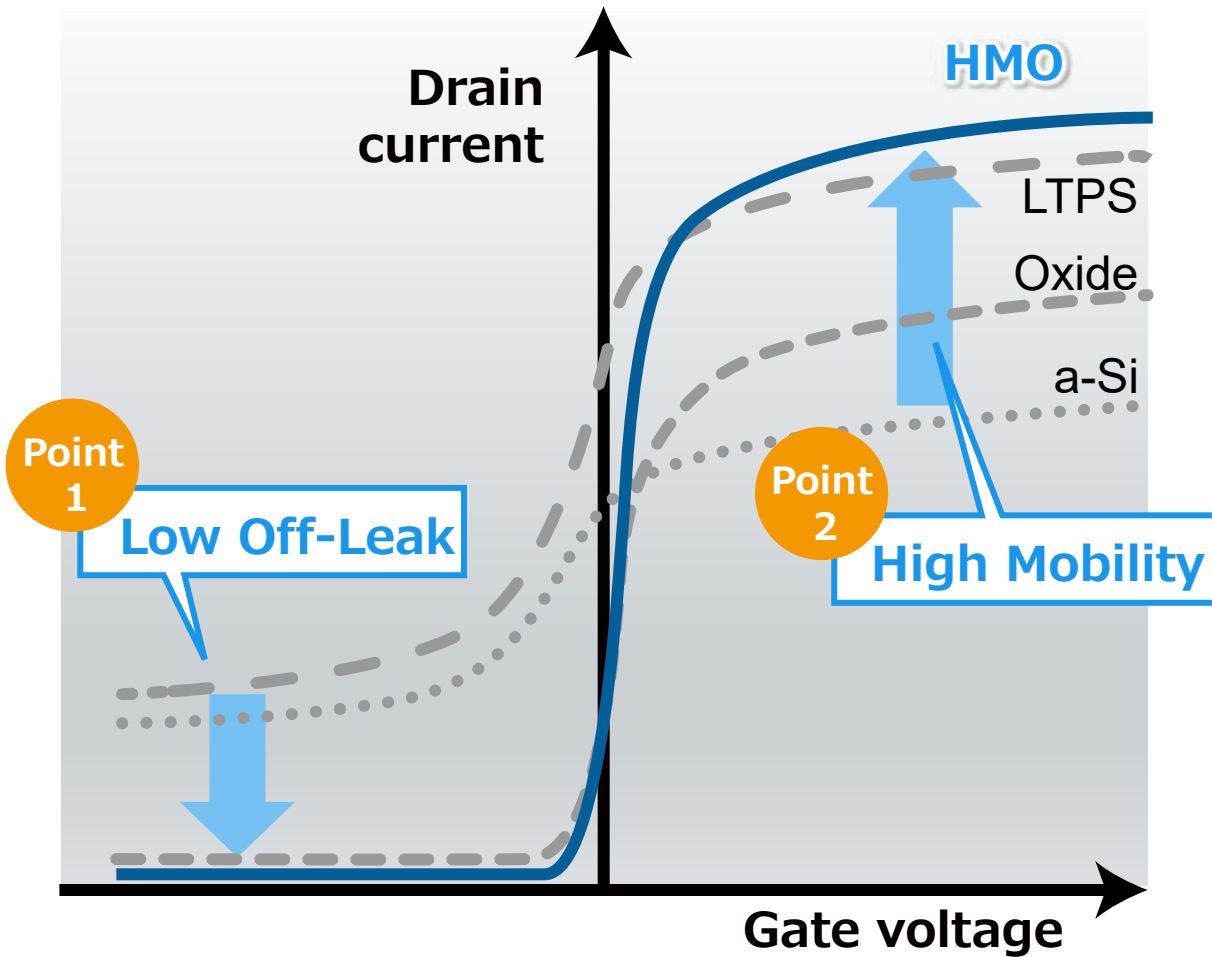
Can combine HMO with different frontplane technologies to drive further value

HMO

+ OLED = **Lower Power Consumption**
Larger Display Size

+ VR = **Higher PPI**
Higher Refresh Rate

+ Rælclear = **Larger Display Size**
Higher Refresh Rate
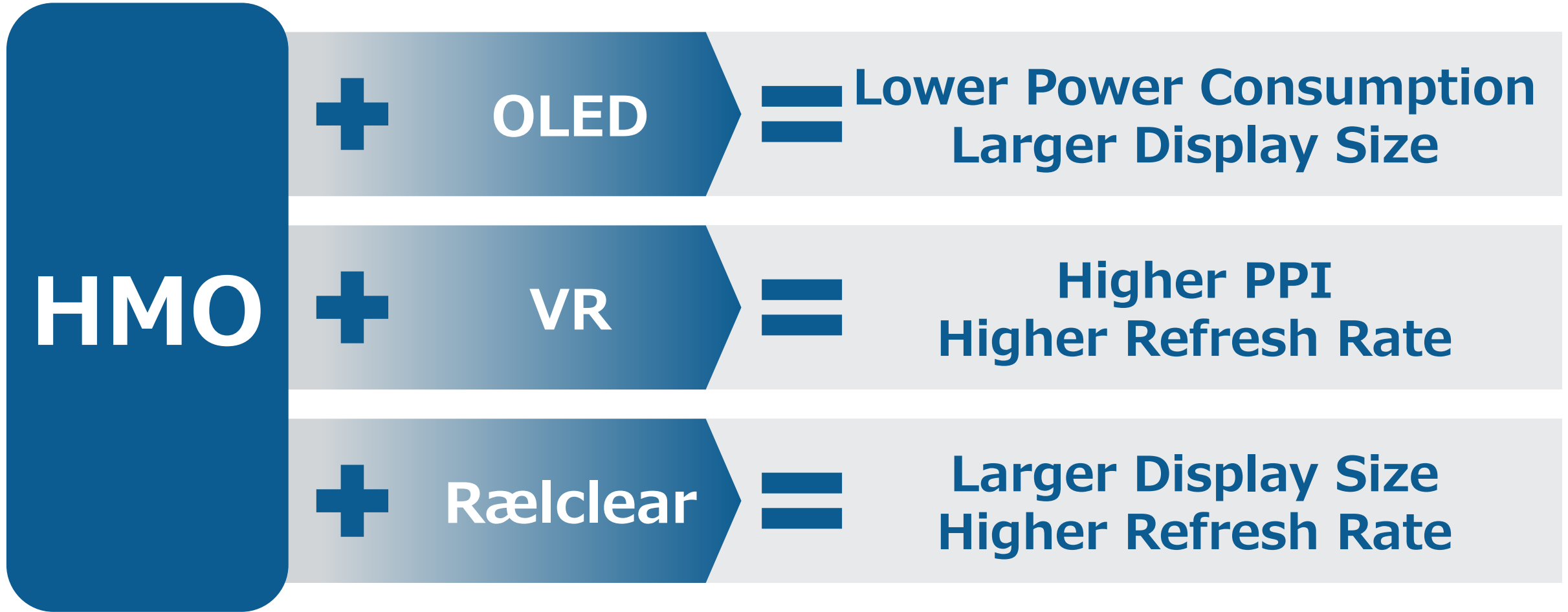
Pursuing collaboration with other companies for >G8 lines to further expand HMO market penetration

HMO Size Capabilities

G10(2940x3370mm)

G8(2200x2500)

G7(1950x2250)

Largest LTPS

G6(1500x1850)

G5(1100x1250)

G4(680x880)

G3(550x650)

G2(370x470)

G1(300x400)
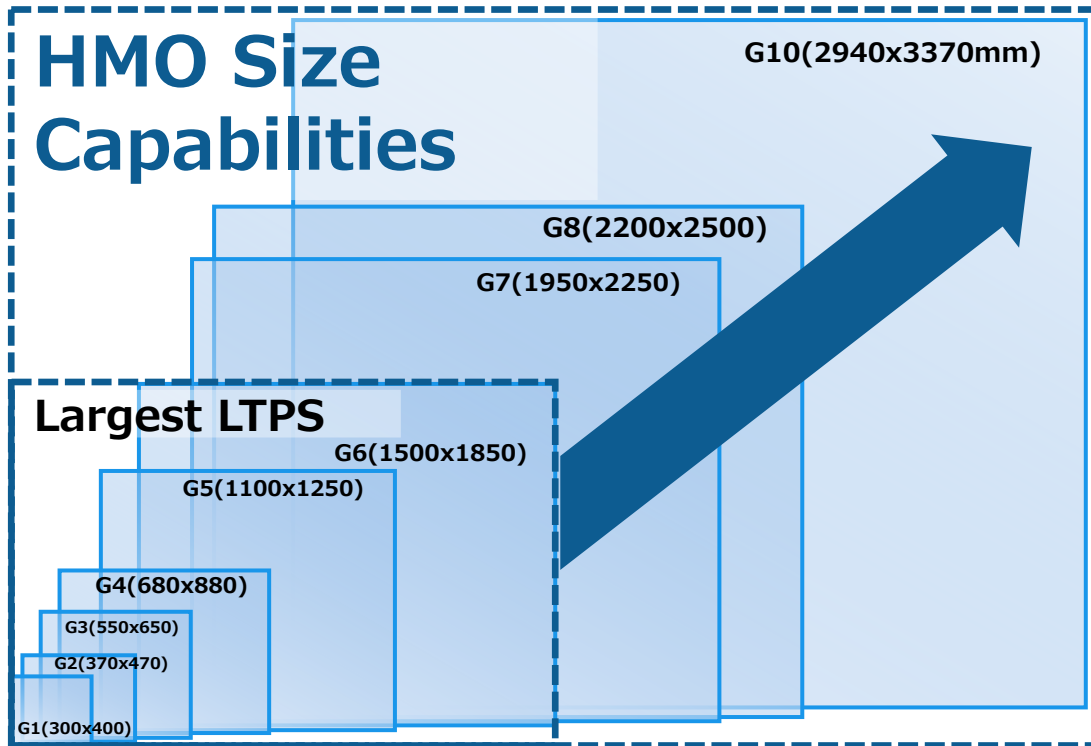
Increasing the feasible size of high-performance display substrates

2X

G10.x

G8.x

CY20   CY25   CY30

>G8 line growth (by area)
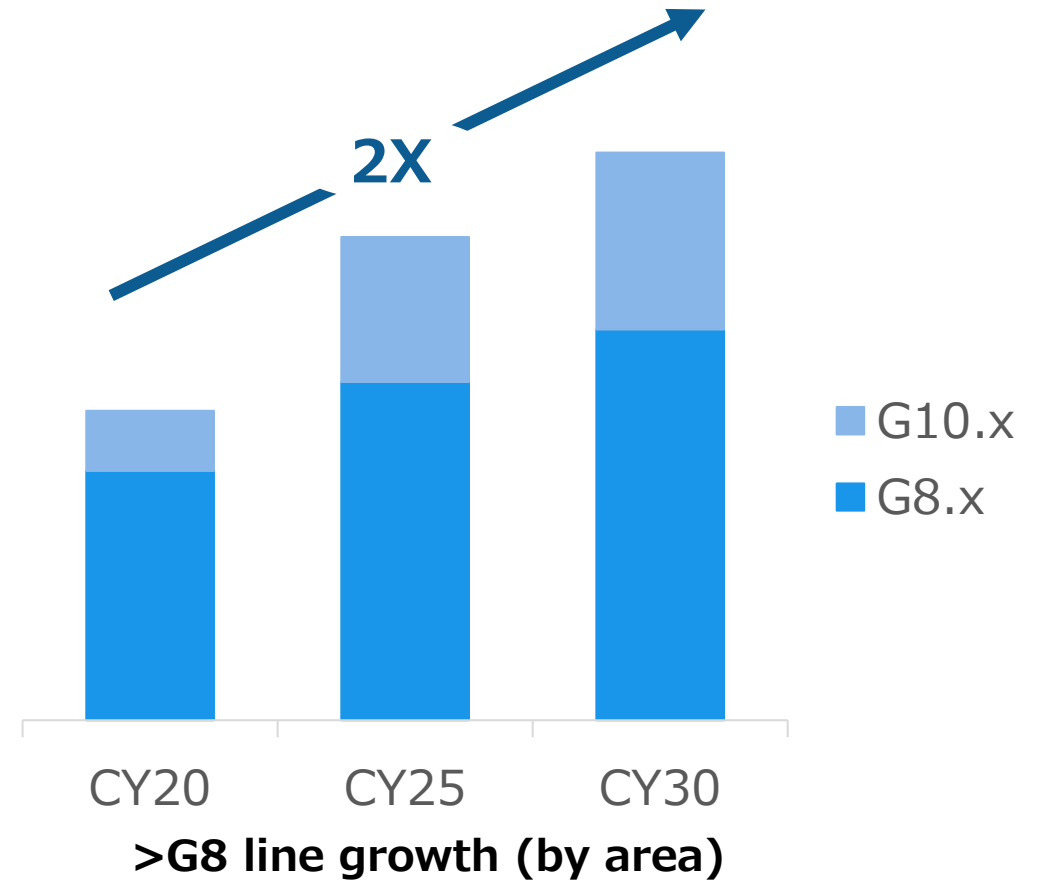
Source: JDI estimates based on research institute information

eLEAP | HMO | Metaverse | Rælclear | AutoTech | New Tech

Metaverse
(Ultra High Resolution)
Bringing the Metaverse to Life

Takeshi Harayama
Head of Business Division 1
InfiniTech Business Unit

Global No. 1 in ultra high resolution displays, driving JDI market share expansion & high growth rate

Head-Mounted Display Demand

Annual Growth Rates 2019-26

+29%

- Micro LED
- OLED on Si
- AMOLED
- LTPS LCD

Unit: M sheets

Head-Mounted Display Share

Others

JDI

40%

- Others 800~1099
- Others ~799
- JDI 1100~
- JDI 800~1099
- JDI ~799

(Number: ppi)
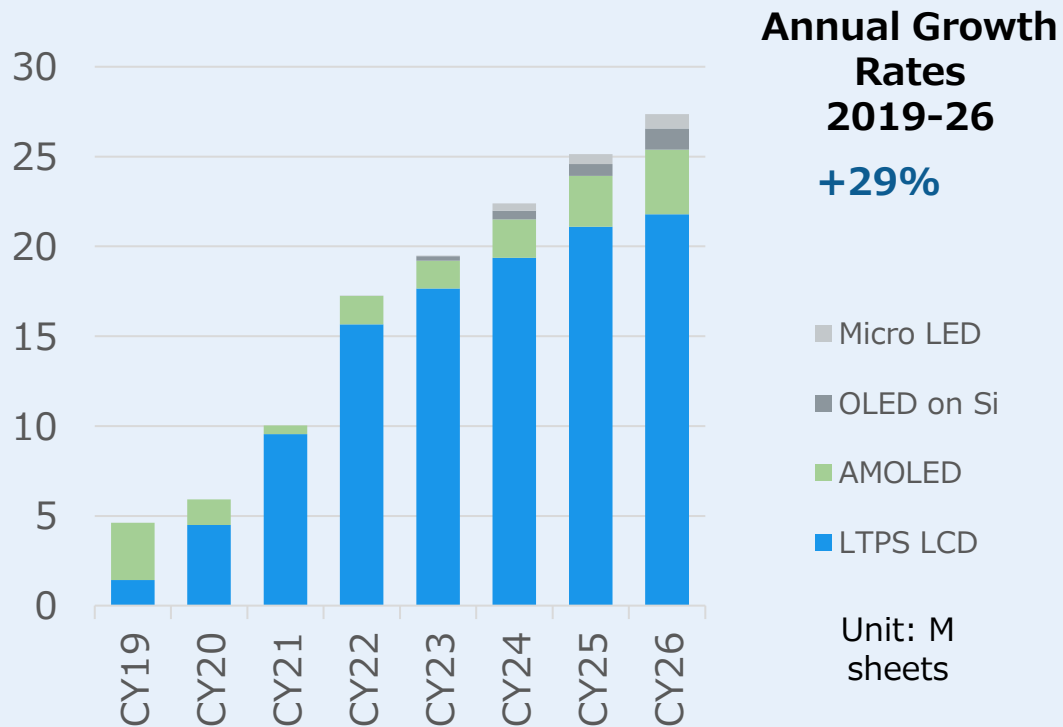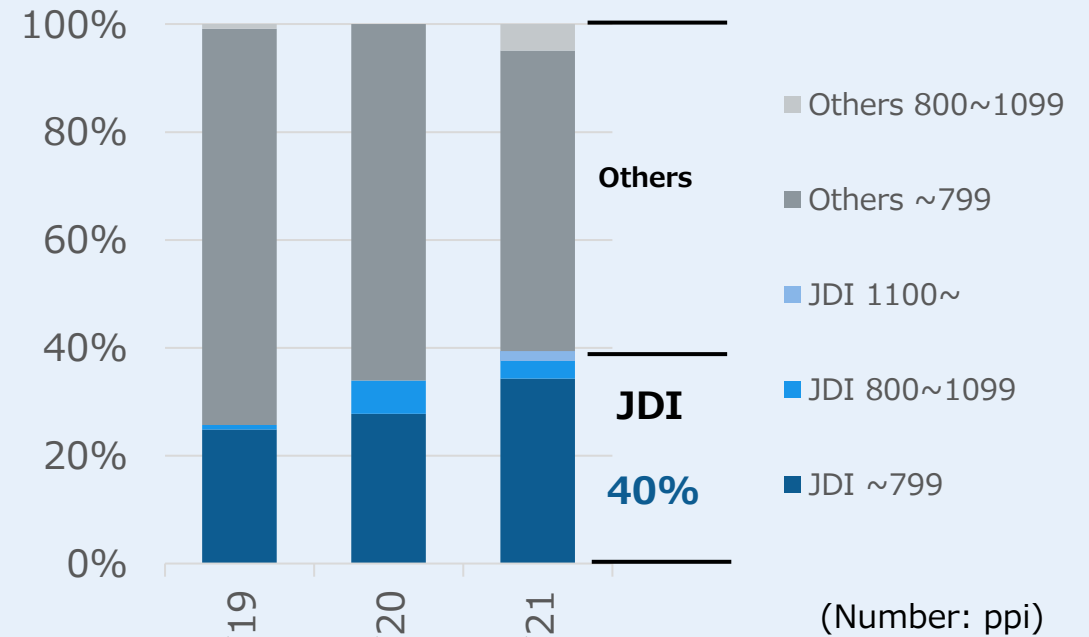
Source: Data for demand is "OMDIA Small Medium Display Market Tracker Forecast 4Q21"; Share is JDI-estimated based on survey agency data (by volume)

eLEAP | HMO | **Metaverse** | Rælclear | AutoTech | New Tech

JDI's ultra high resolution displays generate stunning image quality & cost performance

Smartphone	VR@2016	VR@2018	VR@2021	VR@2025
400ppi	651ppi	803ppi	1201ppi	2000ppi(4k8k)

Pixel size (schematic)
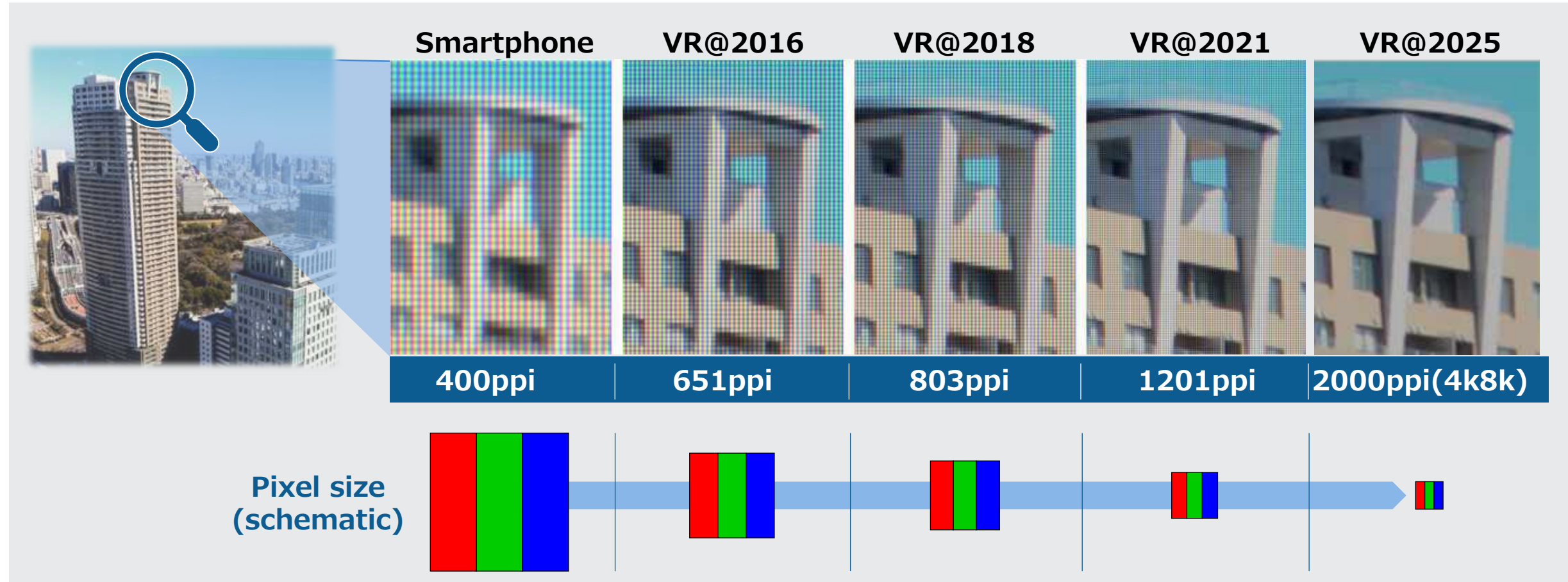
1

Metaverse

Technology Introduction

Metaverse | What is an Immersive Display?

Stunning Realism
- High Resolution
- High Brightness
- High Contrast
- Wide Color Gamut

Low Latency
- High Refresh Rate

Motion Blur Correction
- Impulse Display
- Fast Response Liquid Crystal

Wide Viewing Angle
- Optimized Display Size
- New Lens Design
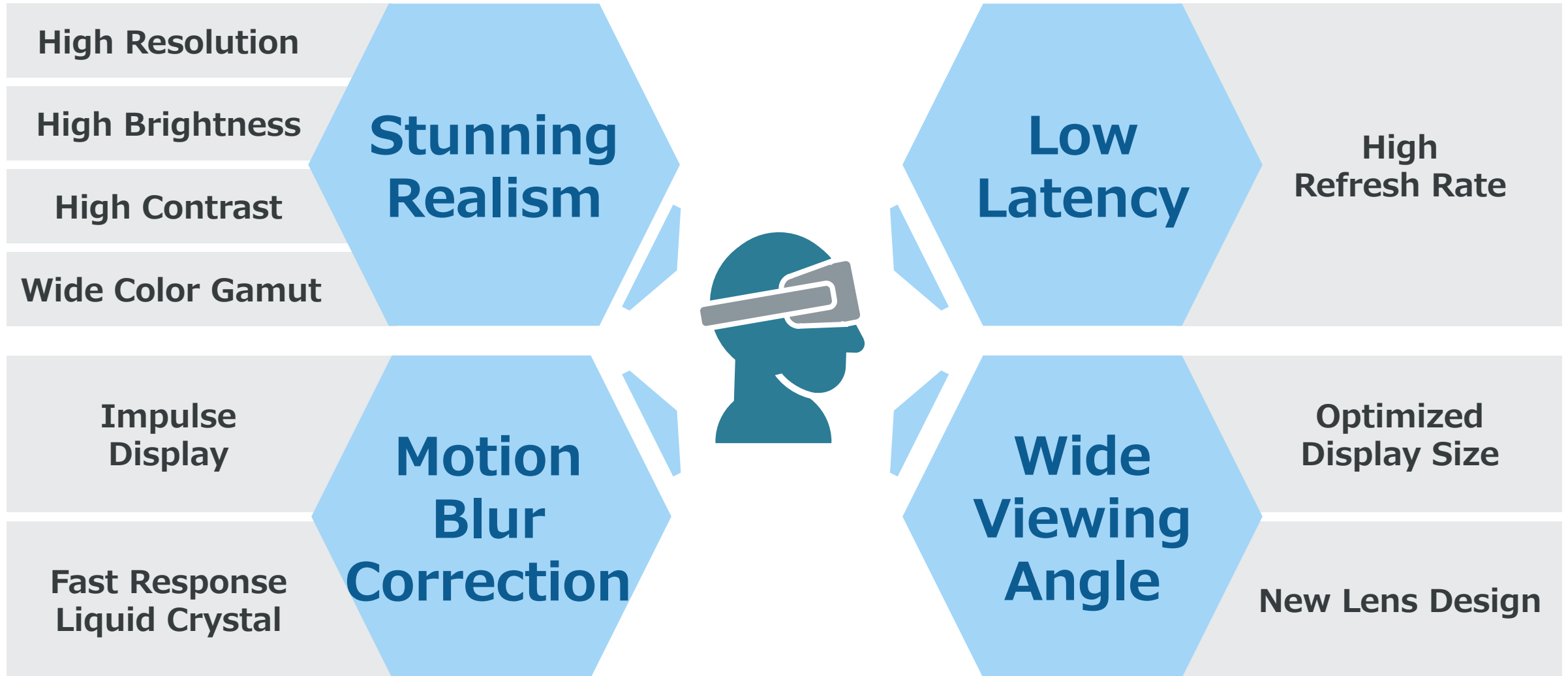
Leading the global display industry with ultra high quality, ultra high resolution display technology

In Mass Production

Prototype

Display Image
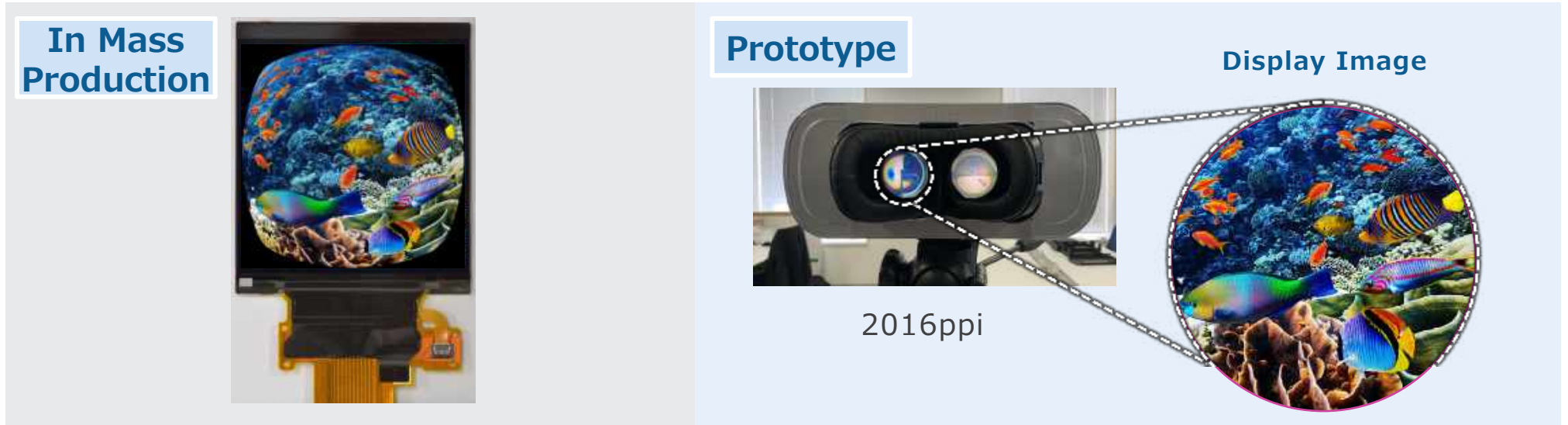
2016ppi

VR 2.88" 1201ppi Advanced LTPS	Prototype
LCD Mode IPS designed for VR	← Same
Diagonal Size 2.88 Inch	2.27 Inch
Resolution 2448×2448	3240×3240
Pixel Density 1201ppi	2016ppi
Refresh Rate 120Hz	90Hz
Backlight System High-Speed Global Switching	← Same

1201ppi VR Display in mass production uses JDI's proprietary Advanced LTPS technology to generate high aperture ratios essential for VR displays

1201ppi

Conventional LTPS

Aperture Ratio +30%

1201ppi

Advanced LTPS
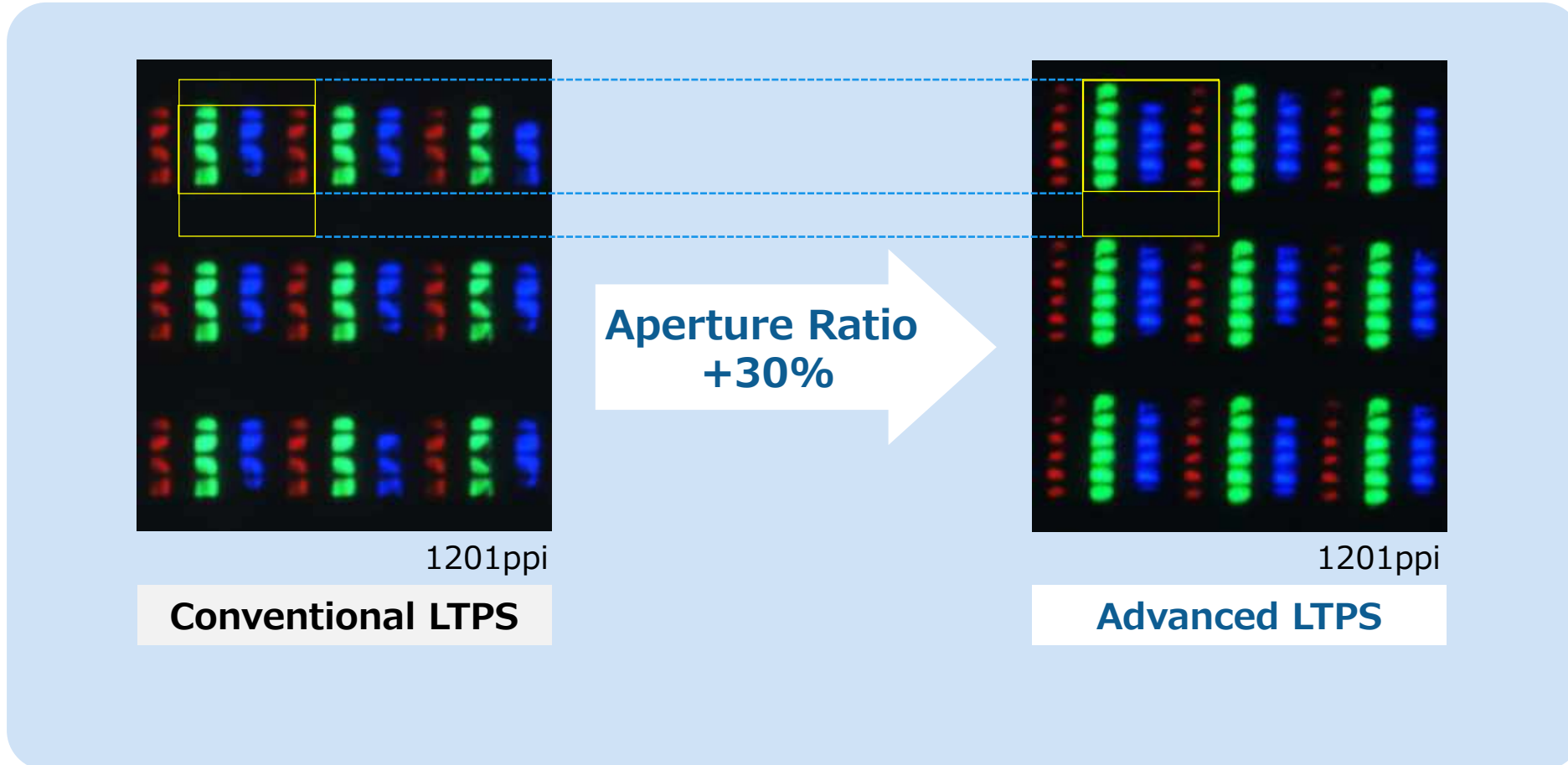
Algorithmic backlight controls lower power consumption & optimize image for higher contrast

Display Image

LCD

Backlight (Mini LEDs)

Local Dimming Algorithms

Input image

(Step 1) Image Analysis

(Step 2) Backlight Output Control

(Step 3) Image Optimization

Output Image (LCD)

Backlight Output Image
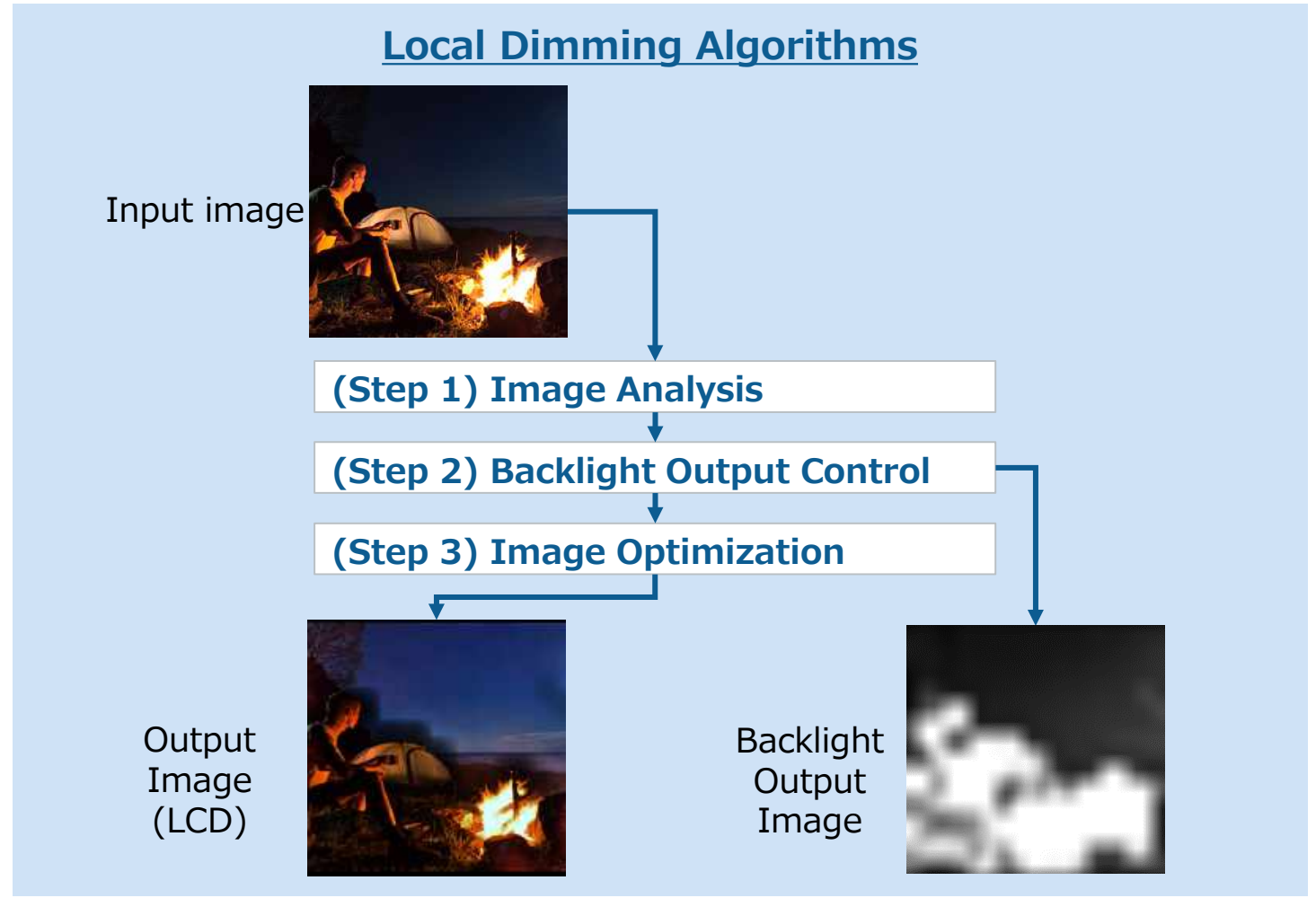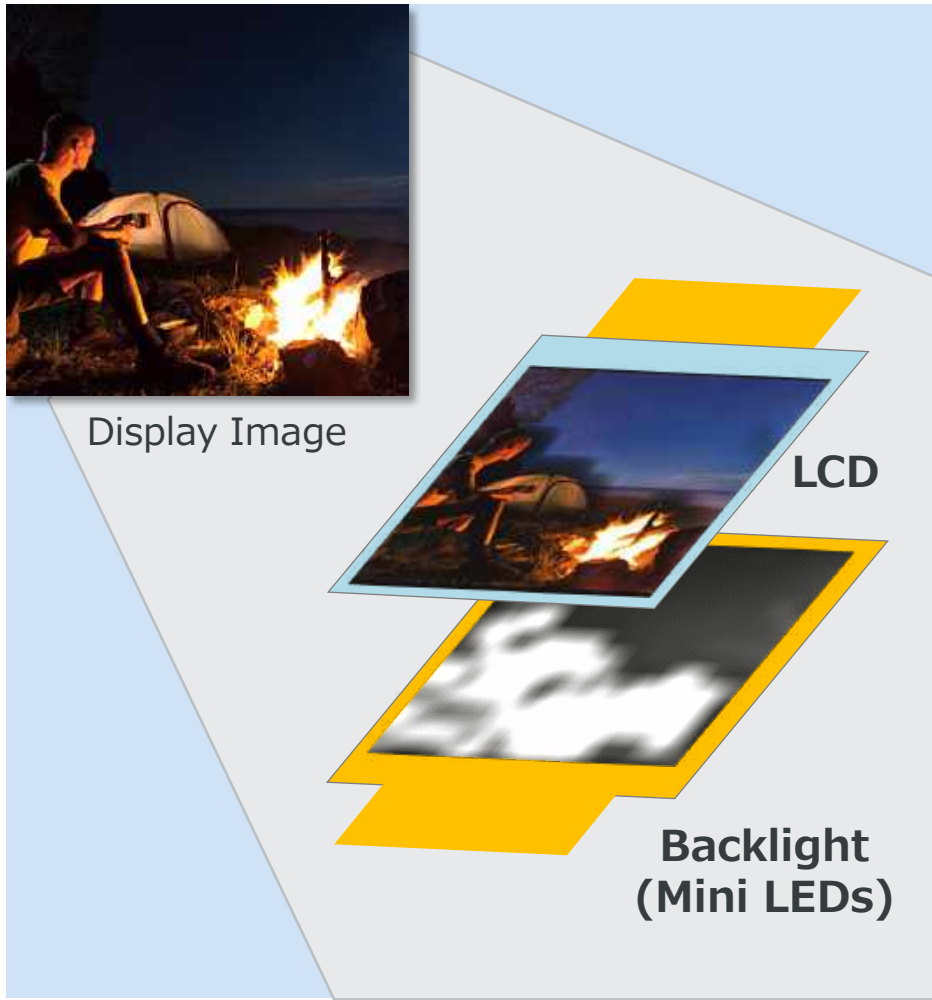
Fast response liquid crystal + high-speed backlight switching for clear image

Fast Response Liquid Crystal	-	✓	-	✓
High-Speed Backlight Switching	-	-	✓	✓
Display Image				
Problem	Blurring, Distortion	Blurring, Distortion	Ghost Image	**Clear Image**

Sample Drive Timing
- Resolution: 2160xRGBx2160
- Refresh Rate: 90Hz
- High-Speed Global Backlight Switching: 1.1 ms

3.89 ms | 6.11 ms | 1.1 ms

Writing image data | Liquid crystal response

1 Frame (11.1 ms)
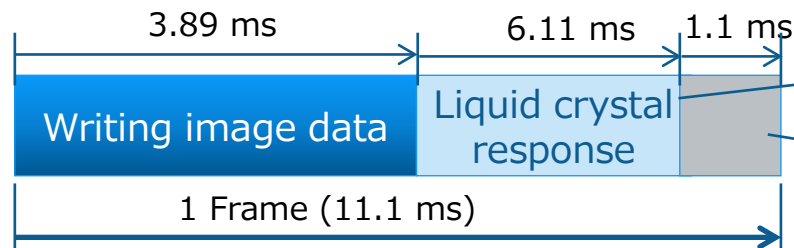
Fast Response Liquid Crystal (5X response speed vs. prev. IPS)

High-Speed Backlight Switching

eLEAP | HMO | **Metaverse** | Rælclear | AutoTech | New Tech

2 Metaverse

Forward Outlook

Resolution

4k x 4k per eye
PPD[*1] >30
FOV[*2] 130 degrees

1700〜2500ppi
w/ Local Dimming
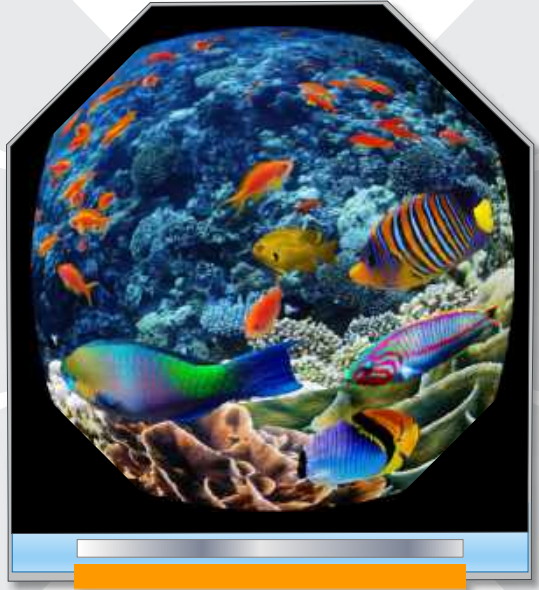
Brightness

1,000cd/m²
Tailored to pancake lens optical systems

Optimal Screen Size

Diagonal 2.x inches
Wide FOV within optimized eye-box size

Display Time (Impulse)

<0.5 ms (BL lighting ratio 6% @ 120Hz)

HDR Compatibility

Contrast: >100k
Color Gamut: >DCI-P3 95%

Refresh Rate

>120Hz
High refresh rate that can smoothly process pass-through video

*1) PPD: Pixels per degree, no. of Pixels per 1 degree of viewing angle   *2) FOV: Field of view

| eLEAP | HMO | **Metaverse** | Rælclear | AutoTech | New Tech |

VR Solutions Deploying Ultra High Resolution Displays

360-degree VR Content Production	Simultaneous, Multi-User VR Playback

Medical Training

Note: Medical training solution is being developed under the supervision of Jikei University

Rælclear
(Transparent Displays)
Changing How We Communicate

Tsutomu Sato
Head of LCD Application Engineering
Section 2
InfiniTech Business Unit

JDI

Rælclear's name was born from its unique two-way transparency: starting from the letter "c", Rælclear reads as "clear" in both directions. With the world's highest display transparency, Rælclear enables brand-new display applications with unprecedented two-way communication.
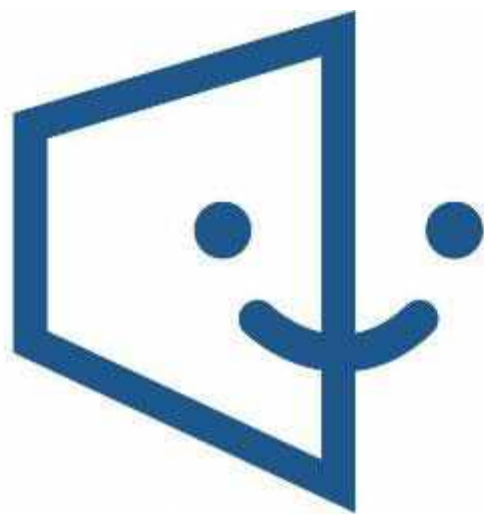
Glass-Like Transparency

JDI's proprietary liquid crystal materials generate
84% transparency, far superior to other companies'

Multi-Directional, Full Visibility

Competitors' transparent displays are degraded and blurred when viewed from the back,
whereas JDI's transparency technology provides crystal clear images with zero degradation

Market Benchmarks ※JDI research	JDI	OLED		Micro LED
Manufacturer	JDI	Company A	Company B	Company C	Company D
Transparency	84%	45%	68%	70%	60%
Multi-Directional	✓	✕	✕	✕	✕

eLEAP   HMO   Metaverse   **Rælclear**   AutoTech   New Tech

- Light emitted from the RGB LEDs travels through the LCD
- When voltage is applied to a desired location in the LCD, the liquid crystal enters a diffusion mode & extracts (diffuses) the light. The area where no voltage is applied becomes transparent
- Colors can be displayed by switching the RGB LED at high speed (field sequential drive)

High-Speed Driver

RGB LED

Light from the LED travels inside the panel as if it were travelling through optical fiber

Light Extraction

Visible

Transparent Electrode

Newly Developed Liquid Crystal

Transparent

Diffusion

TFT

TFT Glass Substrate

100% Reflection

Visible

Transparent

Field Sequential Driver

180 Hz (5.5msec)   180 Hz (5.5msec)   180 Hz (5.5msec)

Equals
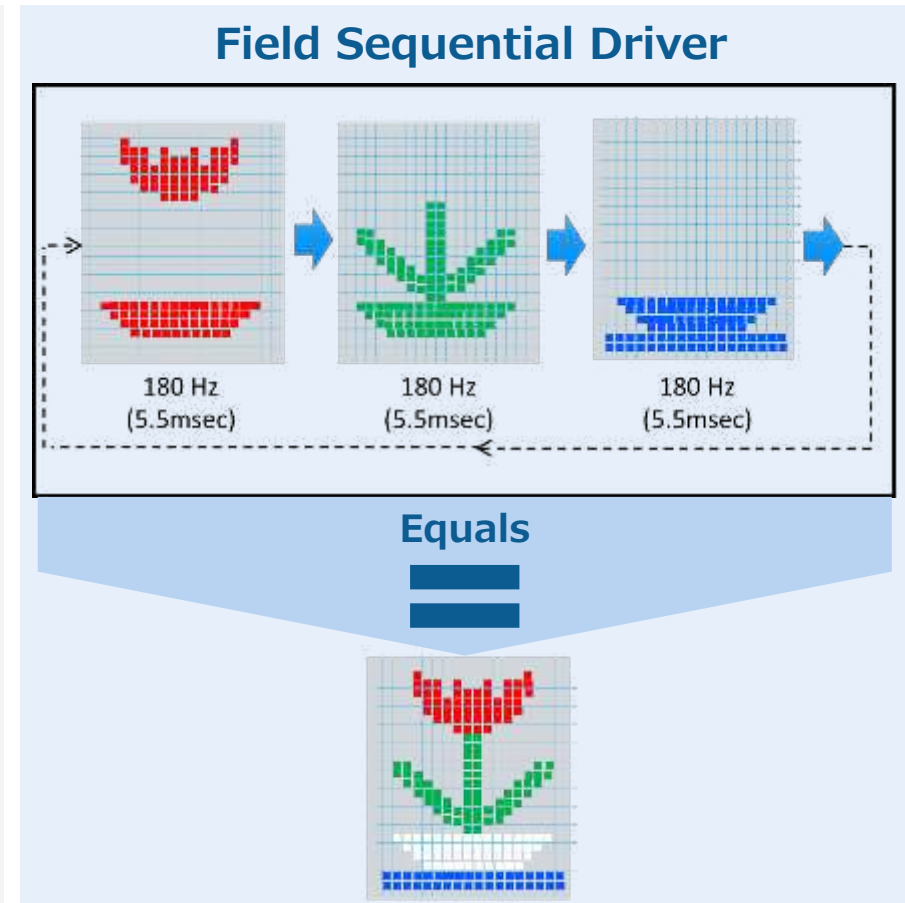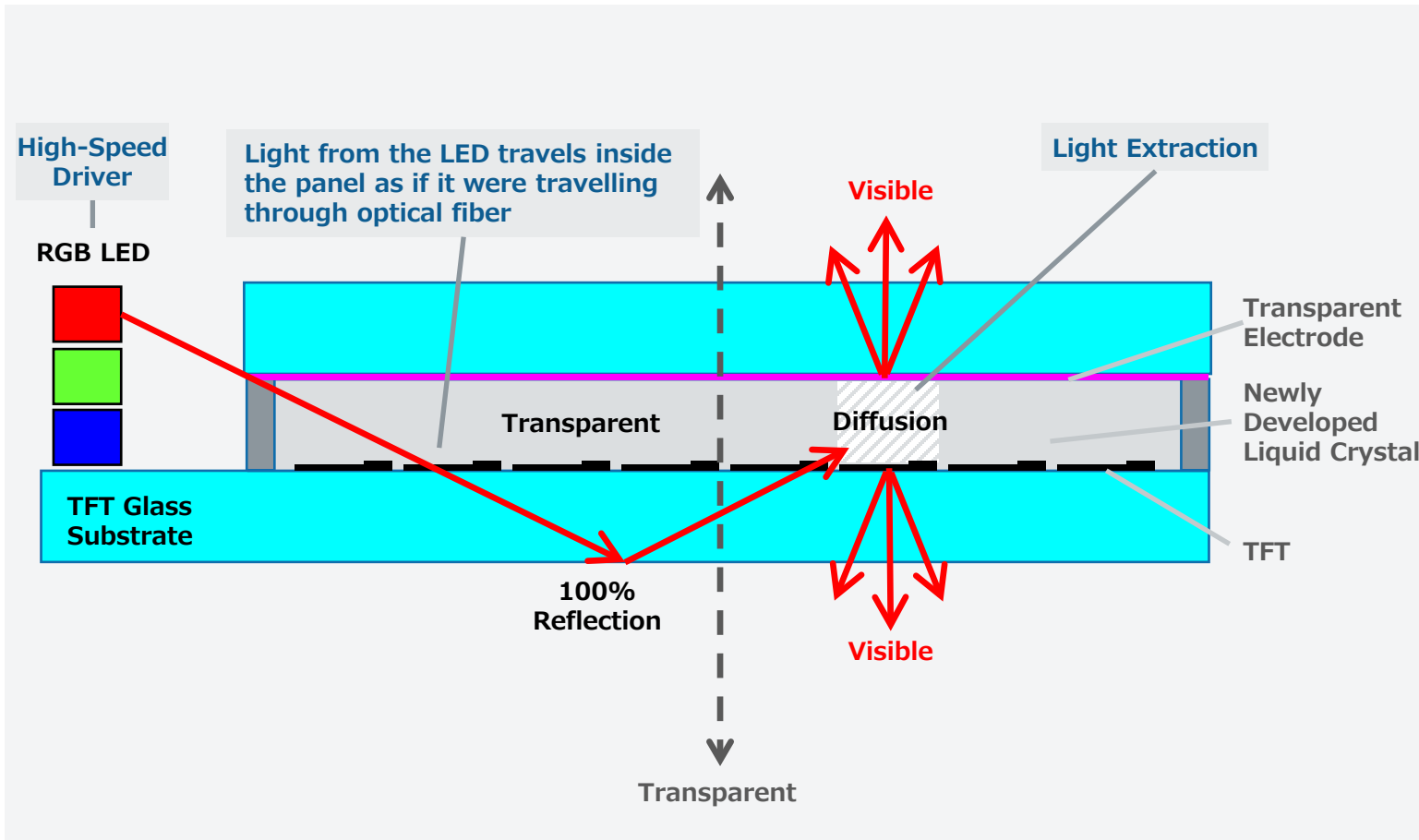
■ Working towards the Achievement of the SDGs

By deploying Rælclear on behalf of two people in conversation & visually showing their speech, it is possible to facilitate smooth communication, especially for the elderly and hard of hearing, because the speaker's facial expressions and words can be seen. In addition, Rælclear can also facilitate in-person, cross-cultural communication with simultaneous translation (SDGs No.10)

■ Content Sharing via a Nearly 360° Viewing Angle

With conventional displays, screens can only be viewed up to 180° due to blockage from the backlight. Rælclear images can be seen from both front & back, enabling Rælclear to be viewed from all directions & shared among friends, families, and colleagues

Viewing Angle

Display
Backlight

Display

(a) Conventional Display
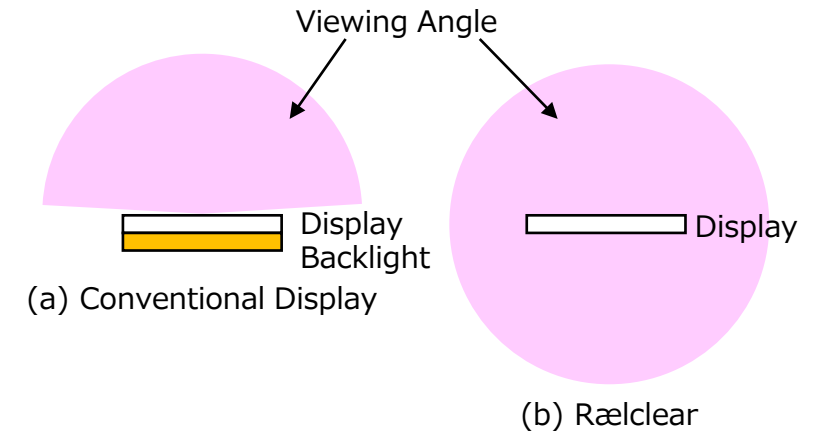
(b) Rælclear

■ Freeing Space

Rælclear's glasslike transparency frees space from the visual obstruction of conventional displays. Rælclear displays naturally and unobtrusively blend into any environment, bringing the world of science fiction to reality

Rælclear | Use Cases

Sharing Screen during Meeting

Watching Videos Together

Supporting Communication for Hard of Hearing

Unobtrusive Interior Design

Accessing Recipes in the Kitchen

Reading Picture Books to Children

eLEAP   HMO   Metaverse   **Rælclear**   AutoTech   New Tech

Hospital Reception

hello I have a headache

can I see a doctor

Okay, when did your

headache symptoms

come from?

我的头痛的你向请，我

是从什么时候。

JDI   GB

※Dedicated software is required for translation

✓ **Impressive level of transparency**

✓ **Unexpectedly clean & colorful images**

✓ **Easy to read, crisp text display**

✓ **Want to use in conference rooms**

✓ **Helpful for people with hearing disabilities**

✓ **Exciting, futuristic technology**

✓ **Frees space – no feeling of enclosure**

Businesses

Local Governments & Service Desks

Hospitals & Medical Organizations

Schools for Deaf

Organizations for Hearing-Impaired

Rælclear has been recognized by customers as a positive tool to "help communication" and is being deployed at in-person service desks and at community organizations that support people with disabilities

The Sci-Fi World of Anime & Movies Coming to Life!

Viewable from the

BACK

or from the

FRONT

今日は天気がいいですね日差しもいい
ので散歩でも行きませんか。

Leading-Edge Transparent Display

AutoTech
Leading the EV Era with NextGen Tech

Mitsuo Nomura
Deputy General Manager
AutoTech Business Unit

By controlling the passenger display's viewing angle with a switchable panel, "Privacy Mode" blocks the driver's view while "Public Mode" makes it visible

For safety, passenger display needs to be invisible to the driver while driving

Privacy Mode (While Driving)
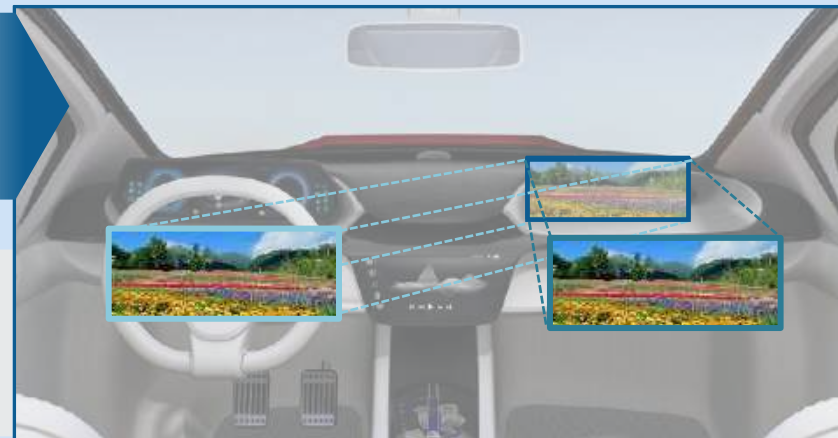
Public Mode

Switchable privacy technology allows for easy switching between Privacy Mode & Public Mode. JDI's Privacy Mode achieves off-state illumination of <1% (@35°view)

Safety

Power Saving

JDI

JDI's privacy technology has an independent switchable function that does not affect LCD & backlight design, allowing it to be combined with in-cell touch panels & local dimming backlights

In-Cell Touch Panel

In-Cell Touch Panel +Local Dimming

Switchable Privacy Panel

Backlight

Combination with in-cell touch panel with a built-in touch function

Combination with local dimming generates high contrast & decreased power consumption
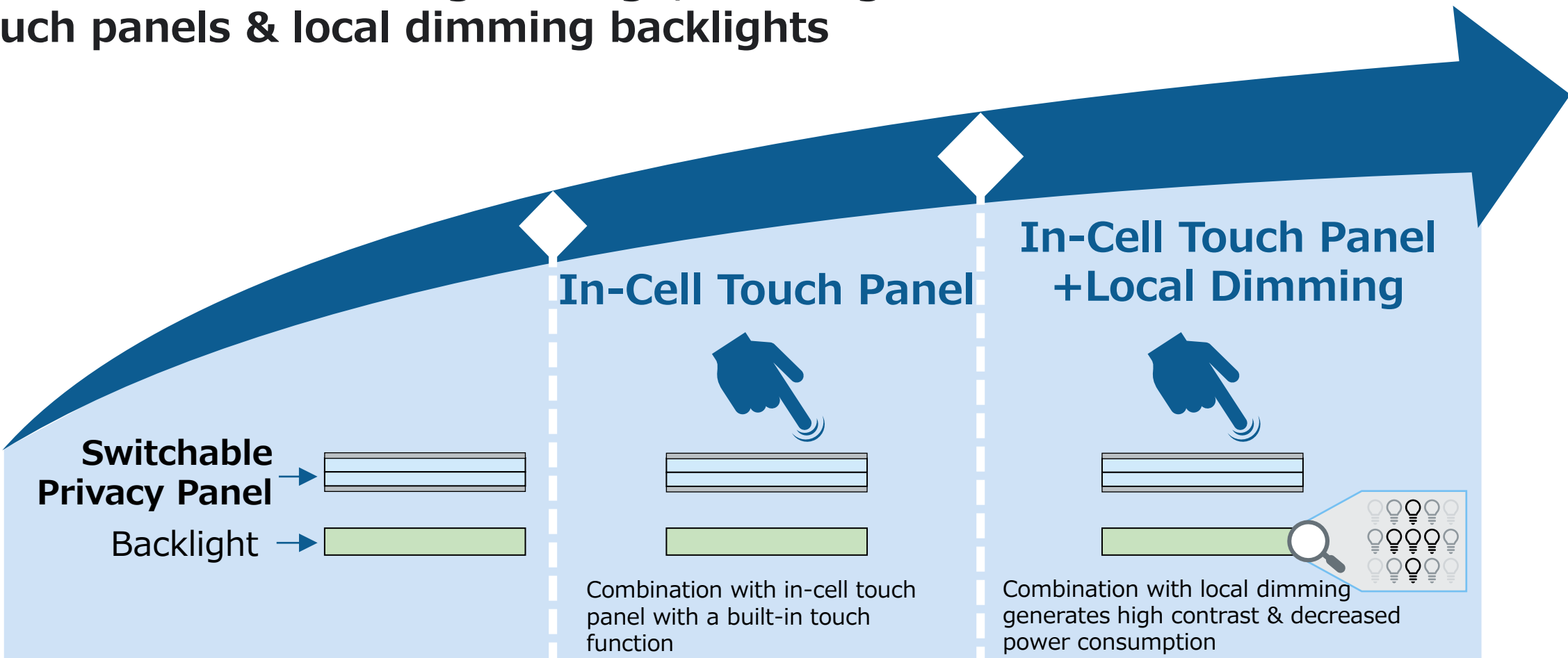
Privacy technology is suitable for large displays the driver & passenger, as it allows privacy features on only a portion of the screen
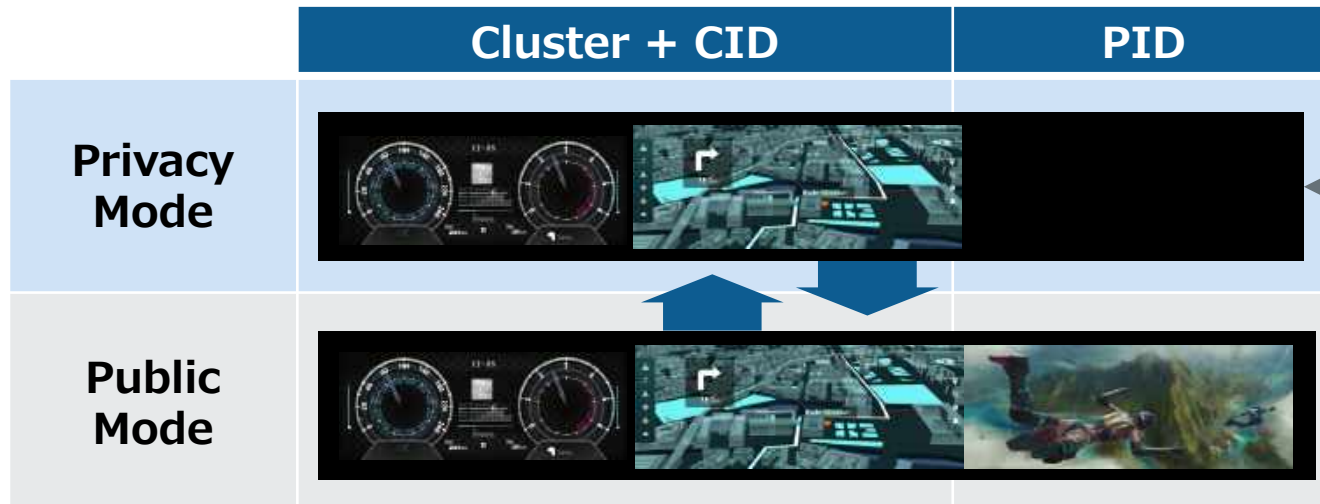
Privacy Mode (While Driving)
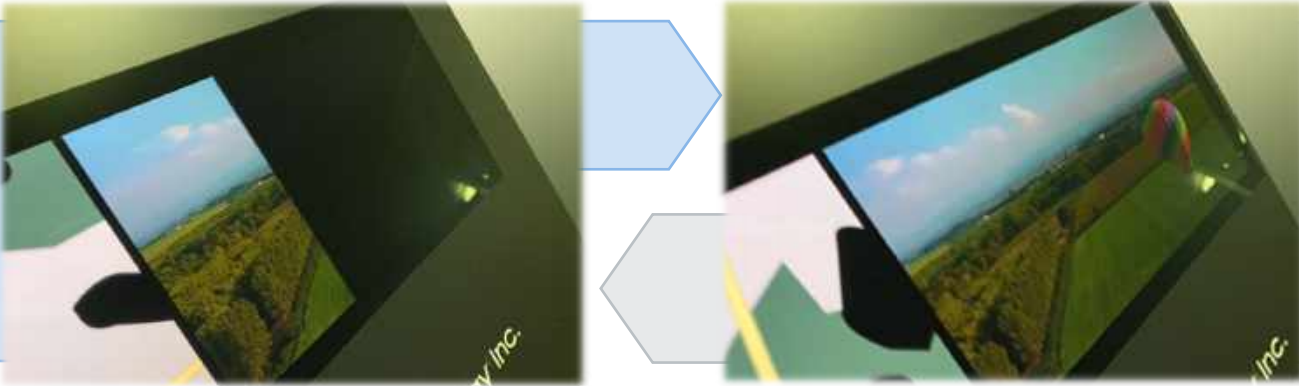
Public Mode

Demand rapidly increasing for large displays, which integrate the driver seat display (cluster), CID, & passenger seat display (PID)

	Cluster + CID	PID
Privacy Mode		
Public Mode		

Privacy function can be applied only to PID

CID = Center Information Display
PID = Passenger Information Display

HUD's higher image quality & functionality supports safer & more comfortable driving

Sharp image

Better Visibility

Advanced Image Quality

- Higher resolution
- Superior brightness
- Larger screen sizes

High resolution, high aperture ratio LTPS
High-efficiency liquid crystal technology

AR (Augmented Reality) HUD

Because HUD projects information to the front window, drivers have little eye movement which is safer & more convenient. Demand for HUD technology continues to grow

More Realistic

Advanced Functionality

- AR HUD
- 3D HUD

3D HUD
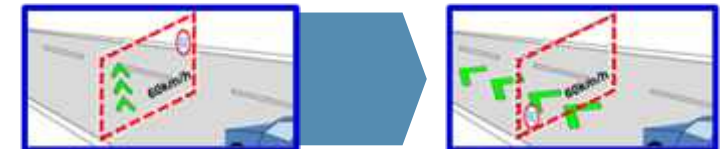
Liquid crystal lenses & light field technology

Integrated Cockpit

Integrated Cockpit Display

Stylish integrated cockpit design with in-cell touch functionality

3-in-1 Tiling/ Free Shape/ Curved Surface (Concave R800 to 2000mm)/ In-Cell Touch Panel

6.8" Operation Panel (in-cell touch panel)

14" Cluster

12.6" CID (in-cell touch panel)

High Value Add

Switchable Privacy Display

Privacy technology required for passenger side display of the integrated cockpit

Privacy **ON**

Passenger side display seen from the driver's seat

R&D Strategy
New Tech, Products, & Businesses

Yoshiharu Nakajima
Chief Technology Officer
Head of R&D Division

Expand applications of JDI's <u>Global No.1</u> technologies through continuous technological innovation
Deliver products & solutions beneficial for people, society, & the earth itself via the power of technology

① <u>Global No. 1</u> **Technology Leadership**

② **Market-Leading Technology, Transformational Growth**

③ **GreenTech & Sustainability**

eLEAP | HMO | Metaverse | Rælclear | AutoTech | **New Tech**

OLED Display
Fundamental Structure

Frontplane

Lumi-nes-cence

Cathode

Organic EL layer

Electron hole

Anode

Cathode

Signal line

Organic EL layer

Anode

Driver IC

TFT

Gate Driver line

Glass substrate or flexible substrate
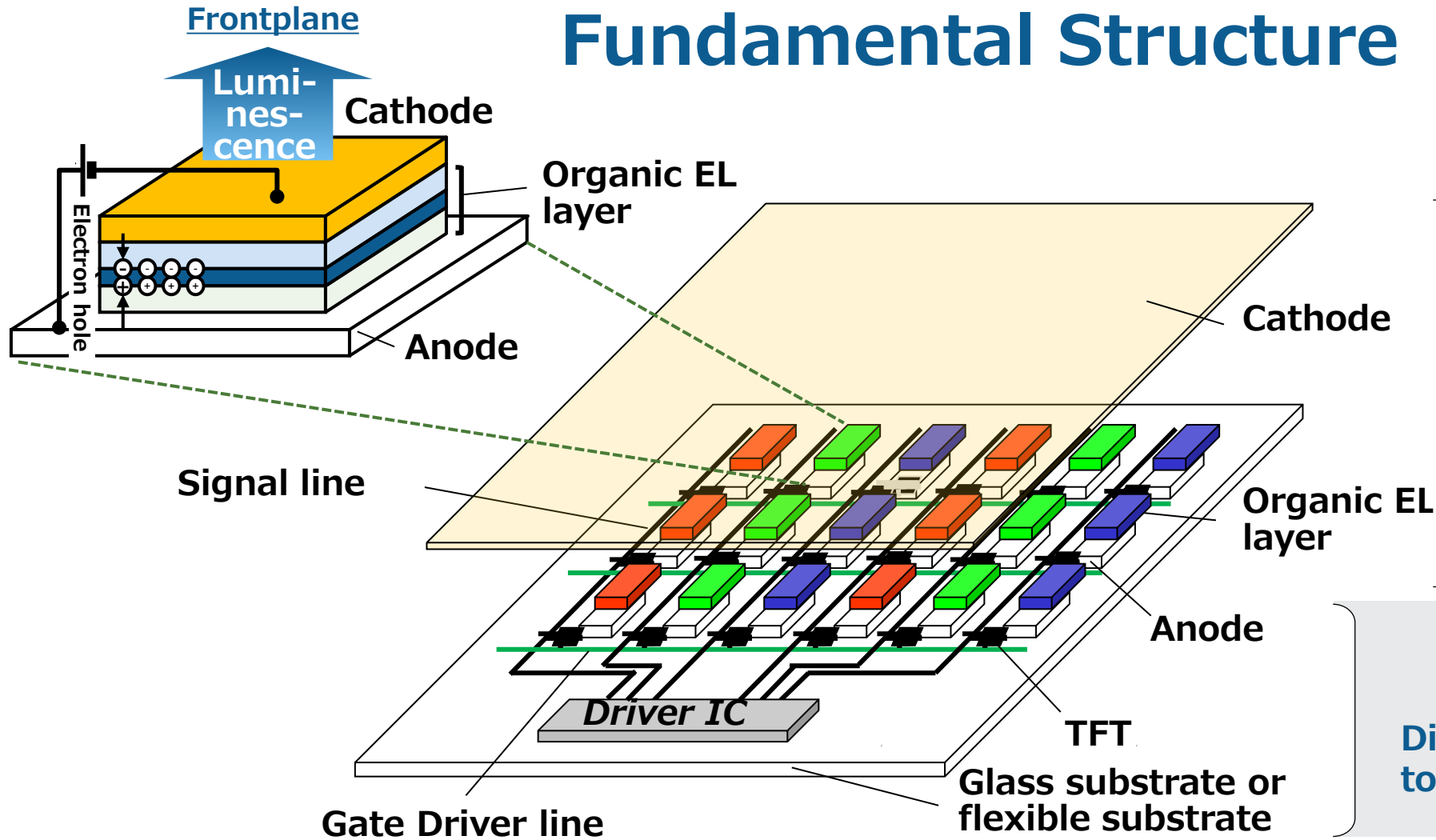
Frontplane

Converts electric signals distributed to each pixel by the backplane into optical signals to generate images

Backplane

Distributes electrical signals to each pixel

eLEAP   HMO   Metaverse   Rælclear   AutoTech   **New Tech**   Slide 76

- **Driving the further advancement of world-leading backplane technology**
- **Radical new value via optimizing backplane & frontplane combinations**

Frontplane

| LCD | OLED (eLEAP) | Sensors |

Backplane

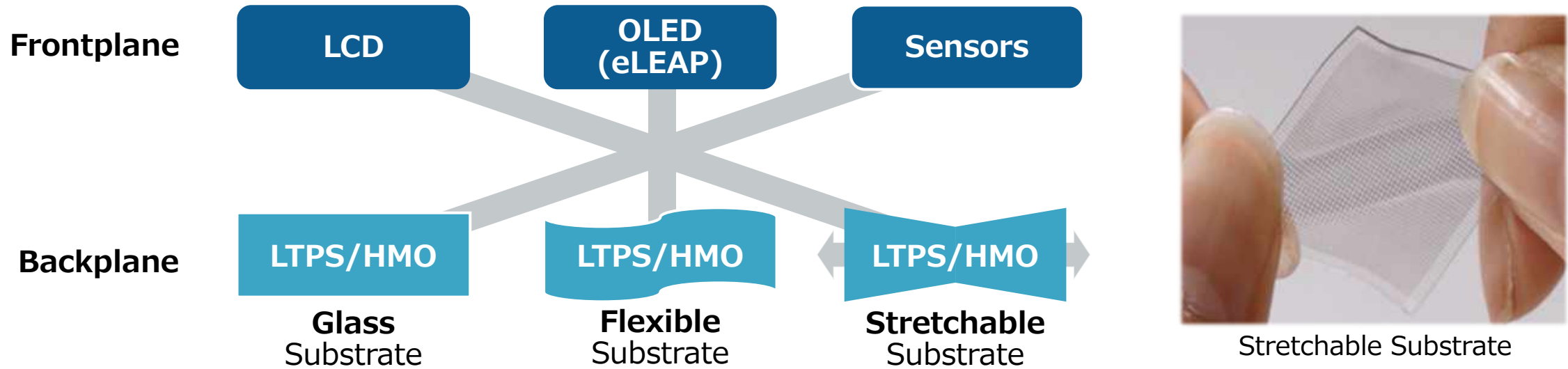| LTPS/HMO | LTPS/HMO | LTPS/HMO |

Glass Substrate   **Flexible** Substrate   **Stretchable** Substrate

Stretchable Substrate

Advanced Display Development

- NextGen OLED
- Ultra High Resolution Displays
- Transparent Displays
- Micro LED

New Sensor Development

- Large Authentication Sensors
- Non-Contact Sensors
- Biometric Sensors

New Tech, Products, & Businesses | Leading Edge Technologies

Customer Value

1 — eLEAP (Next-Generation OLED)

- High-brightness, long-life, high resolution, & GreenTech
- Support wide range of shapes & sizes

2 — HMO (High Mobility Oxide)

- Ultra-low power consumption, high resolution, & large display size capability
- Fundamental technology for G8/G10 fabs

3 — Metaverse (Ultra High Resolution)

- Unparalleled sense of reality & immersion
- High yields & outstanding quality

Customer Value

4 — AutoTech

- EV-focused, best-in-class integrated cockpit development
- Advanced HUD for higher driving safety

5 — Rælclear (Transparent Display)

- World's highest transparency
- Social contribution by enabling more interactive & inclusive communication

| eLEAP | HMO | Metaverse | Rælclear | AutoTech | **New Tech** |

Developing new products & solutions to address important social needs, leveraging JDI's deep technology capabilities

Support for public & personal health through contactless hover sensors

JDI technology innovation in ultra high speed, high bandwidth NextGen telecom

Supporting self-diagnostics & remote care with biometric sensor technology

Provide non-contact user interface for hygienic use by leveraging JDI's widely used Pixel Eyes in-cell touch technology
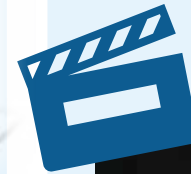
Add-On Hover Sensor

Video Link (YouTube):
Hyperlink

現在、感染症予防や衛生的な環境の必要性から
非接触技術が多くの場所で求められています。

Sensor area size: c. 304 mm x 228 mm
Medical & industrial use, reception, self-checkout, elevators, etc.
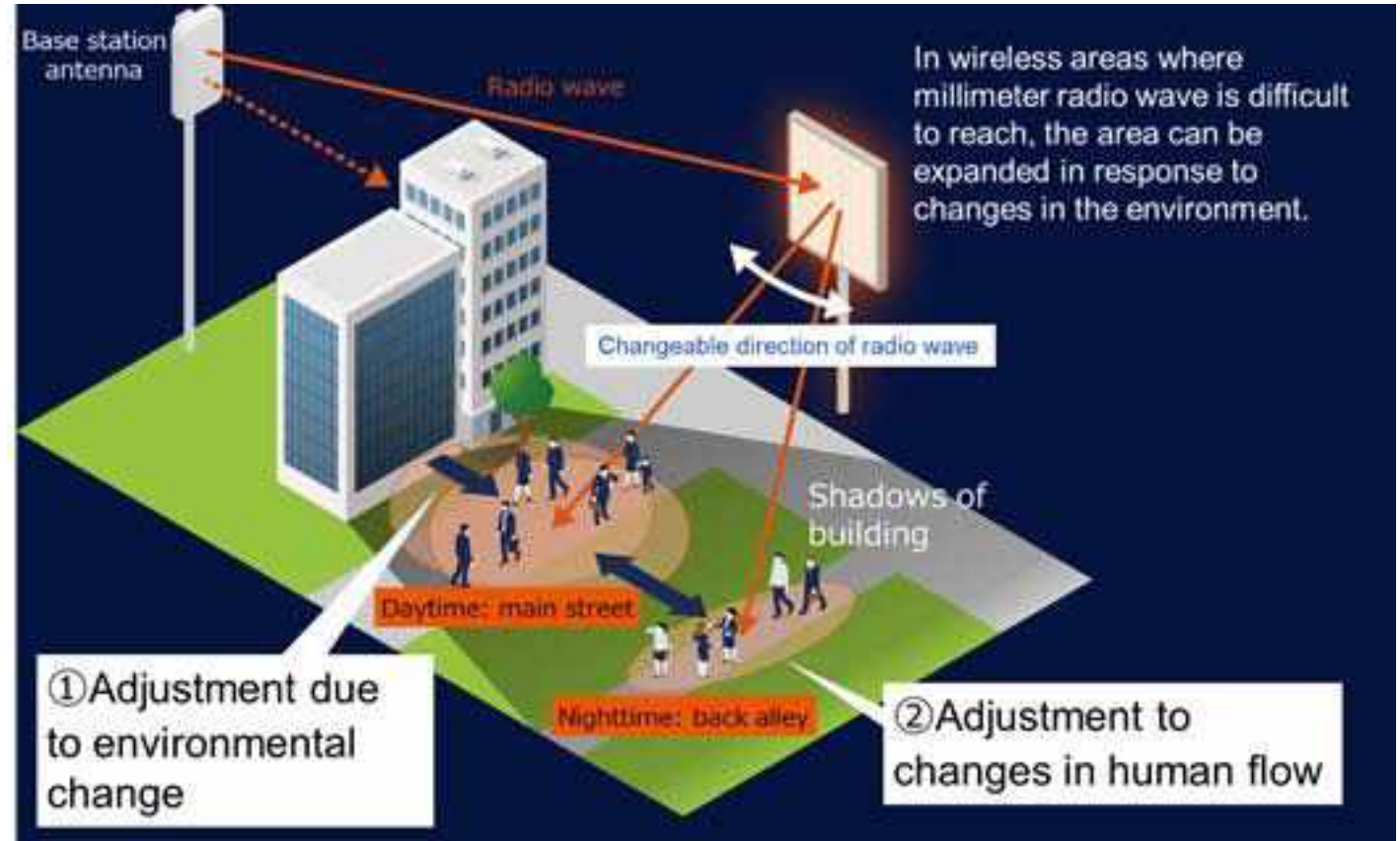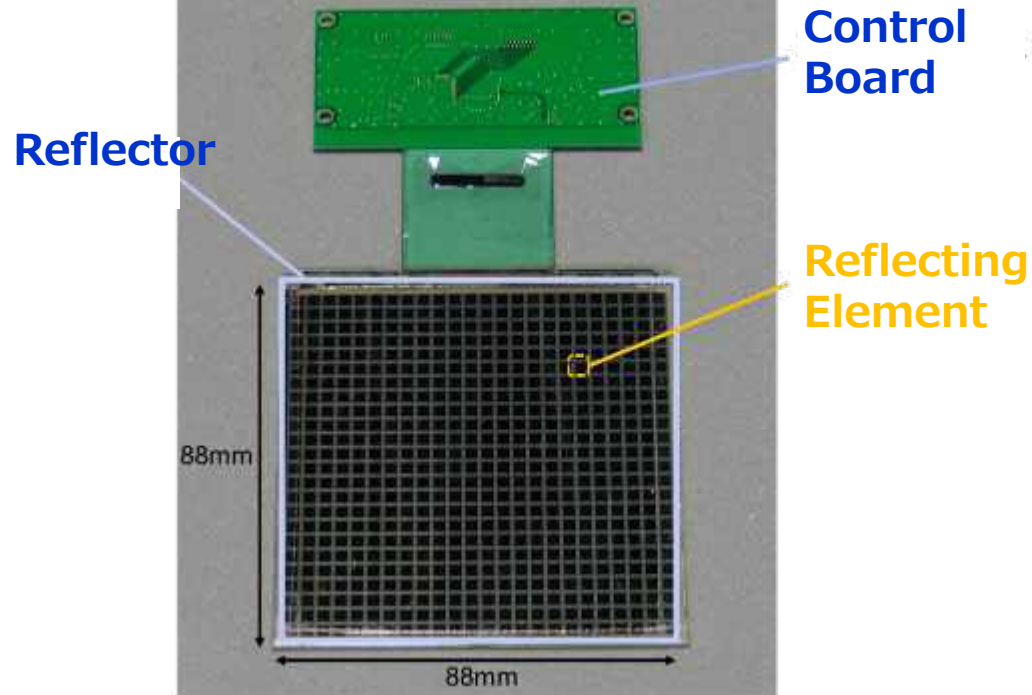
Add-On Hover Sensor + Transparent Display

Video Link (YouTube):
Hyperlink

Sensor area size: c. 292 mm x 109 mm
Ticket vending machines at public facilities, menu tables, etc.

World's first liquid crystal meta-surface reflector changes radio wave direction to allow for flexible expansion of 5G service areas

Control Board

Reflector

Reflecting Element

88mm

88mm

Base station antenna

Radio wave

In wireless areas where millimeter radio wave is difficult to reach, the area can be expanded in response to changes in the environment.

Changeable direction of radio wave

Shadows of building

Daytime: main street

Nighttime: back alley

①Adjustment due to environmental change

②Adjustment to changes in human flow

eLEAP   HMO   Metaverse   Rælclear   AutoTech   **New Tech**   Slide 81

Applying TFT technology to thin, light, curved, & flexible matrix sensors for wearable biosensor applications

	Features	Use Cases
Film Substrate	**Thin, light, flexible**	Wearable
LTPS/HMO	**Large sensor area, high resolution, compact**	Precise & Accurate Biometric Sensors
	High speed	Optimal Location — Vein Wave — Heart Rate — 81bpm
Matrix Sensor	**Large sensor area**	Fingerprint Imaging — Vein Imaging — Capture multiple biometric data points
	Capable of generating images	

Biometric Measurement

Vein

Finger-print

Pulse wave — Output signal — Time (second)
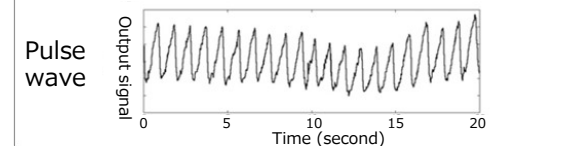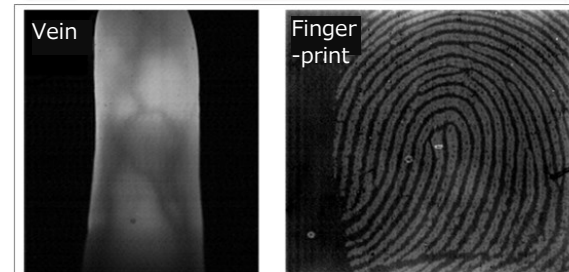
Part of these researches were conducted with the support of the Japan Science and Technology Agency.

eLEAP | HMO | Metaverse | Rælclear | AutoTech | **New Tech**

Thank You!

Any information related to market trends or industries mentioned in this document is based on information available at present and JDI does not guarantee that this information is accurate or complete.

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