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# SAMSUNG SYSTEM LSI



Investor Presentation

2017

Contents

BUSINESS UPDATE

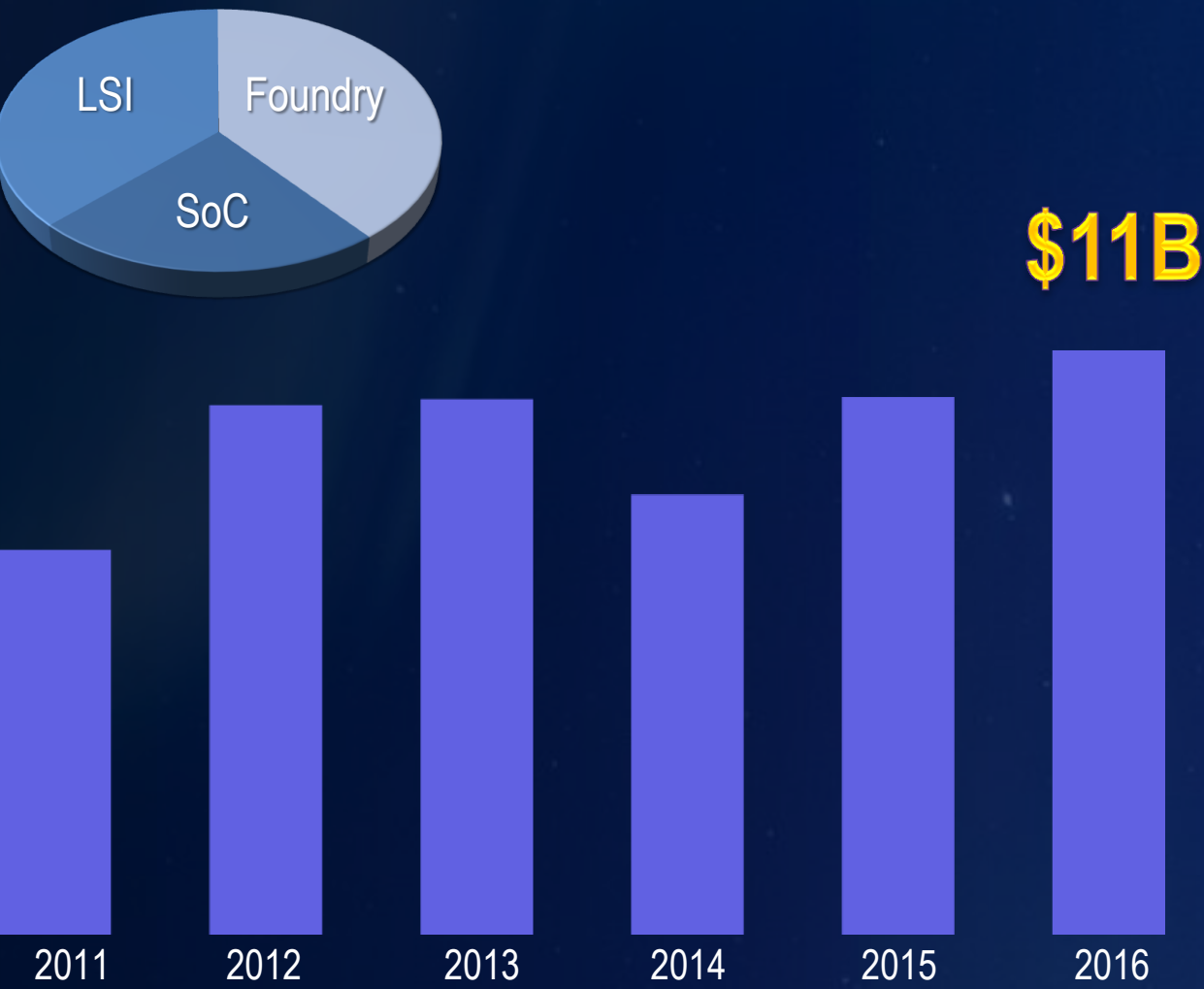
MARKET OPPORTUNITIES

SAMSUNG STRATEGY

# FINANCIAL PERFORMANCE

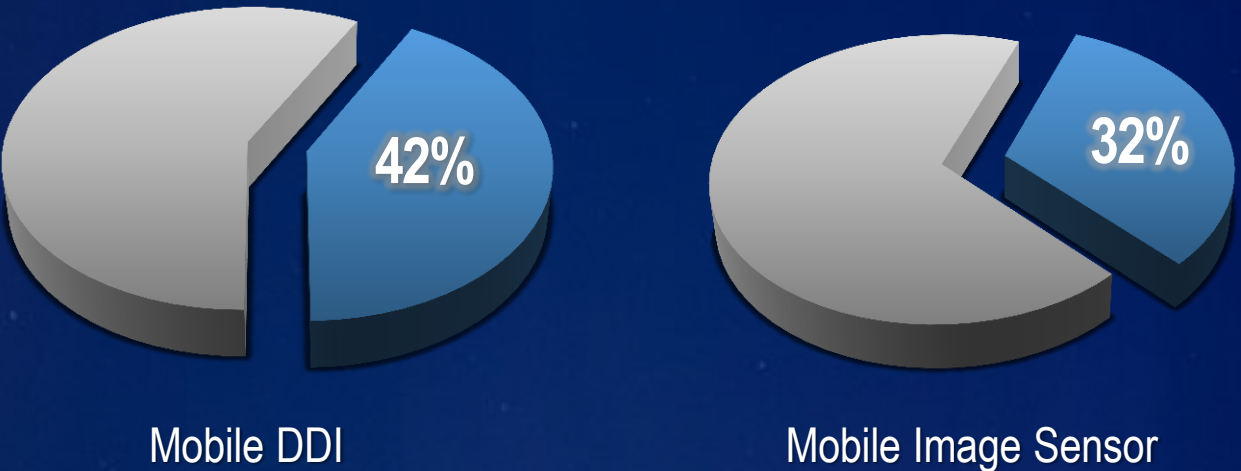
## Revenue

Continuous Growth with Balanced Portfolio



## Leader in Respective Area

Key IC Supplier for Mobile Display and Mobile Camera

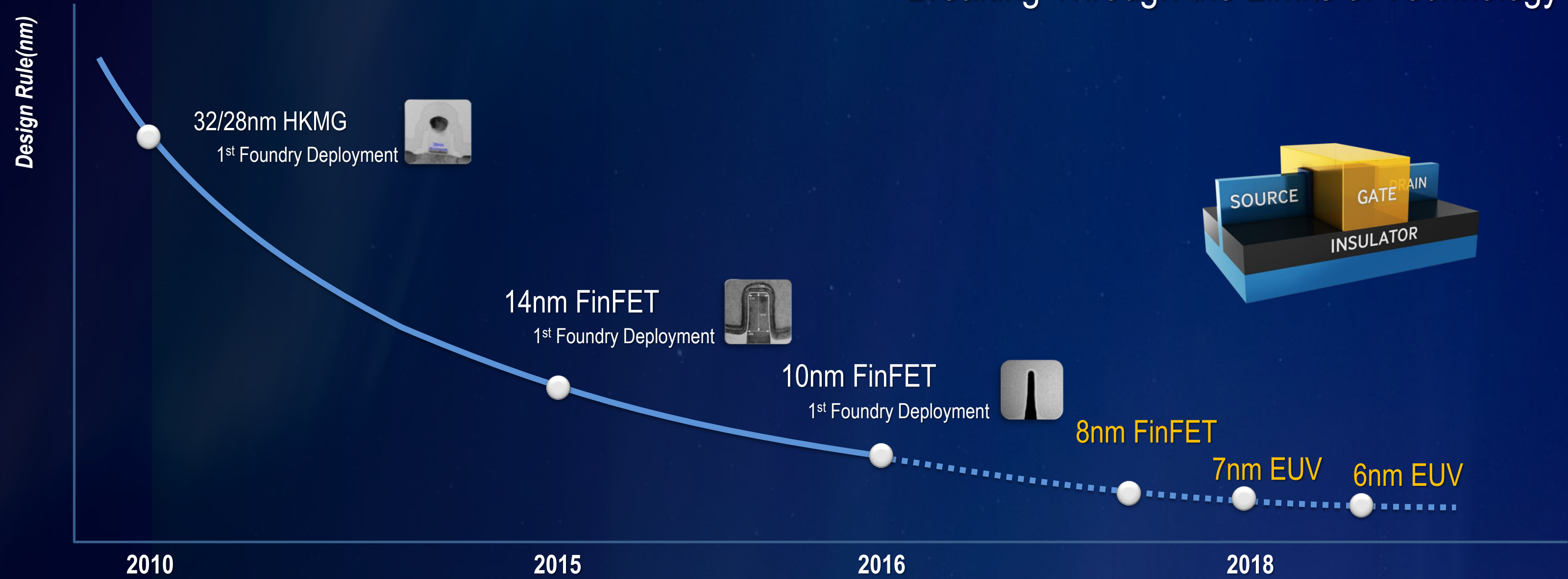


\* Global Market Share in Revenue, 2016, Company Data



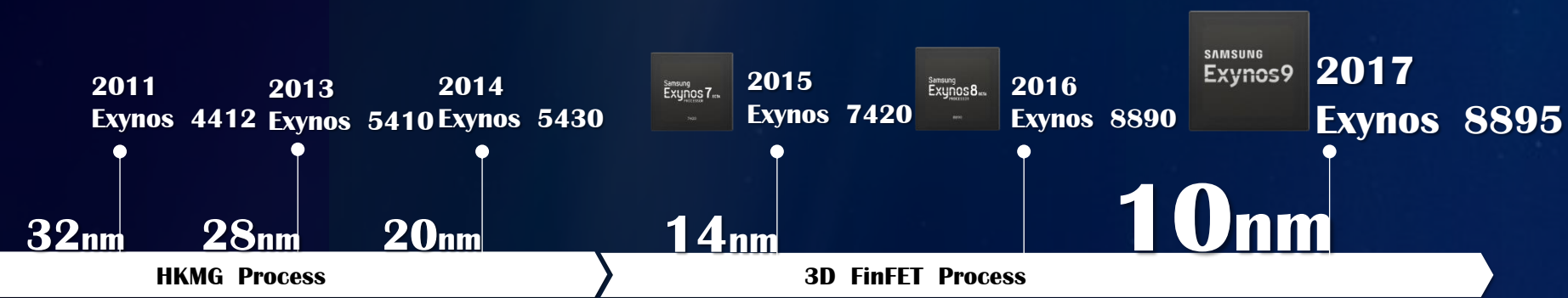
# INNOVATIVE PROCESSES

Breaking Through the Limits of Technology



# PREMIUM MOBILE SOC

Leading-edge Exynos Series  
at the Heart of Innovative Mobile Devices



Galaxy S7 edge | S7

Galaxy S6 | S6 edge

Galaxy Note5

Galaxy S8 | S8+

MEIZU PRO 6 Plus

MEIZU PRO 5





# ISOCELL CMOS IMAGE SENSOR

Creating the Innovative Mobile Cameras



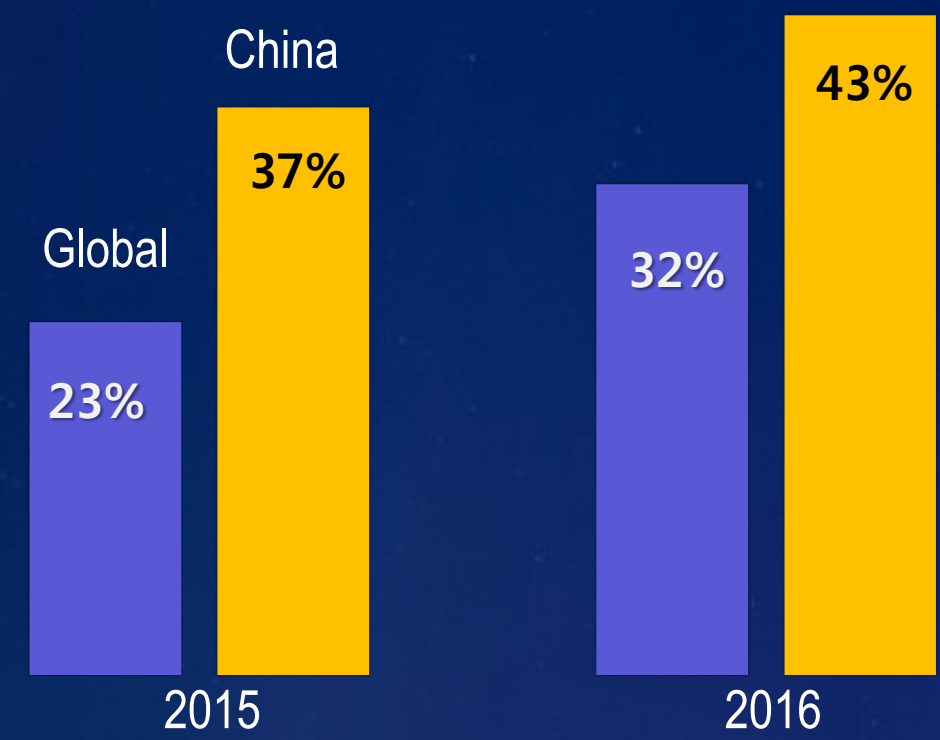


**SAMSUNG**  
**ISOCELL**

Dual Pixel Technology  
4X Faster, Accurate AF in Low Light

## Mobile Image Sensor Market Share

Growing Share in Global and China Market



\* Mobile Phone 5MP & Above Market Only, Market Share in Revenue, Company Data

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# FUTURE MOBILE EXPERIENCE

Enabled by Key Technologies



**Highly Realistic Graphics**

**Stunning Photos**

**Mobile Healthcare**

**Mobile Payment**

**Biometric Authentication**

**Hub for All Connected Devices**

**Intelligent UX**

# COMPLICATED USER SCENARIOS

Driving Importance of Process and Design Technology



## Low Power Consumption

Always Connected, Always On  
Long Battery Life

## Performance & Design

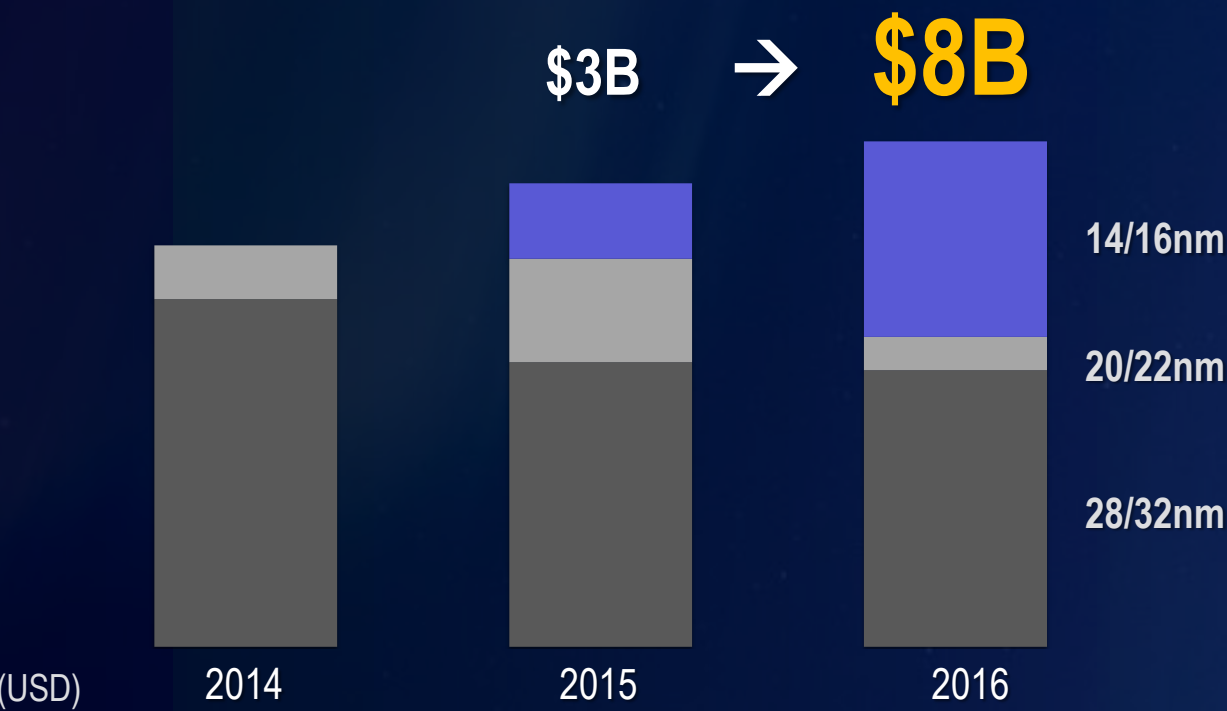
High Performance CPU/GPU  
High Quality Photos, Immersive 3D Video  
Large Display in High Resolution  
Slim and Sleek Design



# LIMITED FOUNDRY SUPPLIERS

## 14/16nm Foundry Market

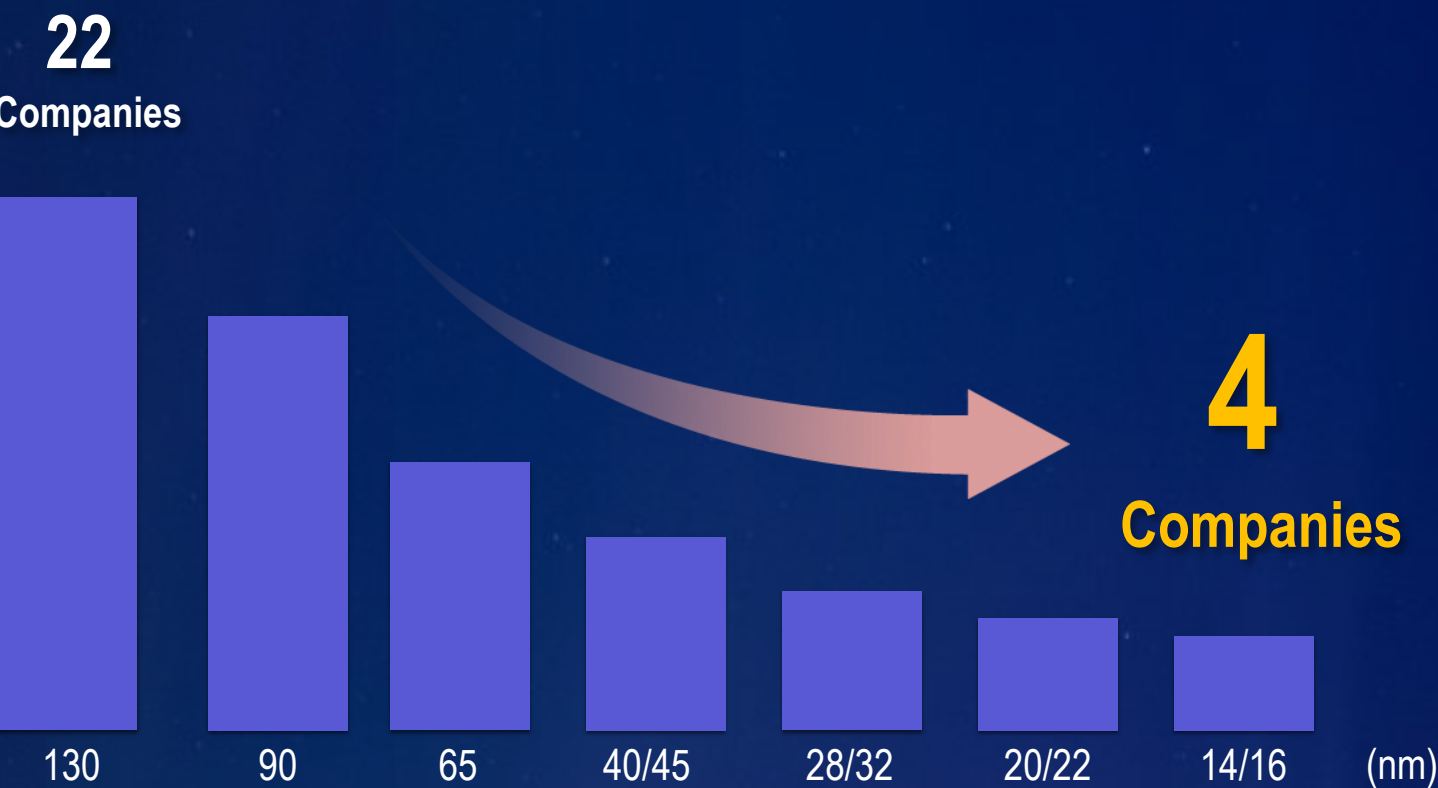
Expected to Grow 2.7X in 2016



Source : Gartner, iSuppli, IBS, IC Insight, Company data

## Foundry Service Companies

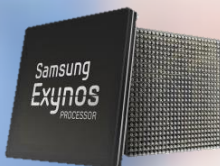
Only 4 foundries, including Samsung, can provide leading-edge technology



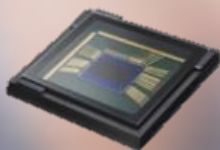


# INTEGRATED TOTAL SOLUTIONS

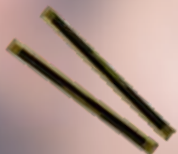
## SAMSUNG SYSTEM LSI



Exynos Processor  
Modem/RF/Connectivity



ISOCELL  
CMOS Image Sensor



Mobile DDI  
Touch Controller



NFC/eSE  
Fingerprint Sensor



Smart Card



Bio Processor



PMIC

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# STRATEGY FOR GROWTH

## Differentiated Design Technology

Enhancing Core Competency with Own Designed Unique IPs

Innovation of Pixel Technologies for Image Sensors

## Continuing Process Leadership

10nm/7nm Leading-edge Process Design and Manufacturing Capabilities

Foundry Service to Provide Value-added 28FDSOI/8inch

## Customer / Product Diversification

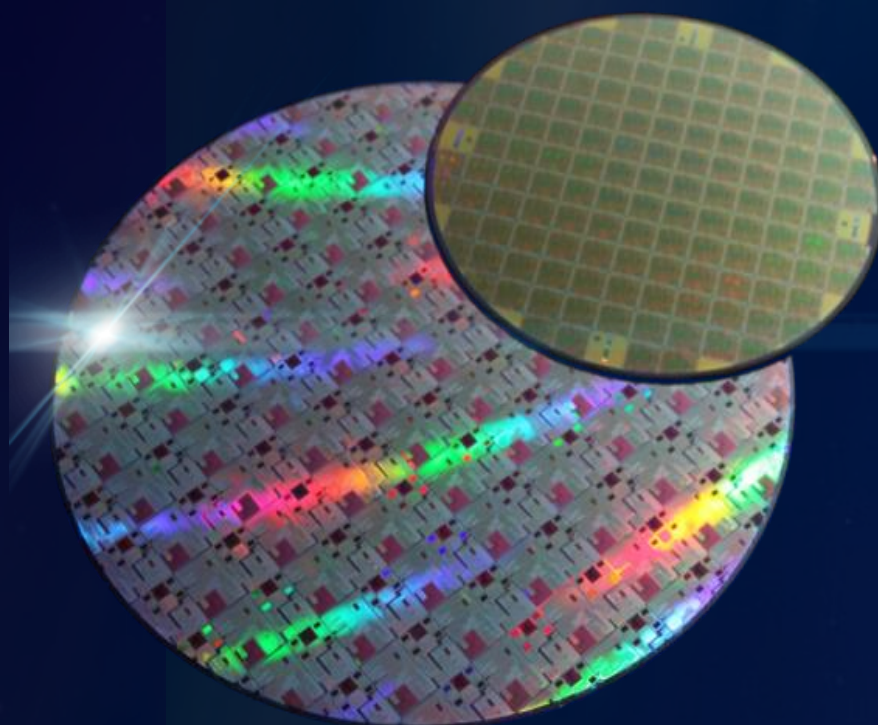
Greater Presence in China, India Market with Stronger Solutions

Solutions for Future Applications beyond Mobile



# THE WAY TO TOP-CLASS SUPPLIER

Foundry



**Strong customer momentum continues with 14nm**  
→ Renewed longevity with process variations

**10nm to be a long-lived node**  
→ Ramp multiple volume products in 2017

**Differentiated solutions with 28FDSOI and 8"**  
→ Broadening Samsung Foundry offerings

# PROCESS LEADERSHIP

Foundry

Performance and Cost Variations

Boosted performance  
Reduced layers with same performance with LPP

RF for Connectivity

Ready for Automotive

Supporting AEC-Q100 Grade 2/3  
TS16949 qualified (14nm FABs)



14LPE

14LPP

+14% Boosted Performance  
Same Design-rule

14LPC + RF

Process Optimization

14LPU

+15% Boosted Performance  
Same Design-rule

Ramp up in 2017 with multiple products

Performance and Cost Variations

10LPE

10LPP

+10% Boosted Performance  
Same Design-rule

10LPU

+5% Boosted Performance  
Same Design-rule

8LPP

Area Reduction  
Easy Migration

Risk Production in 2018

Competitive in power, performance and scaling with EUV

7LPP

6LPP

Area Reduction  
Easy Migration





# INNOVATIONS FOR EVERYONE

Mobile SOC

## Technical Leadership

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Technical Leadership  
with 10nm, Custom CPU  
and Gigabit LTE Modem

## Differentiation

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14nm Exynos Series  
for Volume Zone  
Optimized IC Solution

## Ready for the Future

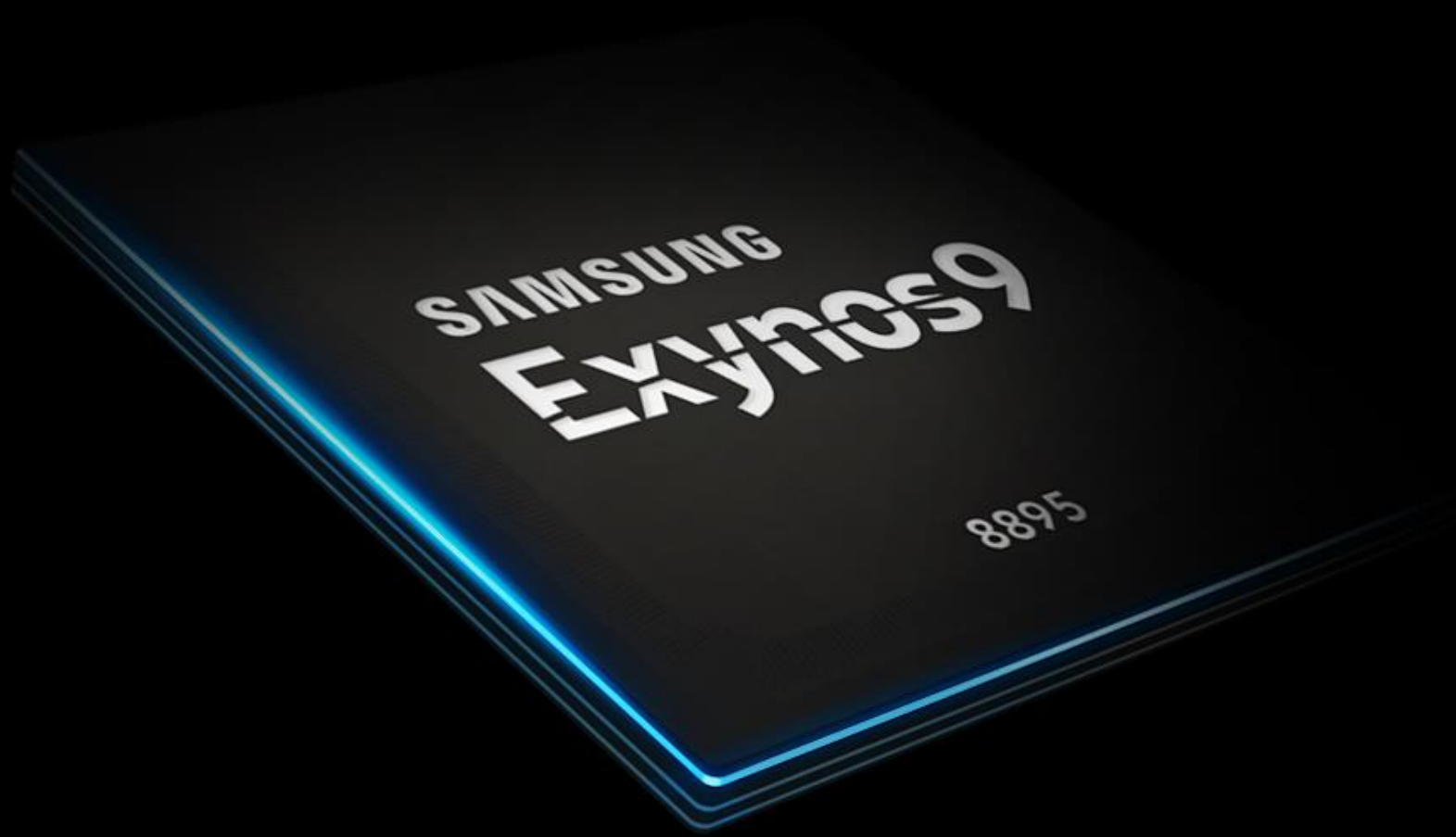
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Complete Solutions for  
Wearable / VR / IoT /  
Automotive



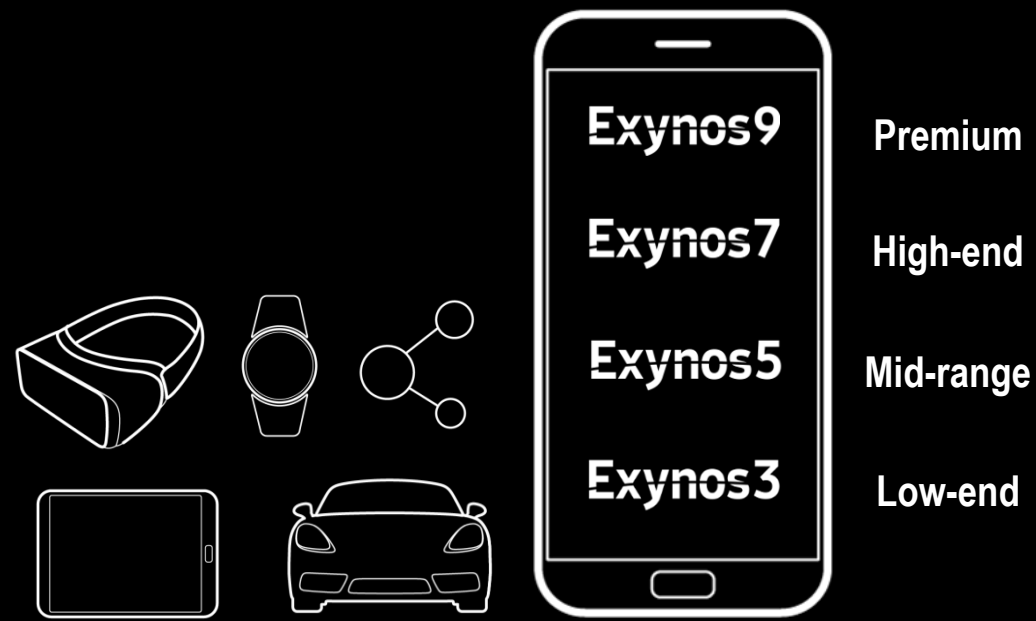
# EXYNOS PROCESSOR

Mobile SOC



## A Mobile Processor that Goes Beyond Mobile Innovation

Exynos series enable new user experience at the heart of the innovative devices

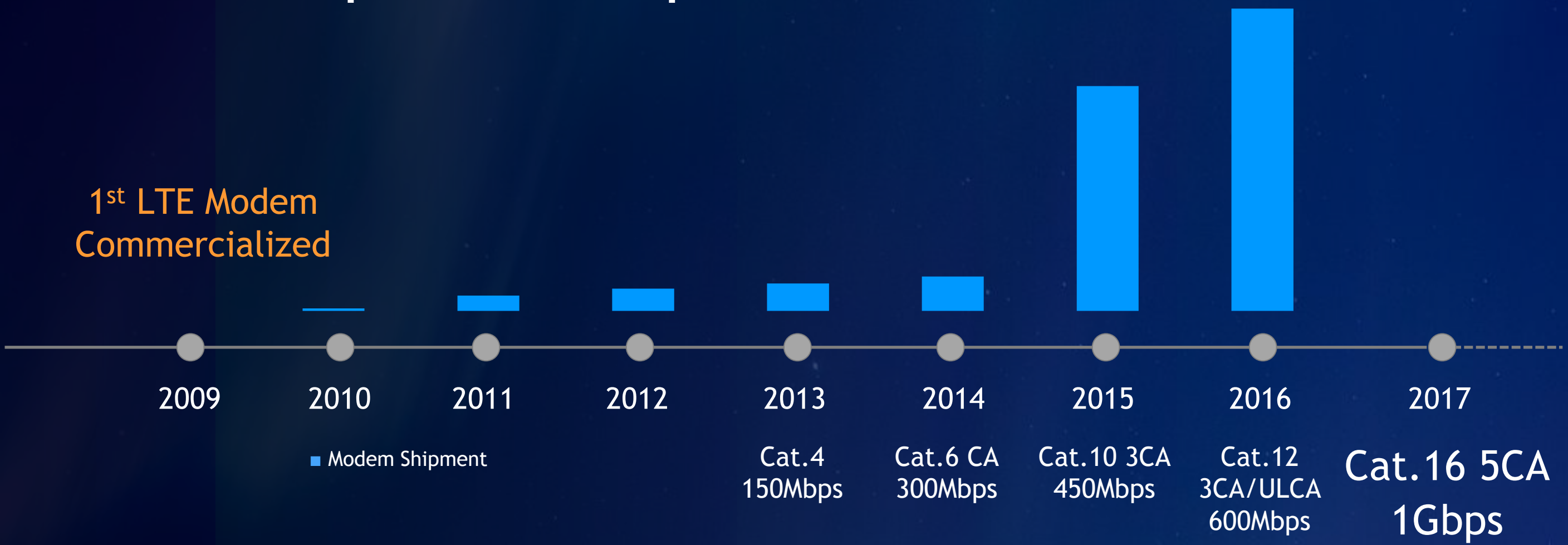


# EXYNOS MODEM

Mobile SOC

Over 280Mpcs Modem Shipment

1<sup>st</sup> LTE Modem  
Commercialized

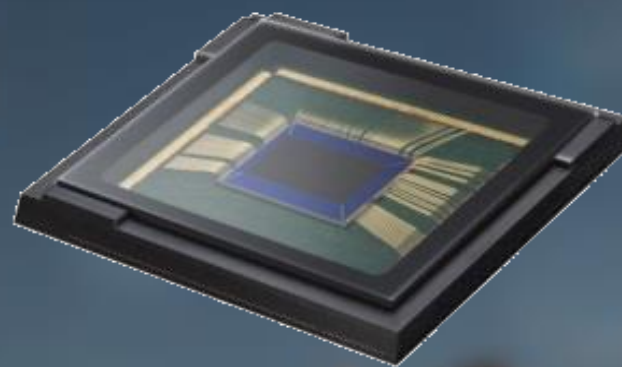


5G



# SAMSUNG ISOCELL

Image Sensors with unique pixel technologies  
to bring perfect images anywhere, anytime

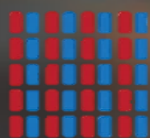


**Bright**



**Tetracell  
Smart WDR**

**Fast**



**DUAL PIXEL**

**Slim**



**Small Pixel**

**Dual**



**Dual Camera Solution**  
for Zoom, Depth Sensing, LLS



\*LLS (Low Light Shooting)

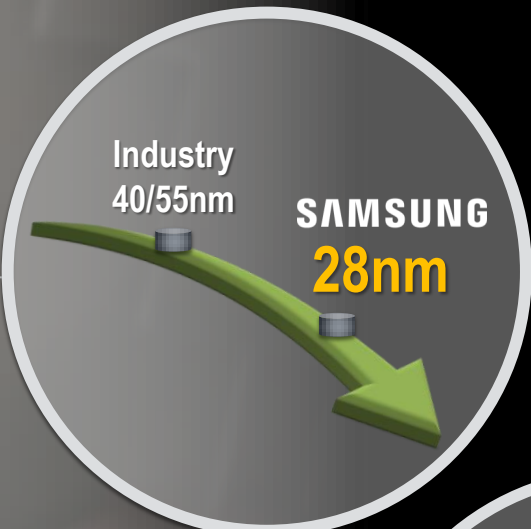


# PROCESS / SERVICE COMPETENCY

ISOCELL CMOS Image Sensor

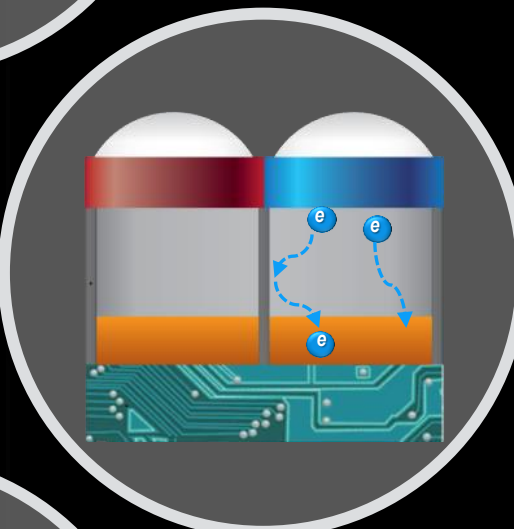
## Advanced Node

28nm based Image Sensors



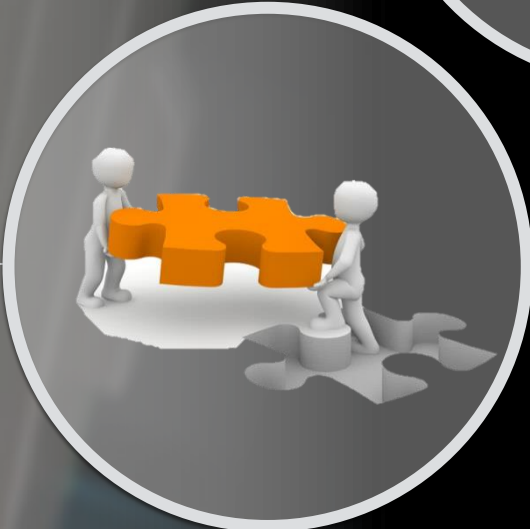
## ISOCELL Pixel Technology

Superior Image Quality with Small Pixel



## Custom Design Service

Custom Sensor Design, Software Solution for Dual Camera



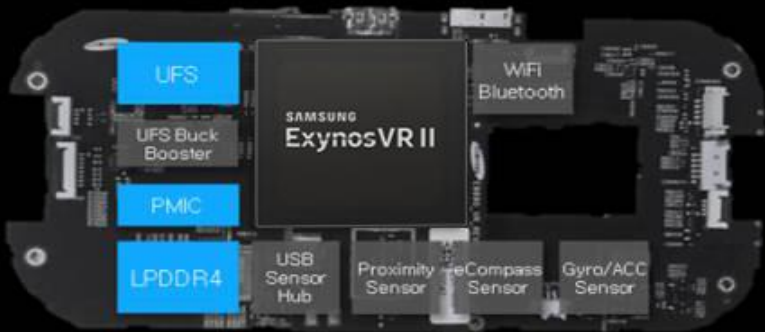
SAMSUNG

SOLUTIONS FOR VR AND WEARABLE

IC Components and Design Reference Platforms  
for Standalone VRs and Smart Watches

Exynos Processor   Power Management IC   Display Solution   Image Sensor

Exynos Processor   Power Management IC   Display Solution   NFC   Bio-Processor



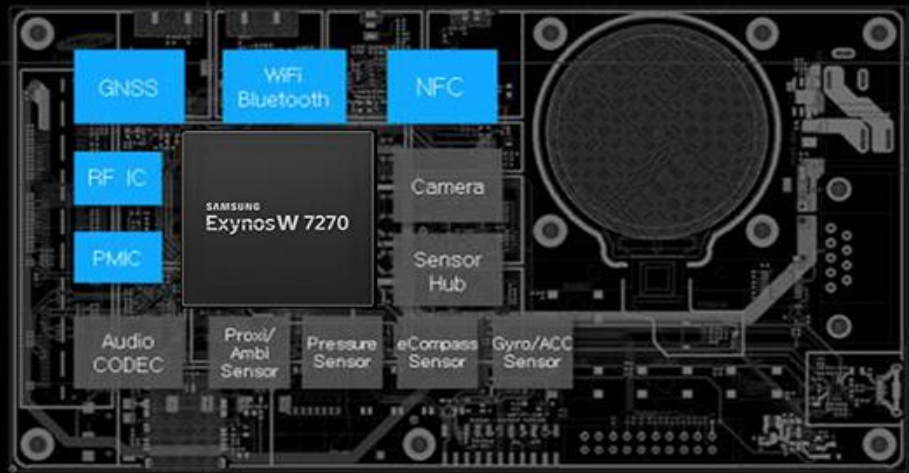
Hardware   Design Support



Powered by  
**ExynosVR II**



Powered by  
**ExynosW 7270**





SAMSUNG

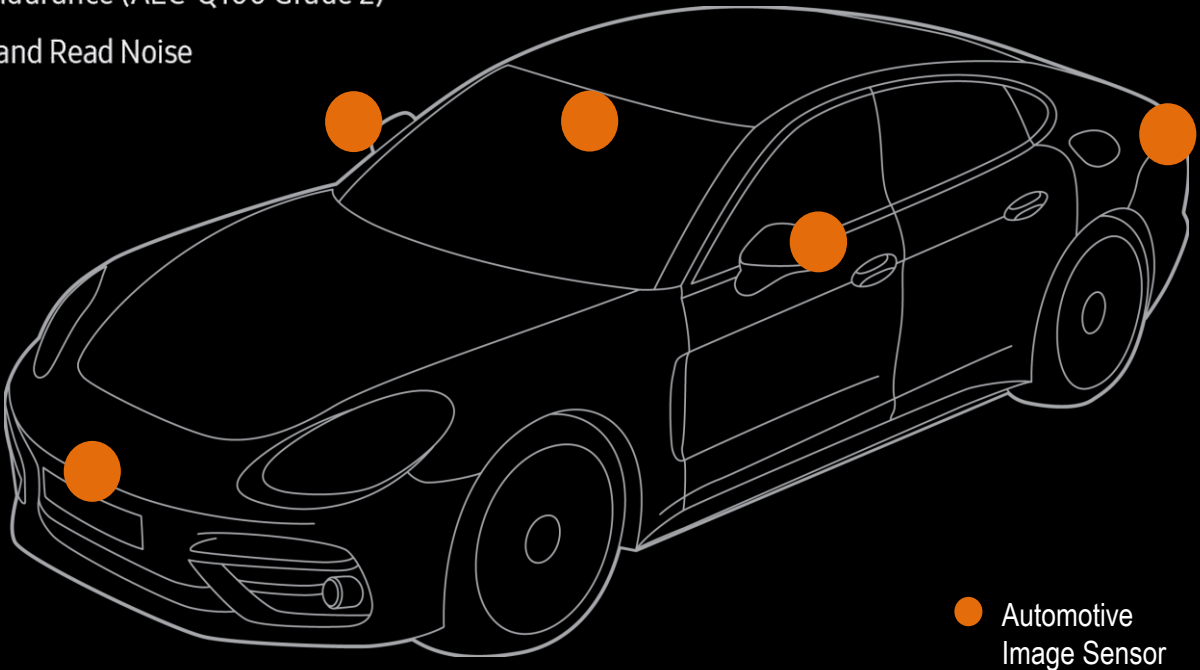
SOLUTION FOR FUTURE DRIVING

Integrated Technologies for Next Generation In-Vehicle Infotainment  
and Driving Support System



ISOCELL CMOS Image Sensor for Automotive

- Excellent Low-light Sensitivity Performance
- Maximized HDR 120dB and More
- High Temperature Endurance (AEC-Q100 Grade 2)
- Lowest Dark Current and Read Noise





# PACKAGE TECHNOLOGY

Perfect, Optimized Solution to Customer

Package Solution of Samsung

Integrated

Full Scoped

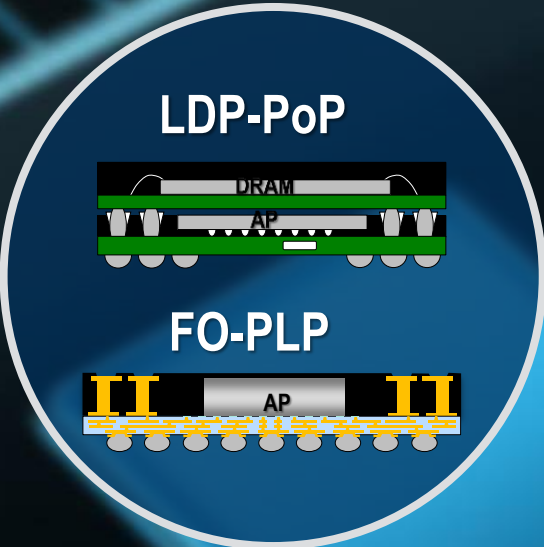
Experienced

Integrated Design  
of Memory, Logic

Complete Platforms  
from Conventional  
to Advanced

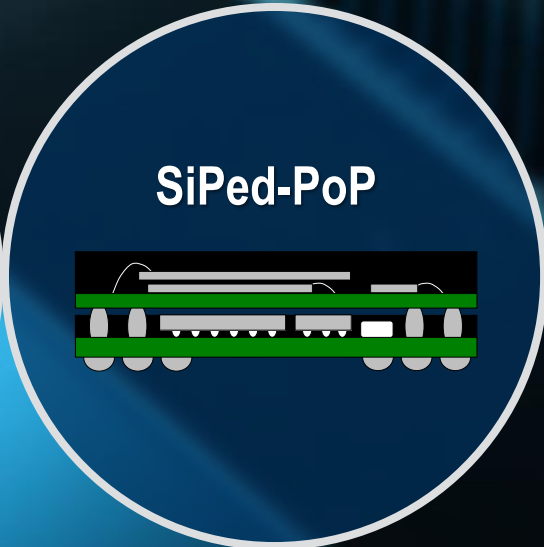
No.1 PoP Provider  
The 1<sup>st</sup> & No.1 TSV Provider  
30 Years Experience

Thin



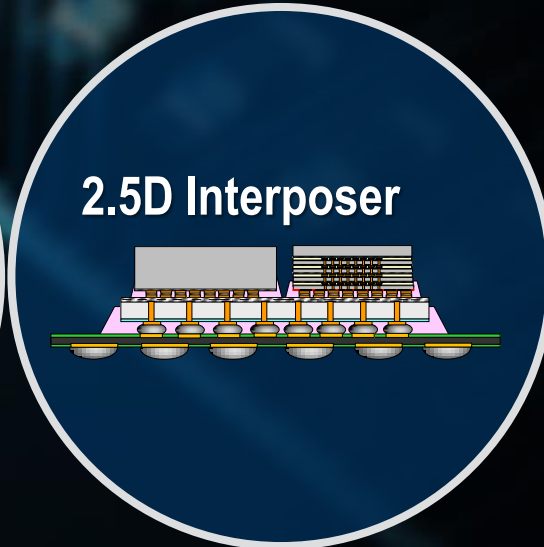
0.9~0.8mm Slim Thickness  
Lower Cost, Higher Throughput  
using Panel Technology

Small



Reduced Footprint  
Simpler Design

High Bandwidth  
High Density



3D Stacking Technology  
using TSV

LDP-POP : Laser Drilled Process Package on Package  
FO-PLP : Fan out Panel Level Package  
SiPed-PoP : System in Packaged-Package on Package



# Enabling the Future of Mobile through Innovative Technologies

Integrated Solution

Silicon Technology




# SAMSUNG

Follow System LSI

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 [www.samsung.com/semiconductor](http://www.samsung.com/semiconductor)

 [www.samsung.com/Exynos](http://www.samsung.com/Exynos)


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