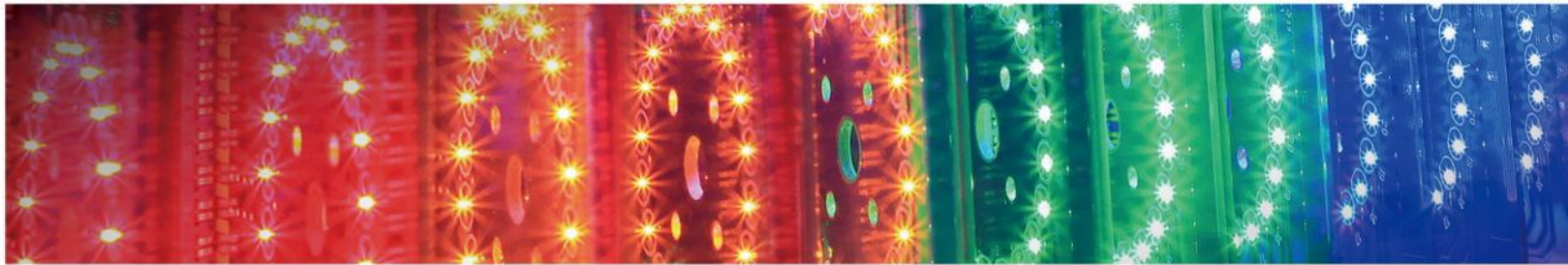


# EPISTAR

2448



Actualize LED Potential



..... Co-activation Service Model

..... Full Spectrum LED Chips Portfolio

..... Chip Solution for Various Applications

2018.05.23 update

# Safe Harbor Notice

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These presentation materials include forward-looking statements that are subject to significant risks and uncertainties and actual results may differ materially from those contained in the forward-looking statements.

The factors that could cause actual results including, but not limited to current uncertainty in global market conditions, our development in new technologies and products, our ability to lower costs, the complexity of our manufacturing processes, the availability of raw materials, and the difficulties of estimating future market demand.

Our industry and business are constantly evolving and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events, or otherwise.

# Quick Glance at Epistar

**Founded** : September 1996

**Chairman** : Dr. B. J. Lee

**President** : Dr. M. J. Jou

**Paid-in Capital** : NTD 10.9 Billions (~ US\$ 373 M)

**Products** :

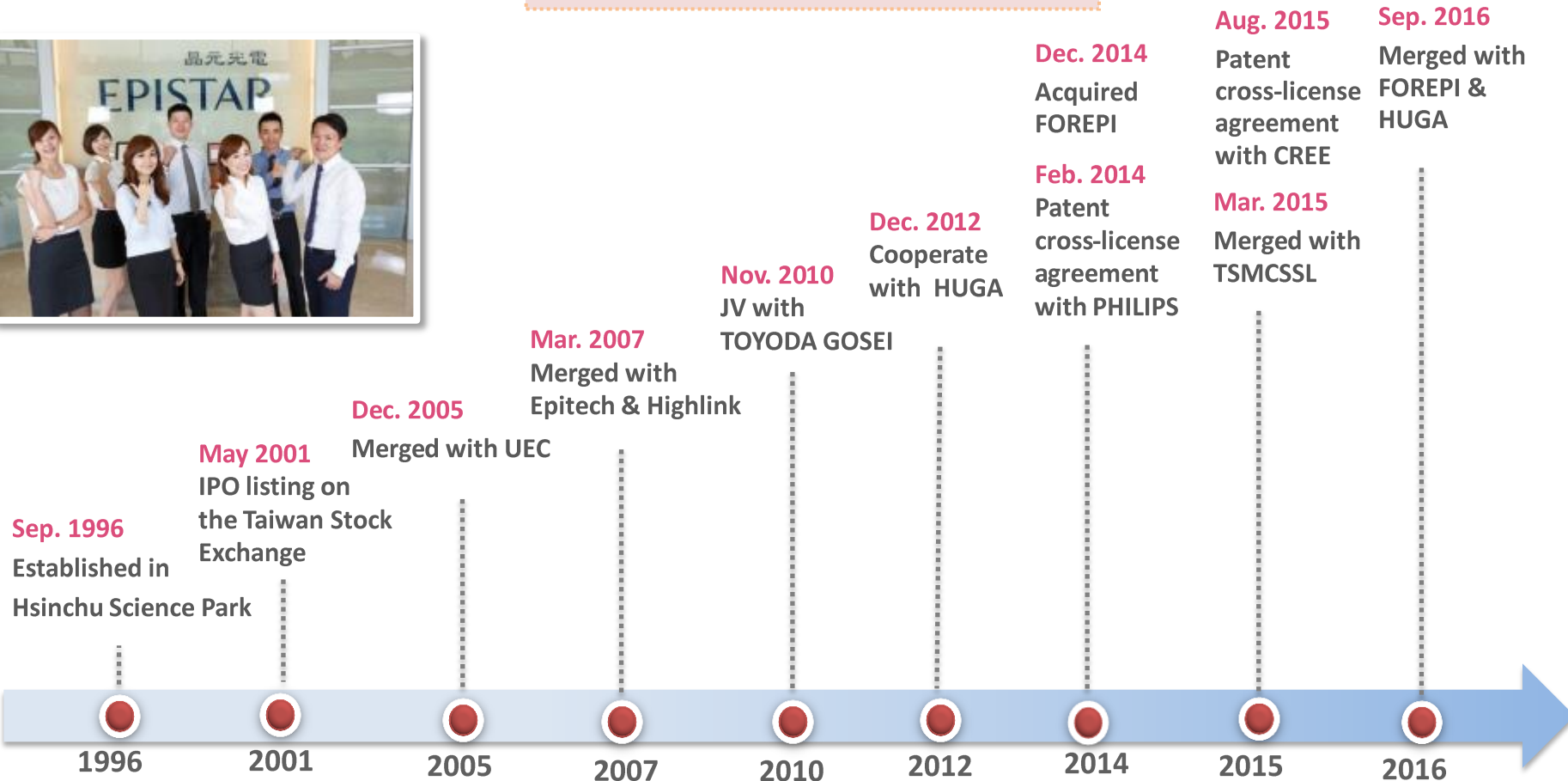
- AlGaInP LED EPI-wafers and chips
- InGaN LED EPI-wafers and chips
- UV / Infrared LED chips
- VCSEL Foundry Services
- III-V solar cells

**Employee** : 3,897 staff (update: Apr. , 2018)



# History & Milestones

## Corporate Achievement



# Market Overview and Outlook

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- Oversupply due to recent China expansion
- 2<sup>nd</sup> quarter is soft due to weak BLU and lighting demand
- Expect to rebound for 3<sup>rd</sup> quarter after pipeline inventory is consumed
- Auto, IR, horticulture and colored LED continue to be strong
- Mini-LED starts to take off in the 2<sup>nd</sup> half

# The Three Big Waves for LED Industry



# Growth Engines for LED & Epistar's Strategy

## ➤ Lighting

- Filament (IP), Tube (high performance), CSP (commercial & outdoor lighting), and horticulture (WPE)

## ➤ Automotive

- Exterior (R&Y) & interior (RGB), DRL, Headlamp (design in) and IR (sensing)

## ➤ Signage (Display)

- Ultra-fine pitch display, RGB (high brightness & uniformity)

## ➤ Mini & Micro-LED

# Epistar's Competitiveness in Mini- & Micro-LED

- Efficiency: Best red performance, excellent green brightness
- Uniformity: std dev. for 4" & 6" wafer less than 1 nm
- Unique chip structure for optimized BLU design
- Capable of different design (lateral, vertical & flip chip) for customized applications
- Strong connection to end customers



**Actualize LED Potential**



**Actualize III-V Semiconductor Potential**

# Application field for III-V Semiconductors

### LED

Illumination  
Signals  
Automotive  
Mobile Application

### Laser Diodes

Optical Storage  
Projector  
Image Sensor

### Power

PFC/Power Supply  
PV Inverter  
EV/HEV  
Wind Mills  
Motor Control  
UPS  
Rail Transport.

### RF Electronic

5G, Wireless charger  
Mobile phone

### Acoustic wave

BAW Device

Mendelevium																																																																					
Supply risk																																																																					
<span style="color: red;">■</span> High supply risk <span style="color: orange;">■</span> Medium supply risk <span style="color: green;">■</span> Low supply risk <span style="color: grey;">■</span> Unknown																																																																					
H	Li	Na	K	Rb	Cs	Fr	Sc	Y	La	Ac	Ti	Zr	Hf	Rf	V	Nb	Ta	Cr	Mo	W	Re	Os	Ir	Pt	Au	Hg	Cn	B	C	N	O	F	Ne																																				
1	3	11	19	37	55	87	21	39	57	89	22	40	72	104	23	41	73	24	42	74	106	25	43	75	107	26	44	76	108	27	45	77	109	28	46	78	110	29	47	79	111	30	48	80	112	31	49	81	113	32	50	82	114	33	51	83	115	34	52	84	116	35	53	85	117	36	54	86	118
<div style="display: flex; justify-content: space-between;"> <div> <p>Key isotopes: <sup>258</sup>Md, <sup>260</sup>Md</p> <p>Electron configuration: [Rn] 5f<sup>13</sup>7s<sup>2</sup></p> <p>Density (g cm<sup>-3</sup>): Unknown</p> <p>1<sup>st</sup> ionisation energy: 634.870 kJ mol<sup>-1</sup></p> </div> <div style="text-align: center;"> <p><b>Md</b></p> <p>Mendelevium</p> <p>101 [258]</p> </div> </div>																																																																					
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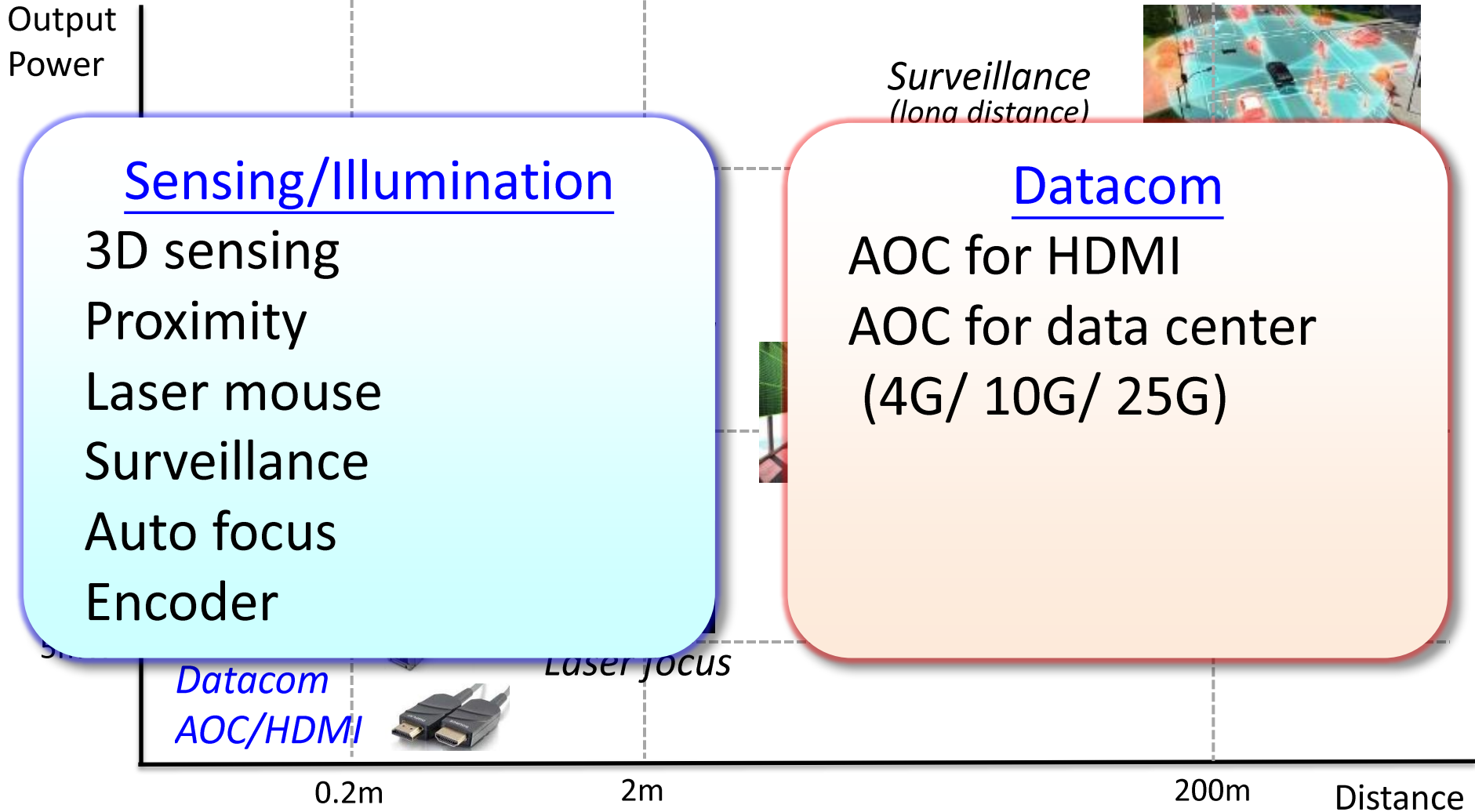
# New Growth Engines

- Future Display (Mini-LED/Micro-LED)
- New Generation Smart Car – GaN Power/LiDAR
- IoT –/Sensor/Power Module
- 5G World – Solar Cell/BAW....
- 3D Sensing, VR/AR – VCSEL
- AI & Deep Learning
- .....

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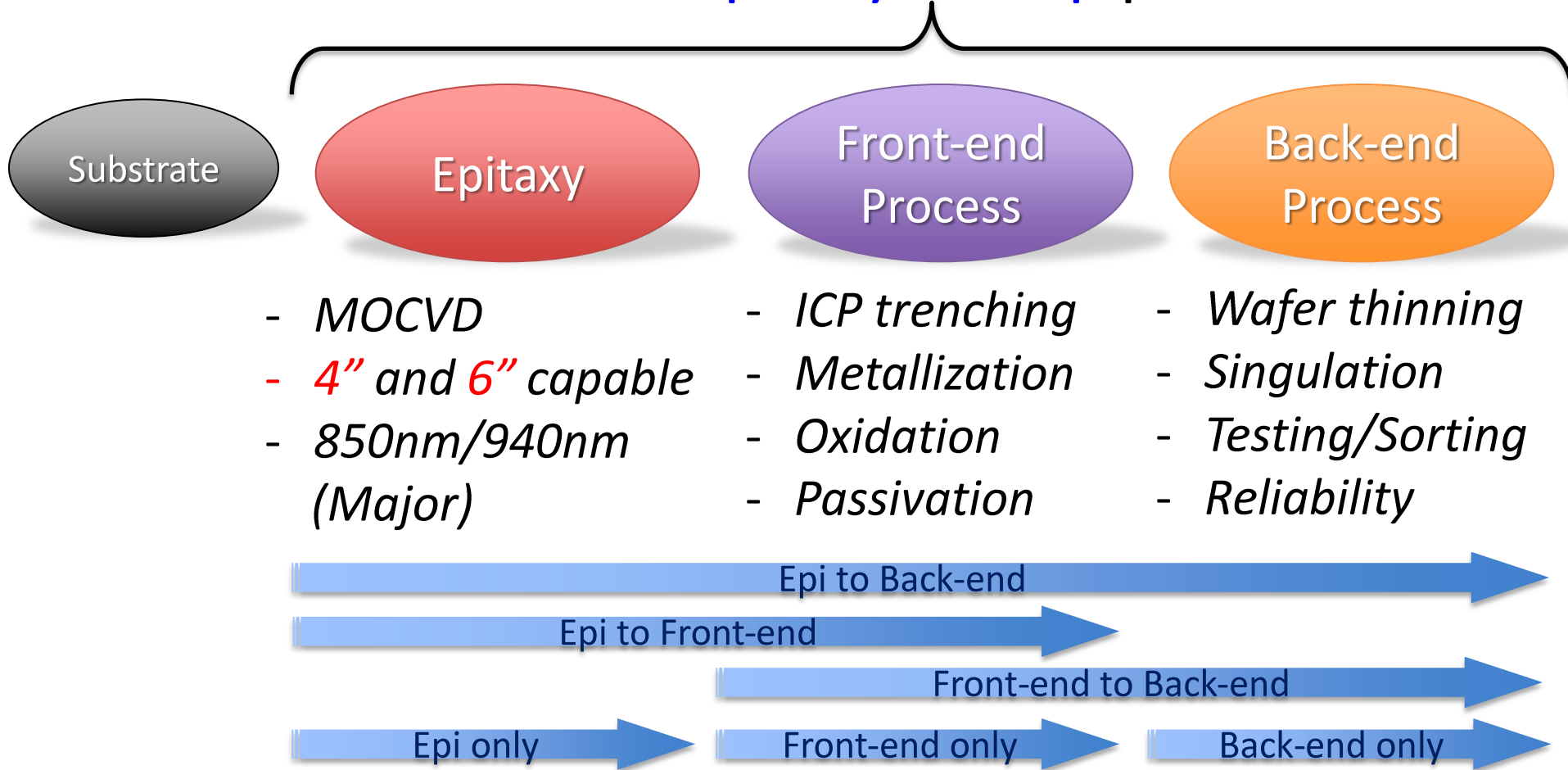
# ES Semiconductor: Foundry Business

# VCSEL Application

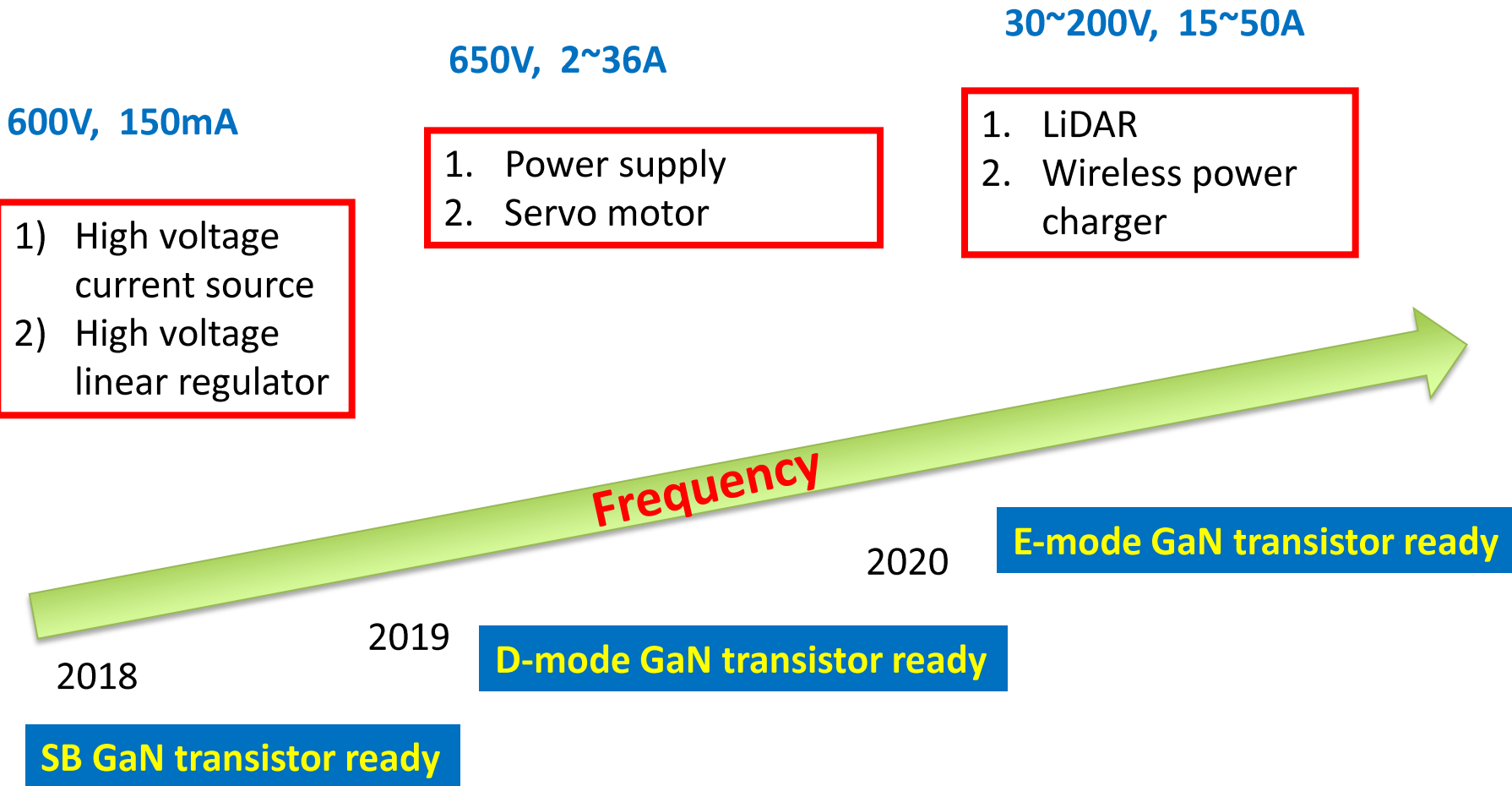


# Epistar Foundry Model - A Complete Foundry Service Provider

## From epitaxy to chip process



# GaN Transistor Application Roadmap



# Epistar Foundry's Competitiveness

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- Only company capable of full foundry service (epi and chip)
- Only company with significant built-in epi capacity
- Excellent track record for foundry service (ex. epi for datacom)
- Proprietary know-how for a variety of different materials (AlGaAs, GaN,...)



# Transformation for Future Growth

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- Transform Epistar group from LED focus to III-V semiconductor focus
- Based on Epistar core competencies
- Address end customer/application needs
- Expand business scope and drive for sustainable profitability

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***Embrace the Change for a Better Future!***

# Balance Sheets

(In NT billions excepted otherwise noted)

## Selected Items from Balance Sheets

	2018.03.31		2017.12.31		2017.03.31	
	Amount	%	Amount	%	Amount	%
Cash & Marketable Securities	5.5	8.3%	7.2	10.7%	5.4	8.1%
Accounts Receivable	11.4	17.2%	11.3	16.9%	10.1	15.1%
Inventory	5.4	8.1%	4.8	7.2%	4.6	6.9%
Long-Term Investment	2.6	3.9%	2.8	4.2%	2.8	4.2%
Net PP&E	24.0	36.2%	24.3	36.3%	26.2	39.1%
<b>Total Assets</b>	<b>66.3</b>	<b>100.0%</b>	<b>67.0</b>	<b>100.0%</b>	<b>67.0</b>	<b>100.0%</b>
Current Liabilities	9.4	14.2%	9.7	14.5%	9.2	13.7%
Long-Term Interest-bearing Debt	0.7	1.1%	2.1	3.1%	5.0	7.5%
<b>Total Liabilities</b>	<b>12.4</b>	<b>18.7%</b>	<b>14.0</b>	<b>20.9%</b>	<b>16.4</b>	<b>24.5%</b>
<b>Total Shareholders' Equity</b>	<b>53.9</b>	<b>81.3%</b>	<b>53.0</b>	<b>79.1%</b>	<b>50.6</b>	<b>75.5%</b>

# 2018 1Q Income QoQ Comparison

(In NT millions except otherwise noted)	1Q 2018		4Q 2017		QoQ	
	Amount	%	Amount	%	Amount	%
Sales revenue	5,148	100.0	5,937	100.0	(789)	(13.3)
Gross profit	886	17.2	1,284	21.6	(398)	(31.0)
Operating expenses	(812)	(15.7)	(921)	(15.5)	(109)	(11.8)
Net other income and expenses	53	1.0	54	0.9	(1)	(1.9)
Operating Profit	127	2.5	417	7.0	(290)	(69.5)
Net currency exchange (loss)gains	(44)	(0.9)	(79)	(1.3)	(35)	(44.3)
Interest expense	(41)	(0.8)	(88)	(1.5)	(47)	(53.0)
Other net non-operating income and expenses	65	1.3	(12)	(0.2)	77	641.7
Profit (loss) before income tax	107	2.1	238	4.0	(131)	(55.0)
Profit (loss) for the period	378	7.3	363	6.1	15	4.1
EPS(NT\$)	0.37		0.37		0.00	0.0

# 2018 Income YoY Comparison

(In NT millions except otherwise noted)	2018 1Q		2017 1Q		YoY	
	Amount	%	Amount	%	Amount	%
Sales revenue	5,148	100.0	5,731	100.0	(583)	(10.2)
Gross profit	886	17.2	1,131	19.7	(245)	(21.7)
Operating expenses	(812)	(15.7)	(766)	(13.4)	46	6.0
Net other income and expenses	53	1.0	52	0.9	1	1.9
Operating profit (loss)	127	2.5	417	7.3	(290)	(69.5)
Net currency exchange (loss)gains	(44)	(0.9)	(599)	(10.5)	(555)	(92.7)
Interest expense	(41)	(0.8)	(37)	(0.6)	4	10.8
Other net non-operating income and expenses	65	1.3	(1)	(0.0)	66	6,600.0
Profit (loss) before income tax	107	2.1	(220)	(3.8)	327	148.6
Profit (loss) for the period	378	7.3	(284)	(5.0)	662	233.1
EPS(NT\$)	0.37		(0.26)		0.63	242.3