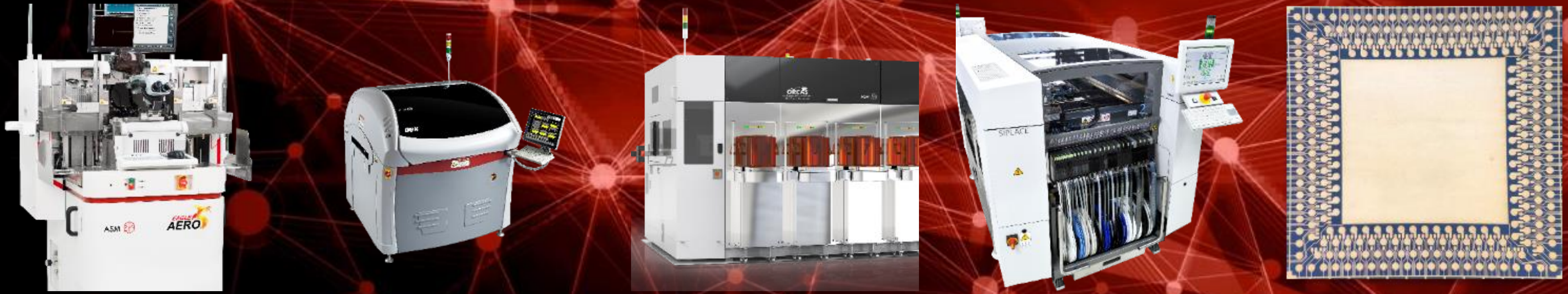
ASM Pacific Technology

2019 Q1 Results Announcement

25 April 2019



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ASMPT Recognized as TOP 100 Global Tech Leaders

ONLY Back-end Equipment Supplier Being Recognized

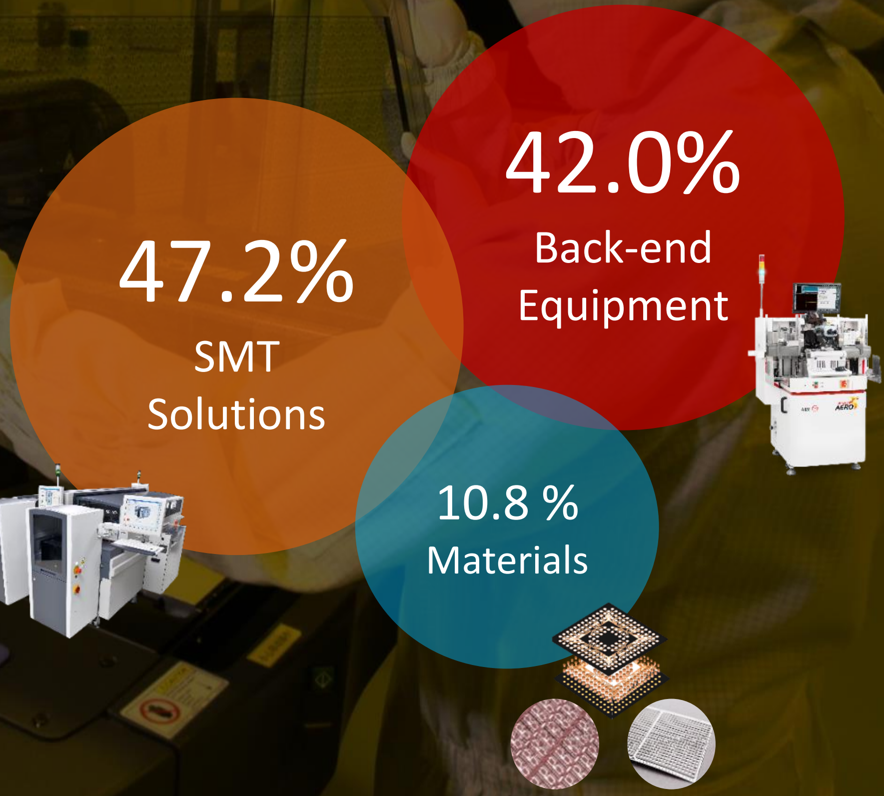
2018 THOMSON REUTERS
TOP100
GLOBAL TECH LEADER

> ***"The Top 100 Global Technology Leaders are the organizations poised to propel the future of technology",***
> Brian Scanlon, Chief Strategy Officer
>
> Thomson Reuters, 2018

Corporate Overview

Q1 2019 Group Revenue
(CAGR 2009- Q1 2019 LTM 14.8%)

USD 467m



A World's Technology & Market Leader

- In the semiconductor packaging equipment industry
- In the SMT solutions industry
- In CIS (CMOS Imaging Sensor) assembly equipment
- In LED equipment
- In Automotive electronics assembly equipment
- In the Lead frame market

ASMPT’s Global Presence

>2,000
Global R&D staff

>1,400
Patents on key leading edge technologies

10
R&D centres worldwide

12
Manufacturing facilities

ASMPT Major Facilities around the World


Hong Kong


Singapore


Munich


Regensburg


Boston


Porto


Longgang (龙岗)


Fuyong (福永)


Huizhou (惠州)


Chengdu (成都)


Taoyuan


Weymouth


Beuningen


Johor


Johor Expansion
(Ready 2019)

Three Business Segments With Leading Market Positions

Worldwide Market Position & Share

Back-end Equipment

#1 Assembly & Packaging Equipment Market

Since 2002

#1 Die Bonders
#2 Wire Bonders
#1/2 Flip Chip Bonders
#1 Thermal Compression Bonders (TCB)
#1 LED Packaging Equipment
#1 CMOS Imaging Sensors (CIS) Equipment
#2 Encapsulation & Post Encapsulation Solutions
#3 Turret Test Equipment (Test Handlers)
#2 Laser Dicing and Grooving

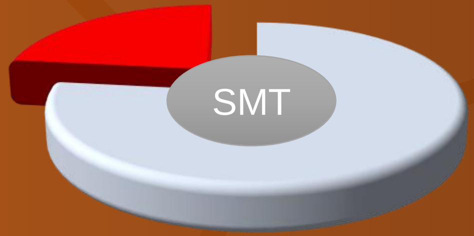
~25%
(2018)

SMT Solutions

#1 SMT Equipment Market

Since 2016

~23%
(2018)



Materials

#3 Leadframe Market

Since 2018

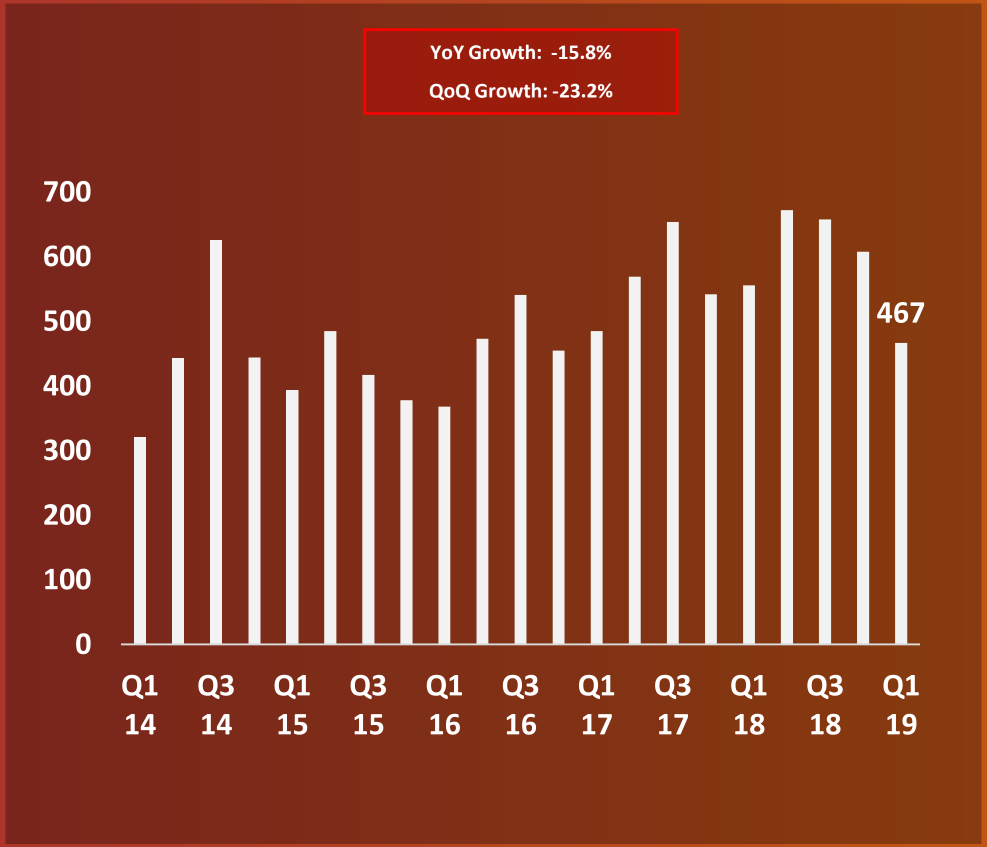
~9%
(2018)

Sources:
Market share for Back-end Equipment is based on information on packaging and assembly equipment market by VLSI, leadframe market by SEMI, and SMT market by ASMPT SIPLACE Market Intelligence

2019 Q1 Financial Highlights

Q1 Financial Highlights

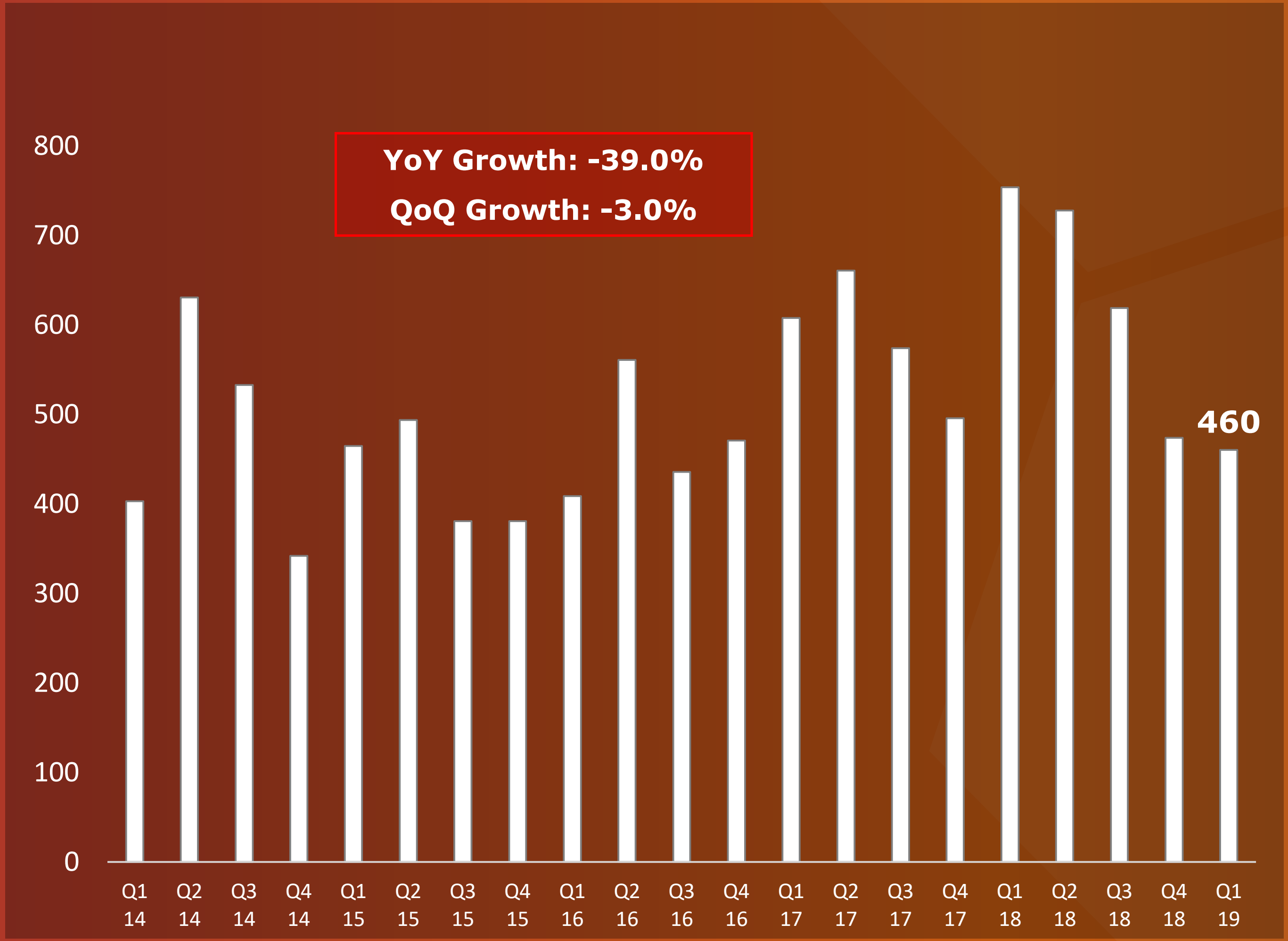
Quarterly Group Billings
(US$ m)



	Q1 2019 Billings		
	USD	YoY	QoQ
Group	466.6m	-15.8%	-23.2%
Back-end Equipment Segment	195.9m	-30.4%	-15.9%
Materials Segment	50.5m	-32.3%	-15.5%
SMT Solutions Segment	220.2m	+11.4%	-30.1%

Group Bookings

Quarterly Group Bookings
(US$ m)



YoY Growth: -39.0%

QoQ Growth: -3.0%

The Worst is Over?

- **Q1 Group Booking:** ▼ 3.0% QoQ
- **Q1 Backend EQT Booking:** ▼ 4.2% QoQ
  - CIS rebound > 100% QoQ
- **Q1 Materials Booking**: ▲ 15.2% QoQ
  - Historically a leading indicator for the Market
- **Q1 SMT Booking:** ▼ 5.1% QoQ

Q1 Group Financial Highlights

Q1 2019	Group	
	YoY	QoQ
Bookings	-39.0%	-3.0%
Revenue	-15.8%	-23.2%
Gross Margin	-369bps	+93bps
EBIT	-64.1%	-34.7%
Net Profit	-82.4%	-49.0%
Net Profit Margin	-1121bps	-149bps

Factors affecting Q1 Profitability

- Product Mix
- Lower Sales volume
- Underutilization of capacity
- YoY OPEX increased by 6.6% mainly due to new acquisitions

We Are Ready to Ride the Next Wave of Growth

The "Smart" Era Made Possible with Data

Smart Factories

By 2022...

- 7 billion more Machine-to-Machine devices
- 300 EB/year

Smart Cars

By 2025...

- 8 million more Autonomous Vehicles
- 21,920 EB/year

Smart Things

By 2030...

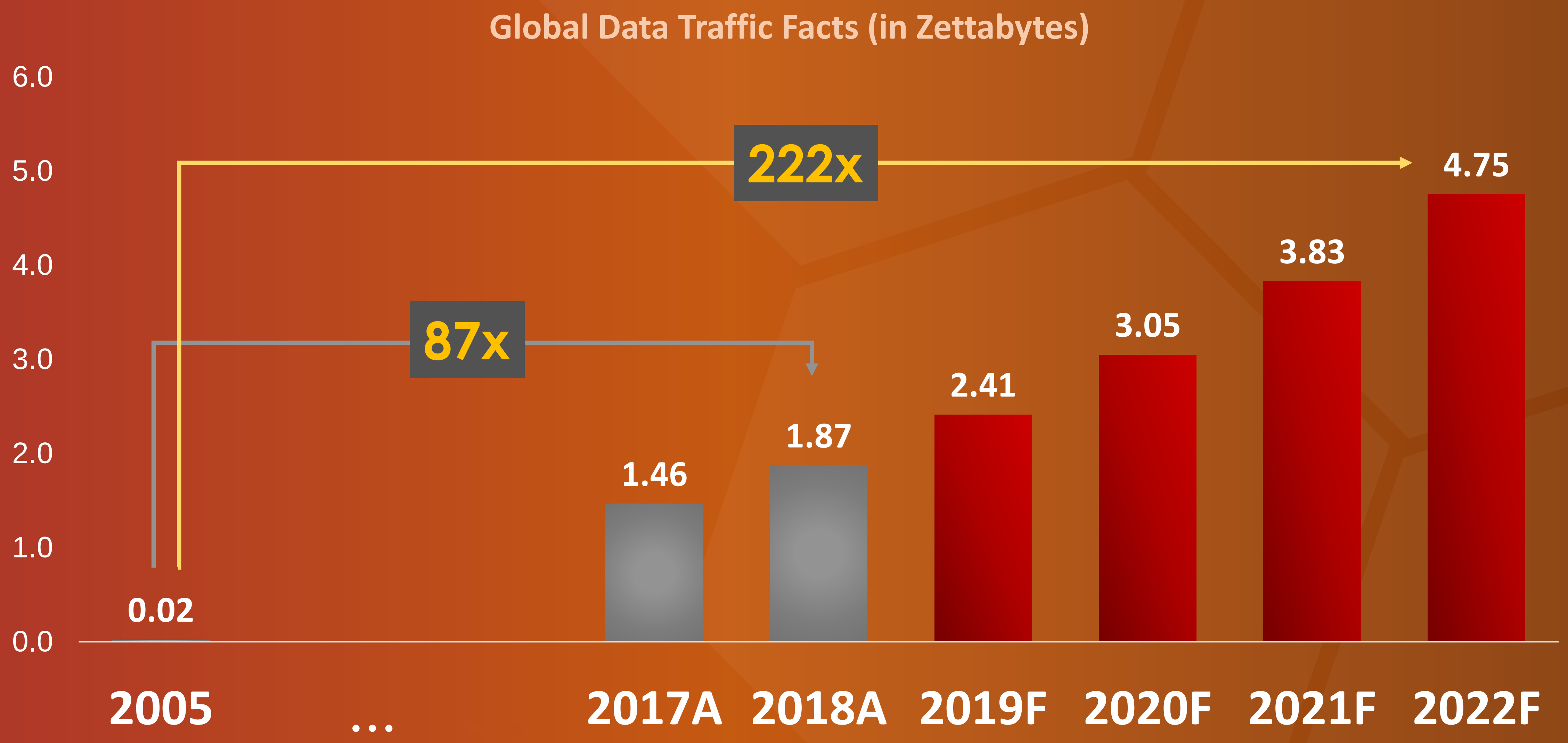
- 100 billion more units
- 11,500 EB/year

34 ZB more data generated in a year by 2030

From These Three Drivers Alone

Sources:
Cisco Visual Networking Index: Forecast and Trends, 2017–2022 White Paper,
Tuxera: Autonomous cars will generate more than 300 TB of data per year,
Wikibon: The Vital Role of Edge Computing in the Internet of Things

Data Traffic to continue ‘Exploding in Waves’ over the next years



Source: Cisco Visual Networking Index: Forecast and Trends, 2017–2022 White Paper (Updated February 2019)

Data-Centric Era will spur Semiconductor Demand

Transmit
WiFi
LiFi
5G
WLFO
Silicon Photonics
Wire Bonding

Collect
3D Sensing
Camera
Industry IoT
Sensor
IoT
LIDAR
Active Alignment
CMOS Imaging Sensors
Precision Die Attach

Advanced Packaging

Store
Big Data Centre
Memory
Cloud Computing
Silicon Photonics
TCB
Wire Bonding
PLFO
Laser Dicing

Analyse
AI
TPU
Data Analytics
HPC
WLFO
PLFO
LASER Grooving
TCB

Advanced Packaging

Visualise
AR
Micro LED
VR
Mini LED
Precision Die Attach
TCB

Critical Requirements to Enable the Digital World

Critical Requirements

Greater Storage

Higher Bandwidth

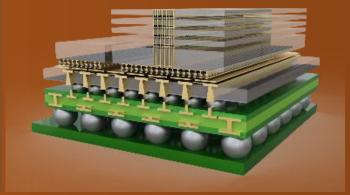
No Latency

Lower Power

Technology Enabling Solutions

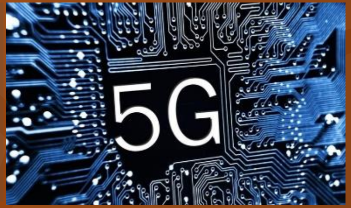
Advanced Packaging

New structures, "right" form factor – Having more with less



5G Connectivity Infrastructure

100x faster than 4G
Creates "near zero latency"



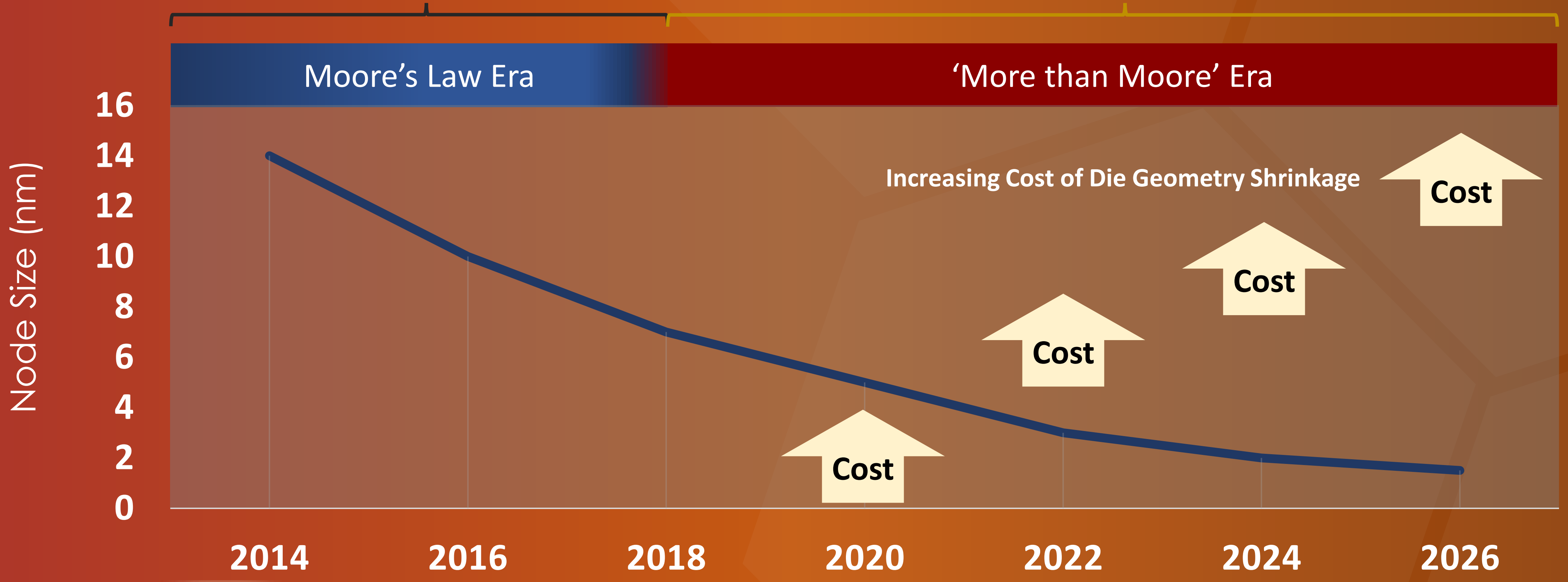
Heterogeneous Integration

Significant improvement in functional density
High Bandwidth and Low Power

More than Moore: Heterogeneous Integration & Advanced Packaging Shifting the Value Chain

Shrinkage in Die Geometry

Solution: Heterogeneous Integration and Advanced Packaging

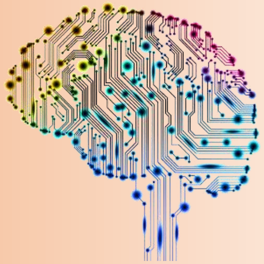


Heterogeneous Integration & Advanced Packaging Unleashes the Power of A.I.

Advantages of Heterogeneous Integration

- Integrating multi-mode technologies to enable *"More than Moore"*
- Faster time to market
- Less IP issues
- Flexibility
- Cost savings

Crucial enabling technology for Artificial Intelligence



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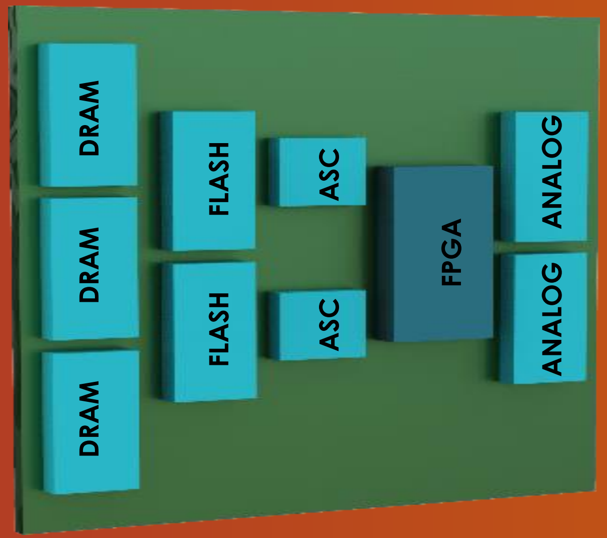
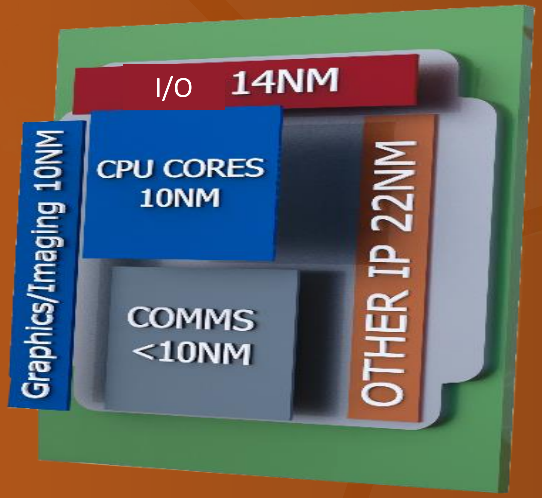


Heterogeneous Integration

To…

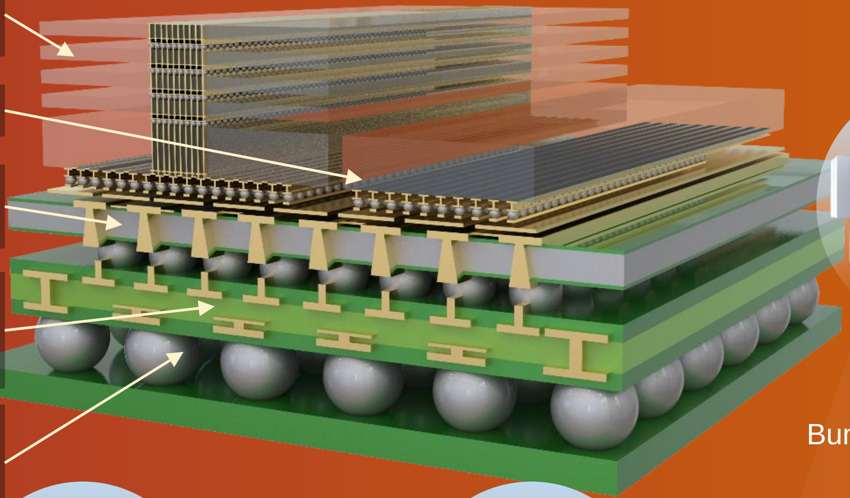


"High Bandwidth & Low Power Data Pipes <u>ONLY</u> Available On Heterogeneous Integration on Advanced Packages"

Source: Intel

Advanced Packaging: The Game Changer in Semiconductor Revolution

Advanced Packaging Technology Enabler



HBM / Memory

X-PU

2.5D Silicon Interposer

HDI Substrate with Embedded Technology

Integrated Passive Device, IPD integration

FIREBIRD
TCB
FLI

NEXX
PVD | ECD
Bumping,TSV & RDL

Laser 1205
Laser Separation
Wafer Dicing and Grooving

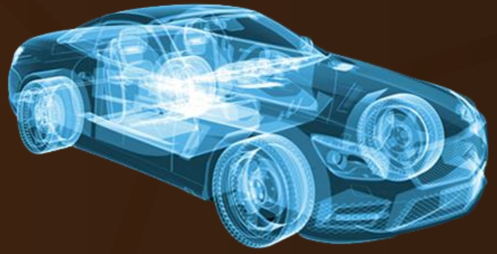
SIPLACE CA
Die Attach & SMT
Wafers and SMT Feeders

NUCLEUS
Pick and Place
Wafer and Panel

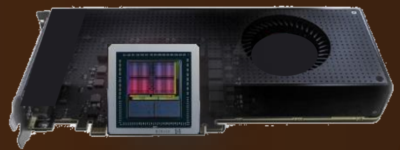
End Applications

Datacenters for HPC, Machine Learning

Automotive – Sensors, Camera, Body Electronics, Safety Systems, Infotainment



GPU for VR/AR & AI



IoT Era – Smart Wearables & Smart Machines (Factories)

Applications Fueling OPTO Business Growth

MiniLED

Market Size CAGR 2019 – 2023

~ 90 %

Video Walls / Large Displays

MicroLED

Current Resolution 2160 x 1200

MicroLED is expected to offer

10X

higher resolution

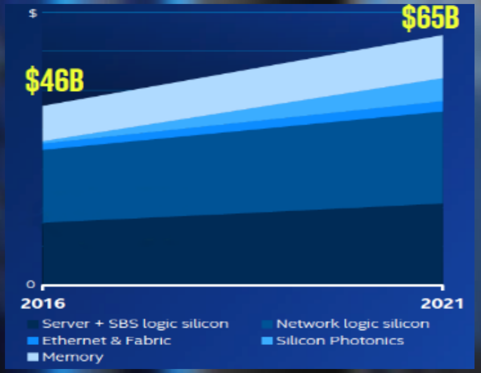
Display for AR / VR

Photonics

Market Size CAGR 2019 – 2025

~ 23.4 %

Data Center Silicon TAM

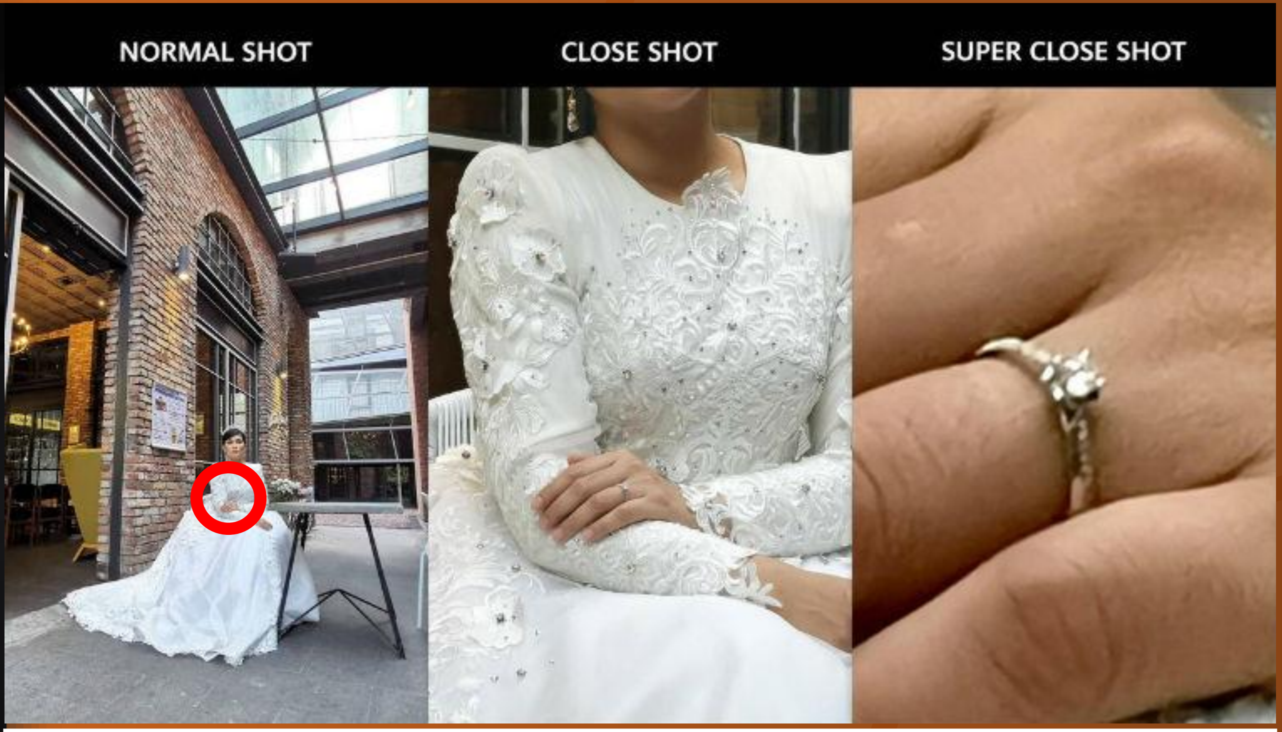


Source: Intel

Data Centre / Cloud Computing

Source: Gamingscan, Electronics Weekly, LEDinside, ReportsnReports, Yole Development (Oct 2018)

Smartphone Innovations Continue to Drive CIS Business

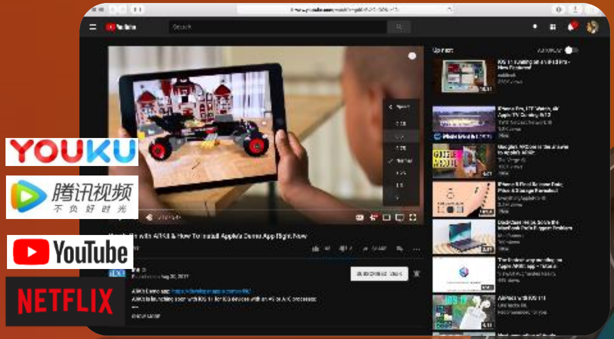


50X Zooming Capability

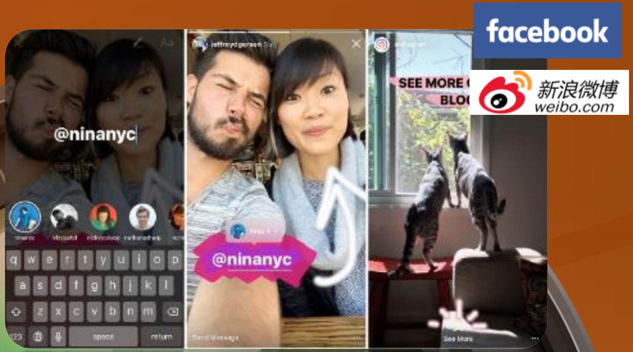
(5X Optical + 10X Digital Zoom)

The Role of the Camera in the Data Era Redefined

Today…



Videos



Social Media Content

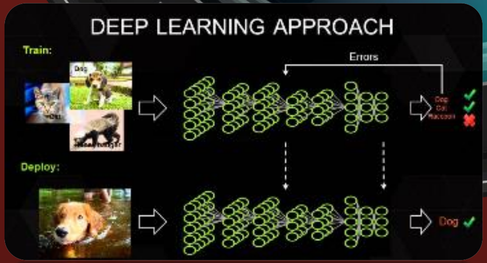
Still Images

Autonomous Vehicles

AR/VR

Security: Features Recognition

Future…



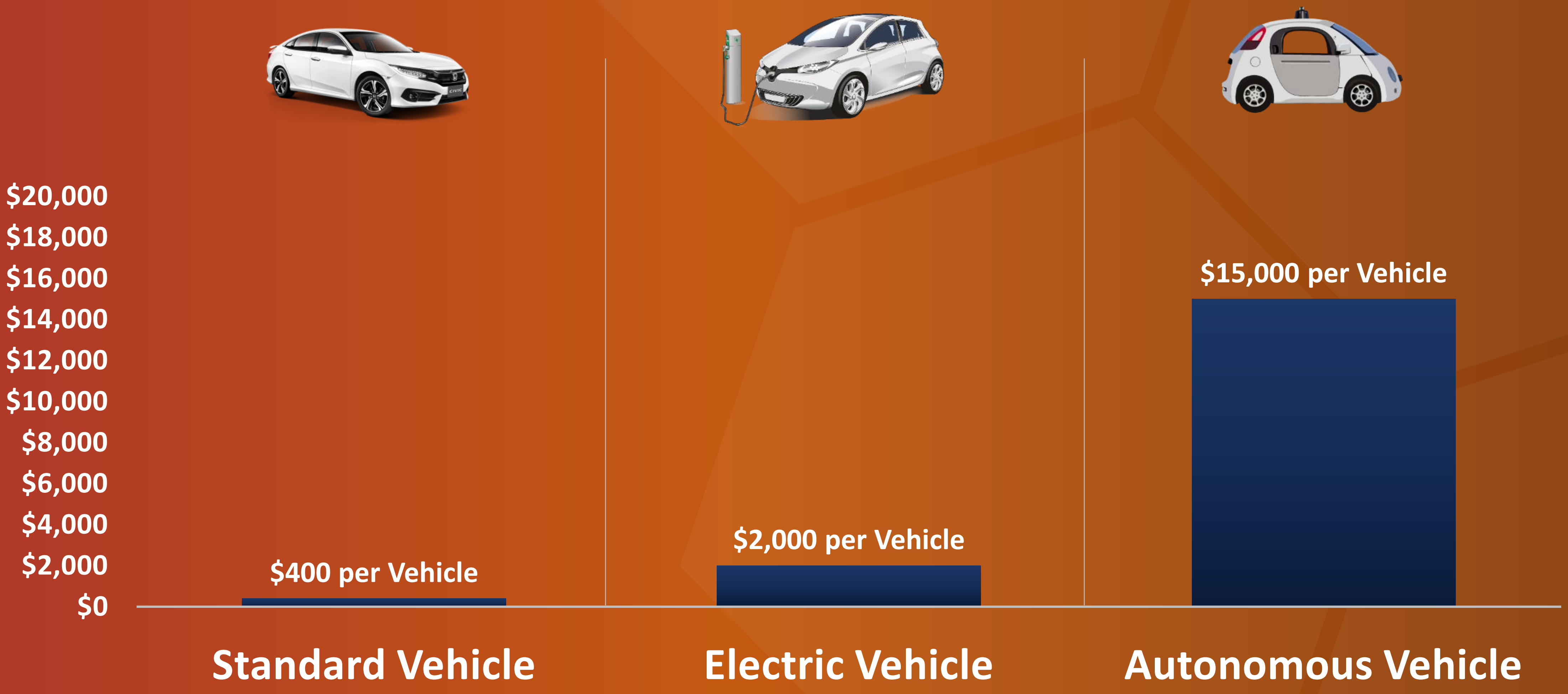
Artificial Intelligence

Industrial Inspection with Drones

Source: Youtube, Facebook, Instagram, IT World Canada, Nvidia, Precision Security Australia, Cramer.com, Weibo, Netflix, Youku

‘Smart Cars’ will drive Semiconductor Industry Growth

Semiconductor Content Value in a single unit vehicle, 2018 (in US$)



Source: Semico Research

How will ‘Smart Cars’ drive ASMPT’s Growth?

5G to Cloud Connectivity

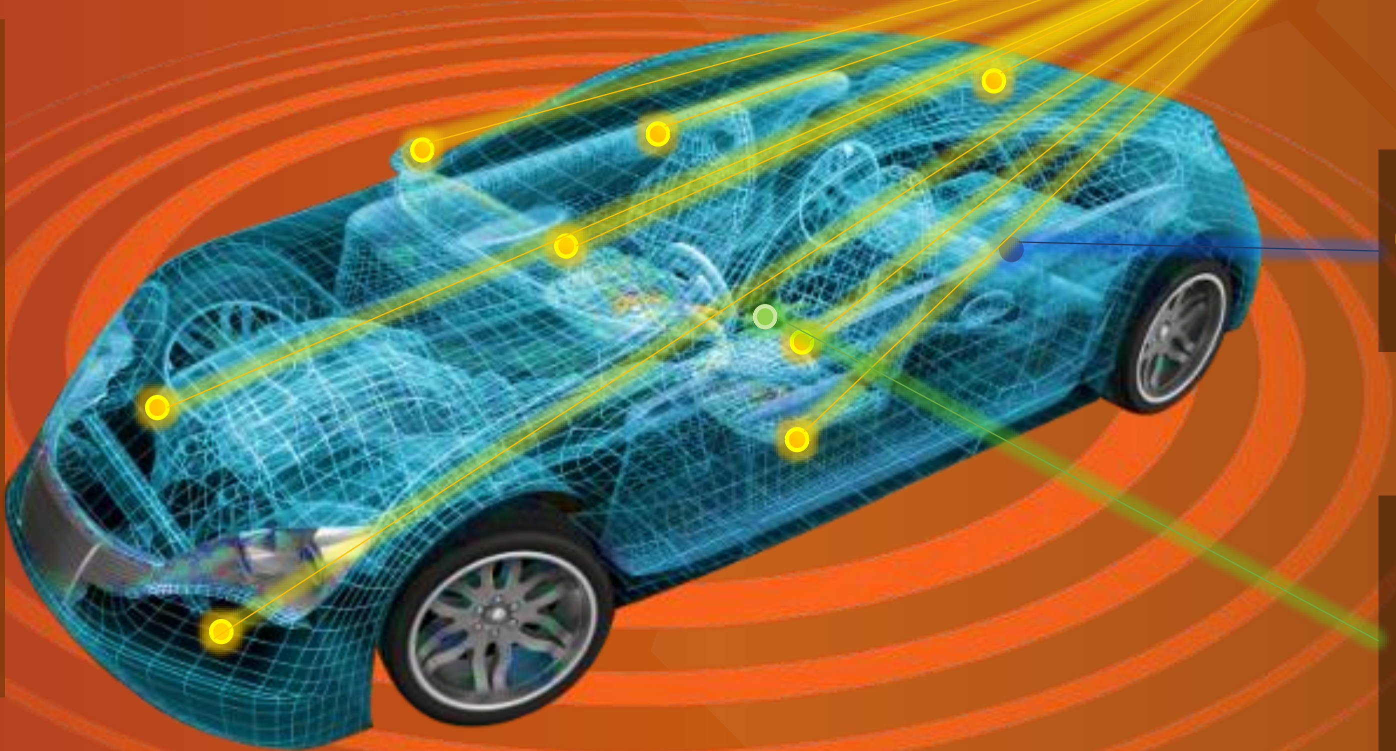
Vehicle-to-X (Vehicle, Infrastructure, Network, Devices) communications

Sensors
The eyes and ears to gather information from the Road

Power
Thermal management (e.g. Ag Sintering) will play important role

5G to Cloud Connectivity
Enable “V2X” communications

Entertainment
Frees up driver’s attention on road for entertainment



Sensors

Image, LIDAR, Radar

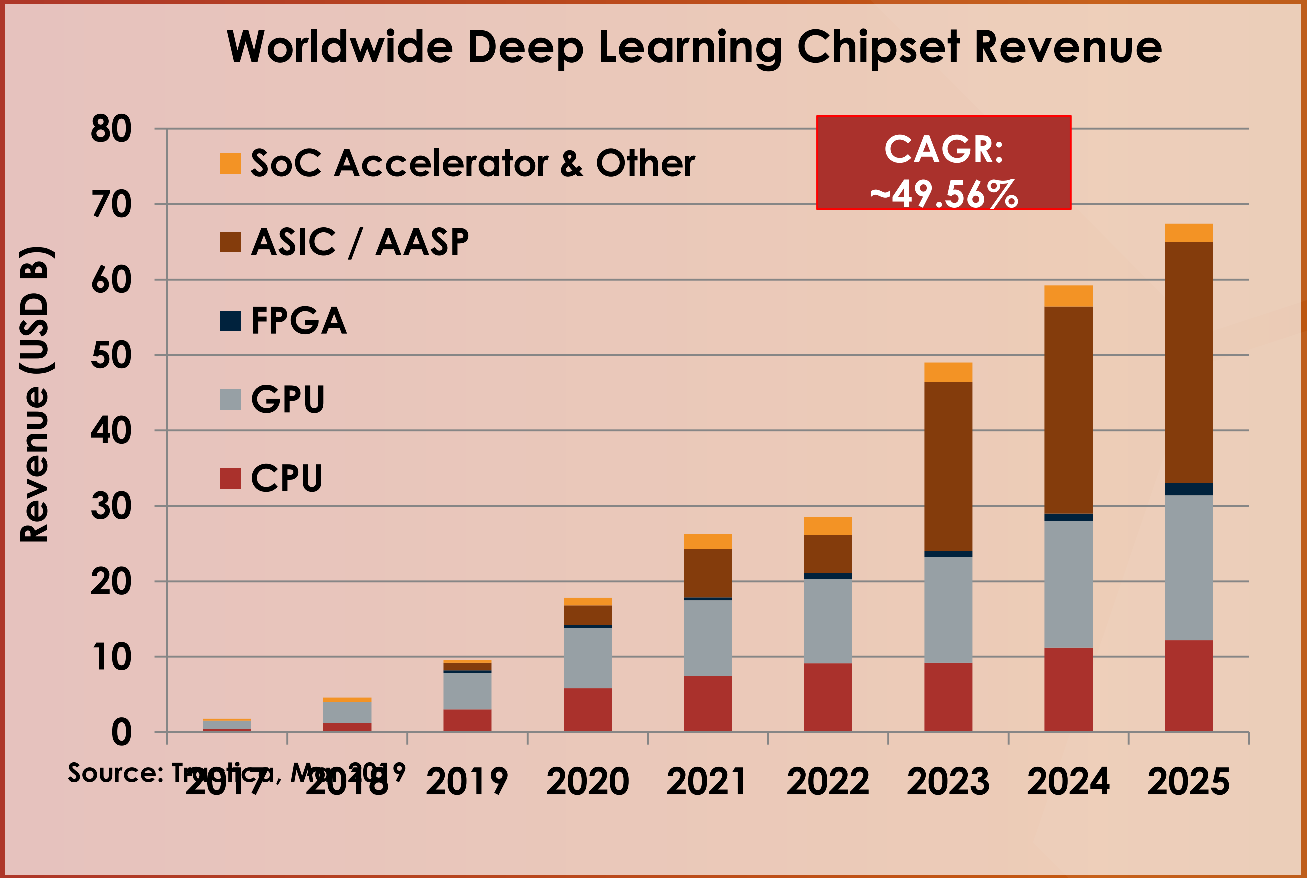
Power Management

Battery Technology for thermal management

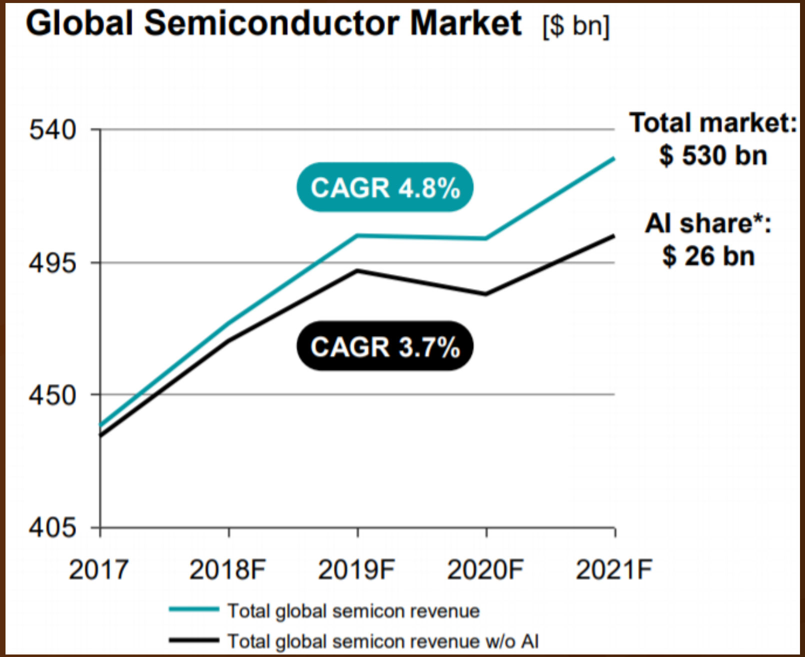
Entertainment Platform

Television, Mobile devices, VR/AR, Gaming, etc.

Artificial Intelligence (AI) is a Significant Driving Force for ASMPT



Source: Tractica, Mar 2019



A.I. Share within Semi industry
Expected to grow to

> $100B

In the next decade

Source: PwC Strategy & analysis, IC Insights, JP Morgan

WLCSP | WLP | eWLB | FOPLP | 3D TSV | Embedded SiP | Advanced SiP …

5G to Bring About New Array of Applications in the Data-Era

Opportunities

Antennas
Array

More Base Stations

Substrate Like PCB

Greater Demand for Chips and RF Filters

Hardware + Software + Services

ASM **SMART FACTORY** SOLUTIONS

ENABLING THE DIGITAL WORLD

ADAMOS

IIoT applications & services, IIoT portal (Data Analytics, Business Intelligence, Cloud based)

CRITICAL MANUFACTURING

Factory Level (MES)
(Planning, Process Flow Maintenance, Visualization)

IPC CFX

ASM

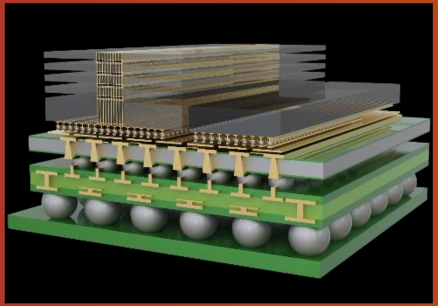
OPC FOUNDATION SECS/GEM

Line Level
(Automation, Material Management, Lot Management)

Shop floor / Equipment

OPC FOUNDATION SECS/GEM

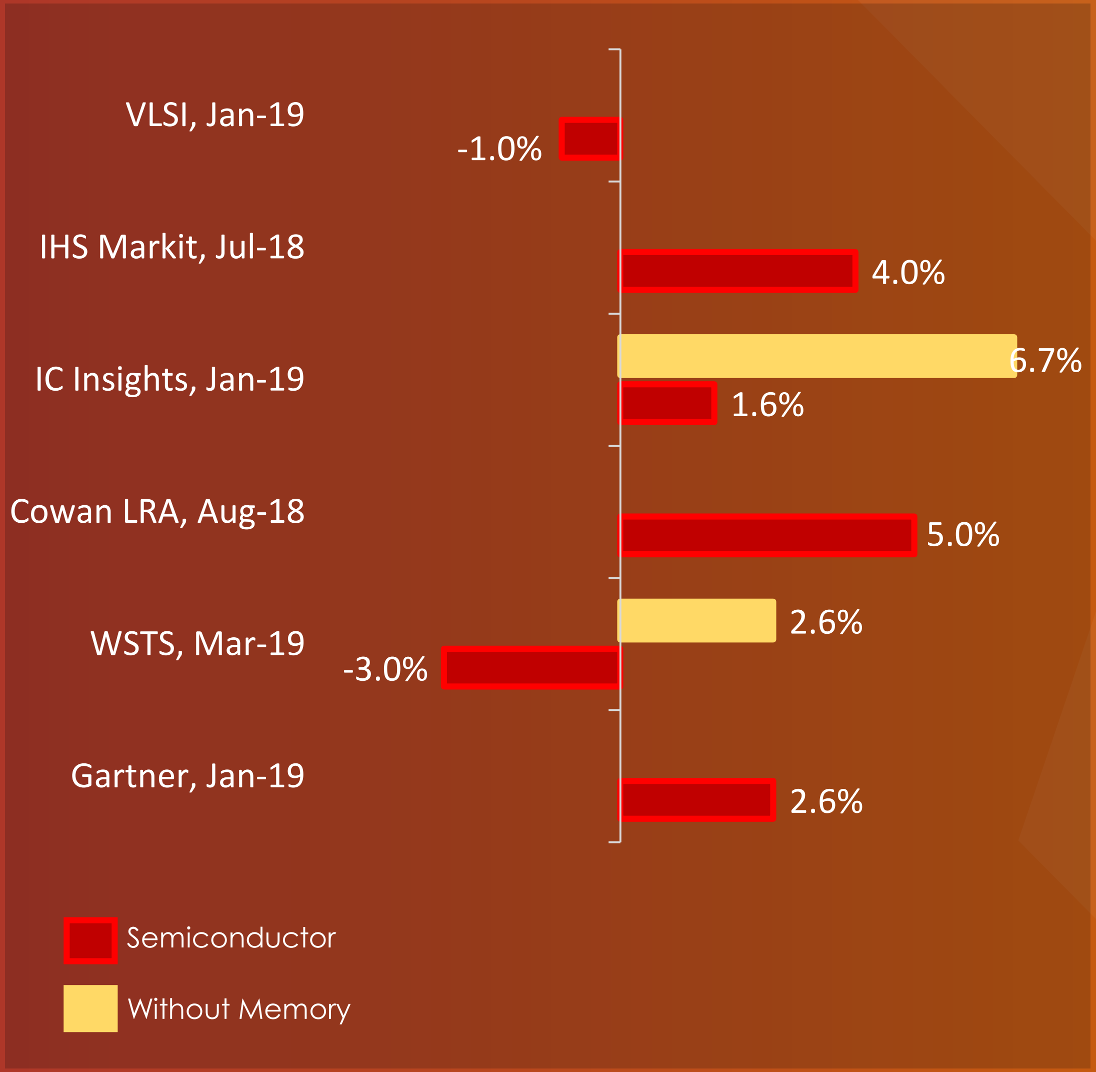
Expanding Beyond Assembly and Packaging Solutions

Application Markets	Industry Requirements	ASMPT’s Enabling Solutions	
 CIS	- Zero Foreign Particles	- 1µm Particle Inspection Capability with Auto Clean Solution	 **TwinSpector** Automated Optical Inspection
 Automotive	- Demands High Quality - Zero PPM Defects	- 2D and 3D All-in-one Vision System	 **SkyHawk** 3D Automated Optical Inspection
 Advanced Packaging	- 100%, on-line high speed inspection	Made Strategic Investment into a Silicon Valley Startup on **X-Ray Inspection Solutions**	

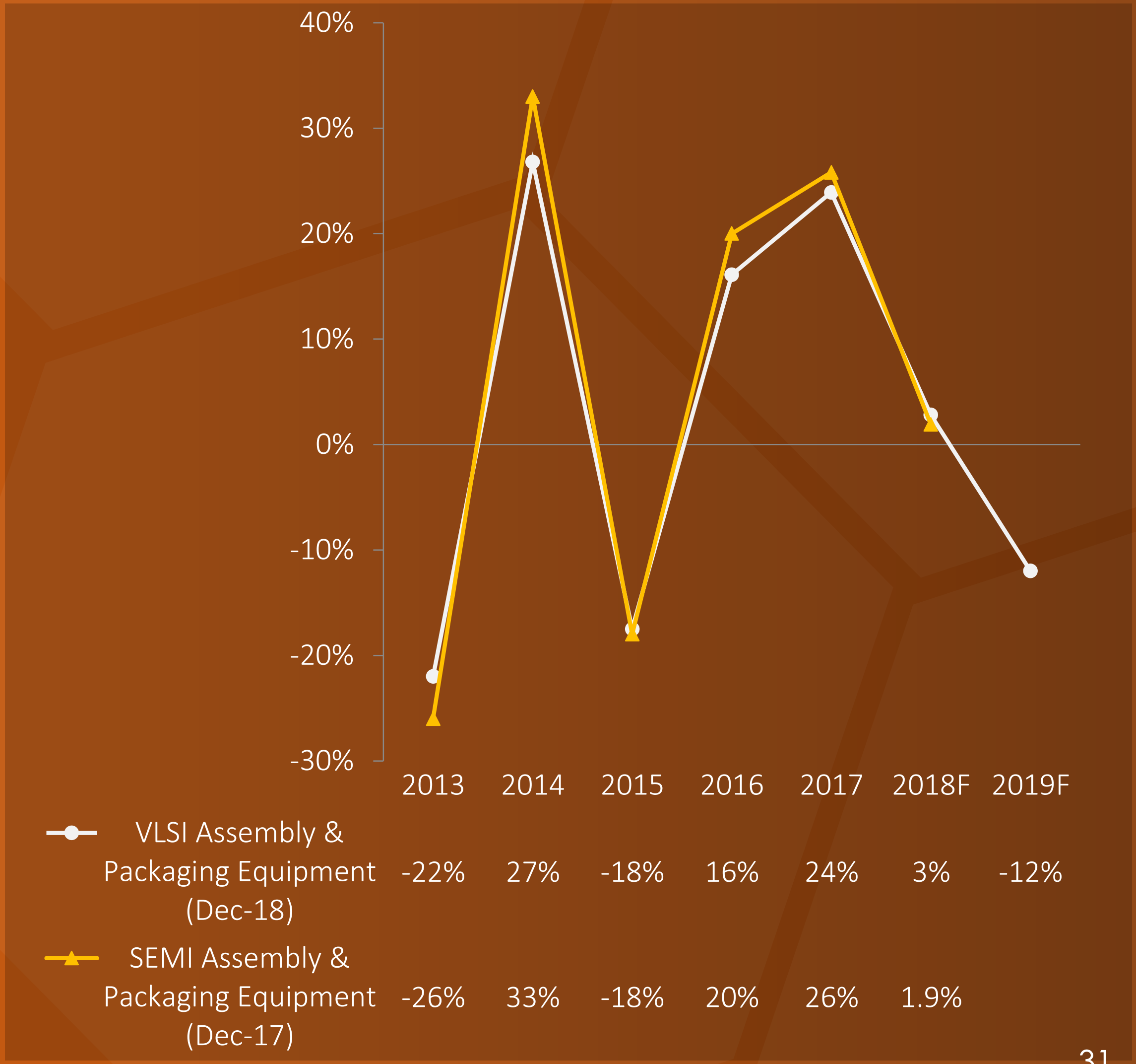
Outlook

Industry Growth Forecast (2019)

Semiconductor Industry



Forecast Global Assembly & Packaging Equipment Market



	2013	2014	2015	2016	2017	2018F	2019F
VLSI Assembly & Packaging Equipment (Dec-18)	-22%	27%	-18%	16%	24%	3%	-12%
SEMI Assembly & Packaging Equipment (Dec-17)	-26%	33%	-18%	20%	26%	1.9%	

Outlook

Q2 Group Billing: US$490 million to US$540 million

- **Expect Back-end business to lead the QoQ improvement**

Q2 Group Booking: Anticipate double-digit percentage improvement QoQ

Many customers believe chance of market improvement greater than chance of further market deterioration

2019 Q1
Financial Results

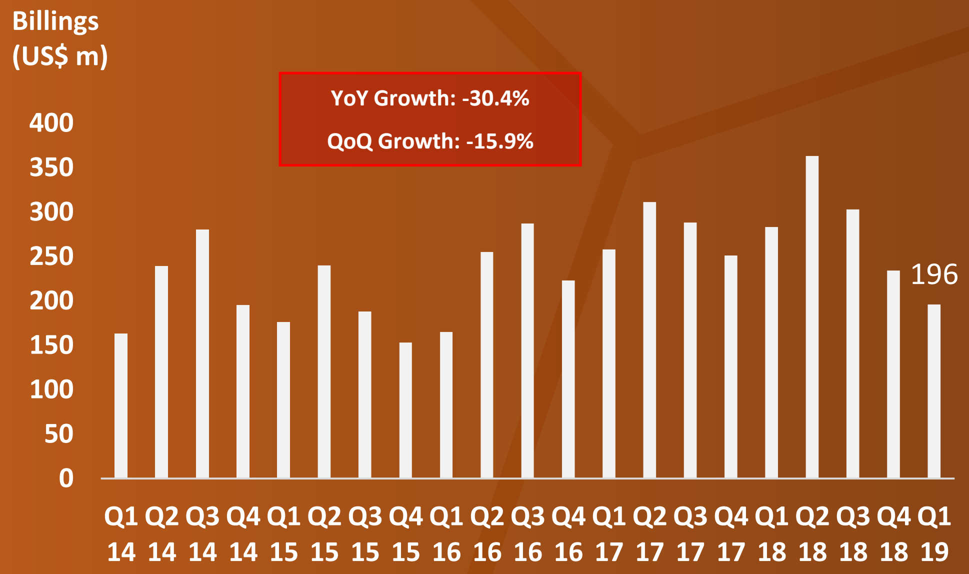
Q1 Segment Financial Highlights

Q1 2019	Back-end Equipment Segment		Materials Segment		SMT Solutions Segment	
	YoY	QoQ	YoY	QoQ	YoY	QoQ
Bookings	-45.2%	-4.2%	-37.4%	+15.2%	-30.1%	-5.1%
Revenue	-30.4%	-15.9%	-32.3%	-15.5%	+11.4%	-30.1%
Gross Margin	-508bps	-383bps	-271bps	+275bps	-269bps	+423bps
Segment Profit	-89.5%	-68.0%	-73.3%	+214.2%	+6.4%	-28.5%
Segment Profit Margin	-1928bps	-558bps	-406bps	+193bps	-58bps	+27bps

Q1 2019 Segment Results - Back-End Equipment Business

	Q1 2019	YoY	QoQ
Bookings (USD)	223m	-45.2%	-4.2%
Billings (USD)	196m	-30.4%	-15.9%
Gross Margin	39.2%	-508bps	-383bps
Segment Profit (HKD)	53m	-89.5%	-68.0%
Segment Profit Margin	3.4%	-1928bps	-558bps

- IC/Discrete and CIS took the lead in Backend EQT Booking
- Booking for IC/Discrete ▲ 30% QoQ (excluding ASM NEXX)
- CIS Booking more than double QoQ
- Gross Margin ▼: Lower sales volume and under-utilization of installed production capacity

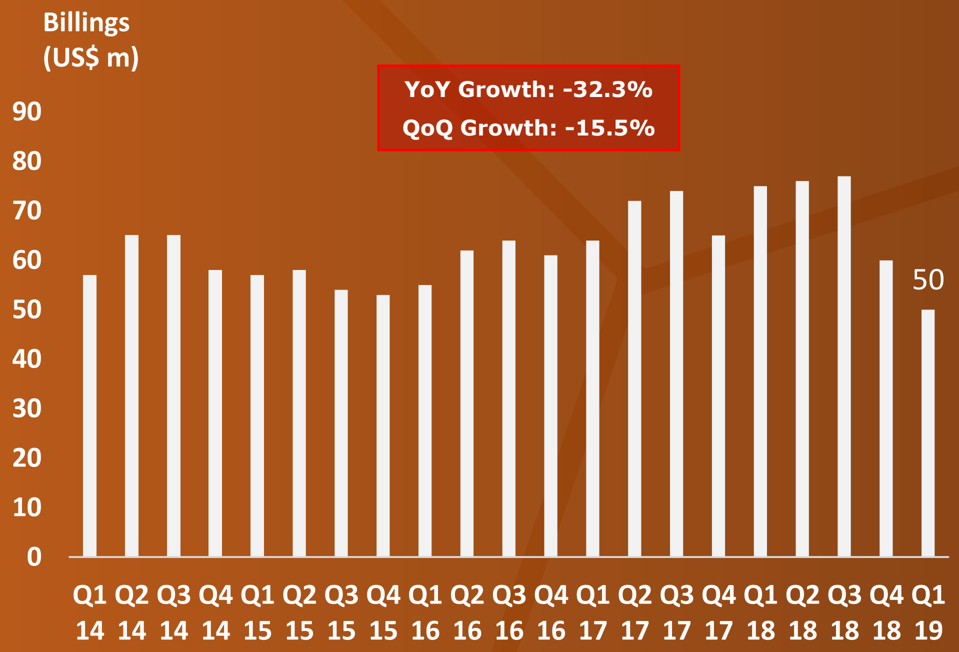

YoY Growth: -30.4%

QoQ Growth: -15.9%

Q1 2019 Segment Results - Materials Business

	Q1 2019	YoY	QoQ
Bookings (USD)	46m	-37.4%	+15.2%
Billings (USD)	50m	-32.3%	-15.5%
Gross Margin	10.4%	-271bps	+275bps
Segment Profit (HKD)	10m	-73.3%	+214.2%
Segment Profit Margin	2.6%	-406bps	+193bps

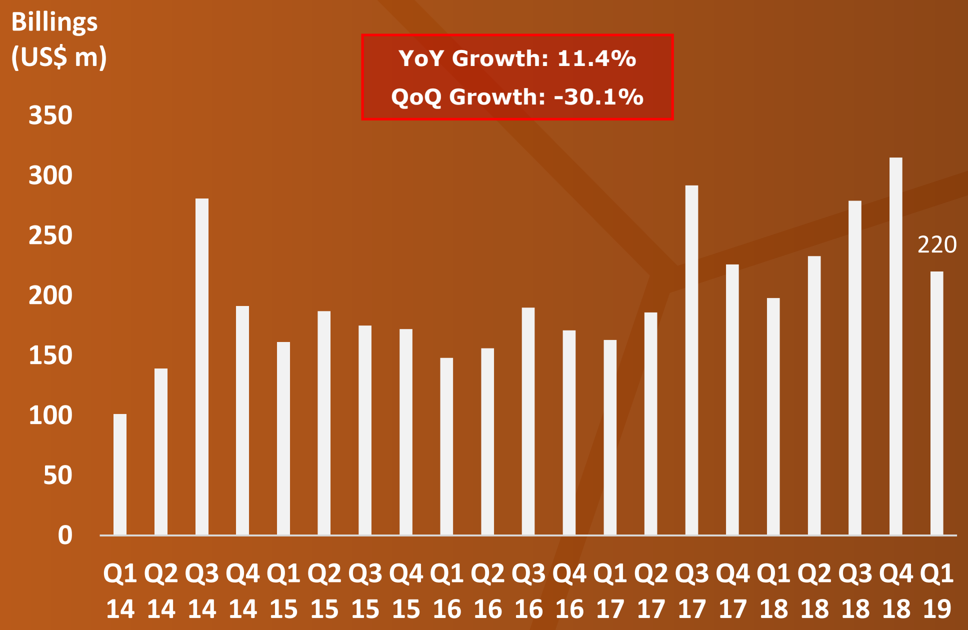
- Booking ▲ 15.2% QoQ
- Historically a leading indicator for the market
- GM ▲ 275 bps QoQ to 10.4%


YoY Growth: -32.3%
QoQ Growth: -15.5%

Q1 2019 Segment Results - SMT Solutions Business

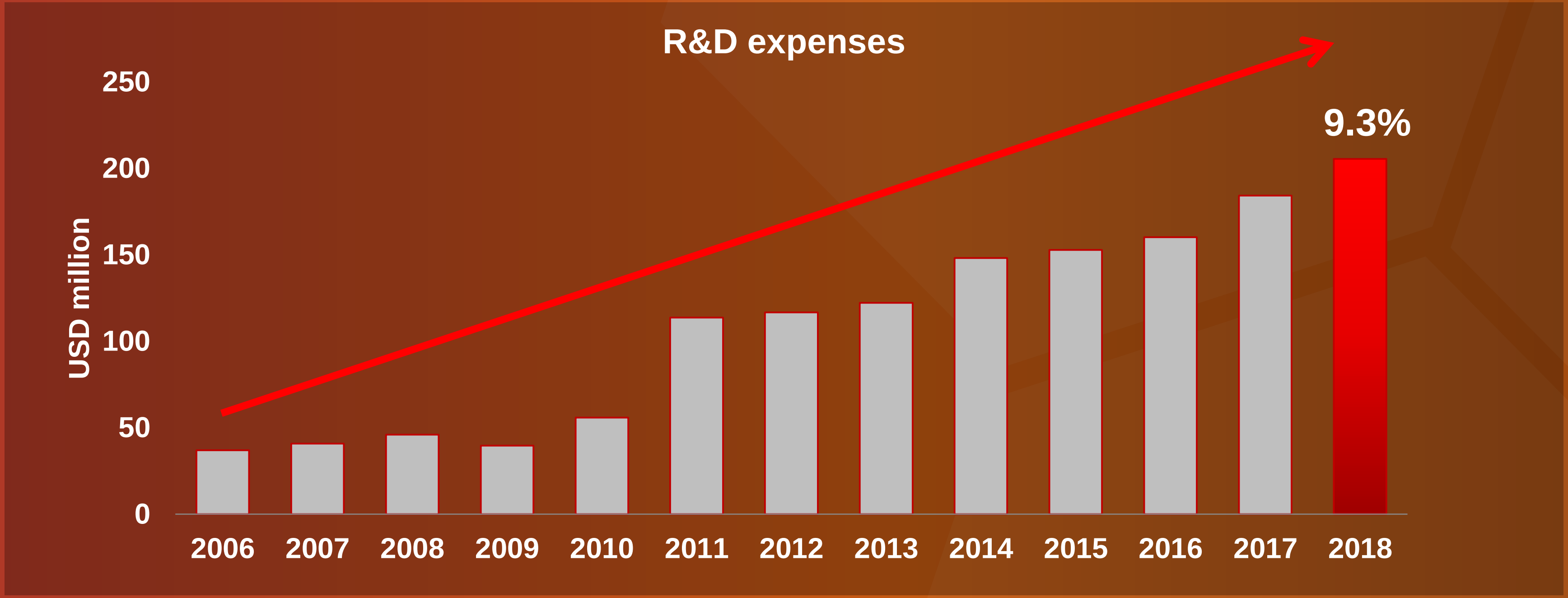
	Q1 2019	YoY	QoQ
Bookings (USD)	192m	-30.1%	-5.1%
Billings (USD)	220m	+11.4%	-30.1%
Gross Margin	34.5%	-269bps	+423bps
Segment Profit (HKD)	213m	+6.4%	-28.5%
Segment Profit Margin	12.4%	-58bps	+27bps

- Billing ▲ 11.4% YoY
- Segment Profit ▲ 6.4% YoY



YoY Growth: 11.4%
QoQ Growth: -30.1%

R&D Commitment Makes Us a Preferred Partner of Choice

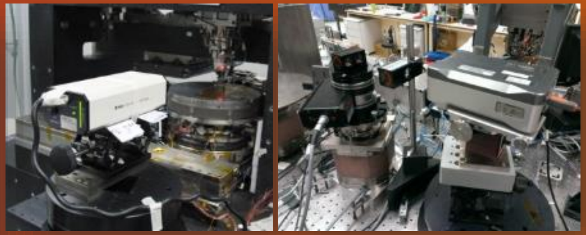

R&D expenses

USD1,423 million invested in R&D

2018 R&D expenditure

- US$ 205 million
- 9.3% of equipment sales


Package Interconnection


Optics precision engineering


Vibration control

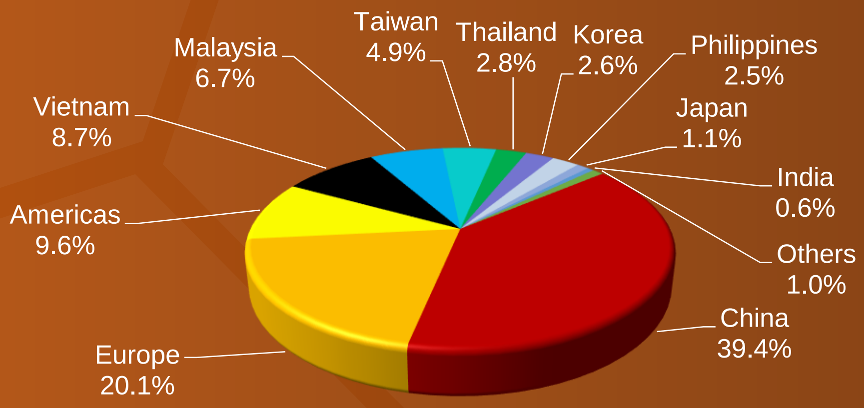

Laser dicing & grooving


SMT

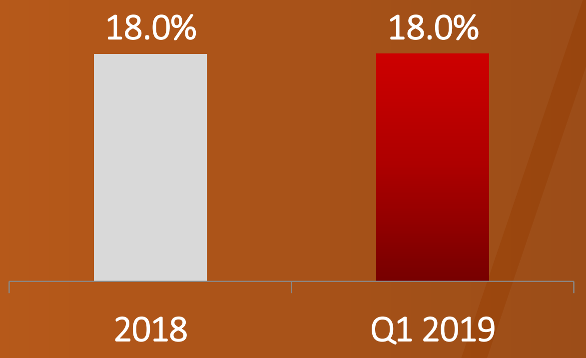
An Extensive Customer Base

- No single customer accounted for more than 10% of Group revenue
- Top 5 customers accounted for 18% of Group's Q1 2019 revenue
- Top 20 customers include:
  - World's leading IDMs
  - Tier 1 OSATs, major OSATs in China
  - Key LED players
  - Major camera module makers
  - Top EMS providers
  - Leading automotive component suppliers
- Among Top 20 customers of Group:
  - 6 from SMT Solutions segment
  - 4 from both Back-End Equipment & SMT Solutions segment

Q1 2019 Geographical Distribution of Revenue



Q1 2019 Revenue Contribution from Top 5 Customers



Awards & Recognition

Recent Awards & Recognition

- Technology Achievement Grand Award of HKIA 2017
  (for the third time)
  Federation of HK Industries

- Directors of the Year Awards 2017 (Collective Board)
- Directors of the Year Awards 2018 (Individual Director)
  Hong Kong Institute of Directors

- Hong Kong Outstanding Enterprises 2017-18
  HK Economic Digest

- 2017 All Stars of the Semiconductor Industry
  VLSI Research

VLSIresearch's 2017 All Stars

- Singapore Quality Class
  Enterprise Singapore

Recent Awards & Recognition

- Factory of the Year 2016 Award (for SMT) by Produktion/AT Kearney

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- Ranked among Top 10 of Best Managed HK Companies
- Ranked among Top 10 of Best at Investor Relations

- 2017 & 2018 “Triple Crown” with RANKED 1st/10 BEST/BEST Suppliers Awards from VLSIresearch

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- 2016-17 Corporate Governance Asia – Best Investor Relations Company (HK)
- 2017 Corporate Governance Asia – Best CEO (Investor Relations)

- 2015 Hong Kong Awards for Industries: Technology Achievement Grand Award

VLSI Awards 2018

VLSIresearch™
THE BEST SUPPLIERS
Customer Satisfaction
2018

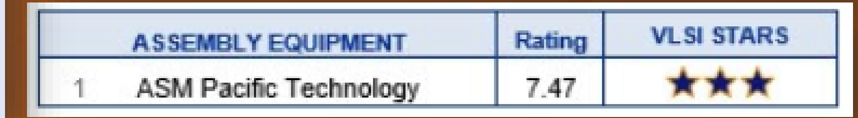
10 BEST Segment	Rank	10 BEST CHIP MAKING EQUIPMENT SUPPLIERS OF 2018	Rating	Stars
LARGE	1	TERADYNE	9.25	★★★★★
	2	ADVANTEST	9.10	★★★★★
	3	ASML	9.05	★★★★★
	4	Hitachi Kokusai Electric	8.90	★★★★½
	5	TEL TOKYO ELECTRON	8.45	★★★★
	6	APPLIED MATERIALS	7.55	★★★½
	7	ASM Pacific Technology	7.45	★★★
	8	Hitachi High-Tech	7.45	★★★
FOCUSED	1	Plasma-Therm	9.01	★★★★★
	2	AMEC	8.95	★★★★½
	3	FORMFACTOR	8.94	★★★★½
	4	SPTS	8.90	★★★★½
	5	Xcerra	8.76	★★★★½
	6	EVG	8.42	★★★★
	7	ACCRETECH TOKYO SEIMITSU	7.22	★★★

Source: VLSIresearch
css_10BEST_v18.05

WHAT
THE BEST SUPPLIERS OF 2018
ARE BEST AT

ACCRETECH TOKYO SEIMITSU	• Uptime • Usable Performance	ADVANTEST	• Trust in Supplier • Recommend Supplier
AMEC	• Recommend Supplier • Trust in Supplier	APPLIED MATERIALS	• Field Engineering Support • Uptime
ASM Pacific Technology	• Field Engineering Support • Support After Sales	ASML	• Recommend Supplier • Technical Leadership
EVG	• Technical Leadership • Trust in Supplier	FORMFACTOR	• Technical Leadership • Recommend Supplier
Hitachi High-Tech	• Trust in Supplier • Uptime	Hitachi Kokusai Electric	• Field Engineering Support • Process Support
JEM JAPAN ELECTRONIC MATERIALS	• Partnering • Recommend Supplier	Nidec SV TCL	• Partnering • Commitment
Plasma-Therm	• Trust in Supplier • Spares Support	SPTS	• Recommend Supplier • Uptime
TECHNOPROBE Wafer Probing Technologies	• Support After Sales • Trust in Supplier and Partnering	TERADYNE	• Trust in Supplier • Recommend Supplier
TEL TOKYO ELECTRON	• Trust in Supplier • Uptime	Xcerra	• Trust in Supplier • Recommend Supplier

Source: VLSIresearch Doc: css_THEBEST_v18.05



	ASSEMBLY EQUIPMENT	Rating	VLSI STARS
1	ASM Pacific Technology	7.47	★★★

ASM Pacific Technology

ENABLING THE DIGITAL WORLD