



**NASDAQ: DAIO**

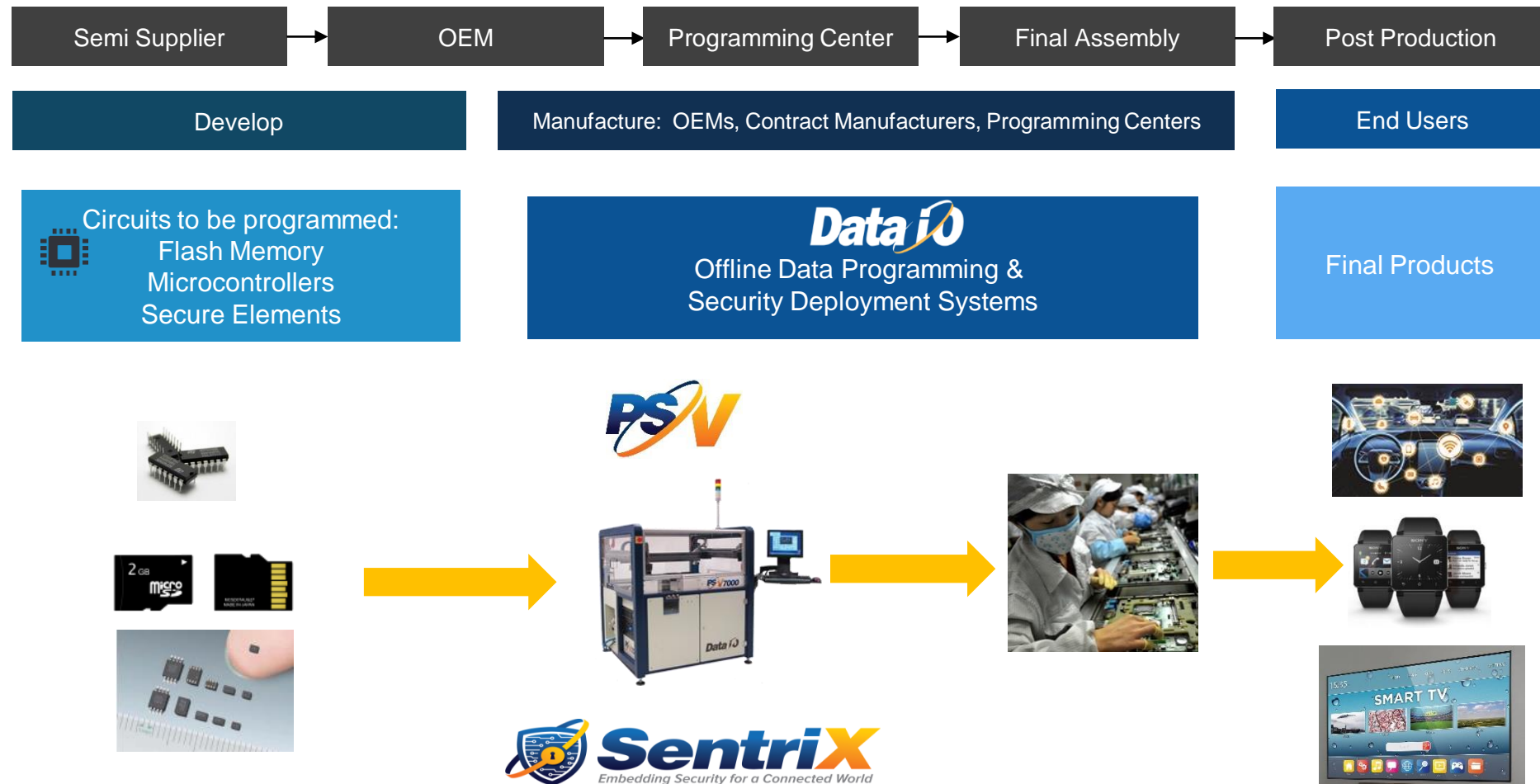
**Data I/O Corporation  
December 2019  
Investor Presentation**

*The matters that we discuss today will include forward-looking statements that involve risks factors that could cause Data I/O Corporation's results to differ materially from management's current expectations. We encourage you to review the Safe Harbor statement contained in the earnings release as well as our most recent SEC filings for a complete description. Additionally, those forward-looking statements are made as of today, and we take no obligation to update them.*

# Supporting the Secure Digital World



Data I/O's programming systems are used by the world's leading manufacturers, programming centers, and contract manufacturers, to securely program integrated circuits and bring their devices to life.



# Company Snapshot



## Recent Achievements and Trends

- 5 consecutive years of profitability
- Strong momentum in Automotive and IoT devices
  - 8 of top 9 Auto electronics companies are customers
  - 5-year global supply agreement with Bosch extended by 2.5 years in 3Q18
  - ~60% of revenue from Automotive Electronics customers
- Expand new markets with introduction of PSV2800
- Industry and technology awards for Lumen®X, Universal Flash Storage (UFS), PSV Lines and SentiX®
- Over 275 PSV systems sold
- Traction for SentiX Security Provisioning Platform

## Committed to Growing Shareholder Value

- Focusing programmable core competencies on higher growth, higher margin vertical markets
- Differentiated market position through technology leadership and global support
- Approx. 16% of stock held by insiders so that management and Board are aligned with shareholders
- \$2 million buyback completed in 3Q19

## Company Snapshot <sup>(1)(2)</sup>

NASDAQ:	DAIO
Headquarters:	Redmond, WA
Established:	1972
Stock Price:	\$4.00
Market Cap:	\$33M
Diluted Shares:	8.2M
10-Day Avg. Volume:	30,000 shares
Sales <sub>(TTM)</sub> :	\$23.6M
Net Income <sub>(TTM)</sub> :	\$(43,000)
Diluted EPS <sub>(TTM)</sub> :	\$(0.00)
Adj. EBITDA <sup>(3)</sup> <sub>(TTM)</sub> :	\$2.1M
Cash & Sec. (9/30/19):	\$15.2M (\$1.85/share)
Debt (9/30/19):	\$0.0

(1) Stock price, market cap and volume as of 11/22/19; Source: Yahoo

(2) Financials for the TTM period ended 9/30/19 or as noted

(3) Adj. EBITDA is a non-GAAP financial measure. A reconciliation is provided in this presentation

## Long Term Growth Focus

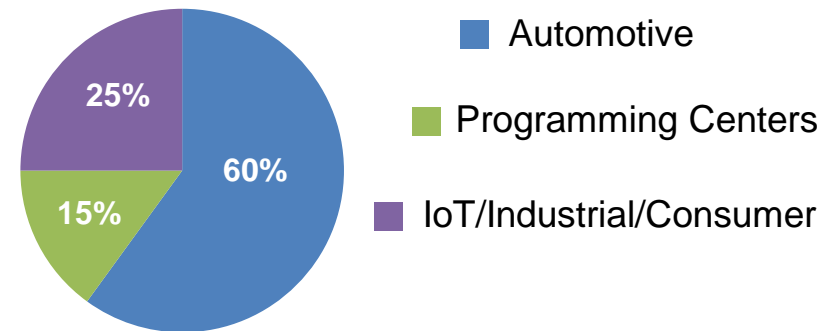
- Growth strategy focused on advanced data programming and security deployment solutions for Automotive Electronics, Internet of Things (IoT) and Industrial markets
  - Expansion of addressable markets
  - Technology leadership through continued heavy R/D investment in intellectual property portfolio
  - Greater balance between capital equipment sales and recurring revenues
- Developing new partnerships for Security Deployment Platform
- Allocating capital and other resources for opportunistic growth; return excess capital to shareholders

# Serving Customers Globally in Growing Markets



- The largest programming company in the world, 2-3 times larger than the next programming company
- Global footprint with headquarters in Redmond, USA and subsidiary offices in Shanghai China and Munich Germany

## 2018 Annual Orders by End Markets



## Sample Customers

### Automotive



### IoT/ Industrial/Consumer

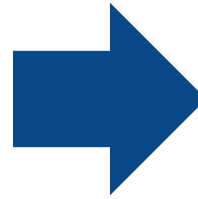


### Programming Centers and EMS



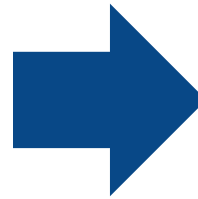
## *Market Forces*

- **IoT and Automotive Growth**
  - **Devices Get Smaller**
  - **Move towards Automation**
- **Products will increase their code size as customers want more features**
- **Products will be more secure, creating new opportunities**

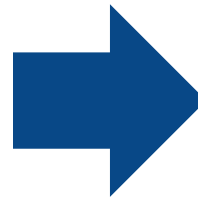


## *Programming Impact*

**Unit Growth**



**Bit Growth**



**Added Complexity +  
Security Requirements**

***Programming Demand = Units x Bits x Security***

## Industry Leading Products

### Automated Handlers



### Programming Engines



## Managed and Secure Programming Systems



## History of Innovation

- Data I/O's products are viewed as the "gold standard" for advanced programming equipment and IP management and security solutions.
- Research and Development focused on:
  - Breakthroughs in programming technology to support explosive demand for automotive infotainment solutions using large FLASH memories and microcontrollers.
  - Security Deployment Platform technology for Internet of Things applications
  - Introduced Universal Flash Storage (UFS) solution and SentriX™ Security Platform
- During the past 15 years, Data I/O has been granted ~50 U.S. and International utility patents. Currently, Data I/O has ~20 U.S. and International utility patents pending.



# Data I/O Sets Blistering Pace for Programming Market

# Data iO



Service Excellence Award  
for World-Class **Device  
Programming**



NPI Award & Mexico  
Technology Award for New  
**Job Composer**  
Software Application



Technology Award, 5<sup>th</sup> Industry  
Award for Universal Flash Storage  
(UFS) Support on **LUMENX**

**November 2019: Machine Learning-Based Automated Teach Capability for PSV7000**

**October 2019: PSV2800 Automated Programming System for 3,000 unites per hour production**

# 2X

Doubles Programming Performance w/ TurboBoost™ for  
**LUMENX** Programmers

*2x increase in programming performance for eMMC devices shown at IPC APEX Expo 2019*

# 2X



Programming Platform Doubles Download Speed  
& Support Next-Generation Microcontrollers

**Data iO** **SECURE  
THINGZ**

Scripting Interface Upgrade to  
**SentriX® Secure Provisioning System**



**Data iO** **digicert**

DigiCert's **Certificate Signing Services**  
via  
Data I/O's **SentriX® Secure Provisioning System**





# Financial Overview

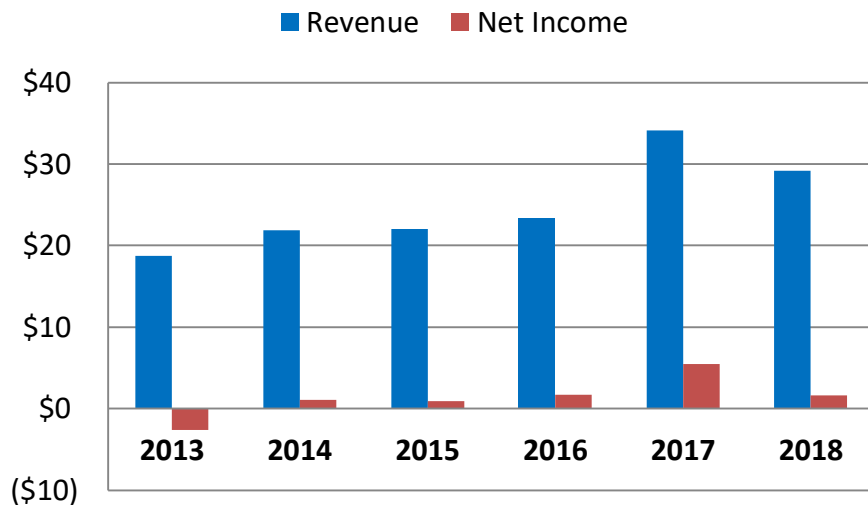
## Third Quarter 2019 Highlights

- Net sales of \$3.8 million; bookings of \$4.3 million
- Gross margin as a percentage of sales of over 52%
- Net loss of \$(844,000) or \$(0.10) per share
- Adjusted EBITDA\*, excluding equity compensation, of \$(306,000)
- Cash & Equivalents of \$15.2 million; no debt
- Auto. electronics, advanced programming and secure provisioning leadership
  - Automotive represented 57% of bookings year to date through 3Q19
  - Announced the new PSV2800 system with performance up to 3,000 parts per hour for dedicated high-volume programming applications
  - Growth in SentiX® devices provisioned, device types supported, design wins, and sales funnel
  - Received 2019 Mexico Technology Award in the category of Device Programming for the new Job Composer Software Application
  - Key speaking engagements and presentations planned for productronica, the major biennial electronics manufacturing innovations trade show in Munich, Germany
  - Ended 3Q19 with 12 partners, 5 system deployments for SentiX system
- Repurchased 56,000 shares to complete \$2 million buyback authorized in October 2018

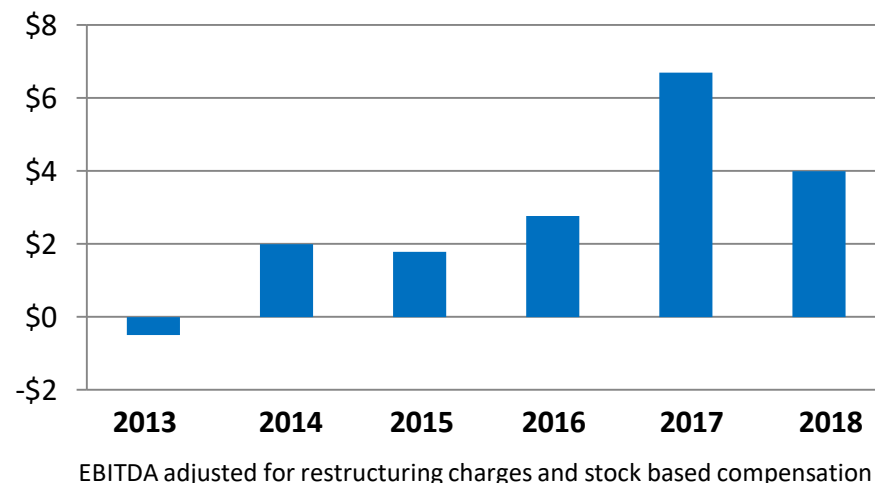
\*Adjusted EBITDA is a non-GAAP financial measure. A reconciliation is provided in the **Appendix section of this presentation.**

## Long Term Performance Improvements through Innovation and Operational Excellence

### Revenue and Net Income (\$M)



### Adjusted EBITDA (\$M)



### Growth Drivers

- Semi-cap equip. cycle
- Automotive Electronics
- Internet-of-Things
- Recurring revenues from installed base
- SentiX revenues (ramping in 2020)

# Balance Sheet and Capital Structure Overview



## Balance Sheet Highlights

### At September 30, 2019:

- \$15.2 million in cash and cash equivalents
- No debt
- \$18.4 million of net working capital
- Total stockholders' equity of \$21.4 million, or approx. \$2.61 per diluted share outstanding
- EV/Sales at 0.7x<sup>(3)</sup>
- EV/Adjusted EBITDA at 5.2x<sup>(3)</sup>
- NOLs of approximately \$13.0 million

## Enterprise Value (\$K)

Market Cap <sup>(1)</sup>	\$ 33,000
Plus Total Debt <sup>(2)</sup>	0
Less Total Cash <sup>(2)</sup>	<u>\$ 15,200</u>
Enterprise Value	\$ 17,800
Diluted Shares Outstanding <sup>(2)</sup>	8,200,000

<sup>(1)</sup> At 11/22/19; Source: Yahoo

<sup>(2)</sup> At 9/30/19

<sup>(3)</sup> Sales and Adjusted EBITDA based on TTM through 9/30/19 financial results

## Balance Sheet Strategy

- Important to maintain strong balance sheet in a cyclical industry, with about 65% of revenues from capital equipment sales
- Financial flexibility allows the company to:
  - Withstand, and advance during, downturns in semi cycle
  - Invest in organic and acquisitive growth opportunities for the long term
  - Develop recurring revenue streams
- \$2 million buyback approved in 4Q18. Completed program in quarter ended 9/30/19 with total purchase of 404,000 shares
- Approx. \$8.0 million returned to shareholders from buybacks authorized in '12, '16 and '18

# Capital Equipment to Recurring Revenue



## Capital Equipment

- Approx. 65% of 2018 sales
- Off-line and in-line programming systems
- Automated systems cost \$68K-\$677K
- Manual systems cost \$10K-\$52K
- Usually last 5-7 years
- Adapters fit to these products
- Installed base drives recurring consumables sales

## Consumables

### Adapters



- Approx. 24% of 2018 sales
- Usually last 3-24 months

### Software and Maintenance

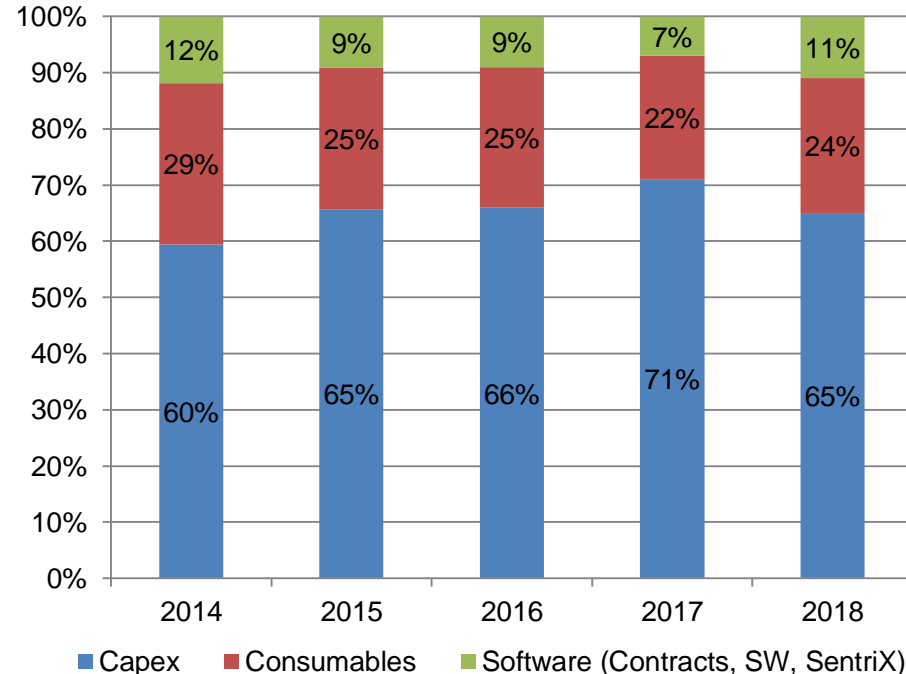


- Approx. 11% of 2018 sales
- Annual software upgrades

## Mix Shift in Revenues

- SentiX drives strategy shift toward consumable and recurring revenues over time
- SentiX revenue for security deployment is recurring
- Lower % capital equipment sales reduces cyclical

## Revenue by Type



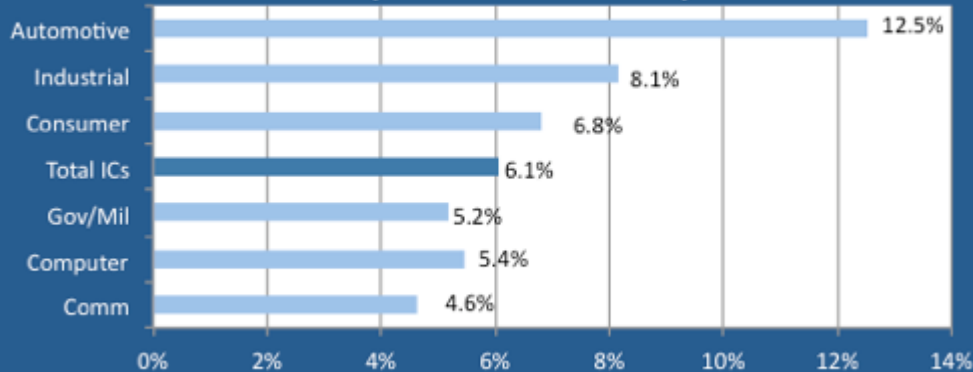


# Market Outlook

# Automotive & Industrial Semi Growth Drives Programming Market



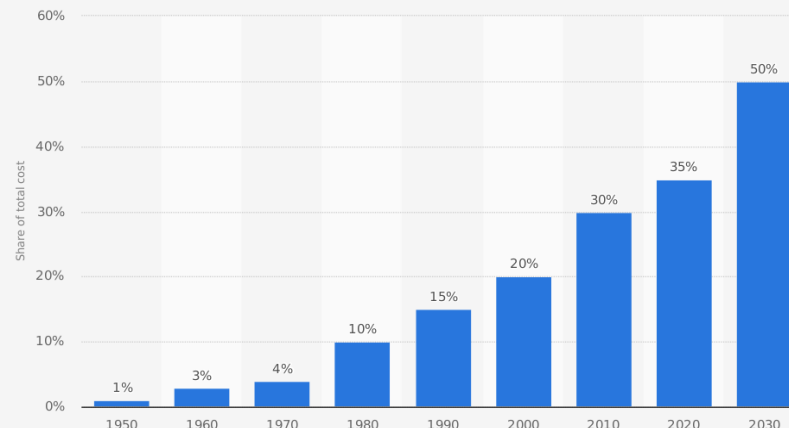
IC Market Growth Rates by End-Use Application  
(2017-2021F CAGR)



Source: IC Insights

*Automotive & Industrial continue to be fastest growing segments*

Automotive electronics cost as a percentage of total car cost  
worldwide from 1950 to 2030



Source  
PwC  
© Statista 2018

Additional Information:  
Worldwide

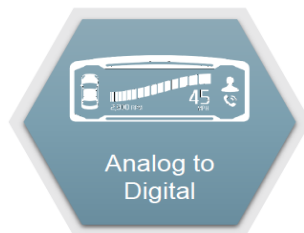


# Automotive Electronics Evolution



## Addressing Macro Trends in Automotive

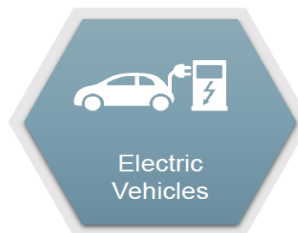
Visteon®



Analog to  
Digital



Device & Cloud  
Connectivity



Electric  
Vehicles



ADAS to  
Autonomous

## Cockpit of the Future

Visteon®



## Smart Mobile Assistant

### Fully Digital

- Large, curved digital displays
- Haptic, knob-on-glass for tactile feedback



### Connected

- Access to cloud data and services
- Hybrid cloud/edge computing



### Automated

- Advanced active safety features
- Self-driving under specific conditions



### Learning

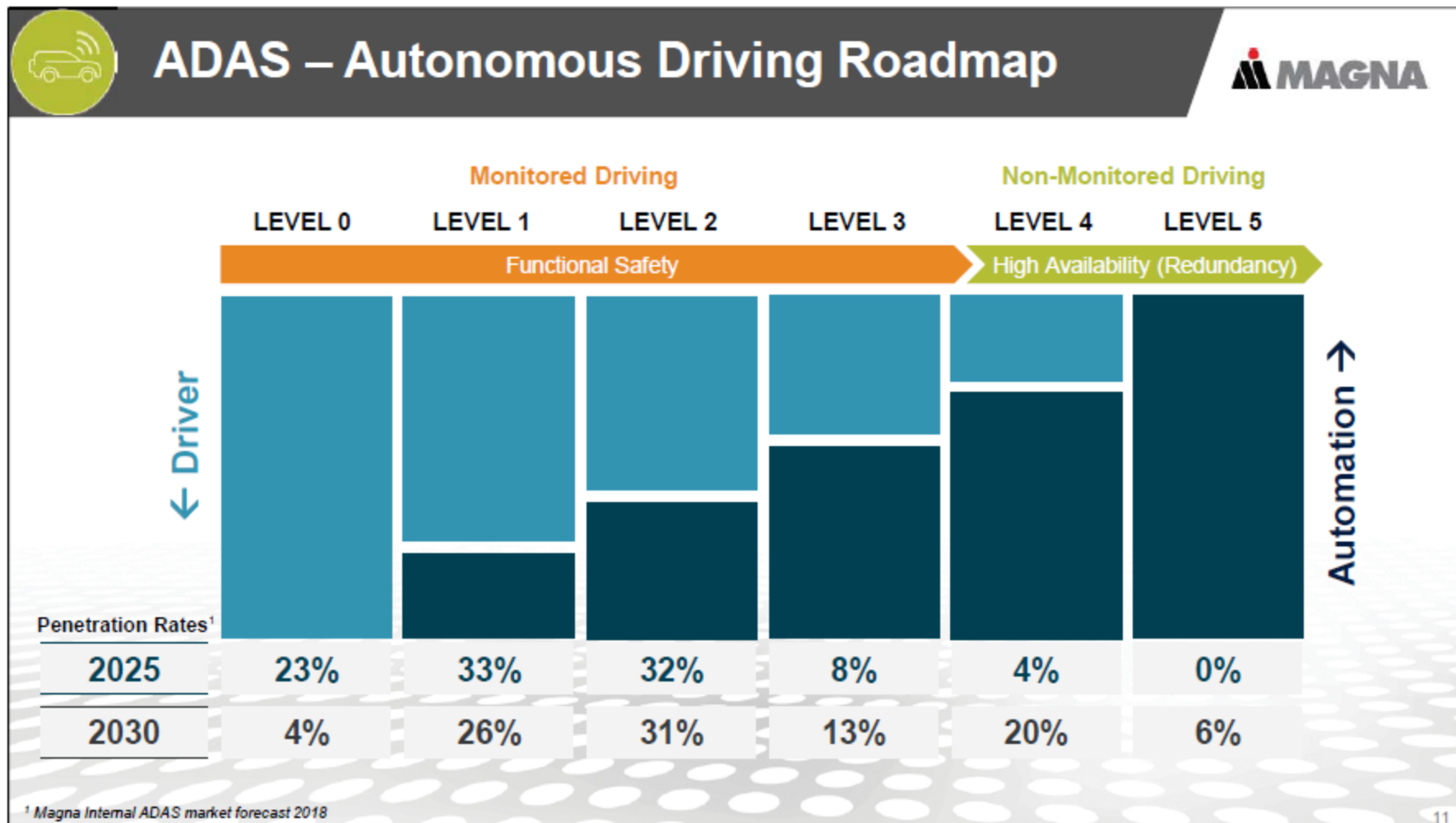
- Machine learning based solutions
- Improved voice and identification features



### Voice Enabled

- Conversational cockpit assistant
- Natural language voice interaction





**Substantial Growth in Electronics Subsystems Well Before Fully Autonomous Driving**

# FLASH Memory Growth in the Connected and Autonomous Vehicle



ADAS / Autonomous  
Car  
**8 GB to 16GB**

Connectivity  
**4 GB to 16GB**

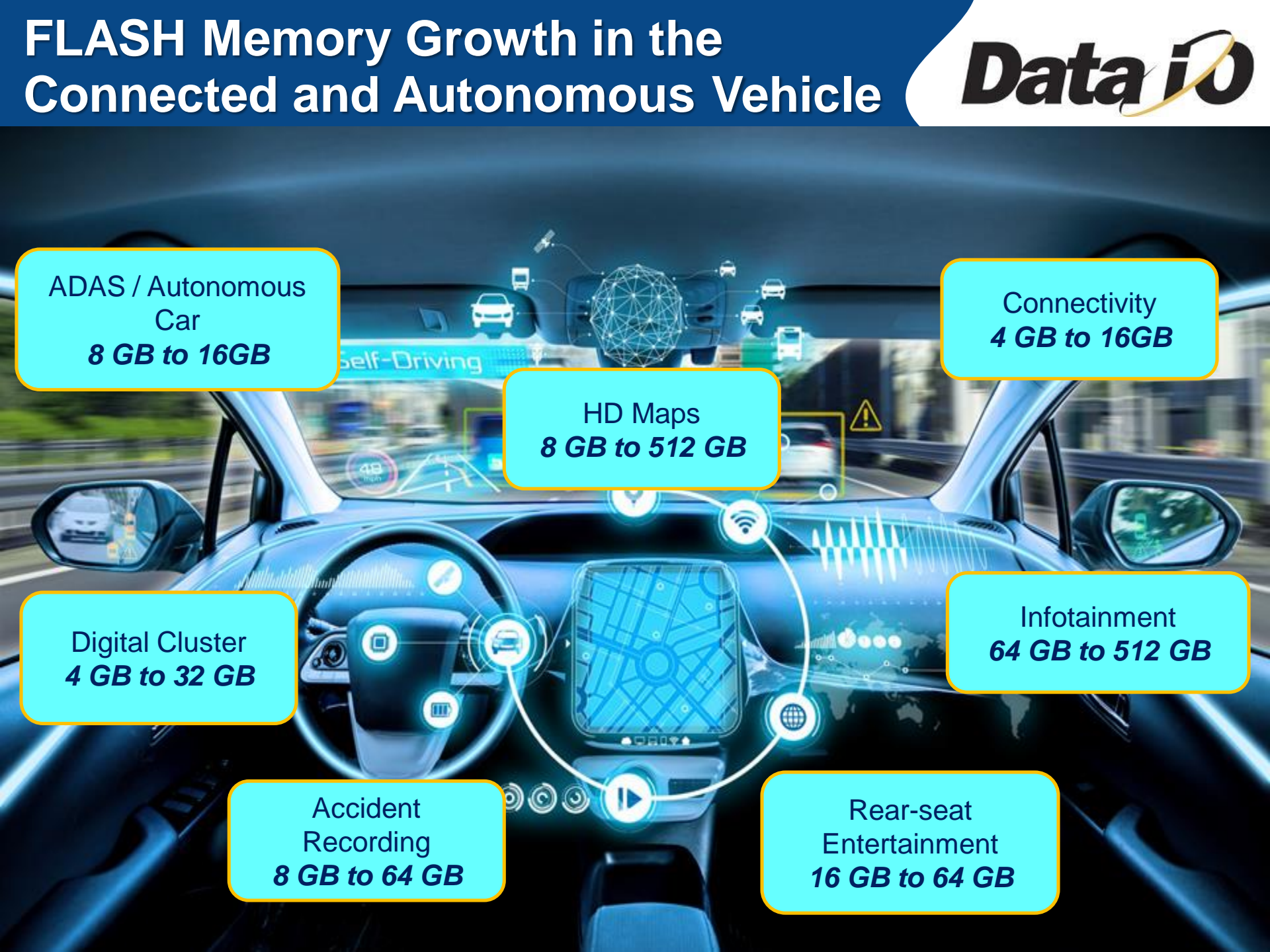
HD Maps  
**8 GB to 512 GB**

Digital Cluster  
**4 GB to 32 GB**

Infotainment  
**64 GB to 512 GB**

Accident  
Recording  
**8 GB to 64 GB**

Rear-seat  
Entertainment  
**16 GB to 64 GB**



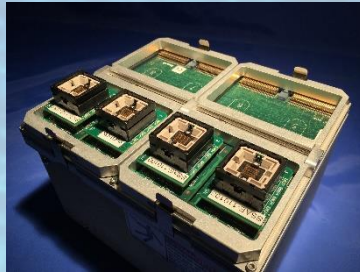


***Western Digital, Samsung, Micron & Toshiba support Automotive Grade UFS devices***

***6 out of the top 9 automotive electronics manufacturers are transitioning from eMMC to UFS***

***8 out of the top 9 automotive electronics suppliers choose Data I/O***

# Data I/O Delivers Automotive UFS



**Lumen®X  
Programmer**

**UFS Upgrade Kit**





































**PSV System**

**Maximum Performance  
Maximum Flexibility & Extensibility  
Investment Protection for Customers**



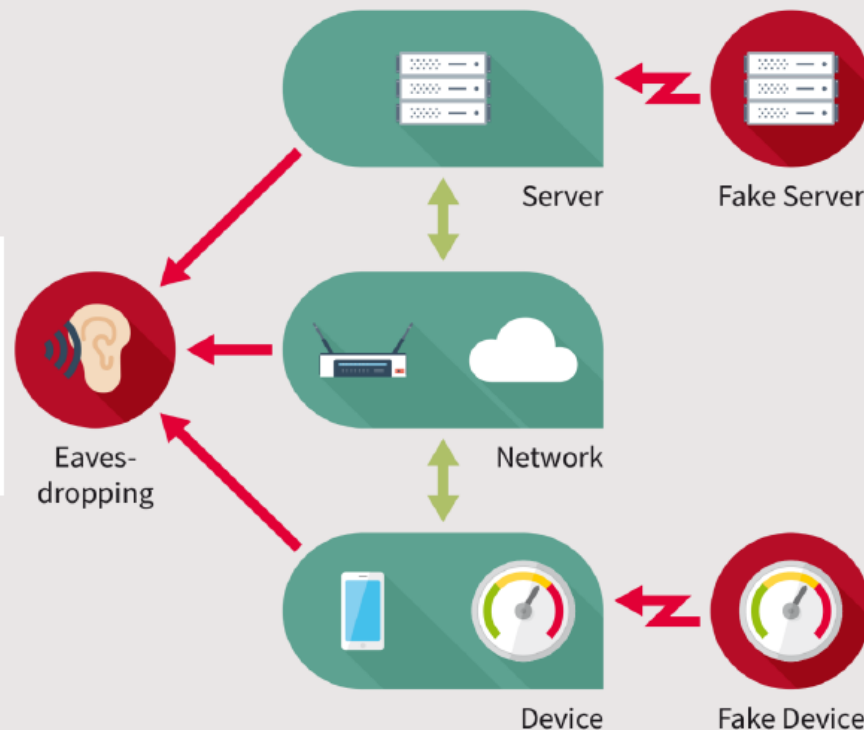
# IoT Market Segmentation



Consumer	Mobility	Energy	Industry & Logistics	ICT	Healthcare	Others
Smart Home 	Cars 	Solar PV 	Industrial Motor Controls & Drives 	Data Centers 	Medical Equipment 	Advertising 
Major Home Appliances 	Trucks & Buses 	Wind Power 	Automation Equipment 	Cellular Networks 	Assisted Living 	Retail 
Small Home Appliances 	Construction Agricultural Vehicles 	Other Power Generation 	Building Automation 	Other WAN 	Lifestyle 	Gambling 
Consumer Electronics (incl. Wearables) 	Traction 	Energy Storage Systems 	Logistics 	Wireless LAN & PAN 		Defense 
Lighting 	Light Electric Vehicles 	Transmission & Distribution 				Aerospace 
Smartcards 		Smart Meters 				
Smartphones & Tablets 		Charging Stations 				
Desktops & Notebooks 						

## Security threats for IoT

An **Eavesdropper** listening in on data or commands can reveal confidential information about the operation of the infrastructure.



A **Fake Server** sending incorrect commands can be used to trigger unplanned events, to send some physical resource (water, oil, electricity, etc.) to an unplanned destination, and so forth.

A **Fake Device** injecting fake measurements can disrupt the control processes and cause them to react inappropriately or dangerously, or can be used to mask physical attacks.

# IoT Market Drivers - Multi-year Secular Growth

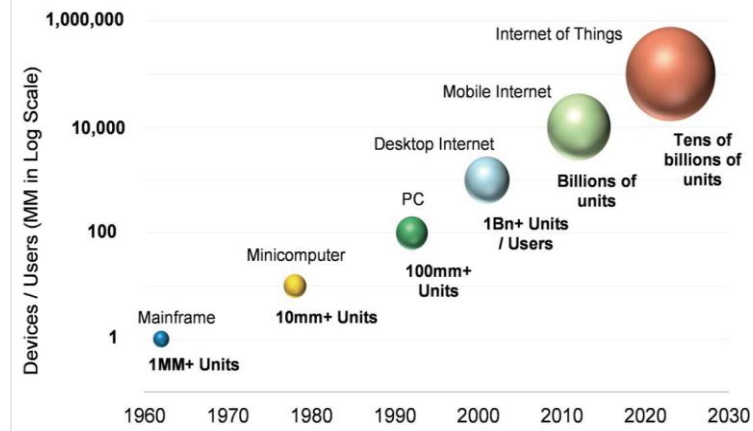
- The IoT is forecast to be bigger than the mobile internet and desktop markets

***“We believe nearly every single industry will eventually migrate to an IoT model yielding 50 billion connected devices by 2020.”***

Needham & Company, November 27, 2015

- ...But Security Issues are top of mind and must be addressed

Computing Growth Drivers over Time, 1960-2030e



Source: Company Data, Morgan Stanley Research

## Computing

### NSA Hacking Chief: Internet of Things Security Keeps Me Up at Night

The leader of the National Security Agency is putting industrial control systems on the secure.

by Tom Simonite January 1, 2015

The trend to connect devices to the Internet is making life easier for hackers—but also keeping

### Internet of Things: Shoddy security and IoT hackers are putting human lives at risk

Experts say need for IoT security isn't overhyped

### Hackers demonstrated first ransomware for IoT thermostats at DEF CON



#### MORE LIKE THIS

Thugs developing ransomware for Android

Cryptoworms: The future of ransomware

Your router won't protect you when smartphones smart homes

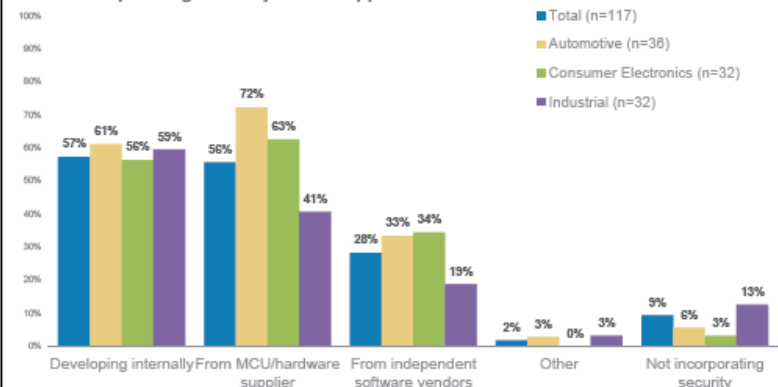
on IoT Answers

How to set network location in Windows so that PC can be seen by other...

IN THE

## Over 90% of respondents are incorporating security along with their MCU products

### How Incorporating Security for IoT Applications



Source: AlphaWise Survey, Morgan Stanley Research

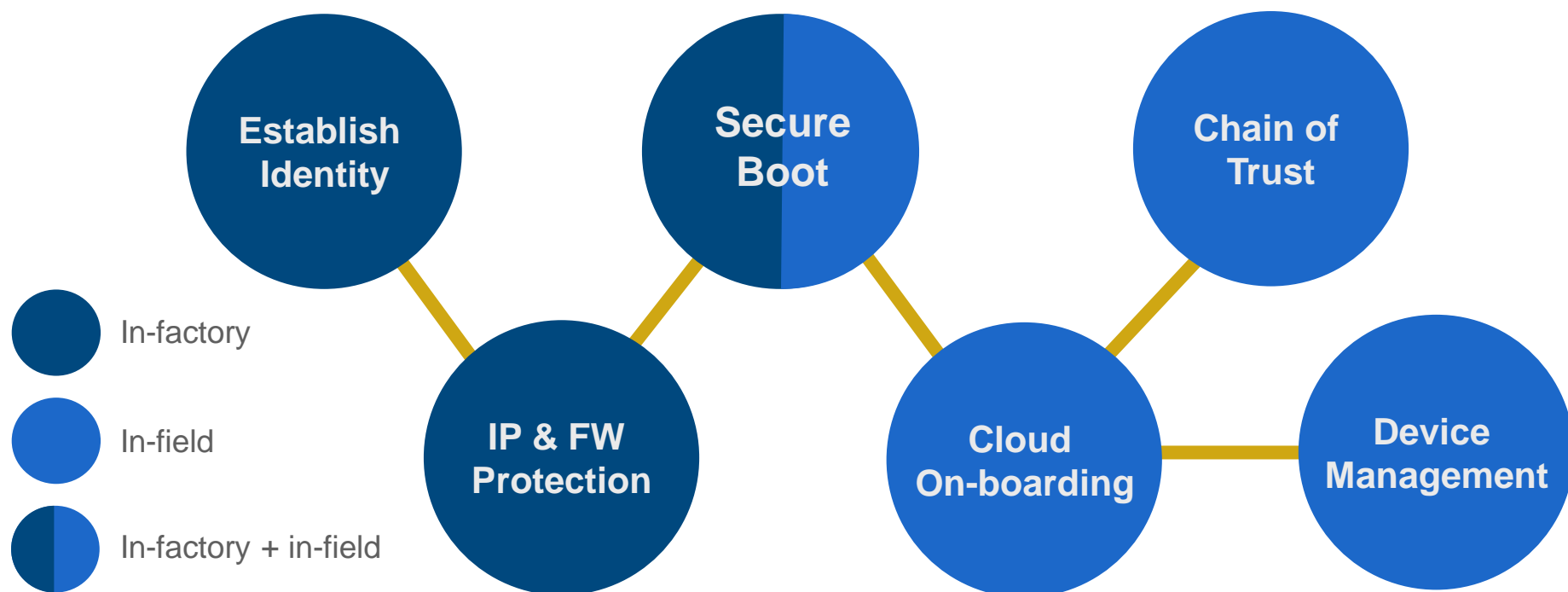


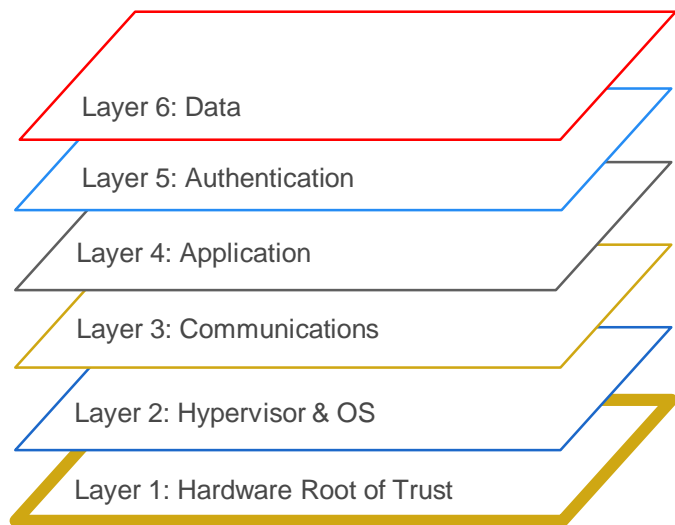
## Secure Programming Center Premise



February 28, 2018: Best of Show with Embedded Award for the SentriX Security Provisioning Platform

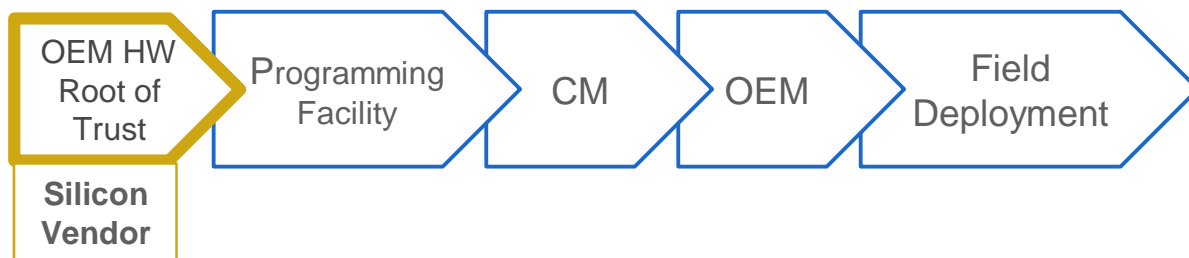
# Leading SentriX Enabled Use Cases





Security Layers

IoT requires a chain of trust built on a secure and **provisioned** hardware root of trust.



# New Partnerships for Growth



## Technology Partners



## Silicon Partners



SECURE CONNECTIONS  
FOR A SMARTER WORLD



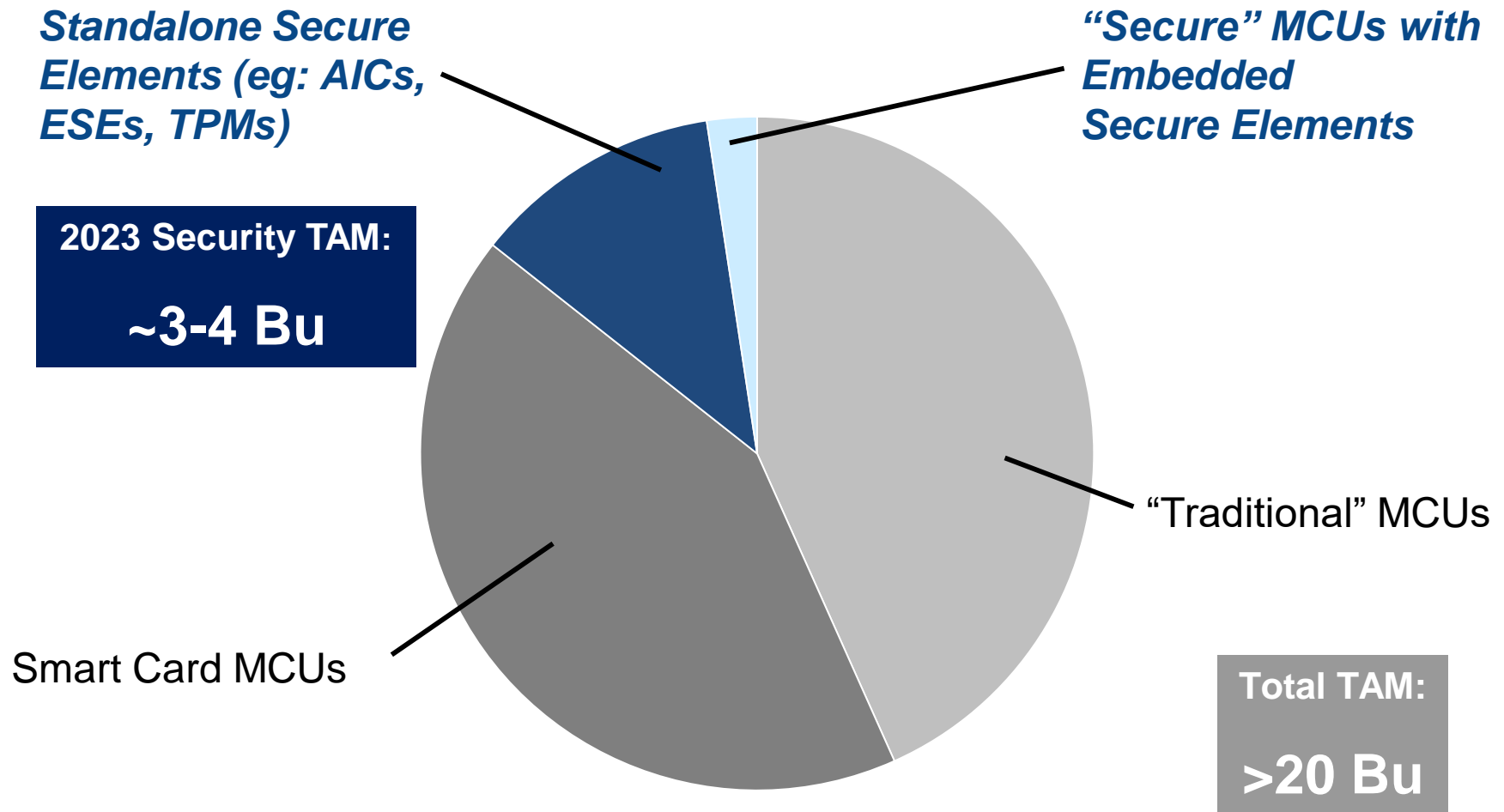
## Distribution Partners




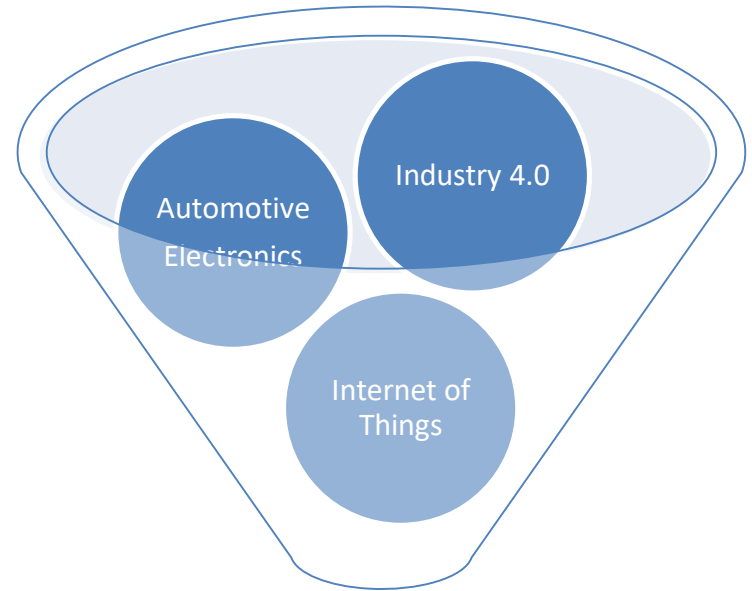
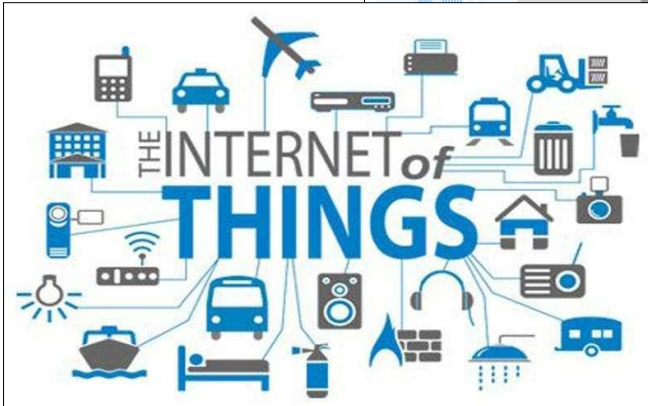
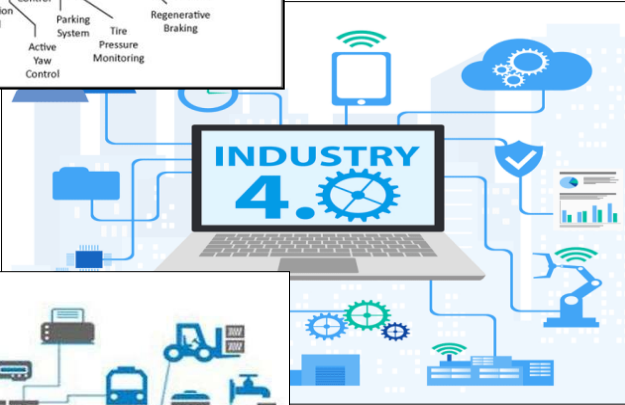
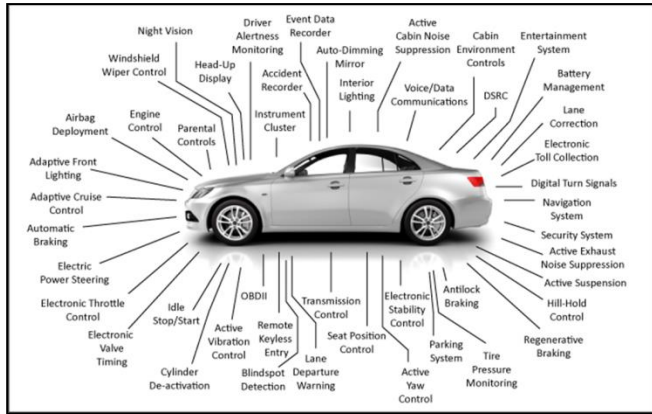
## SentriX Plan: Securing IoT Devices for OEMs of any Size and Volume

- Deployment in October 2017 of first SentriX Security System; 5 deployed at 9/30/19
- Additional Industry support announcements from 2018 through 2019
- Revenue Recognition: scaling begins 2020 with multiyear ramp from win to revenue

# The Opportunity: Billions of Security Enabled Devices

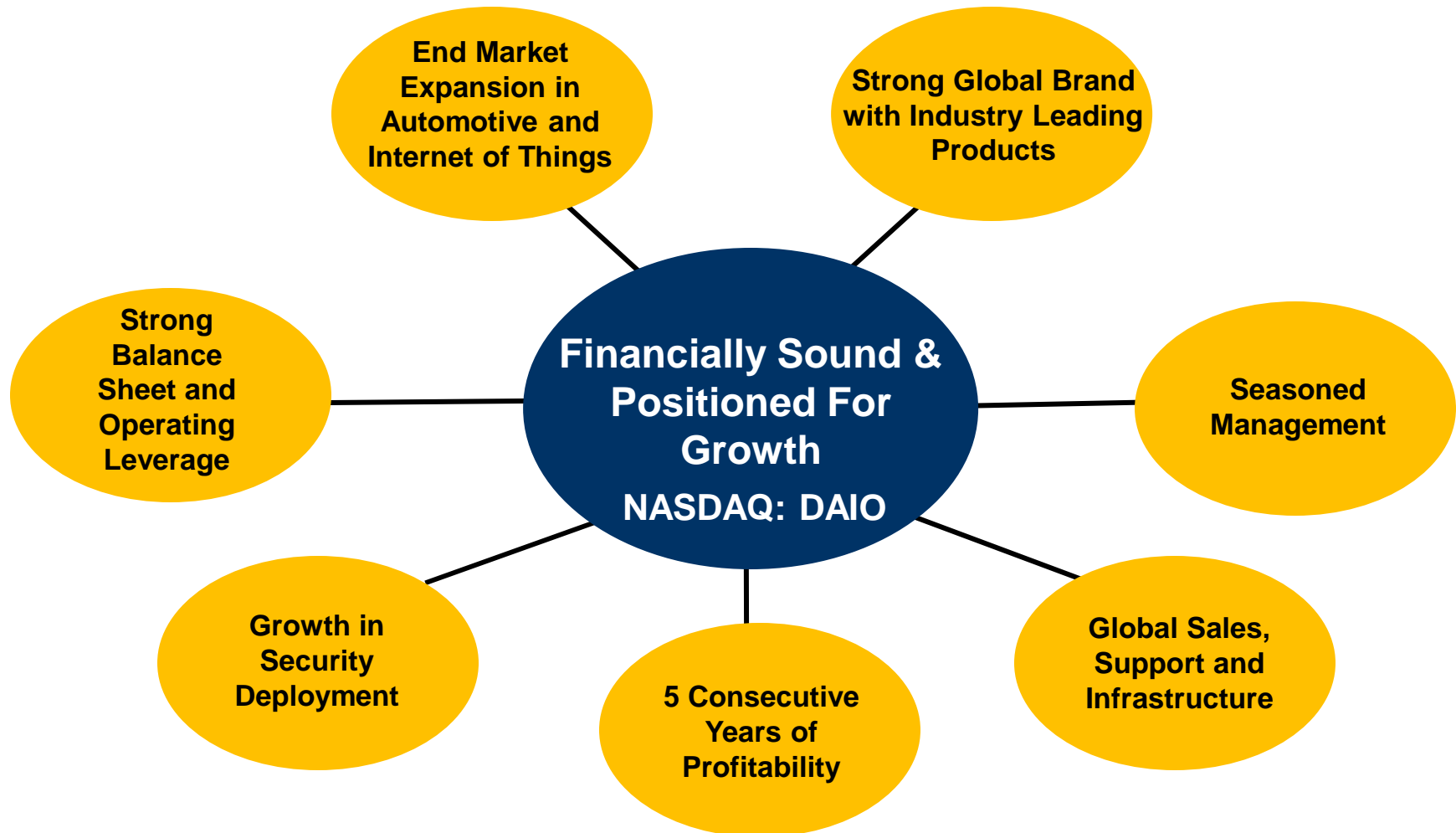


## ***Convergence of Microcontroller Programming and Security Provisioning***



**Data IO**  
Technology  
Stack

# Investment Merits: Positioned for Long-Term Growth



# Thank You!

For more information, please go to  
<https://www.dataio.com/Company/Investor-Relations/Data-I-O-Profile>

**NASDAQ: DAIO**



# Appendix

## NON-GAAP FINANCIAL MEASURE RECONCILIATION

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
(in thousands)				
Net Income(loss)	(\$844)	\$342	(\$690)	\$958
Interest (income)	(25)	(10)	(47)	(26)
Taxes	55	180	52	267
Depreciation and amortization	248	230	672	736
EBITDA earnings(loss)	(\$566)	\$742	(\$13)	\$1,935
Equity compensation	260	282	911	932
Adjusted EBITDA earnings(loss), excluding equity compensation	<u>(\$306)</u>	<u>\$1,024</u>	<u>\$898</u>	<u>\$2,867</u>

**CONSOLIDATED STATEMENTS OF OPERATIONS**  
(in thousands, except per share amounts)  
(UNAUDITED)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Net Sales	\$3,808	\$6,533	\$15,700	\$21,367
Cost of goods sold	1,806	2,415	6,430	8,584
Gross margin	2,002	4,118	9,270	12,783
Operating expenses:				
Research and development	1,507	1,826	4,868	5,550
Selling, general and administrative	1,535	1,888	5,338	6,239
Total operating expenses	3,042	3,714	10,206	11,789
Operating income(loss)	(1,040)	404	(936)	994
Non-operating income:				
Interest income	25	10	47	26
Gain on sale of assets	-	-	60	4
Foreign currency transaction gain (loss)	226	108	191	201
Total non-operating income	251	118	298	231
Income(loss) before income taxes	(789)	522	(638)	1,225
Income tax (expense) benefit	(55)	(180)	(52)	(267)
Net income(loss)	(\$844)	\$342	(\$690)	\$958
Basic earnings(loss) per share	(\$0.10)	\$0.04	(\$0.08)	\$0.11
Diluted earnings(loss) per share	(\$0.10)	\$0.04	(\$0.08)	\$0.11
Weighted-average basic shares	8,217	8,439	8,259	8,361
Weighted-average diluted shares	8,217	8,507	8,259	8,516

# Balance Sheet – 3Q19



## CONSOLIDATED BALANCE SHEETS (in thousands, except per share data) (UNAUDITED)

	September 30, 2019	December 31, 2018
<b>ASSETS</b>		
CURRENT ASSETS:		
Cash and cash equivalents	\$15,178	\$18,343
Trade accounts receivable, net of allowance for doubtful accounts of \$48 and \$75, respectively	2,406	3,771
Inventories	5,432	5,185
Other current assets	582	621
TOTAL CURRENT ASSETS	23,598	27,920
Property, plant and equipment – net	1,733	1,985
Income tax receivable	640	598
Other assets	2,108	220
TOTAL ASSETS	<u>\$28,079</u>	<u>\$30,723</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
CURRENT LIABILITIES:		
Accounts payable	\$869	\$1,755
Accrued compensation	1,373	2,872
Deferred revenue	1,586	1,392
Other accrued liabilities	1,308	789
Income taxes payable	49	47
TOTAL CURRENT LIABILITIES	5,185	6,855
Operating lease liabilities	1,334	-
Long-term other payables	126	511
COMMITMENTS	-	-
STOCKHOLDERS' EQUITY		
Preferred stock -		
Authorized, 5,000,000 shares, including 200,000 shares of Series A Junior Participating		
Issued and outstanding, none	-	-
Common stock, at stated value -		
Authorized, 30,000,000 shares		
Issued and outstanding, 8,210,884 shares as of September 30, 2019 and 8,338,628 shares as of December 31, 2018	18,490	19,254
Accumulated earnings	3,005	3,695
Accumulated other comprehensive income	(61)	408
TOTAL STOCKHOLDERS' EQUITY	21,434	23,357
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	<u>\$28,079</u>	<u>\$30,723</u>

## NON-GAAP FINANCIAL MEASURE RECONCILIATION

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
(in thousands)				
Net Income	\$648	\$1,536	\$1,606	\$5,449
Interest (income)	(11)	(10)	(37)	(29)
Taxes	24	(495)	291	(288)
Depreciation and amortization	220	188	956	822
EBITDA earnings	\$881	\$1,219	\$2,816	\$5,954
Equity compensation	297	174	1,230	714
Adjusted EBITDA earnings, excluding equity compensation	<u>\$1,178</u>	<u>\$1,393</u>	<u>\$4,046</u>	<u>\$6,668</u>

**CONSOLIDATED STATEMENTS OF OPERATIONS**  
(in thousands, except per share amounts)  
(UNAUDITED)

	<b>Three Months Ended December 31,</b>		<b>Twelve Months Ended December 31,</b>	
	<b>2018</b>	<b>2017</b>	<b>2018</b>	<b>2017</b>
Net Sales	\$7,857	\$8,096	\$29,224	\$34,051
Cost of goods sold	3,284	3,363	11,868	13,992
Gross margin	4,573	4,733	17,356	20,059
Operating expenses:				
Research and development	1,811	1,766	7,361	6,896
Selling, general and administrative	2,018	1,816	8,257	8,116
Total operating expenses	3,829	3,582	15,618	15,012
Operating income	744	1,151	1,738	5,047
Non-operating income (expense):				
Interest income	11	10	37	29
Gain on sale of assets	15	3	19	366
Foreign currency transaction gain (loss)	(98)	(123)	103	(281)
Total non-operating income	(72)	(110)	159	114
Income before income taxes	672	1,041	1,897	5,161
Income tax (expense) benefit	(24)	495	(291)	288
Net income	<u>\$648</u>	<u>\$1,536</u>	<u>\$1,606</u>	<u>\$5,449</u>
Basic earnings per share	\$0.08	\$0.19	\$0.19	\$0.67
Diluted earnings per share	\$0.08	\$0.18	\$0.19	\$0.65
Weighted-average basic shares	8,431	8,260	8,378	8,149
Weighted-average diluted shares	8,509	8,542	8,514	8,436

**CONSOLIDATED BALANCE SHEETS**  
(in thousands, except per share data)  
(UNAUDITED)

	December 31, 2018	December 31, 2017
<b>ASSETS</b>		
CURRENT ASSETS:		
Cash and cash equivalents	\$18,343	\$18,541
Trade accounts receivable, net of allowance for doubtful accounts of \$75 and \$73, respectively	3,771	3,769
Inventories	5,185	4,168
Other current assets	621	708
TOTAL CURRENT ASSETS	27,920	27,186
Property, plant and equipment – net	1,985	2,458
Income tax receivable	598	598
Other assets	220	45
TOTAL ASSETS	<u>\$30,723</u>	<u>\$30,287</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
CURRENT LIABILITIES:		
Accounts payable	\$1,755	\$1,301
Accrued compensation	2,872	3,536
Deferred revenue	1,392	1,787
Other accrued liabilities	789	858
Income taxes payable	47	218
TOTAL CURRENT LIABILITIES	6,855	7,700
Long-term other payables	511	527
<b>STOCKHOLDERS' EQUITY</b>		
Preferred stock -		
Authorized, 5,000,000 shares, including 200,000 shares of Series A Junior Participating		
Issued and outstanding, none	-	-
Common stock, at stated value -		
Authorized, 30,000,000 shares		
Issued and outstanding, 8,338,628 shares as of December 31,		
2018 and 8,276,813 shares as of December 31, 2017	19,254	18,989
Accumulated earnings	3,695	2,089
Accumulated other comprehensive income	408	982
TOTAL STOCKHOLDERS' EQUITY	23,357	22,060
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	<u>\$30,723</u>	<u>\$30,287</u>

## Fourth Quarter and Full Year 2018 Highlights

- Net sales of \$7.9 million in 4Q and \$29.2 million for year
- Bookings of \$6.5 million in 4Q and \$27.0 million for year
- Gross margin of 58.2% for 4Q and 59.5% for year, above target of 57%
- Net income of \$648,000 or \$0.08 eps in 4Q and \$1.6 million or \$0.18 for year
- AEBITDA\*, excl. equity comp., of \$1.2 million in 4Q and \$4.0 million for year
- Cash/securities of \$18.3 million at end of year; No debt
- Automotive electronics and advanced programming leadership
  - Automotive represented 60% of bookings for the year
  - Won 5 industry awards in year
  - Released TurboBoost for eMMC 5.0 and 5.1 devices on the Lumen®X to enable doubling of programming performance
  - Bosch Agreement extended by 2.5 years and UFS products were added
- Progress for SentiX® Security Provisioning Platform
  - 4 systems deployed at 12/31/18 (2 in US and 2 in Europe)
  - Partnership with Secure Thingz to Deliver Scripting Interface Upgrade
  - Partnership with DigiCert to enable PKI certificate management
  - Released Lumen®X version 1.6 to support doubling of programming speed and Dynamic Data Injection security
- \$536,000 used to purchase 102,000 shares during fourth quarter as part of \$2 million buyback program authorized in October 2018

\*Adjusted EBITDA is a non-GAAP financial measure. A reconciliation is provided in the Appendix section of this presentation.