



# Investor Presentation

FOURTH QUARTER & YEAR 2018

Nasdaq: AAOI

# SAFE HARBOR STATEMENT

This presentation contains forward-looking statements. The statements contained in this presentation that are not purely historical are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act, as amended. These forward-looking statements involve assumptions and current expectations, which are subject to risks and uncertainties that could cause the company's actual results to differ materially from those anticipated in such forward-looking statements. These risks and uncertainties include but are not limited to: reduction in the size or quantity of customer orders; change in demand for the company's products due to industry conditions; our ability to maintain sufficient liquidity; changes in manufacturing operations; volatility in manufacturing costs; delays in shipments of products; disruptions in the supply chain; change in the rate of design wins or the rate of customer acceptance of new products; the company's reliance on a small number of customers for a substantial portion of its revenues; potential pricing pressure; a decline in demand for our customers' products or their rate of deployment of their products; general conditions in the internet datacenter, cable television ("CATV"), fiber-to-the-home ("FTTH"), or telecommunications ("Telecom") markets; changes in the world economy (particularly in the United States and China); the negative effects of seasonality; impact of the Tax Cuts and Jobs Act of 2017, including its impact on deferred tax assets and the one-time transition tax on unremitted foreign earnings and on the realization of deferred tax assets, and other risks and uncertainties described more fully in the company's documents filed with or furnished to the Securities and Exchange Commission. More information about these and other risks that may impact the company's business are set forth in the "Risk Factors" section of the company's quarterly and annual reports on file with the Securities and Exchange Commission, which are available online at [www.edgar.gov](http://www.edgar.gov).

In some cases, you can identify forward-looking statements by terminology such as "believe," "may," "estimate," "continue," "anticipate," "intend," "should," "could," "would," "target," "seek," "aim," "believe," "predicts," "think," "objectives," "optimistic," "new," "goal," "strategy," "potential," "is likely," "will," "expect," "plan" "project," "permit" or by other similar expressions that convey uncertainty of future events or outcomes. You should not rely on forward-looking statements as predictions of future events. All forward-looking statements in this presentation are based upon information available to us as of the date hereof, and qualified in their entirety by this cautionary statement. Except as required by law, we assume no obligation to update forward-looking statements for any reason after the date of this presentation to conform these statements to actual results or to changes in the company's expectations.

In this presentation we include certain other non-GAAP measures that we believe are useful to investors in evaluating our operating performance. Non-GAAP measures should not be considered as an alternative to income (loss) after tax, earnings per share, or any other measure of financial performance calculated and presented in accordance with GAAP. Our non-GAAP measures may not be comparable to similarly titled measures of other organizations because other organizations may not calculate such other non-GAAP measures in the same manner. You are encouraged to evaluate these adjustments and the reasons we consider them appropriate. For a reconciliation of GAAP measures to our non-GAAP measures, please see the Appendix to this presentation.

The offering of securities to which this presentation relates will only be made to qualified institutional buyers in the United States in accordance with Rule 144A under the Securities Act and to persons outside the United States in accordance with Regulation S under the Securities Act. The securities to be issued in the offering have not been registered under the Securities Act and may not be offered or sold in the United States without registration or an applicable exemption from the registration requirements of the Securities Act and applicable state or other jurisdictions' securities laws.

This presentation shall not constitute an offer to sell or the solicitation of an offer to buy securities of the company, nor shall there be any sale of the any securities of the company in any state or jurisdiction in which such offer, solicitation or sale would be unlawful. Any offer, if at all, will be made only pursuant to Rule 144A or Regulation S under the Securities Act.

# Investment

---

## HIGHLIGHTS



**A Leader In  
Advanced Optics**



**Fast Growing  
Markets**



**Marquee  
Customers**



**Proprietary  
Manufacturing**

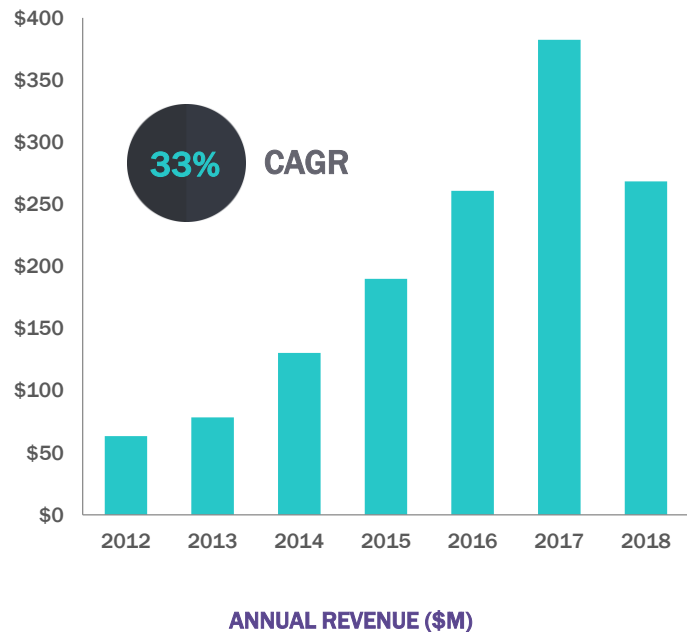
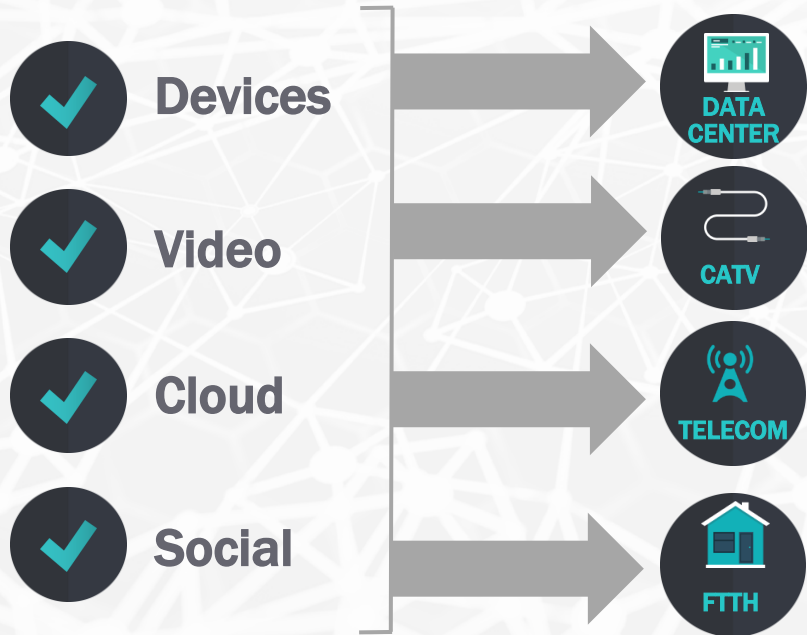


**Diversifying  
Customer Base**



**A leading provider of optical access products that  
enable the gigabit age**

# Bandwidth Demand Drives Growth



# Four End-Markets With Strong Demand Drivers

## Datacenter

- ✓ Increasing size of datacenters
- ✓ Higher-speed interconnect - 1G to (10G/40G/100G/200G/400G)
- ✓ Continuous need to expand, refresh and replenish

## Cable Television

- ✓ DOCSIS 3.1 & upgrade cycle
- ✓ International market opportunities
- ✓ Continued outsourcing of design and production

## Telecommunications

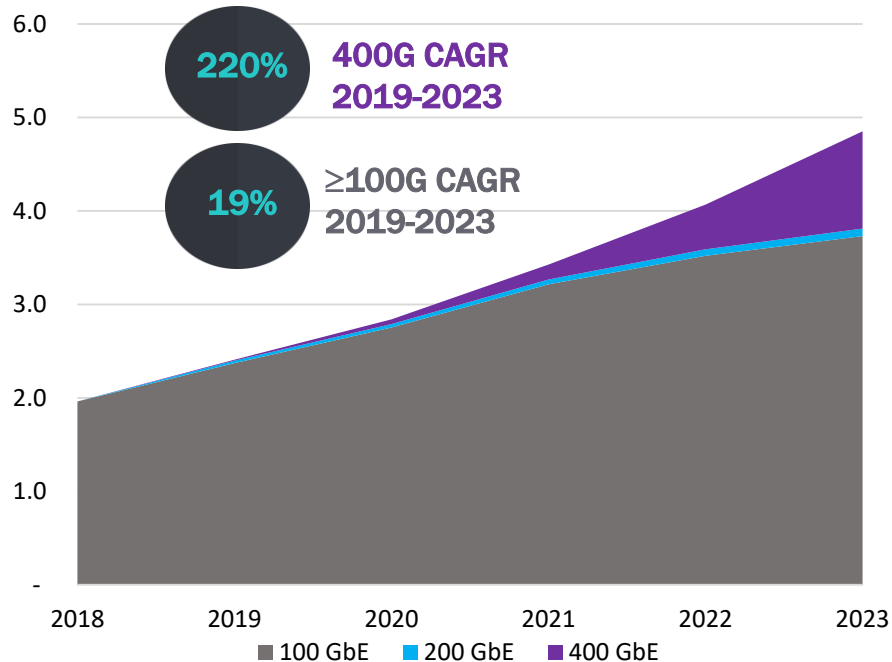
- ✓ 5G LTE deployment
- ✓ Backbone network for datacenter interconnect
- ✓ Aging access networks in need of rebuild

## Fiber-to-the-Home

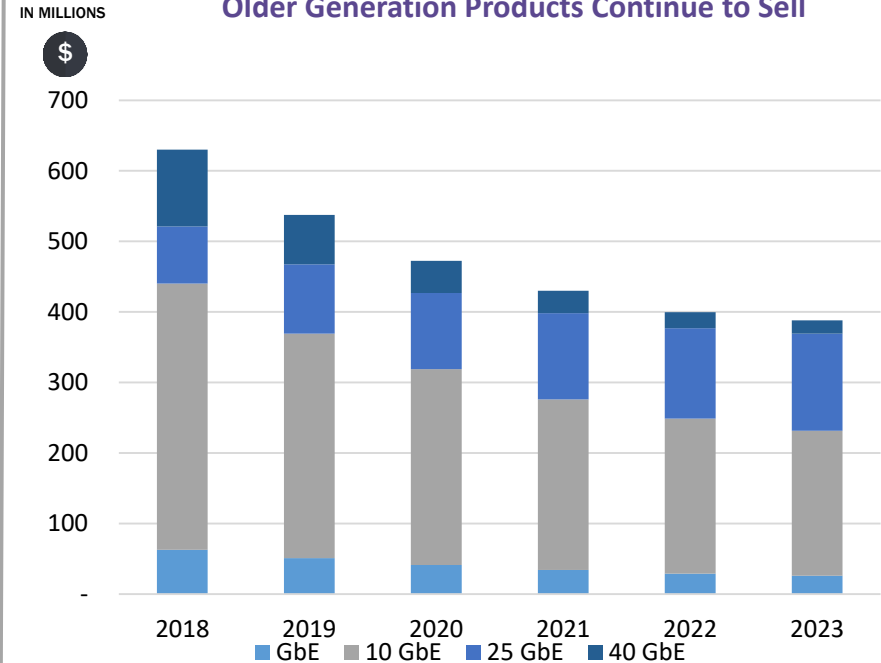
- ✓ 10 Gbps FTTH networks to replace 2.5Gbps
- ✓ Telecom carriers need to fiberize to compete with CATV, new entrants
- ✓ Greenfield economics favor fiber deployment

# Rapidly Growing Datacenter Market

Total High-Speed (100G or greater) Market to Exceed \$4.5 Billion



Older Generation Products Continue to Sell



# DATACENTER MARKET CHARACTERISTICS DIFFER FROM CHARACTERISTICS OF TELECOM OPTICAL COMPONENT MARKET

---

## Vertical Integration & In-house Manufacturing Optimal

### DATACENTER MARKET

- ✓ Rapid product development cycles favor controlling a substantial part of the manufacturing process
- ✓ Large production volume/relatively low diversity enables rapid ROI on factory equipment
- ✓ Integration of manufacturing process enhances efficiency

### TELECOM MARKET

- ✓ Telecom applications have much longer production cycles
- ✓ Small volume/high diversity favors outsourcing
- ✓ Initial costs of integration are high, and only economical with high production volume

# 100G Datacenter Transceiver Use Cases

	100G Technology	Lasers	# Fibers	Transceiver Cost*	Fiber Cost/m*	Optimal Distance (d)
Intra-Datacenter	Short-Reach (SR) AOC	4xVCSEL	8	\$	\$\$	<150m
	Long-Reach, PSM-4	4x1310-nm DFB (AOI) OR 1x1310-nm high power + modulators (SiPh)	8	\$\$	\$\$\$\$\$	150m<d<500m
	Long-Reach, CWDM (CWDM-4, CLR-4)	4xCWDM DFB	2	\$\$\$	\$\$\$	500m<d<2km
Interconnect	Extended Reach, 4WDM-10	4xCWDM	2	\$\$\$\$	\$\$\$	2km<d<10km
	100G-BASE-LR4	4xWDM (cooled)	2	\$\$\$\$\$\$	\$\$\$	2km<d<10km
	Coherent (DP-QPSK)	1x1550 (tunable, narrow linewidth)	2	\$\$\$\$\$\$\$\$\$	\$\$\$	>80km

# 400G: Multiple Standards to Meet Multiple Use Cases

400G intra-datacenter electrical/optical standards currently in existence or being developed:

Reach Distance	Data Center Unique Spec	IEEE Standards	100G single Lambda MSA
70m for OM3, 100m for OM4	-	400G SR8*	-
	-	400G SR4.2	-
500m	-	100G DR*	-
	-	400G DR4*	-
2km	-	-	100G FR*
	-	-	400G FR4*
10km	400G DR4+*	-	-

# 400G Form-Factors

QSFP-DD



OSFP



COBO x 16



- ✓ Backward compatibility to QSFP28, easier migration for datacenter operators.
- ✓ Smaller size than OSFP
- ✓ Two variants: type-1 for MMF and type-2 for SMF (15mm longer than type-1).

- ✓ Better thermal management and capable of 20W power dissipation
- ✓ Biggest design size among the three listed, larger size may be necessary for 400G ZR (used in DCI, not intra-DC)
- ✓ Backward compatibility to QSFP28 requires an active adapter

- ✓ 16x 25G NRZ for 400G 2km reach
- ✓ Smaller than QSFP-DD and OSFP
- ✓ Not front-panel pluggable
- ✓ Flexible for optics termination for various front panel solutions
- ✓ Highest thermal dissipation of 3 designs

# Details of Current 400G Transceiver Form-factors

## Key Considerations for Designers:

Backward Compatibility

Connector Termination

Latch Mechanism

Mating Process

Protruding area safety

Electrical/optical breakout

Thermal dissipation

Common management interface specification



Dimensions (mm)	SFP-DD	QSFP-DD	OSFP	COBO
Width	14	19	22.93	36
Length (overall)	64.15	93	100.4	40
Length inside cage	54.15	49.6	82.48	-
Thickness	8.55	8.5	13.00	9.35
Electrical Channel	2x	8x	8x	8x, 16x
Thermal Capability	1 - 3.5W	7 - 14W	12 - 16W	15 - 20W

# 5G Requirements for Front/Mid-Haul Optics

---

**Small-Cell Proliferation and C-RAN Evolution Creates Need for New Optical Solutions**

**25 Gbps/50 Gbps/100 Gbps transceivers needed**

## Front-Haul:

- Link remote radio head (RRH) to base station
- Distances typically several km
- 25 Gbps in SFP-28 form factor
- Outdoor RRH require high-temperature optics

## Mid-Haul:

- Longer distances typical in C-RAN (Cloud-Radio Access Network)
- 50 Gbps/100Gbps over 10+ km
- Typically standard commercial temperature range

# Vertical Integration

---

A KEY DIFFERENTIATOR



Faster time to market



Cost advantages



High yield manufacturing

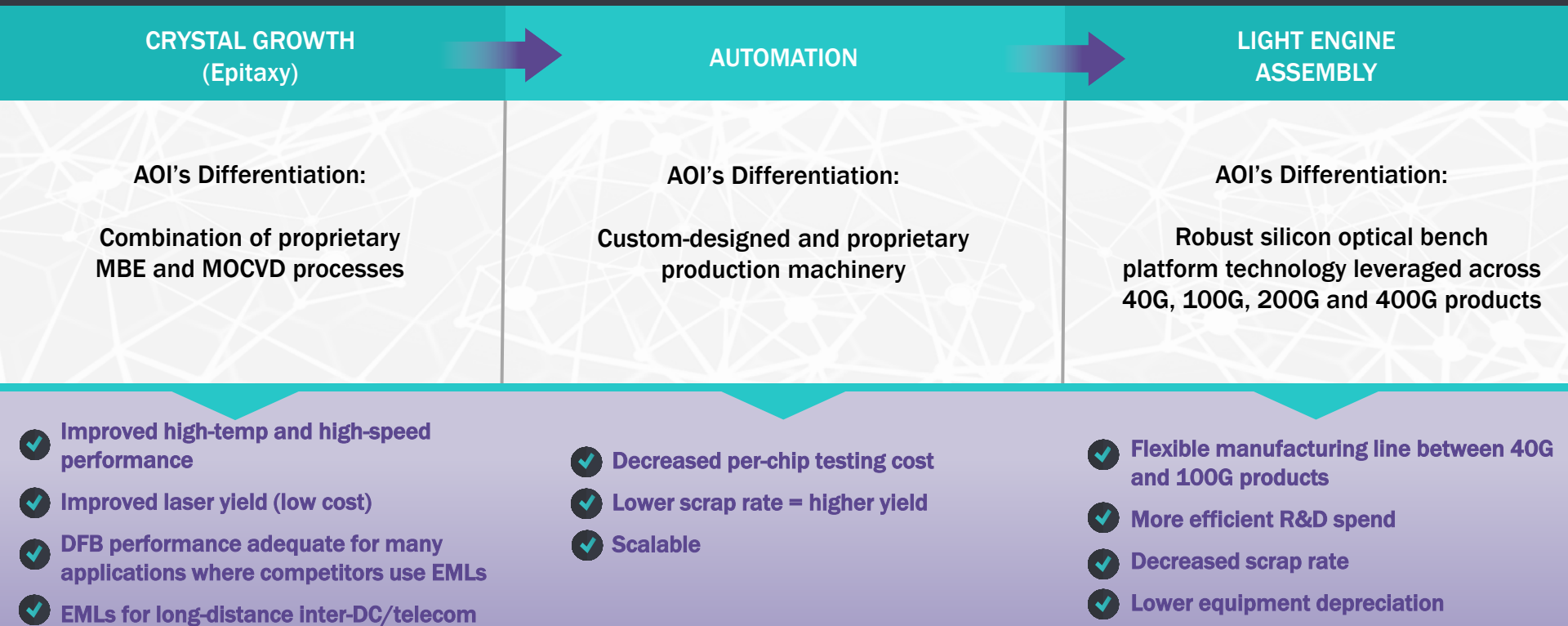


Flexible capacity support



Rapid response to customer & market demand

# A Closer Look...



# Automated Manufacturing Process



Automated Robotic Test Stations Increase Throughput, Decrease Human Error in Handling

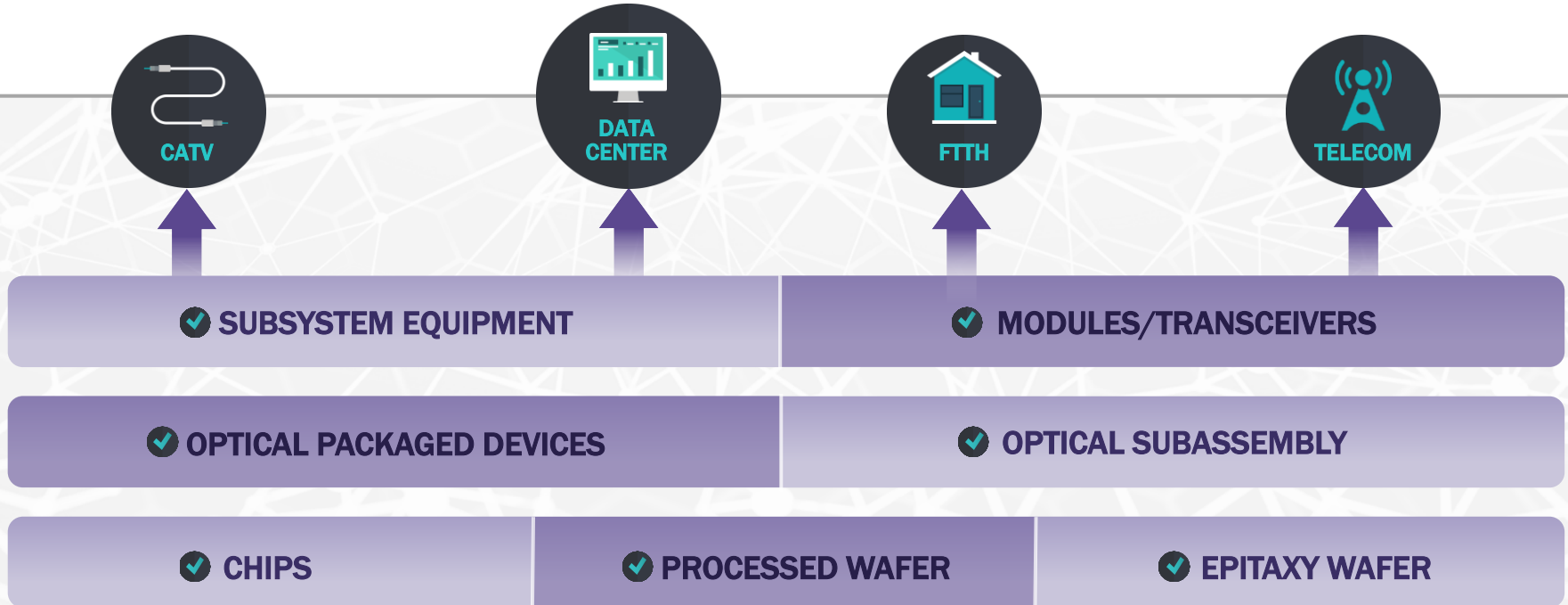
Automated Receiver Sub-Assembly Decreased Labor by 58% & Improved Quality Control



Automated Light Engine Final Assembly Decreased Labor by 85% & Improved Process Control and Quality

# Vertical Integration replicated across markets

In-house production and development  
of advanced laser diodes and light  
engines speeds time to market





## RESEARCH & DEVELOPMENT

- ✓ Excellent laser technology
- ✓ Proprietary Silicon Photonics Technology
- ✓ Strong R&D teams in all 3 sites from lasers, transceivers to equipment
- ✓ Customer NRE reimbursements

## MANUFACTURING & OPERATIONS

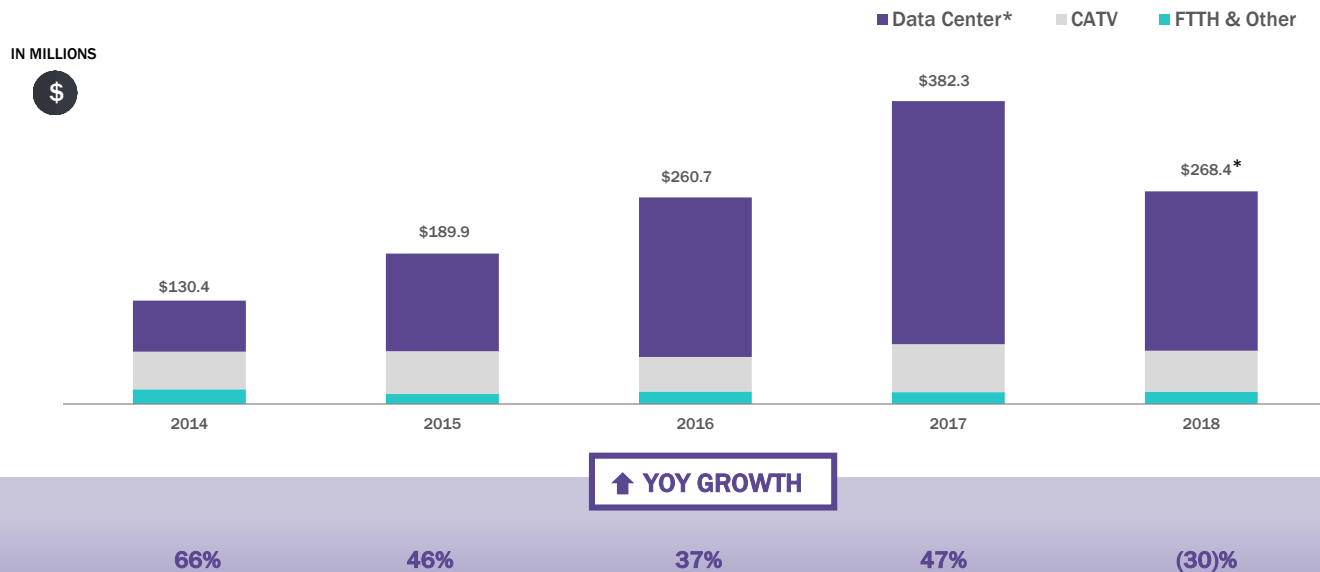
- ✓ Experienced in high-volume manufacture
- ✓ Efficient supply chain
- ✓ Vertical integration from laser chips to transceivers to equipment with cost advantages



# Financial Review

# Data Center Drives Revenue

## ANNUAL REVENUE BY END MARKET

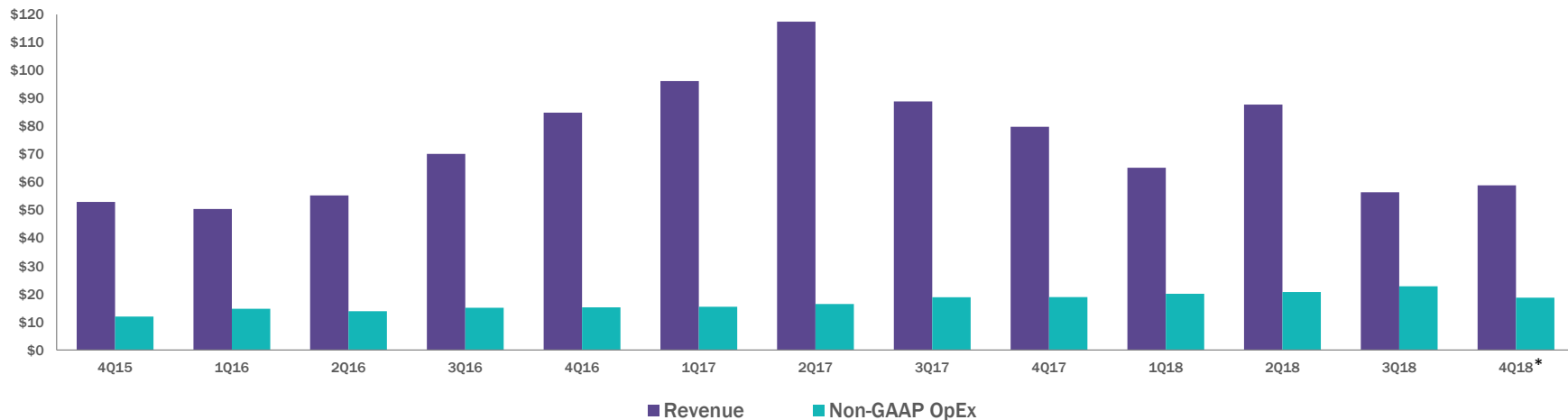




# Disciplined Opex Spend

IN MILLIONS

\$



Non-GAAP financial measures should not be considered as a substitute for or superior to measures of financial performance prepared in accordance with GAAP. Please refer to reconciliation of GAAP to non-GAAP measures, as indicated in the appendix.



## Annual Results

**NON-GAAP\***

<div> <div>\$</div> </div> <div>IN MILLIONS EXCEPT %</div>	FY16	FY17	FY18
DATACENTER	\$ 201.3	\$ 306.7	\$ 201.1
CATV	\$ 43.6	\$ 60.8	\$ 51.7
TELECOM	\$ 12.9	\$ 12.9	\$ 13.1
TOTAL REVENUE	\$ 260.7	\$ 382.3	\$ 268.4
GROSS MARGIN	33.4%	43.7%	35.5%
OPERATING INCOME	\$ 28.1	\$ 97.4	\$ 12.9
NET INCOME	\$ 36.5	\$ 93.0	\$ 20.8

# Balance Sheet Highlights

\$ IN MILLIONS	12/31/2016	12/31/2017	12/31/2018
CASH <sup>(1)</sup>	\$52	\$84	\$58
WORKING CAPITAL <sup>(2)</sup>	\$98	\$159	\$117
PROPERTY, PLANT & EQUIPMENT, NET	\$144	\$198	\$234
TOTAL ASSETS	\$322	\$453	\$467
TOTAL DEBT <sup>(3)</sup>	\$43	\$50	\$89
STOCKHOLDERS' EQUITY	\$227	\$333	\$329

(1) Cash: Cash, cash equivalents, short-term investments, and restricted cash.

(2) Working Capital: Total current assets less total current liabilities.

(3) Total Debt: Short-term loans, notes and bank acceptances payable and total long-term debt.

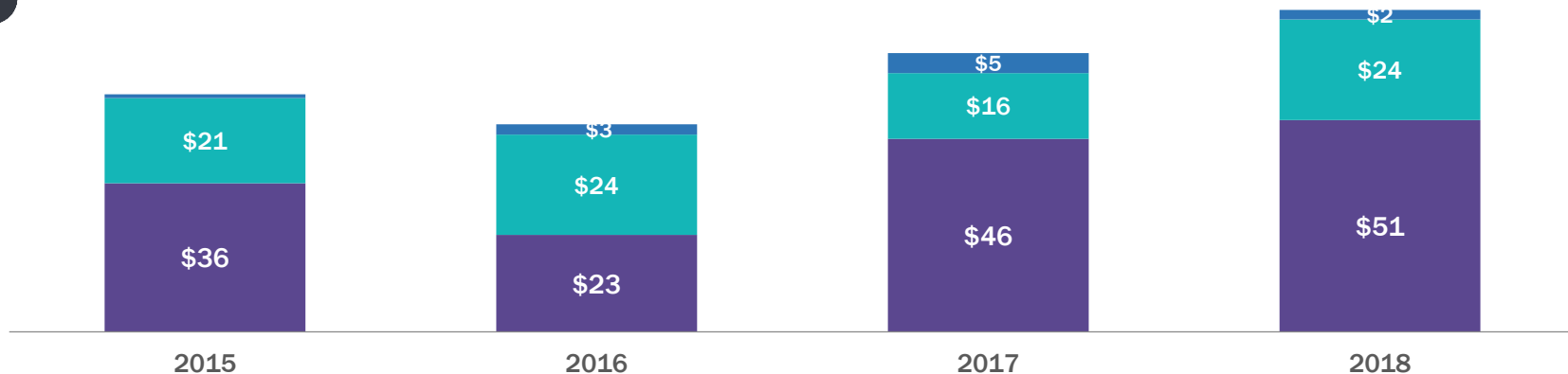
# Investing in Capacity & Vertical Integration

## 2018 Capex: \$77.4M

IN MILLIONS



■ M&E ■ Building ■ Other\*



\* Defined as furniture and fixtures, computer equipment and software and transportation equipment.

# Investment

---

## SUMMARY



**A leader In  
Advanced Optics**



**Focus on fast  
growing markets  
including hyperscale  
datacenters**



**Marquee global  
customers**



**Extensive internally  
developed technology**



**Vertical integration  
and manuf. expertise  
creates differentiation  
& sustains margin**



**Operating model  
provides significant  
leverage**



# Questions



# Appendix

# MANAGEMENT TEAM



**Dr. Thompson Lin**  
FOUNDER, PRESIDENT & CEO

20+ YEARS



**Dr. Stefan Murry**  
CFO & CSO

20+ YEARS



**Dr. Fred Chang**  
COMPONENT BU HEAD

16+ YEARS



**Dr. Alex Anselm**  
SEMICONDUCTOR PRODUCTS  
DIVISION HEAD

18+ YEARS



**Jessica Hung**  
VP OF FINANCE &  
CORPORATE CONTROLLER

11+ YEARS



**Joshua Yeh**  
ASIA GM

11+ YEARS

# NON-GAAP FINANCIAL MEASURES

We provide non-GAAP revenue, non-GAAP gross margin, non-GAAP net income (loss), and non-GAAP earnings per share to eliminate the impact of items that we do not consider indicative of our overall operating performance. To arrive at our non-GAAP revenue, we exclude non-recurring adjustments to revenue, if any. To arrive at our non-GAAP gross margin, we exclude stock-based compensation expense, expenses associated with discontinued products, and non-recurring expenses, if any, from our GAAP gross margin. To arrive at our non-GAAP net income (loss), we exclude all amortization of intangible assets, stock-based compensation expense, non-recurring expenses, unrealized foreign exchange gain (loss), losses from the disposal of idle assets, if any, non-recurring tax expenses (benefits), and expenses associated with discontinued products, if any, from our GAAP net income (loss). Included in our non-recurring adjustments to revenue in CY2018 is a non-recurring customer credit. Included in our non-recurring expenses in CY2018 are certain consulting and legal fees, depreciation expenses associated with certain idle equipment, and employee severance expenses. Non-cash expenses associated with discontinued products in CY2018 include depreciation on certain equipment undergoing reconfiguration. Other expenses associated with discontinued products in CY2018 include inventory obsolescence charges associated with materials used in the manufacture of these discontinued products.

Our non-GAAP earnings per share is calculated by dividing our non-GAAP net income by the fully diluted share count. We believe that our non-GAAP measures are useful to investors in evaluating our operating performance for the following reasons:

- We believe that elimination of items such as stock-based compensation expense and non-recurring revenue and expenses are appropriate because treatment of these items may vary for reasons unrelated to our overall operating performance;
- We believe that elimination of expenses associated with discontinued products, including depreciation and inventory obsolescence is appropriate because these expenses are not indicative of our ongoing operations;
- We believe that non-GAAP measures provide better comparability with our past financial performance, period-to-period results and with our peer companies, many of which also use similar non-GAAP financial measures; and
- We anticipate that investors and securities analysts will utilize non-GAAP measures to evaluate our overall operating performance.

A reconciliation of our GAAP net income (loss) and GAAP earnings per share for the years 2016, 2017, and 2018 to our non-GAAP net income (loss) and earnings per share is provided below.

Non-GAAP measures should not be considered as an alternative to net income (loss), earnings per share, or any other measure of financial performance calculated and presented in accordance with GAAP. Our non-GAAP measures may not be comparable to similarly titled measures of other organizations because other organizations may not calculate such other non-GAAP measures in the same manner. We have not reconciled the non-GAAP measures included in our guidance to the appropriate GAAP financial measures because the GAAP measures are not accessible on a forward-looking basis. GAAP measures that impact our non-GAAP financial measures may include stock-based compensation expense, non-recurring expenses, amortization of intangible assets, unrealized exchange loss (gain), asset impairment charges, and loss (gain) from disposal of idle assets. These GAAP measures cannot be reasonably predicted and may directly impact our non-GAAP gross margin, our non-GAAP net income and our non-GAAP fully-diluted earnings per share, although changes with respect to certain of these measures may offset other changes. In addition, certain of these measures are out of our control. Accordingly, a reconciliation of the non-GAAP financial measure guidance to the corresponding GAAP measures is not available without unreasonable effort.

# NON-GAAP RECONCILIATION

	CY2014	1Q15	2Q15	3Q15	4Q15	CY2015	1Q16	2Q16	3Q16	4Q16	CY2016	1Q17	2Q17	3Q17	4Q17	CY2017	1Q18	2Q18	3Q18	4Q18	CY2018
GAAP revenue	130,448	30,234	49,632	57,085	52,952	189,904	50,422	55,254	70,137	84,900	260,713	96,224	117,371	88,879	79,855	382,329	65,239	87,822	56,386	58,018	267,465
Non-recurring customer credit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	891	891
Non-GAAP revenue	130,448	30,234	49,632	57,085	52,952	189,904	50,422	55,254	70,137	84,900	260,713	96,224	117,371	88,879	79,855	382,329	65,239	87,822	56,386	58,909	268,356
GAAP total gross profit	44,245	10,051	16,731	18,053	15,618	60,454	14,253	17,302	23,161	32,238	86,954	41,472	53,282	39,372	32,154	166,280	25,836	33,863	17,537	10,537	87,773
Non-recurring customer credit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	891	891
Share-based compensation expense	89	16	19	17	18	70	37	50	52	51	190	78	134	125	124	461	177	211	205	202	795
Non-recurring expense	797	-	-	45	-	45	-	-	-	-	-	-	-	-	-	-	7	-	-	43	50
Expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	459	459	71	1,432	1,412	2,852	5,767
Non-GAAP income from gross profit	45,131	10,067	16,750	18,115	15,636	60,569	14,290	17,352	23,213	32,289	87,144	41,550	53,416	39,497	32,737	167,200	26,091	35,506	19,154	14,525	95,276
GAAP total operating expense	39,108	11,367	10,842	11,931	12,864	47,004	15,809	15,330	16,401	16,394	63,934	17,157	19,017	21,321	21,834	79,329	23,666	24,920	27,141	22,814	98,541
Share-based compensation expense	1,971	500	515	500	535	2,050	771	925	994	952	3,642	1,429	2,126	1,957	1,822	7,334	2,391	2,689	2,689	2,558	10,327
Amortization expense	356	100	102	104	106	412	110	112	115	117	454	118	120	122	125	485	126	127	125	128	506
Non-recurring expense	1,561	381	54	137	235	807	173	415	134	53	775	100	290	378	289	1,057	284	330	685	1,134	2,433
Non-cash expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650	650	751	1,004	859	273	2,887
Non-GAAP total operating expense	35,220	10,386	10,171	11,190	11,988	43,735	14,755	13,878	15,158	15,272	59,063	15,510	16,481	18,864	18,948	69,803	20,114	20,770	22,783	18,721	82,388
GAAP operating income (loss)	5,138	(1,316)	5,889	6,122	2,754	13,450	(1,556)	1,972	6,760	15,844	23,020	24,315	34,265	18,051	10,320	86,951	2,170	8,943	(9,604)	(12,277)	(10,768)
Non-recurring customer credit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	891	891
Share-based compensation expense	2,060	516	534	517	553	2,120	808	975	1,046	1,003	3,832	1,507	2,260	2,082	1,946	7,795	2,569	2,900	2,894	2,757	11,120
Amortization expense	356	100	102	104	106	412	110	112	115	117	454	118	120	122	125	485	126	127	125	128	506
Non-recurring expense	2,358	381	54	182	235	852	173	415	134	53	775	100	290	378	289	1,057	290	330	685	1,180	2,485
Expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	459	459	71	1,432	1,412	2,852	5,767
Non-cash expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650	650	751	1,004	859	273	2,887
Non-GAAP operating income (loss)	9,912	(319)	6,579	6,925	3,648	16,834	(465)	3,474	8,055	17,017	28,081	26,040	36,935	20,633	13,789	97,397	5,977	14,736	(3,629)	(4,196)	12,888
GAAP net income (loss)	4,283	(675)	6,089	2,700	2,679	10,794	(1,330)	603	17,736	14,225	31,234	19,789	29,071	19,375	5,716	73,951	2,120	8,034	(3,732)	(8,568)	(2,146)
Non-recurring customer credit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	891	891
Amortization of intangible assets	356	100	102	104	106	412	110	112	115	117	454	118	120	122	125	485	126	127	125	128	506
Share-based compensation expense	2,060	516	534	517	553	2,120	808	975	1,046	1,003	3,832	1,507	2,260	2,082	1,946	7,795	2,569	2,900	2,894	2,757	11,120
Non Recurring charges	2,358	381	54	182	235	852	173	415	134	53	775	100	290	378	289	1,057	290	330	685	1,180	2,485
Expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	459	459	71	1,432	1,412	2,852	5,767
Non-cash expenses associated with discontinued products	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650	650	751	1,004	859	273	2,887
Loss (gain) from disposal of idle assets	-	-	-	-	54	54	-	40	4	37	81	-	2	-	-	2	-	-	-	8	8
Unrealized exchange loss (gain)	1,300	(44)	(848)	3,160	299	2,567	(410)	42	(624)	46	(946)	248	(101)	60	741	948	(203)	(911)	506	7	(601)
Non-recurring Tax Benefit	-	-	-	-	-	-	-	-	(11,856)	-	(11,856)	-	(320)	-	8,016	7,696	(114)	(48)	-	-	(162)
Non-GAAP net income (loss)	10,357	278	5,931	6,663	3,926	16,799	(649)	2,187	6,555	15,481	23,574	21,762	31,322	22,017	17,942	93,043	5,610	12,868	2,749	(472)	20,755