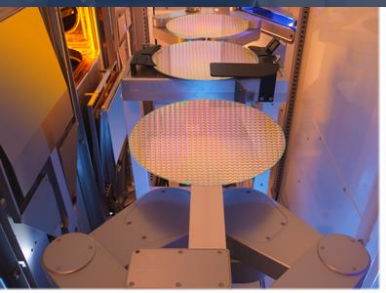
Axcelis Technologies, Inc.



Precision

Purity

Productivity

August 6, 2019

CELEBRATING 40 YEARS OF INNOVATION 1978 - 2018

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Safe Harbor Statement

This presentation and discussion contain forward-looking statements, including our expectations for future revenues, expense reductions, profits, and other results that are forward-looking statements under the SEC's safe harbor provision. These forward-looking statements are based on management's current expectations, and are subject to the risks inherent in our business. These risks are described in detail in our Form 10-K annual report and other SEC filings. Our actual results may differ materially from our current expectations. We do not assume any obligation to update these forward-looking statements.

Axcelis at a Glance

- Global leader in technology development and manufacturing of ion implant systems and services for the semiconductor industry for 40 years
  - Serving an estimated $1B ion implant systems market
  - Based in Beverly, MA with headcount of approximately 1000 worldwide
  - Global infrastructure supporting customers in 31 countries
  - Growing installed base of over 3200 tools
  - Strong IP portfolio with >800 patents

- Supplier of record to leading semiconductor CAPEX spenders in all market segments including DRAM, Flash, Foundry and Logic


Implantation


Global Support

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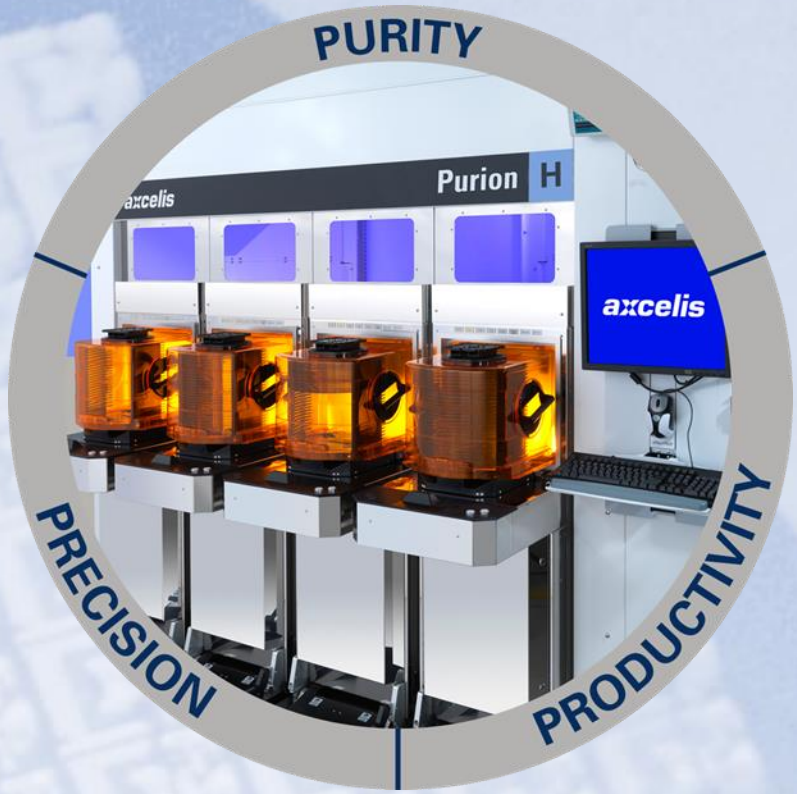
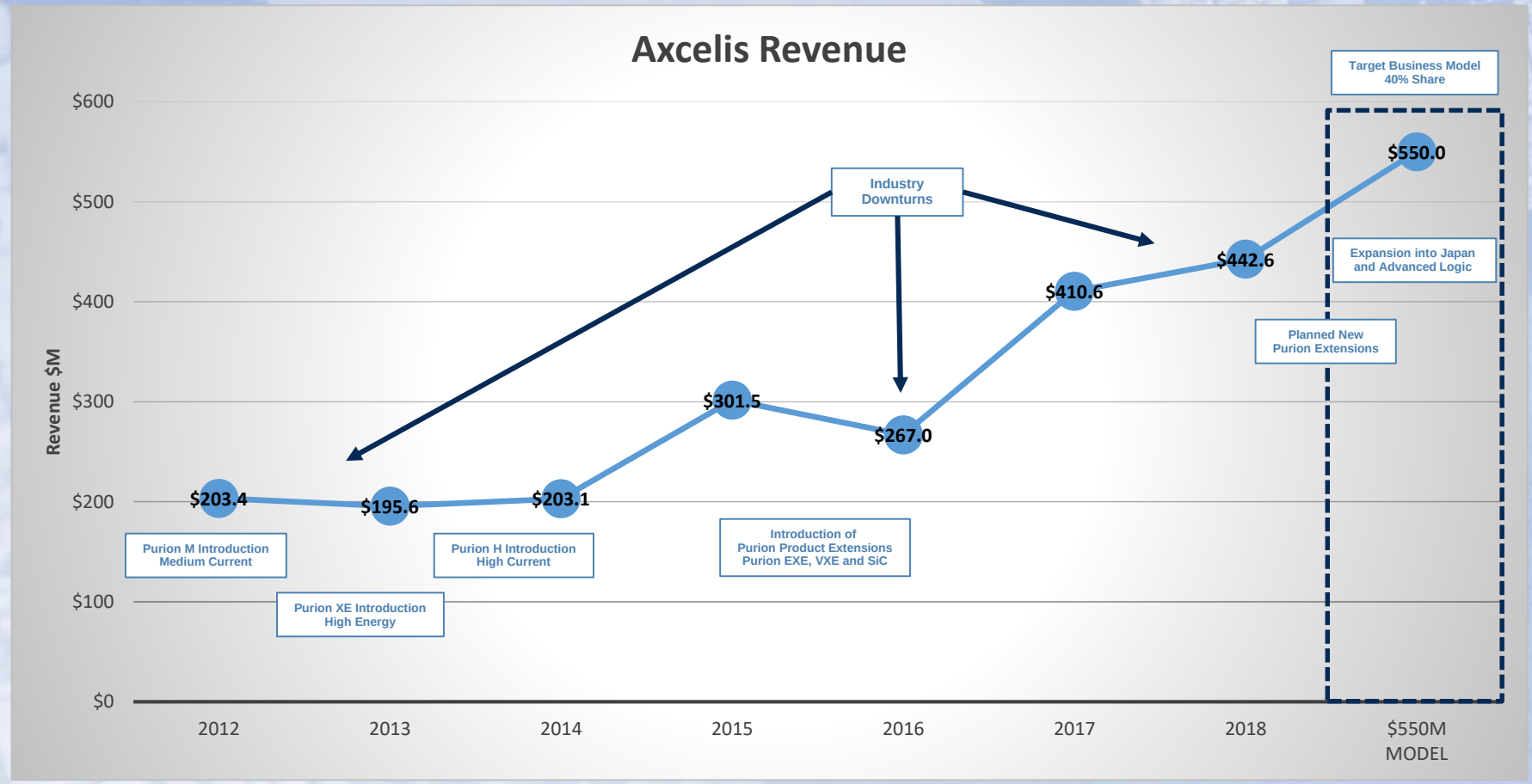
The Purion Platform…Key to Market Share Leadership and Achieving our Target Financial Business Model



- Innovative scanned spot beam architectures with advanced energy filters
- Common endstation and control system
- Advanced source technology

Axcelis Revenue Growth in the Purion Era



Target Business Model (GAAP)
The Path to Market Share Leadership

Revenue	$301.5M 2015(A)	$267M 2016(A)	$410.6M 2017(A)	$442.6M 2018(A)	$550M Model*
Gross Margin	33.7%	37.3%	36.6%	40.6%	42-43%
Total OPEX	26.8%	31.1%	24.9%	27.0%	~25%
Operating Profit	6.9%	6.2%	11.7%	13.5%	17-18%
Free Cash Flow (Cash From Operations – Capex)	5.5%	(4.1%)	11.9%	9.5%	>15%

* The $550M revenue model is not a forecast of results for any identified period, but is intended to be indicative of the annual results Axcelis may achieve based on our strategic objectives.

2019 Objectives – Build on the strength of the Purion Platform

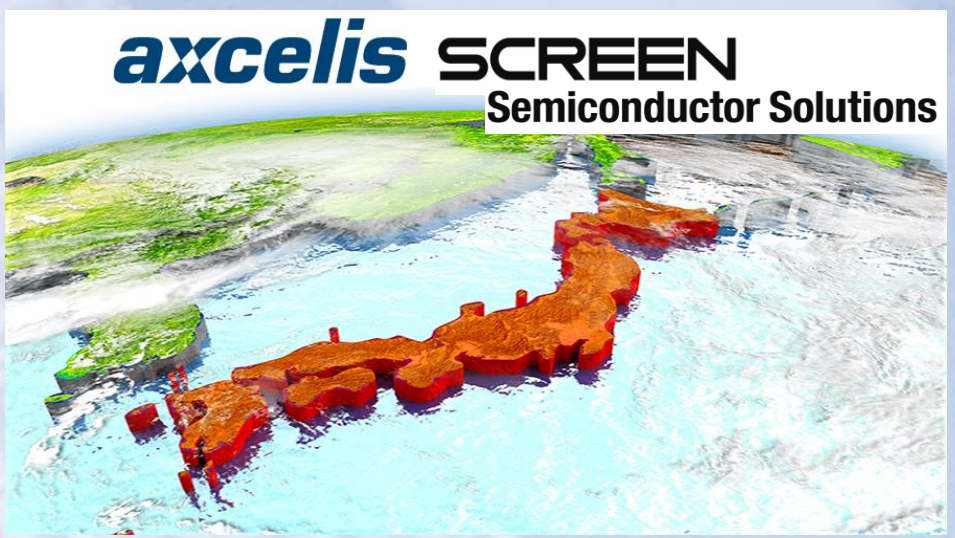
1. **Grow our Purion footprint within our existing customer base**

2. **Penetrate Japanese and advanced foundry/logic market with Purion**
   - **Represents approximately $300M of the $1B ion implant TAM**

3. **Capitalize on successful market segmentation strategy by releasing new Purion product extensions focused on key market segments**
   - **Power device – Silicon Carbide and Silicon**
   - **CMOS Image Sensor – Deep red and infrared**
   - **Purion H for Advanced Logic with advanced capabilities**
   - **Purion H for Mature Process Technology focused on Productivity**

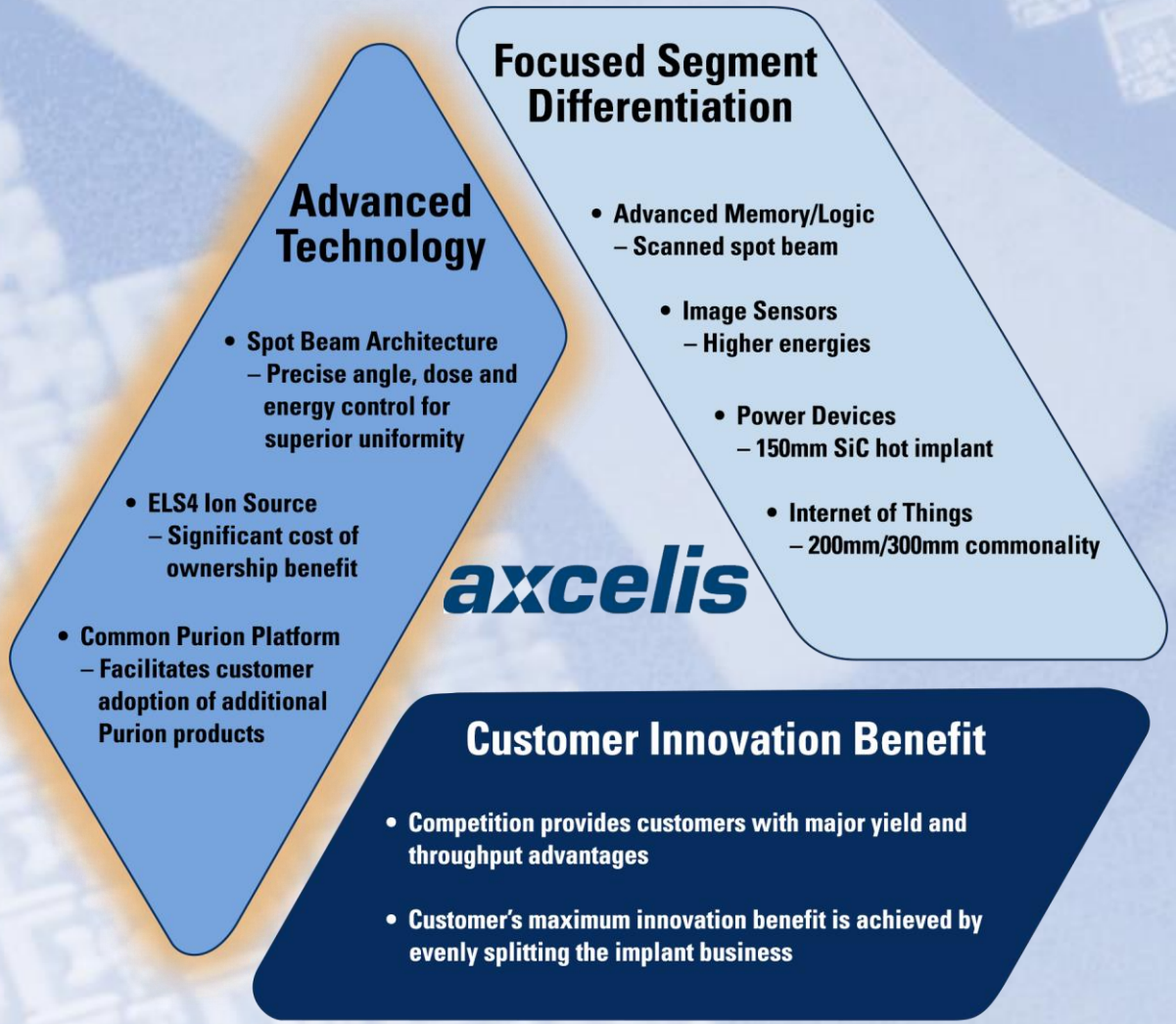
Reentering the Japanese Market
Elements of Axcelis and SCREEN SPE Collaboration*

- **SCREEN SPE to *distribute and service* advanced Purion ion implantation technology in Japan**
  - **Japanese market represents 15% of the overall $1B ion implant TAM**
- **Companies to *establish training and demonstration facility* at SCREEN SPE Process Technology Center in Hikone, Japan**
- **Agreement includes *joint technical collaboration* for emerging implant, thermal processing and wafer cleaning applications**



*** Formerly Dainippon Screen**

Why Customers Choose Purion

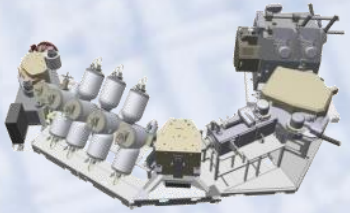


Axcelis Purion Platform
Most Innovative Ion Implant Products Available

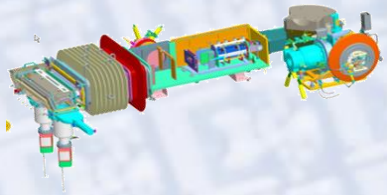
Three Unique and Enabling Beamlines + Common Endstation

Enhanced Scanned Spot Beam Technology

RF Linear Accelerator Technology



Energy Filter Based Beamline Technology

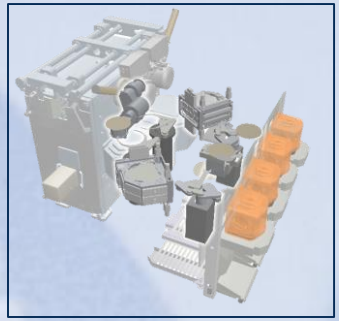


High Current

High Energy

Medium Current

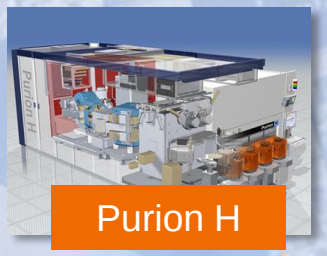
Common Purion Platform
- 500WPH End Station
- Vector Control System™
- Eterna ELS4 Source™



High Current

High Energy

Medium Current



Purion H

Purion XE

Purion M

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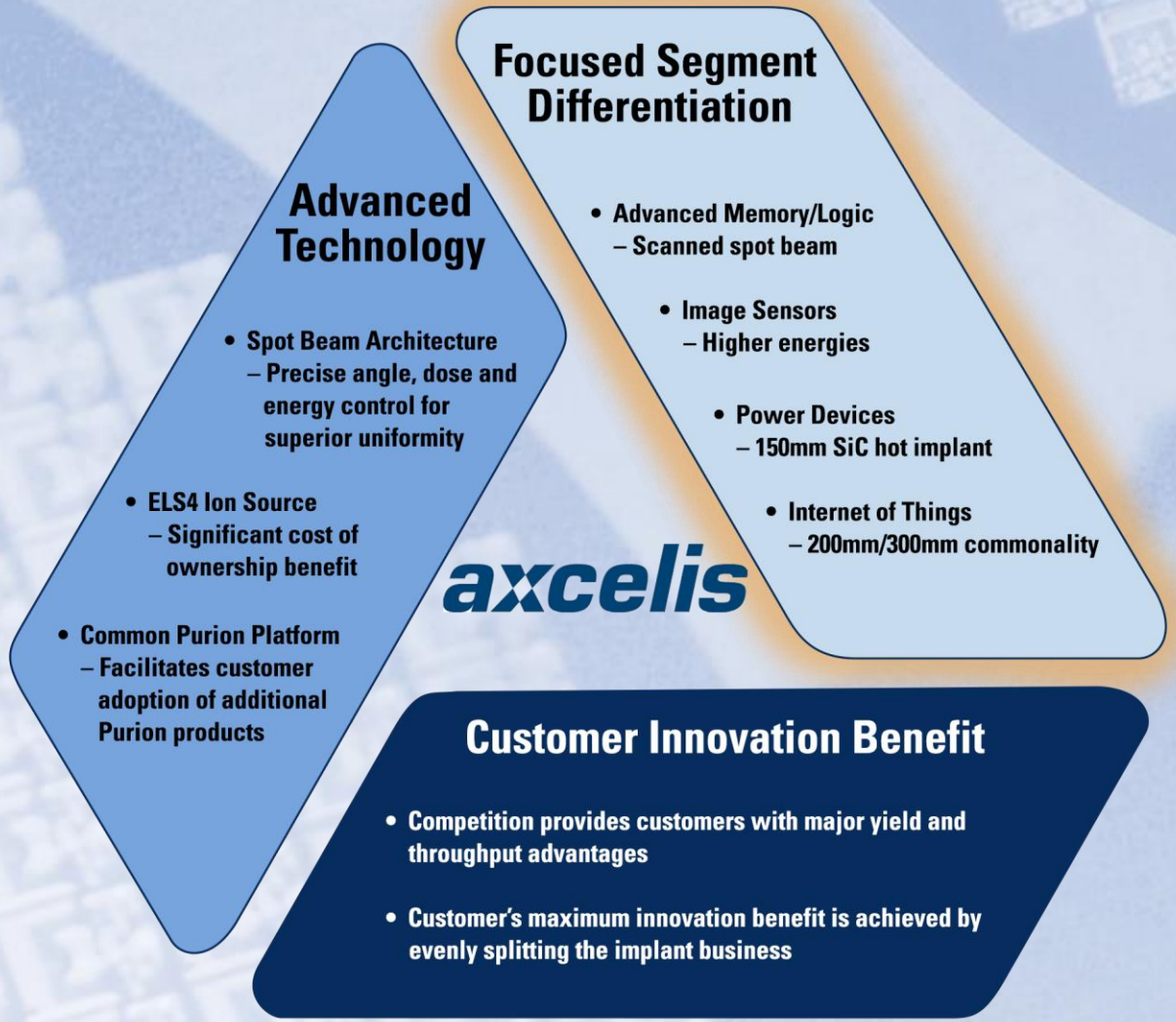
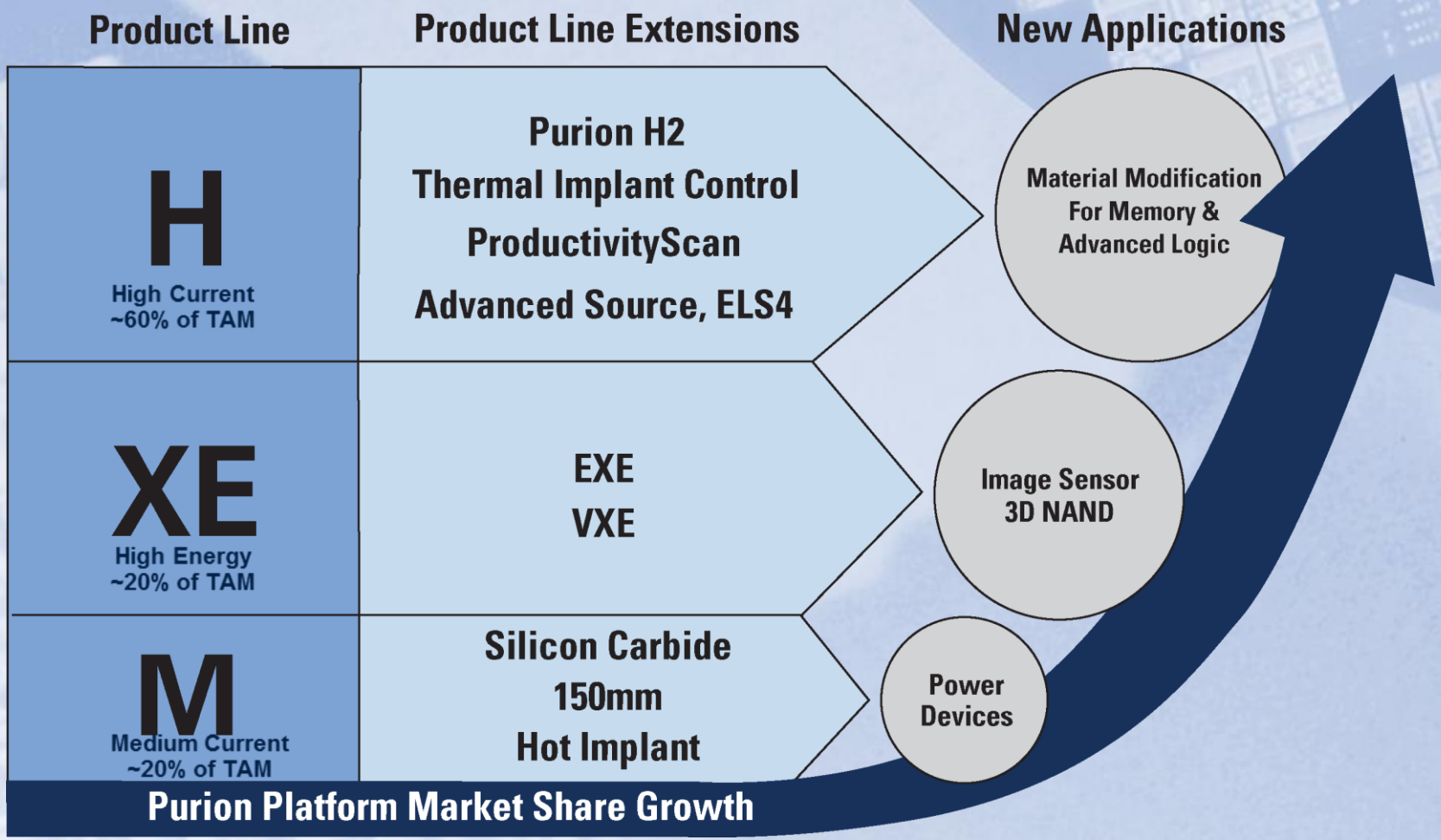
Why Customers Choose Purion



Purion Driving Customer Innovation Through Product Extensions and New Applications Capabilities



Purion Power Series
Optimized for the Growing Power Device Market

Purion Power Series		SiC			Si		
		M	XE	H	M	XE	H
	Aluminum Implantation	✓	✓		✓	✓	
	150mm Wafer Handling	✓	✓		✓	✓	
	Hot Implantation to 700˚C For 150mm Wafers	✓	✓		✓	✓	
	80keV Antimony Implantation				✓		✓
	200mm Thin Wafer Handling				✓		✓
	80keV High Current Capability						✓

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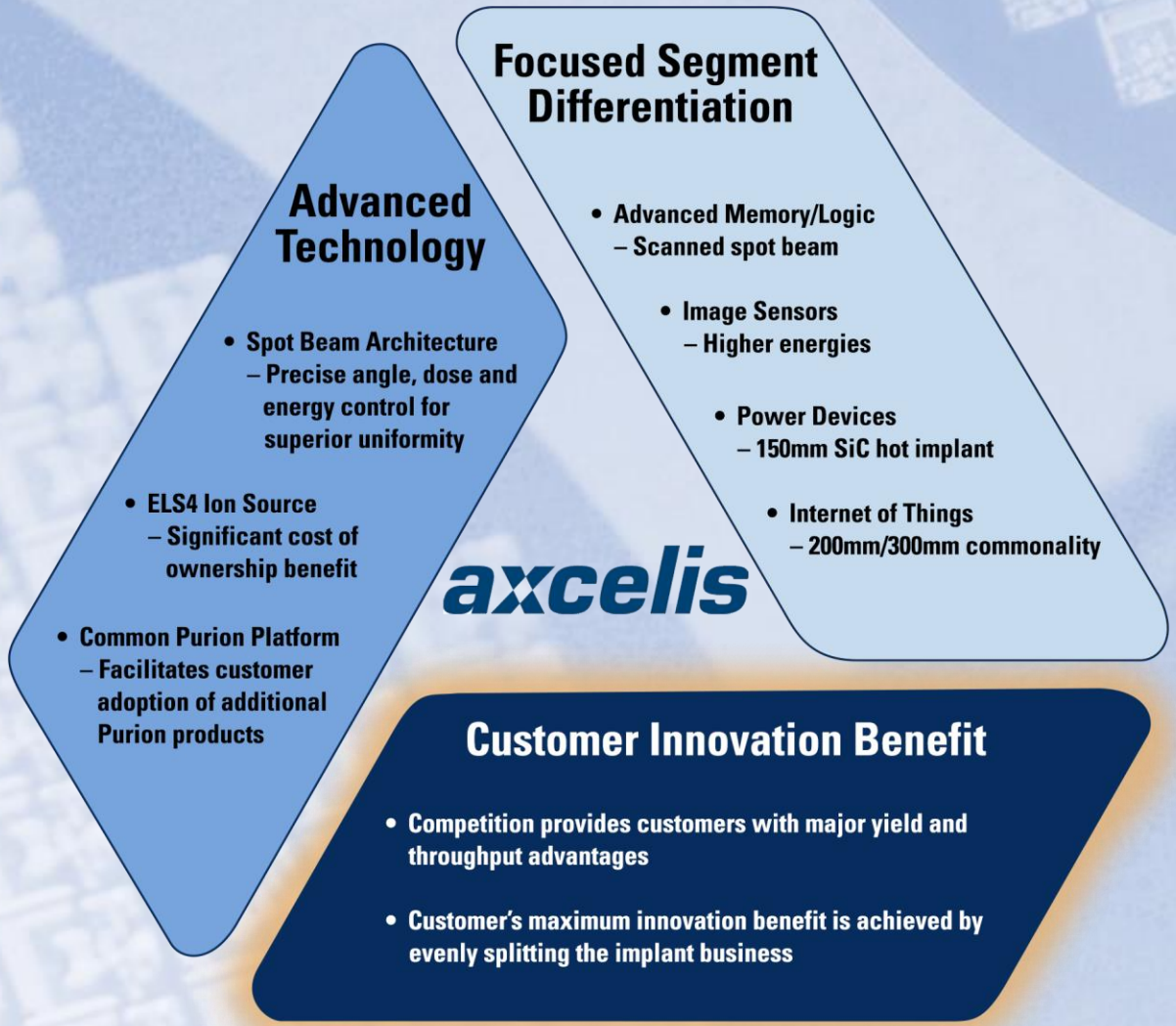
Why Customers Choose Purion



Financials

Axcelis Share Repurchase Program

- Board of Directors has authorized a share repurchase program of up to $35 million of the company's common stock
- Reflects continued confidence in Axcelis' financial performance and long term outlook
- Strong balance sheet and cash flows enable:
  - Return cash to shareholders through share repurchases
  - Investments in internal and external opportunities to strengthen our product lines and drive long-term growth
- Repurchased $14M of stock in Q2 2019

Q2 2019 Financial Results

	Q2 2019 (GAAP)
Revenue	$74.3M
Gross Margin	42.7%
Combined R&D and SG&A Expenses	$29.7M
Operating Profit	$2.0M
Net Income	$0.6M
EPS	$0.02
Total Cash	$143.2M
Debt	$0
Inventory	$135.1M

Q3 2019 Financial Outlook

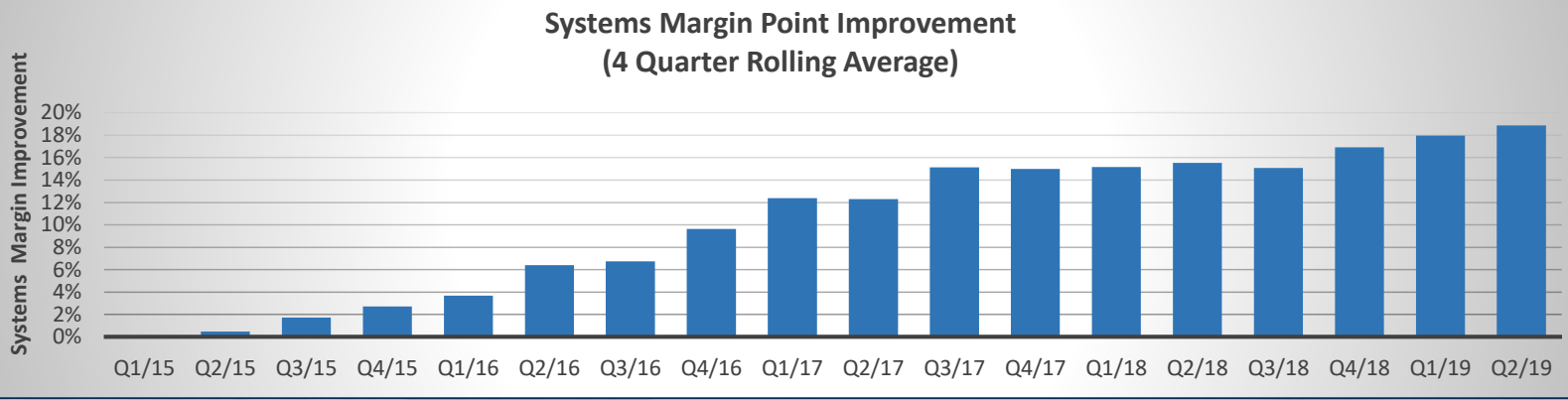
	As Guided (GAAP)
Revenue	$65 – 75M
Gross Margin	~41%
Combined R&D and SG&A Expenses	~$29.7M
Operating Profit	($1.2) – $2.0M
EPS	($0.05) – $0.05

Aggressive Gross Margin Improvement Activities

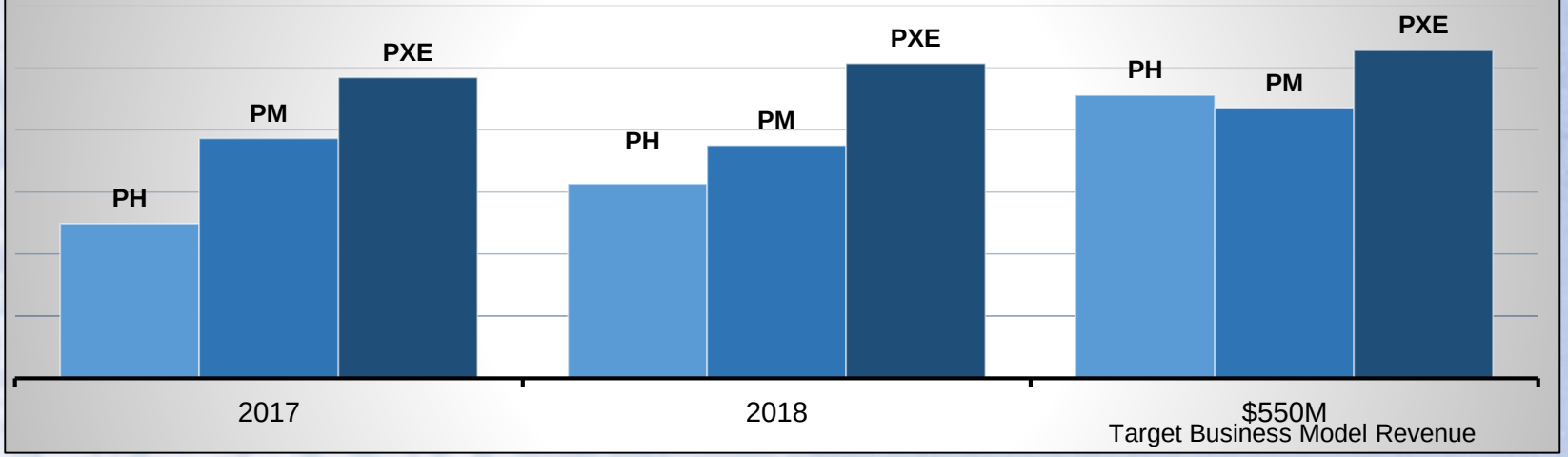
- Accelerated value engineering and supply chain cost out projects across the Purion product family
- Aggressively pursuing volume purchase agreements in low cost regions
- Manufacturing hours decreasing due to multiple lean initiatives
- Expect lower warranty and install costs from local installation teams as learning is applied to new shipments to previously penetrated Fabs
- Warranty costs are being positively impacted by follow on order volume, Purion Platform maturity and parts quality improvements

Gross Margins Driven by Product Maturity, Volume and Cost Out Initiatives

Cost Out Initiatives Fueling Steady Margin Improvement



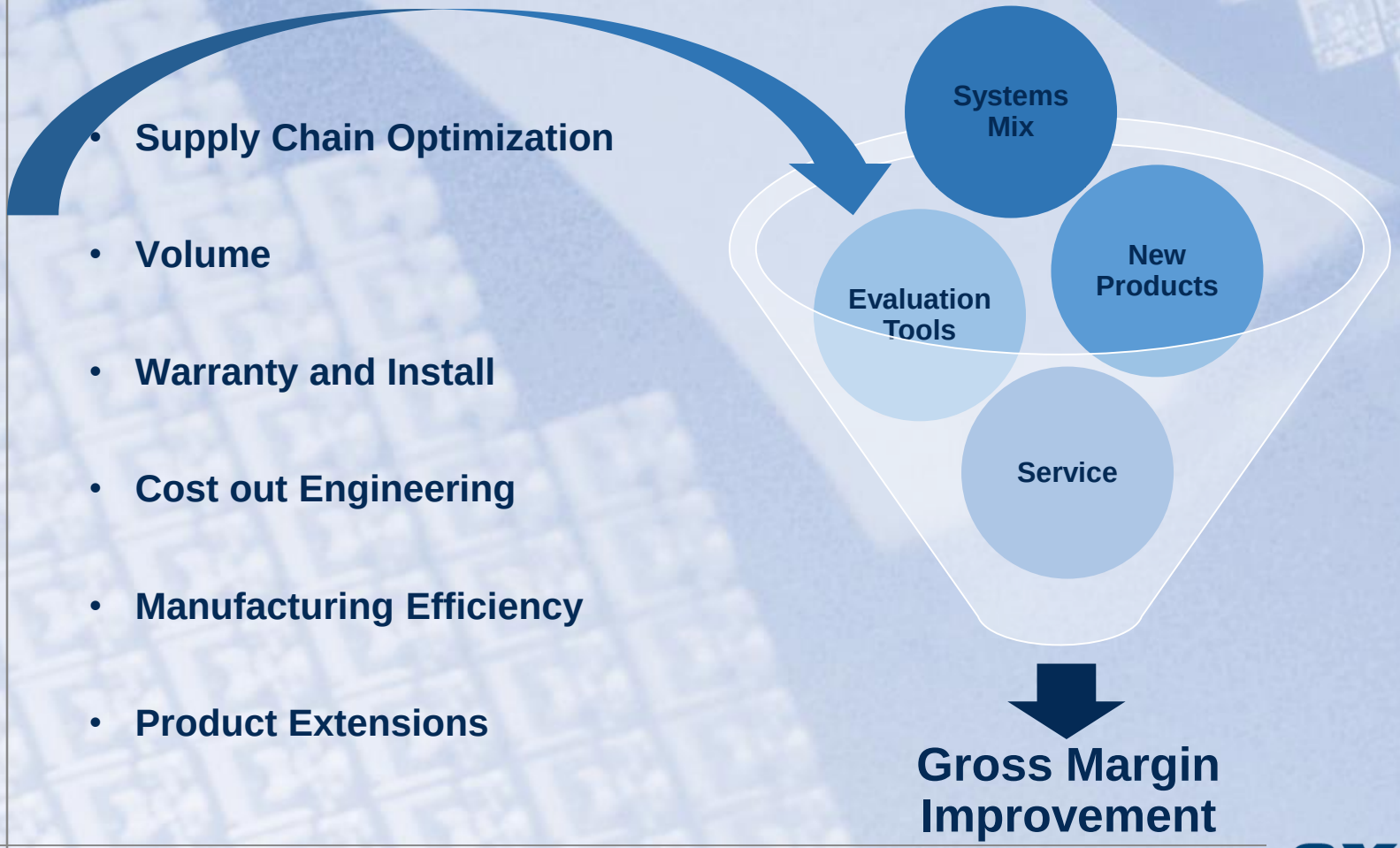
System Standard Margin Targets



The Impact of Mix and Initiatives on Gross Margin

- **Gross Margin Improvement Driven by Improving Systems Margins on the Common Purion Platform**

- Supply Chain Optimization
- Volume
- Warranty and Install
- Cost out Engineering
- Manufacturing Efficiency
- Product Extensions



Managing Through the Downturn

- **Investing in the business for growth in the coming upturn**
  - **Marketing – building strong product roadmaps for key growth segments**
  - **R&D – developing Purion product extensions for these market segments**
  - **Sales – expanding Purion footprint in both existing and new customers**
  - **Companywide – driving excellent customer satisfaction and quality**

- **Managing the business for profitability**
  - **Expected revenues down 20-25% compared to 2018**
  - **Full year operating expenses reduced by $12M compared to budget through multiple actions**
    - **Temporary work force reduction and voluntary executive pay cut**
    - **Reduction in variable compensation expense**
    - **General belt tightening of expenses across the business**
    - **Non-critical infrastructure programs pushed to 2020**

- **Continued focus on gross margin improvement programs**
  - **Full year gross margins expected between 41.0% to 41.5%, up from 40.0% to 41.0%**

Investment Thesis

Strong Long Term Industry Cycle Driven by – "Data-Centric Connected World"

Application	Market Segment	Process Technology
DATA COLLECTION Sensors, microcontrollers, embedded memory, communications, 5G, analog, power devices etc..	IoT	**MATURE PROCESS TECHNOLOGY** greater than 28nm logic, RF, Analog, Power
DATA STORAGE SSD, mobile, enterprise, datacenter, PC, 5G	Memory	**MEMORY** 3D NAND, DRAM, PCRAM, ReRAM, MRAM
DATA ANALYTICS Microprocessors, applications processors, graphics processors, 5G	Advanced Logic	**ADVANCED LOGIC** FinFET, FDSOI

Axcelis Growth Opportunity

- Driven by market dynamics
  - Long term data centric growth cycle is still intact with growth driven by IoT, data storage and analytics
  - Maturing mobile market and capacity absorption in memory causing current slowdown
- Driven by Purion market penetration
  - Mature process technology
  - Memory
  - Japan
  - Advanced logic
- Driven by investment in the development of new Purion product extensions and enhancements
  - Provide opportunities for implant growth beyond the $550M model

Evaluating Growth Beyond the Purion Platform

- Assessing potential options
  - Organic product development
    - New doping-based products focused on emerging technology requirements
  - Inorganic growth
    - Technology acquisition followed by internal product development
    - New product acquisition
    - Business unit M&A