



# GSI TECHNOLOGY

High Performance Components  
for Leading-Edge Technology

*Didier Lasserre, Vice President Sales and Investor Relations  
Doug Schirle, CFO | May 2018*

# SAFE HARBOR

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# GSI TECHNOLOGY OVERVIEW

- 20+ year leadership in innovative performance memory chips
- Largest portfolio of high performance memory products with core competency in Very Fast SRAM and LLDRAM
- Based in Sunnyvale, CA
- \$170 million market cap with 21 million shares outstanding; NASDAQ: GSIT
- Insider ownership of 34%



*GSI memory products are recognized for very high transaction rates, high density, low latency, high bandwidth, fast clock access times, and low power consumption.*

# CONSISTENT TRACK RECORD OF EXECUTION

- Leadership team with 20+ years tenure
- Core strengths in hardware design, manufacturing and marketing
- Fabless manufacturing with TSMC using master die design
- Leveraging memory line into high performance Radiation-Hardened line
- Acquired cutting-edge in-place associative computing technology
- Merging AI start-up innovation with robust chip manufacturing

## ***WHAT'S NEW***

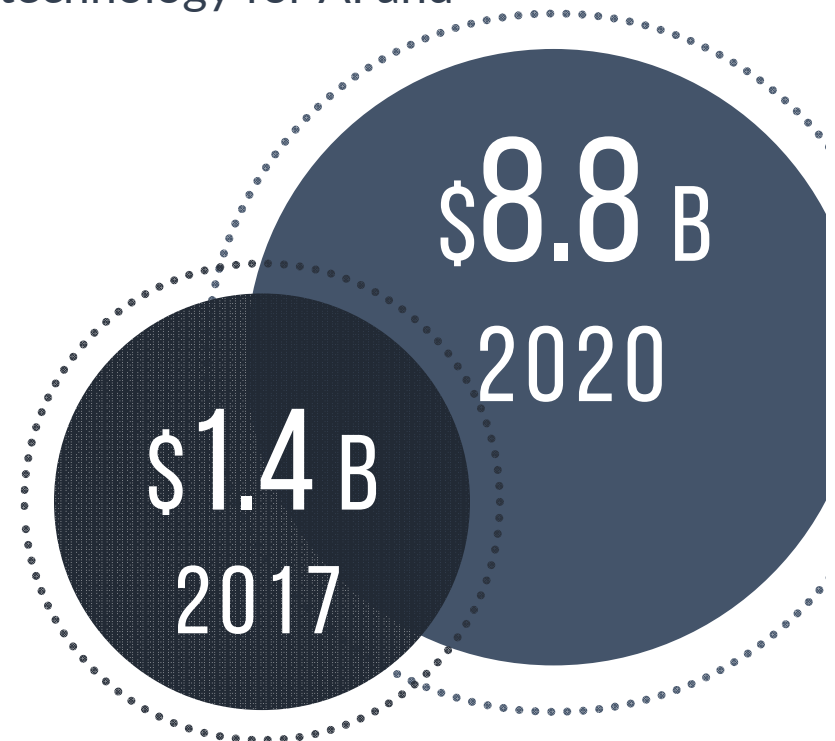
- Company's resources focused on bringing new products to market
- AI acquisition strategically leverages existing core strengths

# ADVANCING OUR BUSINESS TO NEW FIELDS

Launching two new product categories in high margin, growth markets:

- Rad-Hard and Rad-Tolerant launches for aerospace and defense in 4Q CY 2018 – high ASP, high margin products
- In-place associative computing (APU) technology for AI and machine learning applications

***Global machine learning market forecasted to grow at CAGR of 44.1% by 2020\****



\* Source: three year CAGR, MarketsandMarkets™, September 2017

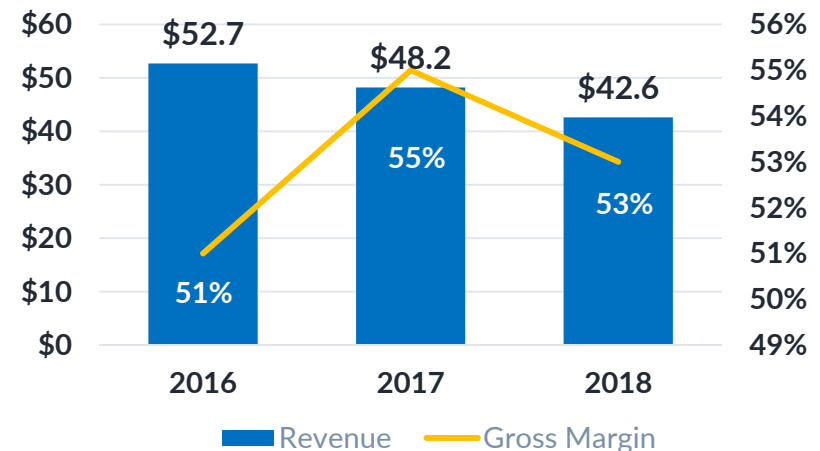
# SOLID PLATFORM FOR GROWTH

- Coming off an investment cycle:
  - \$5 million acquisition in CY 2015
  - \$36 million legal fees
  - Purchased HQ building
  - \$61 million of common stock repurchased to date
- Increased ASPs and gross margin in current product line
- Significant liquidity for launch of in-place associative computing technology for AI applications

## SUMMARY BALANCE SHEET

(\$ in millions)	FY 2018 Q4 03/31/2018	FY 2017 Q4 03/31/2017
Cash & Short Term Investments	\$58.4	\$49.9
Long Term Investments	\$7.9	\$12.9
Debt	\$ 0.0	\$ 0.0

## REVENUE & GROSS MARGIN PERFORMANCE



\*Reflects March 31 fiscal year end

# HIGHLY CAPITAL EFFICIENT

- Efficient business model – fabless manufacturer and master die production
- Strong cash generation historically; currently cash flow neutral
- Primary uses of capital for share repurchase and R&D investment for APU

## R & D INVESTMENT

- Developing software libraries and hardware design
- \$4 million per quarter since CY 2017 (up from \$3 million/Q)
- R&D spend continues through CY 2018 at current levels

## SHARE REPURCHASE

- Repurchased 12 million shares and returned \$60.6 million in capital to stockholders
- Outstanding authorization to purchase up to an additional \$4.4 million

# STRONG CORE COMPETENCIES

## REVENUE GROWTH DRIVERS: SIGMAQUAD™ SIGMADDR™

- Applications in switches, routers, avionics, and military radar
- Broadest product offering across all product categories
- Best industry performance

## NEXT GEN SRAM (3<sup>RD</sup> AND 4<sup>TH</sup> GENERATION)

- Fastest off-the-shelf SRAM on market
- Higher reliability and lower power consumption
- Higher ASP and gross margin contribution

## BEST IN CLASS CAPABILITIES

- SigmaQuad™ SRAMs industry leader for capacity, performance, and unequaled transaction rates
- LLD RAM performance unmatched by commodity DRAM

*Uniquely positioned to leverage these capabilities for AI market opportunity*



# RADIATION HARDENED (RAD-HARD) SRAM

## PRODUCT HIGHLIGHTS

- SigmaQuad Radiation Hardened SRAM
- Capabilities and technology unique to GSI's Sigma Quad expertise
- 85% gross margin, +\$30K ASP
- One project funded – CY 4Q 2018
- **Introducing Rad Tolerant**

## PRIMARY APPLICATIONS/PRODUCT ROLLOUT

- High temperature, high pressure
  - Satellites, missiles
  - High altitude flights
- First product: 288Mb SQII+
- Second product: 144Mb NBT/SB
- Target products: 144Mb SQIV, 144Mb SQIII, APU



# IN-PLACE ASSOCIATIVE COMPUTING (APU)

## UNIQUE APPROACH COMBINING MEMORY AND LOGIC ONTO APU

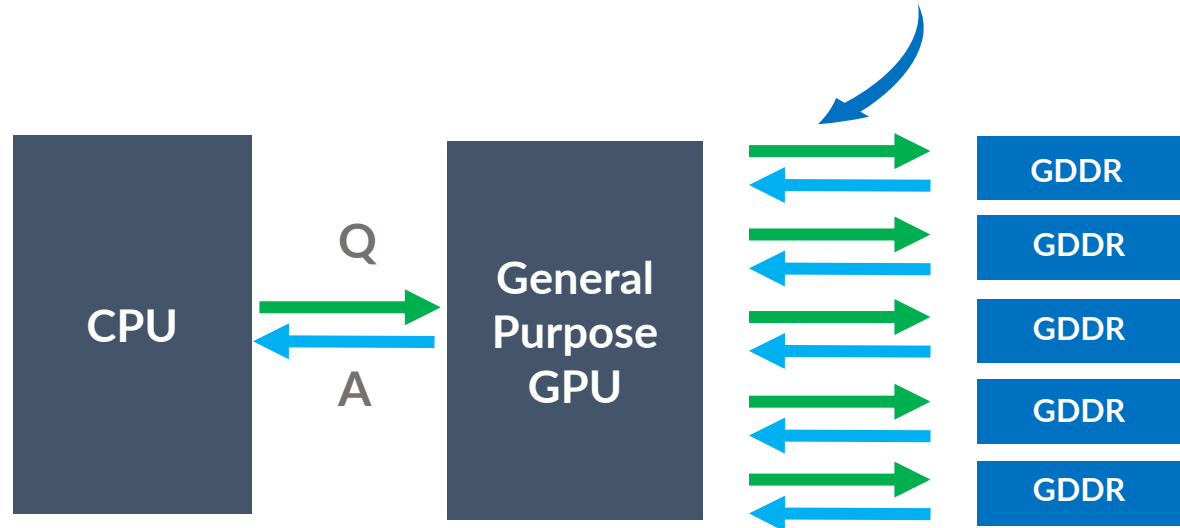
- November 2015 acquired MikaMonu Group, developer of in-place associative computing
- GSI's extensive hardware development and manufacturing complements MikaMonu software development capabilities
- Targeting AI applications in machine learning, inference, computer vision, natural language processing (NLP), and recommender systems
- Existing Massive Parallel Processing (MPP) systems that move data back and forth between processor and memory no longer adequate

***AI revenue will grow from \$643.7 million in 2016 to \$36.8 billion by 2025. Tractica, 2017***

# PROCESSING CHALLENGE FOR MPP

- Current solutions use graphic processing units (GPU) originally designed for video games
- Machine learning is pushing the limits of Massive Parallel Processing (MPP)

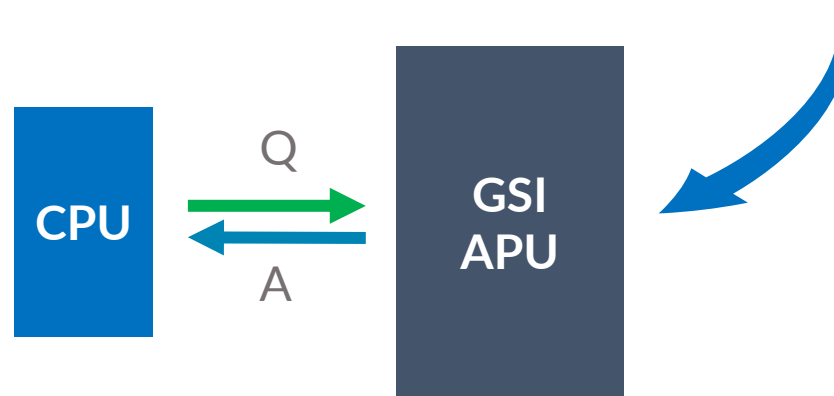
CREATES MASSIVE IO BOTTLENECK BETWEEN GPU AND MEMORY



Results in long query response times, high power consumption and system cost

# IN-PLACE ASSOCIATIVE PROCESSING

*GSI solution mimics the brain by computing in-place within the APU*



- Computation and search occur inside the GSI Associative Processor (APU)
- Response direct from APU removes IO bottleneck and improves performance
- Reduces query response times from hours to seconds
- Significantly reduces power consumption and system cost
- **Scalable – unique feature to GSI APU**

# STRONG IP PORTFOLIO FOR APU

## ACQUIRED PATENT PORTFOLIO, AND IP IN CY 2015

- U.S.-based patent portfolio - 17 granted and 10 pending
- Future patents will extend to China and Korea
- All related to associative processing for compute and search
- Application libraries to enable hardware functions
- Seamless integration into existing software platforms
- Applications include image processing, Big Data analytics, security, machine learning

# GSI'S APU PERFORMANCE ADVANTAGE

Task	Applications	GPU/TPU/IPU/ NERVANA (NVIDIA/GOOGLE/ GRAPHCORE/INTEL)	ASIC	FPGA	APU
High precision floating point	Training	Good	Poor	Average	Average
Low precision	Inference	Average	Good	Good	Good
Low shot similarity search	Big data search, video search, recommender systems, fake review/news	Poor	Poor	Poor	Extremely high ✓
Attention network	NLP / language translation, Q&A, video search	Average	Poor	Poor	Extremely high ✓

Performance key: ■ Poor ■ Average ■ Good ■ Extremely high

# MULTIPLE APU MARKET OPPORTUNITIES

## BIG DATA MARKET - GROWING 30% CAGR\*

- Cloud computing applications of data analytics, machine learning, SQL/NoSQL used by recommender systems, data mining, search engines and NLP



## COMPUTER VISION MARKET - GROWING 42% CAGR\*\*

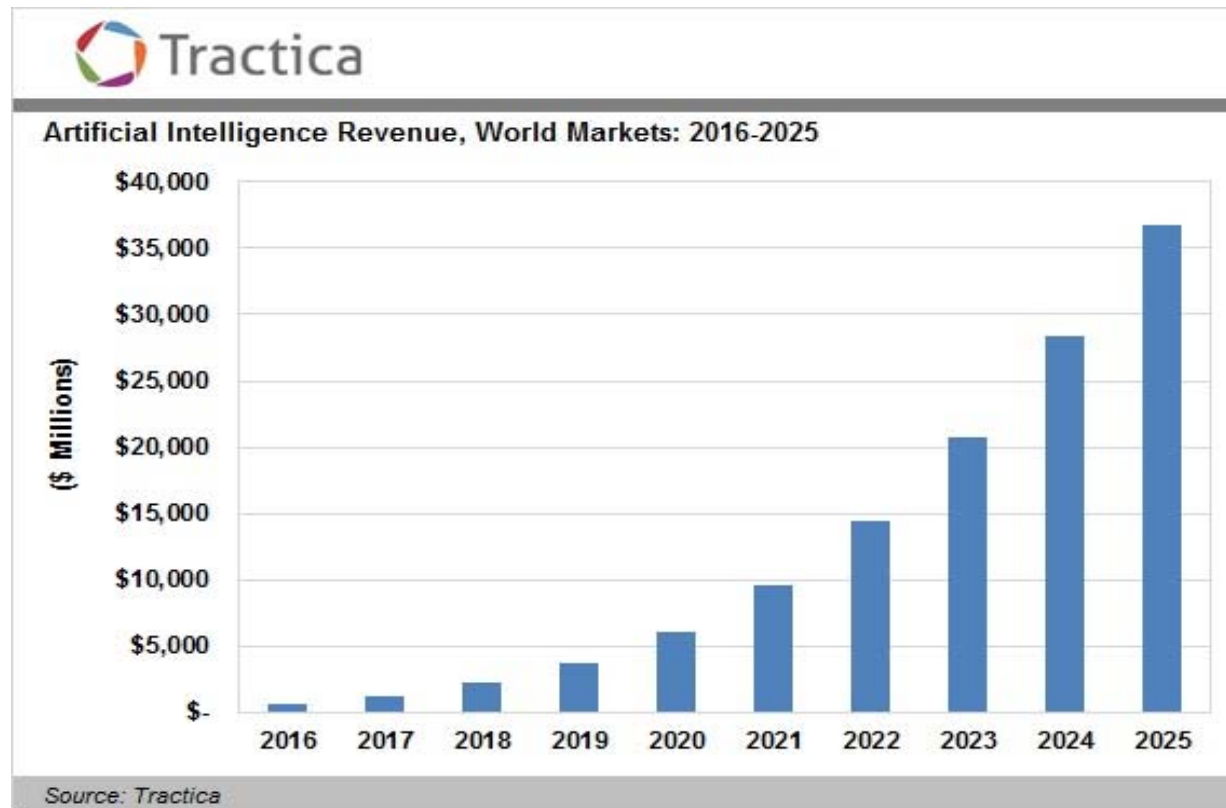
- Safety based automotive applications - Advanced Driver Assistance Systems (ADAS) lane departure warning, collision warning, blind-spot monitoring
- Warehouse robotics, missile guidance
- Amazon, Bosch, Continental, military contractors, Mobileye (Intel)

## CYBER SECURITY

- Firewall, antivirus, encryption, web filtering, IDS/IPS, DPI
- Check Point, Cisco, Fortinet, Palo Alto Networks

Sources: \*Goldman Sachs; \*\* Tractia;

# LARGE HIGH GROWTH MARKETS FOR APU



“From a processor chip perspective, we estimate that AI, and other parallel computing end-markets could grow ten-fold from \$1bn in 2016 to over \$10bn by 2020, at a remarkable 75% CAGR, again marking the fastest growing application-market in semiconductors. “

*BofA Merrill Lynch Global Research*



# SELF-FUNDING AI START UP

(\$ IN MILLIONS)	AS OF 03/31/2018
<b>Liquidity:</b> cash, cash equivalents, short-term investments and long-term investments	\$66.3
Total assets	\$99.5
<b>Debt</b>	\$0.0
Shareholder Equity	\$86.8
<b>BALANCE SHEET METRICS:</b>	
Working capital	\$63.9
Current ratio	9.6

# PATH TO FUTURE GROWTH

- Leveraging leadership in performance memory chips to enter new product categories
- New products will drive future top line growth and further gross margin improvement
- Developing APU for very large, high growth markets with milestones in 2018/2019
  - Design released to fab
  - Samples evaluated
  - Product to customers for evaluation
  - Launch



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