GSI TECHNOLOGY

High Performance Memory
for Leading-Edge Technology

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Doug Schirle, CFO │ January, 2019

SAFE HARBOR

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GSI TECHNOLOGY OVERVIEW

- Leadership team with +20 years of experience in memory chip sector
- Based in Sunnyvale, CA
- Largest portfolio of high performance memory products with core competency in hardware design, manufacturing and marketing
- Acquired Israeli-based AI developer MikaMonu in 2015
- $145 million market cap* with 22 million shares outstanding; NASDAQ: GSIT
- Insider ownership of 36%
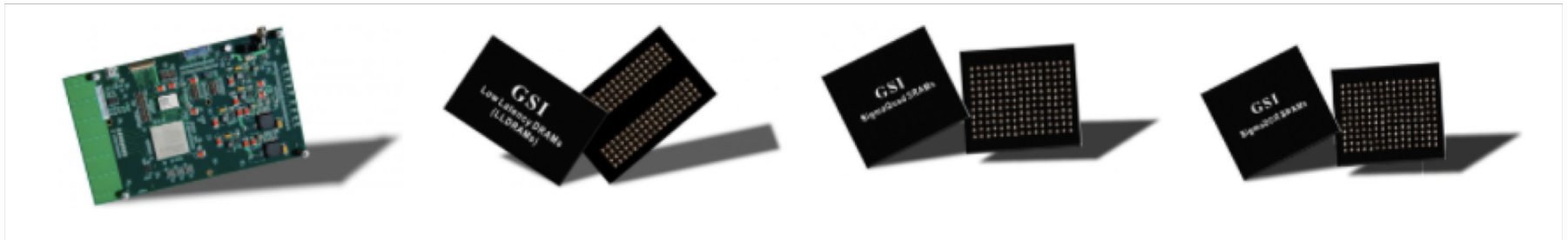
GSI memory products are recognized for very high transaction rates, high density, low latency, high bandwidth, fast clock access times, and low power consumption.

* Market capitalization based on closing share price as of Jan 10, 2019 and shares outstanding from the Company's September 30, 2018 Form 10-Q of 21,947,624.

ADVANCING OUR BUSINESS TO NEW FIELDS

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

- Leveraging SRAM platform with Rad-Hard and Rad-Tolerant chips for aerospace and defense in 2019 – high ASP, high margin products

- Merging AI innovation with core memory capabilities to develop the APU, an in-place associative computing technology for artificial intelligence and machine learning applications
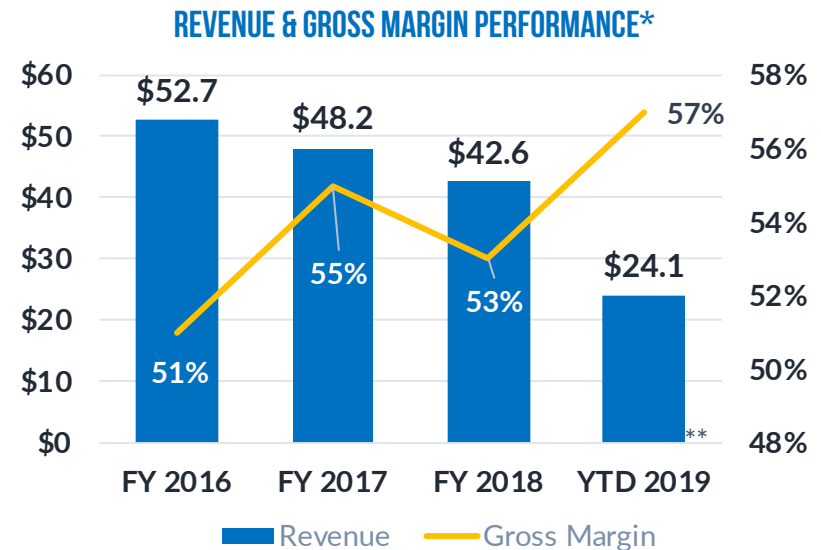
*In 2017 the **global artificial intelligence chip market was valued at $4.5 billion** and is projected to grow at a **CAGR of 45.4% to $91.2 billion by 2025***

$91.2 B
2025

$4.5 B
2017
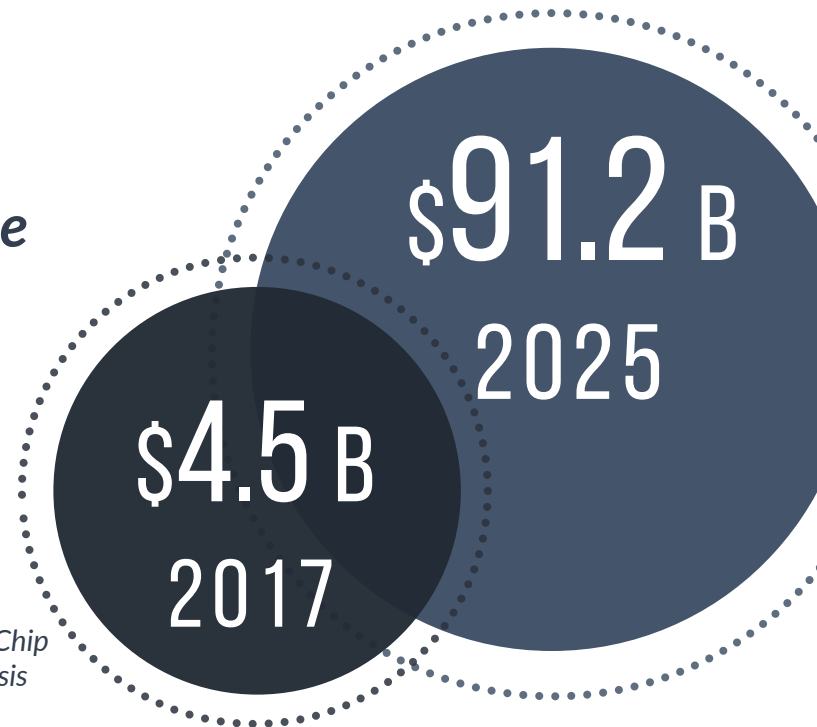
Source: Allied Market Research, Global Artificial Intelligence Chip Market by Chip type, Application, Technology, and Industry vertical: Global Opportunity Analysis and Industry Forecast, 2018-2025,

SOLID PLATFORM FOR GROWTH

- Coming off an investment cycle:
  - $5 million AI acquisition in CY 2015
  - $61 million of common stock repurchased to date
- Increased ASPs and gross margin in core business
- Strong balance sheet with $65.5 million in cash, short term and long term investments** provides sufficient liquidity for launch of new products

REVENUE & GROSS MARGIN PERFORMANCE*

	FY 2016	FY 2017	FY 2018	YTD 2019
Revenue	$52.7	$48.2	$42.6	$24.1
Gross Margin	51%	55%	53%	57%

*Reflects March 31 fiscal year end

**As of September 30, 2018

HIGHLY CAPITAL EFFICIENT

FUNDING NEW PRODUCTS AND R & D INVESTMENT

- Efficient business model – fabless manufacturer with TSMC and master die production process

- Strong cash generation historically; currently cash flow neutral

- Primary uses of capital for new product development and APU R&D

- APU R&D $4 to $5 million per quarter since CY 2017 (up from $3 million per quarter) to develop software libraries and the produce APU V1 chip

- R&D spend continues at current levels through FY 2019, and beyond

BUILDING ON STRONG CORE COMPETENCIES

LEVERAGING CORE CAPABILITIES FOR NEW MARKET OPPORTUNITIES

Revenue Growth Drivers: SigmaQuad™ SigmaDDR™

- Applications in switches, routers, avionics, and military-aerospace

- Broadest product offering across all product categories

- Best industry performance

Next Gen SRAM (3rd and 4th 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

RADIATION HARDENED (RAD-HARD) SRAM

PRODUCT HIGHLIGHTS

- SigmaQuad Radiation Hardened SRAM
- Capabilities and technology unique to GSI's Sigma Quad expertise
- 85%+ gross margin, with $30K ASP
- One project funded – anticipate shipment first half of CY 2019
- **Introducing Rad Tolerant in 2019**

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

MULTIPLE AI MARKET OPPORTUNITIES

NEW CATEGORY OF AI CHIPS BROADEN MARKET OPPORTUNITIES

GSI is developing a new category of computing products for multiple Artificial Intelligence (AI) markets

Big Data
- Data analytics, machine learning, recommender systems, data mining, search engines and natural language processing

Cheminformatic and Bioinformatics
- Computational drug discovery, virtual drug screening
- Genomics

Computer Vision and Visual Search
- Autonomous vehicles, sensor fusion
- Visual search, facial recognition, warehouse robotics, missile guidance

Cyber Security
- Firewall, antivirus, encryption, web filtering, IDS/IPS, DPI

A NEW MODEL IS NEEDED FOR AI

NEW MODEL TO FULLY DEVELOPING AI'S POTENTIAL

The laws that have governed computing need to be rewritten to achieve the performance required to fully develop AI's potential.

Traditional computing based on "von Neumann architecture" has limitation for advanced AI applications

- Big data – too power hungry, too slow

- Computer vision /self-driving cars – too power hungry, low accuracy

- Cheminformatic and Bioinformatics for drug discovery – too slow

- Visual search – too slow, limited accuracy

With the need for new systems to improve computation and outcomes, GSI is entering the market with a new model for AI chip design

PROCESSOR-MEMORY BOTTLENECK

MASSIVE IO BOTTLENECK BETWEEN GPU AND MEMORY

- Current AI configurations based on von Neumann architecture
- Use graphic processing units (GPU) for parallel processing
- Computation rates slowed due to bottleneck from throughput limitations
- Results in long processing times and high power consumption
- Not scalable for the massive data sets needed for advanced AI applications

Bottleneck

CPU

General Purpose GPU

Memory
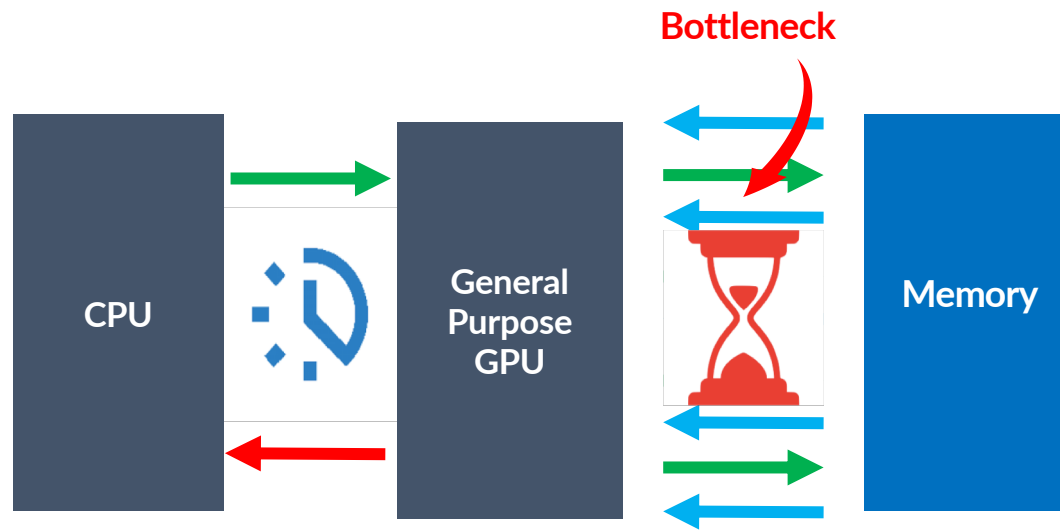
APU: IN-PLACE ASSOCIATIVE PROCESSING

REMOVING THE IO BOTTLENECK TO INCREASE COMPUTATION SPEED

CPU → **GSI APU**

GSI's APU Mimics the Brain's Efficiency
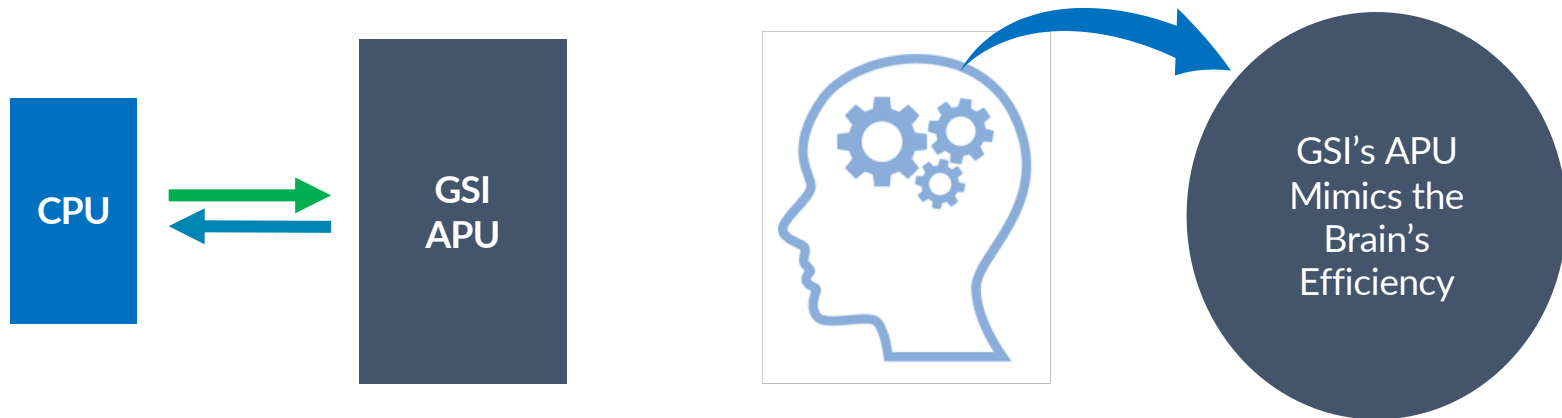
Advantages of GSI's In-place Associative Processing

- Computation and search occur inside the Associative Processor (APU)
- Direct response from APU to CPU removes bottleneck
- Computation times reduced from hours to seconds or milliseconds
- Significant reduction of power consumption and system cost
- **Scalable – unique feature to GSI APU**

APU'S UNIQUE ADVANTAGES IN SEARCH

APU (VERSION 1) BEST SUITED TO SEARCH WITH IMPROVED ACCURACY OF RESULTS

Visual search searches with images:

- Online retail and home design where style is difficult to describe using text
- Big-pharma cheminformatics for drug discovery, drug screening and genomics

AI Chip / Application		Nvidia GPU Google TPU Intel NERVANA NPP Graphcore IPU	ASIC	FPGA	APU1
Similarity search	Visual search Video search Recommender systems Drug discovery Drug screening Genomics	✘	✘	✘	✔

VISUAL SEARCH FASTEST GROWTH SEGMENT IN RETAIL AI

APU IMPROVES CONSUMER EXPERIENCE WITH FASTER, ACCURATE SEARCHES

Visual search simplifies search, replacing text-based descriptions with images or pictures
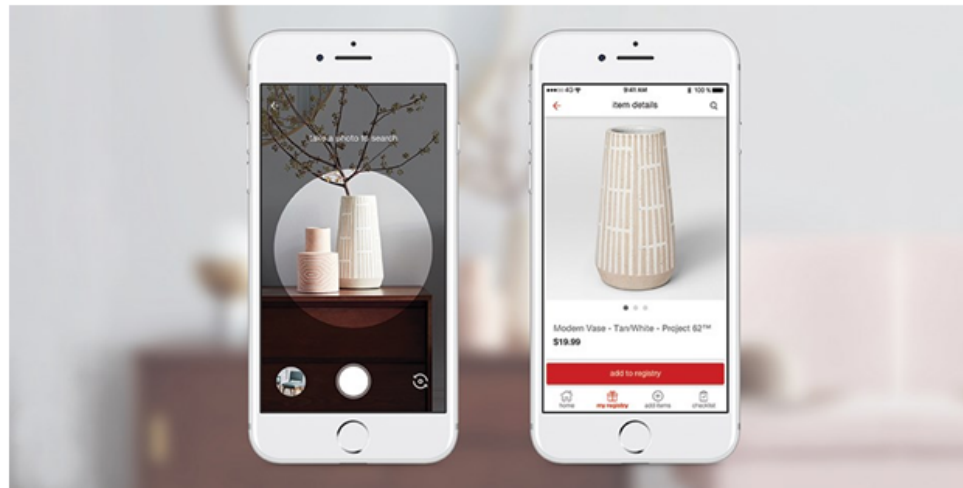
Submit a picture of a vase and visual search finds the vase on a retailer's website

AI adoption in retail is forecast to grow by 40% CAGR in 2018 – 2024 to over $8 billion, with Visual Search as the fast growing segment with a CAGR 0f 45% in the same period.*

* Source: Global Markets Insights, Inc. May 2018

WEIZMANN INSTITUTE-APU COLLABORATION

APU'S HIGHER SPEEDS IN VISUAL SEARCH LOWER DRUG DISCOVERY COSTS

- Weizmann collaborating with GSI to improve outcomes in molecular structural similarity search, a powerful research method used in drug discovery

- Visual screening's role in drug discovery is searching for molecules that have the highest probabilities of success to select for further study

- This reduces _in vitro_ experiments—significantly reducing the time and costs of drug discovery

- Goal is to improve outcomes with the highest probability of success while lowering cost

- *Simulations with GSI APU improve search speed by orders of magnitude with a reduction in query time from 10 minutes to 300 milliseconds*

Drug discovery is very costly with high failure rates
- *The average cost to develop a new drug is around $2.6 billion*
- *90% of new drugs fail to win approval*
- *Drugs that win approval can take at least 10 years to come to market*

Source: Tufts Center for the Study of Drug Development (CSDD) study. June 2018

APU SOFTWARE AND HARDWARE DESIGN

MULTIPLE STRENGTHS DELIVER BIG ADVANTAGES IN AI COMPUTING

- APU's unique design combines AI software with GSI's high-performance custom chips
- Unique in APU software design is the programming interface that allow multiple levels of programing from assemble code up to TensorFlow Python

GSI's APU Strengths
- Software and hardware expertise
- Extensive IP – 17 patents granted, 23 pending
- Depth of AI talent – team of over 60 based in Israel and U.S.
- Leveraging 20+ years of operational performance and AI expertise

SELF-FUNDING AI START UP

($ IN MILLIONS)	AS OF 09/30/2018
Liquidity: cash, cash equivalents, short-term investments and long-term investments	$65.5
Total assets	$102.3
Debt	$0.0
Shareholder Equity	$88.1
BALANCE SHEET METRICS:	
Working capital	$63.3
Current ratio	8.2

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 CY 2019

  - Design released to fab – <u>Completed</u>
  - Samples evaluated – <u>Ongoing</u>
  - Demo boards to Alpha customers for evaluation – CY 2019
  - Launch CY 2020

GSI TECHNOLOGY

High Performance Components
for Leading-Edge Technology

GSITechnology.com / *IR Contact: GSIT@HaydenIR.com*

APPENDIX

AI CHIP LANDSCAPE OVERVIEW

APU1 EXCELS WHERE CURRENT TRADITIONAL PROCESSORS UNDERPERFORM

- Visual search requires high processing speeds and accuracy
- APU1 speed and accuracy is ideal for visual search
- APU1 is not optimal for training, inference

Chip / Application	Nvidia GPU Google TPU Intel NERVANA NPP Graphcore IPU	ASIC	FPGA	APU1
Similarity search	✘	✘	✘	✔+
Training	✔	✘	～	✘
Inference	～	✔	✔	✔

INCOME STATEMENT

	Three Months Ended			Six Months Ended	
	Sept. 30, 2018	June 30, 2018	Sept. 30, 2017	Sept. 30, 2018	Sept. 30, 2017
Net revenues	$ 12,832	$ 11,266	$ 9,647	$ 24,098	$ 20,334
Cost of goods sold	4,801	5,478	4,789	10,279	9,872
Gross profit	8,031	5,788	4,858	13,819	10,462
Operating expenses:					
Research & development	5,752	4,850	4,160	10,602	8,495
Selling, general and administrative	2,673	2,597	2,492	5,270	5,290
Total operating expenses	8,425	7,447	6,652	15,872	13,785
Operating income (loss)	(394)	(1,659)	(1,794)	(2,053)	(3,323)
Interest and other income (expense), net	145	23	103	168	201
Income (loss) before income taxes	(249)	(1,636)	(1,691)	(1,885)	(3,122)
Provision (benefit) for income taxes	102	10	49	112	130
Net income (loss)	$ (351)	$ (1,646)	$ (1,740)	$ (1,997)	$ (3,252)
Net income (loss) per share, basic	$ (0.02)	$ (0.08)	$ (0.08)	$ (0.09)	$ (0.16)
Net inocme (loss) per share, diluted	$ (0.02)	$ (0.08)	$ (0.08)	$ (0.09)	$ (0.16)
Weighted-average shares used in computing per share amounts:					
Basic	21,844	21,567	21,037	21,707	20,922
Diluted	21,844	21,567	21,037	21,707	20,922

BALANCE SHEET

				Sept. 30, 2018		March 31, 2018	
Cash and cash equivalents				$37,890		$ 40,241	
Short-term investments				18,662		18,124	
Accounts receivable				7,839		5,279	
Inventory				5,212		5,547	
Other current assets				2,454		2,080	
Net property and equipment				9,312		8,172	
Long-term investments				8,960		7,923	
Other assets				12,017		12,174	
Total assets				$102,346		$ 99,540	
Current liabilities				$8,782		$ 7,404	
Long-term liabilities				5,443		5,321	
Stockholders' equity				88,121		86,815	
Total liabilities and stockholders' equity				$102,346		$ 99,540	

EXPERIENCED MANAGEMENT TEAM

Name	Title	Years of Experience	Years with GSI	Prior Companies
Lee-Lean Shu	President and CEO, Executive Officer	38	23	Sony, AMD
Doug Schirle	Chief Financial Officer	38	19	Cypress, Pericom
Didier Lasserre	VP Sales and IR	30	21	Cypress, Selectron
Avidan Akerib	VP of Associative Computing	38	3	MikaMonu, NeoMagic
Patrick Chaung	SR VP of Memory Design	41	9	Sony, AMD
Robert Yau	VP OF Engineering	38	23	Sony, Mosel Vitelic
Boy-Tay Wu	VP of Taiwan Operations	35	22	Atalent, AMD