GSI TECHNOLOGY

High Performance Memory
for Leading-Edge Technology

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Doug Schirle, CFO | February, 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
- $170 million market cap* with 22 million shares outstanding; NASDAQ: GSIT
- Insider ownership of 36%
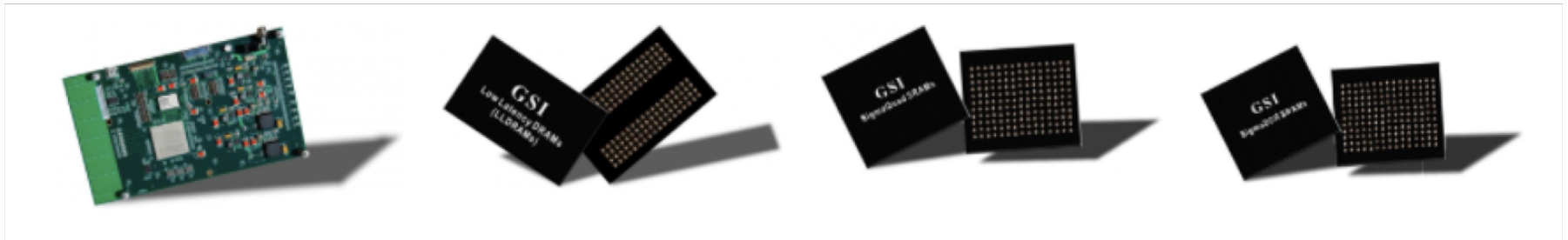
GSI memory products are recognized for very high transaction rates, high density, low latency, high bandwidth, fast clock access times, and low power consumption.

* Market capitalization based on closing share price as of Feb. 05, 2019 and shares outstanding from the Company's December 31, 2018 Form 10-Q of 22,044,083 as of January 31, 2019.

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
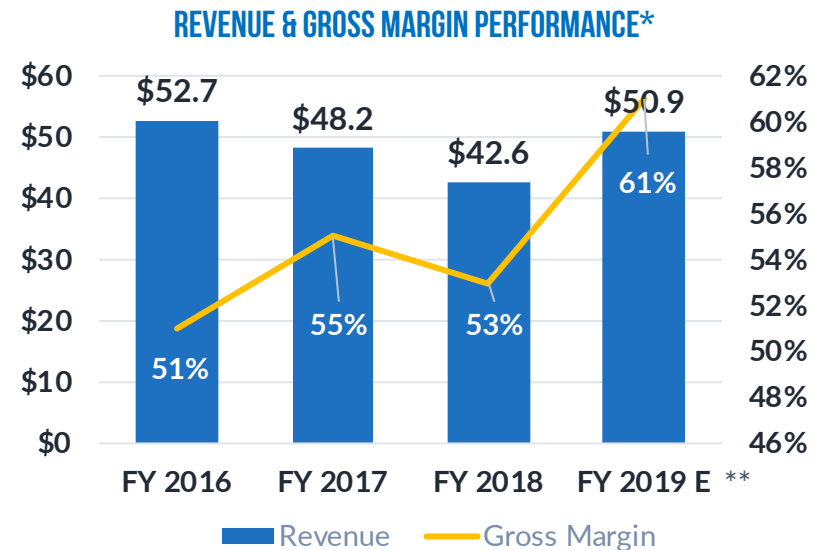
*In 2017 the **global artificial intelligence chip market was valued at $4.5 billion** and is projected to grow at a **CAGR of 45.4% to $91.2 billion by 2025***

$91.2 B
2025

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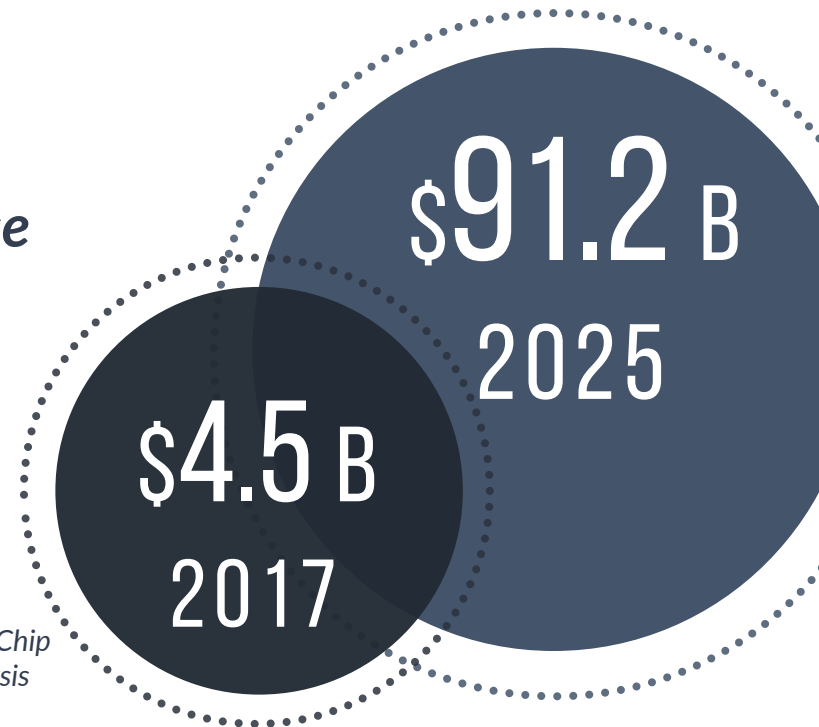
* Source: Allied Market Research, Global Artificial Intelligence Chip Market by Chip type, Application, Technology, and Industry vertical: Global Opportunity Analysis and Industry Forecast, 2018-2025,

SOLID PLATFORM FOR GROWTH

- Recent uses of capital:
  - $5 million AI acquisition in CY 2015
  - $61 million of common stock repurchased to date
- Increasing ASPs and gross margin in core business
- Strong balance sheet with $67.3 million in cash, short term and long term investments** provides sufficient liquidity for launch of new products

REVENUE & GROSS MARGIN PERFORMANCE*

FY	Revenue	Gross Margin
FY 2016	$52.7	51%
FY 2017	$48.2	55%
FY 2018	$42.6	53%
FY 2019 E **	$50.9	61%

Revenue — Gross Margin

*Reflects March 31 fiscal year end

**As of December 31, 2018, plus mid-point of FY 2019 revenue range of $11.6 - $12.6 and gross margin of 60% to 62% provided in 1/31/2019 earnings release.

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 – 100% of R&D budget focused on APU

- APU R&D of $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 foreseeable future

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
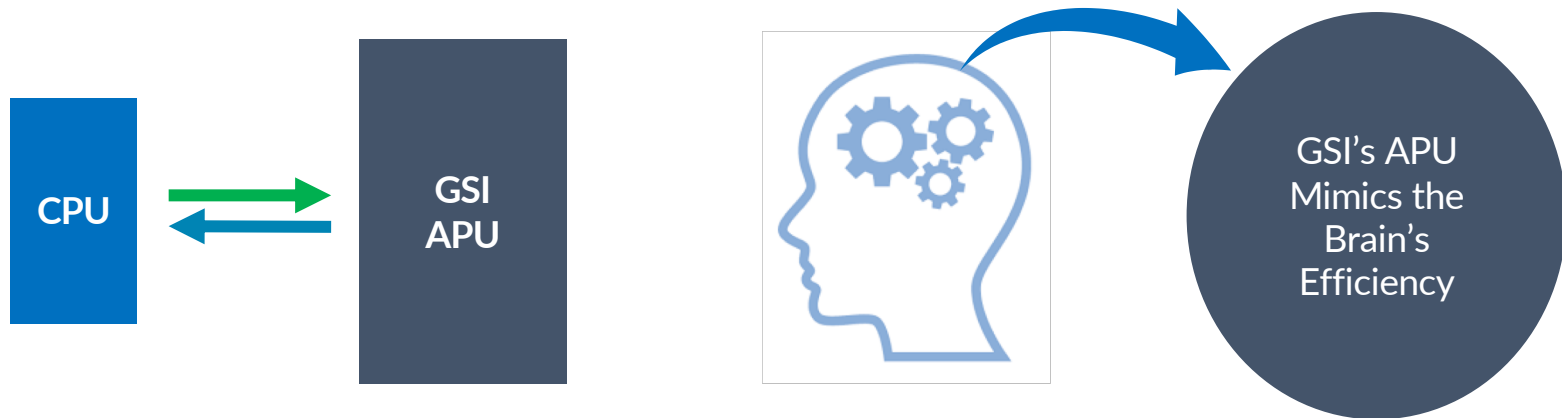
PROCESSOR-MEMORY BOTTLENECK

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
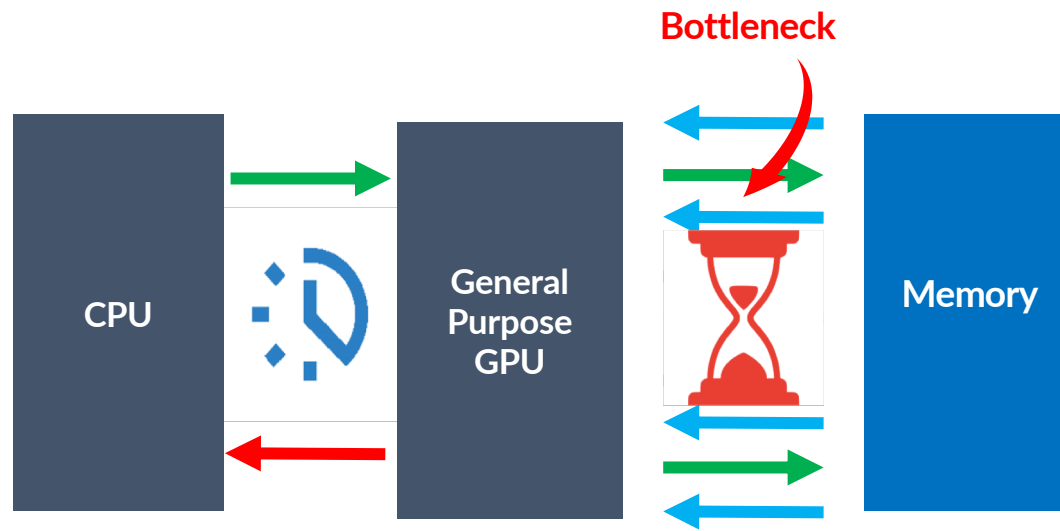
APU: IN-PLACE ASSOCIATIVE PROCESSING

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
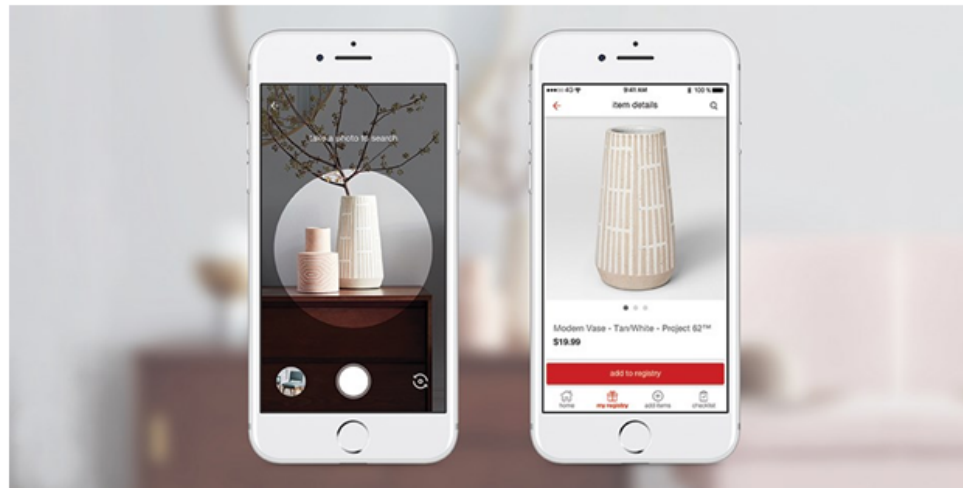
Submit a picture of a vase and visual search finds the vase on a retailer's website

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 – 18 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 12/31/2018
Liquidity: cash, cash equivalents, short-term investments and long-term investments	$67.3
Total assets	$104.1
Debt	$0.0
Shareholder Equity	$91.2
BALANCE SHEET METRICS:	
Working capital	$65.5
Current ratio	9.0

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 APU1 for large, high growth AI markets in similarity search segment, tracking to CY 2019 milestones

  - Sample evaluation – <u>Ongoing</u>
  - Summer CY 2019 – Demo boards to alpha and limited beta customers
  - CY 2020 – Anticipated APU1 launch

GSI TECHNOLOGY

High Performance Components
for Leading-Edge Technology

APPENDIX SLIDES

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

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

INCOME STATEMENT

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)
(Unaudited)

	Three Months Ended			Nine Months Ended	
	Dec. 31, 2018	Sept. 30, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Net revenues	$ 14,702	$ 12,832	$ 11,118	$ 38,800	$ 31,452
Cost of goods sold	4,663	4,801	5,443	14,942	15,315
Gross profit	10,039	8,031	5,675	23,858	16,137
Operating expenses:					
Research & development	5,171	5,752	4,231	15,773	12,726
Selling, general and administrative	2,632	2,673	2,481	7,902	7,771
Total operating expenses	7,803	8,425	6,712	23,675	20,497
Operating income (loss)	2,236	(394)	(1,037)	183	(4,360)
Interest and other income (expense), net	96	145	99	264	300
Income (loss) before income taxes	2,332	(249)	(938)	447	(4,060)
Provision for income taxes	70	102	590	182	720
Net income (loss)	$ 2,262	$ (351)	$ (1,528)	$ 265	$ (4,780)
Net income (loss) per share, basic	$ 0.10	$ (0.02)	$ (0.07)	$ 0.01	$ (0.23)
Net income (loss) per share, diluted	$ 0.10	$ (0.02)	$ (0.07)	$ 0.01	$ (0.23)
Weighted-average shares used in computing per share amounts:					
Basic	21,979	21,844	21,165	21,798	21,003
Diluted	22,769	21,844	21,165	23,139	21,003

BALANCE SHEET

CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands)
(Unaudited)

	Dec. 31, 2018	March 31, 2018
Cash and cash equivalents	$40,529	$ 40,241
Short-term investments	16,557	18,124
Accounts receivable	8,160	5,279
Inventory	5,949	5,547
Other current assets	2,558	2,080
Net property and equipment	9,184	8,172
Long-term investments	10,183	7,923
Other assets	10,957	12,174
Total assets	$104,077	$ 99,540
Current liabilities	$8,213	$ 7,404
Long-term liabilities	4,657	5,321
Stockholders' equity	91,207	86,815
Total liabilities and stockholders' equity	$104,077	$ 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

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