ASX Announcement

Update for the March 2019 Quarter

- Product Development and Marketing Focused on the Akida™ Neuromorphic System-on-Chip (NSoC)
- Restructuring implemented to reduce planned operating expenses, executive compensation and incentives
- Execution of Memorandum of Understanding with Socionext for Akida Development and Manufacturing
- Addition of Roger Levinson, Chief Operating Officer and Ken Scarince, VP Finance

Sydney, Australia – 29 April 2019 BrainChip Holdings Ltd (ASX: BRN), the leading neuromorphic computing company, today provides a market update for the quarter ending 31 March 2019 to accompany the Company's 4C lodged with the ASX.

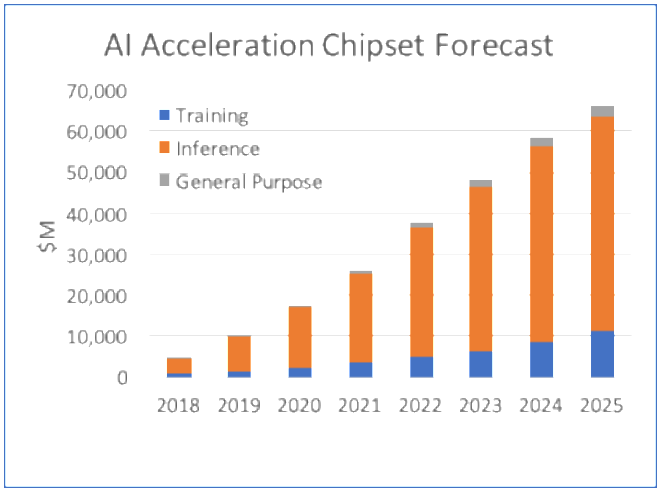
The Company ended the March quarter with US$5.1M in cash. Total cash outflows for the quarter were US$2.6M compared to $2.2M expected in the second quarter of 2019. Total cash receipts for quarter were US$136,000 (approximately AU$190,000). This amount does not include invoices issued in the quarter that will be paid at a future date. The Company has implemented measures to control expenses including headcount reduction associated with BrainChip Studio End-User sales and a temporary reduction in salary for certain executives.

On 8 March 2019, the Company executed a Memorandum of Understanding (MOU) with Socionext Americas to collaborate on the development of the Akida NSoC and manufacture the device. Wafers will be produced on a 28nm digital process at Taiwan Semiconductor Manufacturing Corporation (TSMC). Socionext, formerly known as the Fujitsu Semiconductor business, is a global leader in Application Specific Integrated Circuits (ASIC) products.

The Company is pleased to provide some additional detail and background on the Company's activities below.

Akida™ Market Focus

The AI Acceleration Chip Set Market is forecast to grow from roughly US$5B in 2018 to over US$60B in 2025[1]. This forecast includes Server Central Processing Unit Implementations (CPUs), Server Graphics Unit Processors (GPUs), Server Accelerators with Field Programmable Gate Array (FPGAs) and dedicated neuromorphic integrated circuits.



As a highly integrated NSoC, the Akida device addresses Training, Inference and General-purpose requirements in the high-growth and high-volume "Edge" applications

- Akida is a Neuromorphic System-on-Chip (NSoC) that includes both Inference (Deep Learning) and Autonomous Learning in a single low-power, low-latency and low-cost integrated circuit. As a result, the Akida device provides a competitive advantage in the advancement of Artificial Intelligence for "Edge" applications.
- Edge applications include use cases where data is acquired by a variety of transducers and a benefit is derived by processing the information at the transducer, rather than sending all data to an enterprise data center or cloud for processing.
- The primary applications for AI Edge are in vision systems, acoustic analysis, cybersecurity and the industrial Internet-of-Things.

Akida Engagement Plan

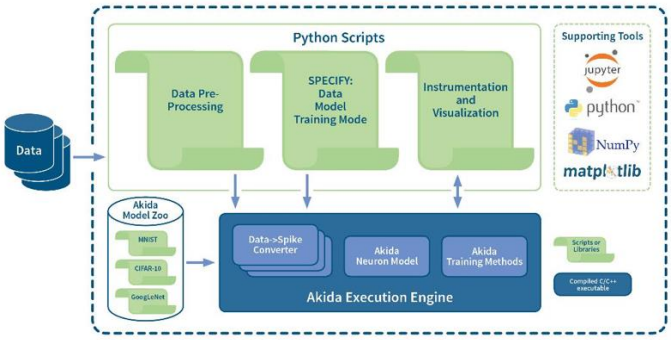
- The Company has established early discussions with vision sensor manufacturers, automobile manufacturers for Advanced Driver Assistance Systems (ADAS) and Autonomous Vehicles (AV).

[1] Source Tractica 2018

- It has also commenced discussions with Tier-One module suppliers to the automotive industry in Europe and North America, Vision Guided Robotics, Surveillance Camera, Smart Transducer and Vision Sensor manufacturers.
- Original Equipment Manufacturers (OEMs), Module Manufacturers and Sensor suppliers (some of whom the Company is already in contact with) in these markets include:
    - ADAS/AV – Valeo, Continental, Aptiv, General Motors, Ford, Micron, Samsung
    - Vision Guided Robotics - HiKvision, iRobot, IRIS, Samsung, Micron
    - Drones – DJI, Safran, Boeing
    - Surveillance cameras – HiKvision, Dauha, Axis
    - Smart Transducers and Vision Sensors – Sensata, On Semiconductor, Sony, ST Microelectronics, Samsung
- The Company also has ongoing dialogue and potential use cases in laptop computers as well as cellphones that could create intellectual property for integration into their own Application Specific Integrated Circuits (ASICs). These use cases are important because they have the potential to provide additional revenue from Akida IP in parallel with, but separate from revenues from the NSoC release.

<u>Akida Development Environment (ADE)</u>

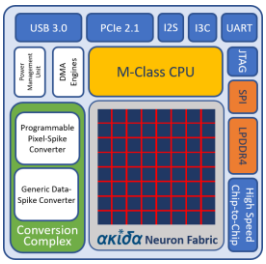
- The ADE fully simulates Akida and allows customers to develop solutions in advance of product availability.
- The Company has issued several licenses to early access companies that wish to evaluate the ADE.



<u>Akida Product Architecture and Development Update</u>

- The Akida architecture and associated development environment were announced in late 2018 and have received significant interest, with over 20 articles globally highlighting the innovation (refer to the Company's website to view recent publications).

- Importantly, complete neural networks can be accommodated on-chip. Actual power consumption, latency and accuracy are dependent on the neural network architecture.



  - Up to 1.2 Million Neurons
  - Up to 10 Billion Synapse
  - Up to 1 Trillion Synapse-Operations-per-Second (SOPS)
  - Less than 1 Watt Power Consumption
  - Less than 100 milliseconds Latency
  - Interfaces include PCIe, USB, Ethernet, I2S, I3C, SPI, UARTs and LPDDR4 to support industry standard data interfaces for “Edge” devices and industrial IoT applications
  - Network Processing Cores (NPCs)
  - NPCs are Packet Processing units
  - NPCs are Mesh Networked On-Chip
  - ARM M-Class CPU Complex for Internal Control
  - Chip-to-Chip Interface provides Scalability

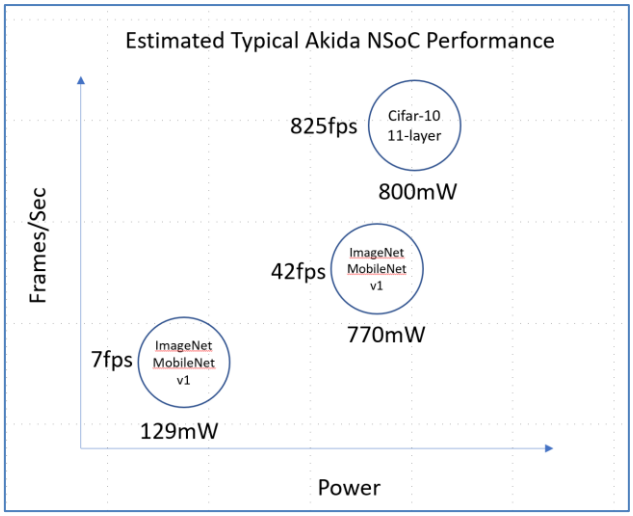
<u>Akida Estimated Performance Benchmarks – Compatible MobileNet with ImageNet database</u>

The power figures below are calculated for the Akida chip running an industry benchmark CIFAR10 and ImageNet neural network entirely on the device. These networks fit on the Akida device. Actual customer designs will be based on specialized neural network designs with selective datasets and selective classifiers to optimize latency, throughput, speed, power and accuracy. Synapse and activation layers are programmable to optimize performance. The configurations included in the table below are as follows:

  - Column 1: Layer 14 is quantized to 2-bit pointwise convolutions. All other layers are 4-bit and single spike buffers.
  - Column 2: Layer 4 is 2-bit pointwise activations. All other layers are 4-bit and double spike buffers.
  - Column 3: Is all 2 bit layers with 2 bit activations and double buffer

Latency (ms)	84	87	77
Throughput (ms)	**36**	**23**	**7**
Frames/Sec	**28**	**43**	**141**
Power (W)	**0.467**	**0.730**	**2.382**
Top-1 Accuracy	**65.6%**	**63.5%**	**50.0%**

Estimated power consumption and speed represented in frames-per-second-per watt for CIFAR10 and ImageNet/MobileNet v1 are shown below and demonstrate the low-power, high-speed capability of the Akida device with a fully implemented on-chip network.



BC Studio/Accelerator OEM Customer Engagements

- A number of OEM partners continue to market BrainChip Studio to their customers in various vertical markets. For example, Quantum Corporation into the Media and Entertainment (M&E) and Surveillance markets. And Veritone, which is completing the integration of BrainChip Studio, intends to make it available on their aiWare platform (a cloud-based video storage product with video analytic tools, which will include BrainChip Studio among them).
- Various Video Management System (VMS) engagements are continuing. VMS partners represent a unique point of leverage in the sales process for surveillance systems and provides BrainChip Studio and Accelerator potential large scale OEM opportunities without the burden of individual sales engagements.
- GPI's shareholders have approved the merger with Angel Holdings Godo Kaisha of Kyoto, Japan. The transaction has been announced to close on 1 May 2019, following which the Company intends to resume commercial discussions and determine the intention to continue with the deployment of the solution, which is currently under review.

Human Resources Update

- Headcount at 31 March 2019 was 33 including the addition of Roger Levinson, Chief Operations Officer and Ken Scarince, Vice President Finance.
- Approximately 80% of the Company's workforce is in engineering development and research.

- The Company's design center in Aliso Viejo, California employs 16.
- The design center in Toulouse, France employs 14.
- The balance of the workforce is administration located in Silicon Valley or sales and marketing people in field locations.

Outlook

The Company is proceeding with the Akida product development and engagements with early access manufacturers to bring a first-in-kind product to market. The Akida NSoC enables AI Edge solutions for high-growth, high-volume applications that have been difficult to achieve with existing AI architectures.

The Company competes in a large and growing market with other well-financed private companies where time-to-market and performance are paramount for success. The Akida device for AI Edge applications is a major technology advancement. To support the primary goal of leading the neuromorphic industry, the Company anticipates raising additional capital in the coming quarters to assist it to finalize the development of the Akida product. The Company will advise the market once it has settled appropriate arrangements to raise that capital.

About BrainChip Holdings Ltd (ASX: BRN)

BrainChip Holdings Ltd is a leading provider of neuromorphic computing solutions, a type of artificial intelligence that is inspired by the biology of the human neuron. The Company's revolutionary new spiking neural network technology can learn autonomously, evolve and associate information just like the human brain. The proprietary technology is fast, completely digital and consumes very low power. The Company provides hardware focused solutions that address high-performance requirements in civil surveillance, gaming, financial technology, cybersecurity, ADAS, autonomous vehicles, and other advanced vision systems. www.brainchipinc.com

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