



BrainChip Holdings Ltd. Corporate  
Presentation

# BrainChip Overview

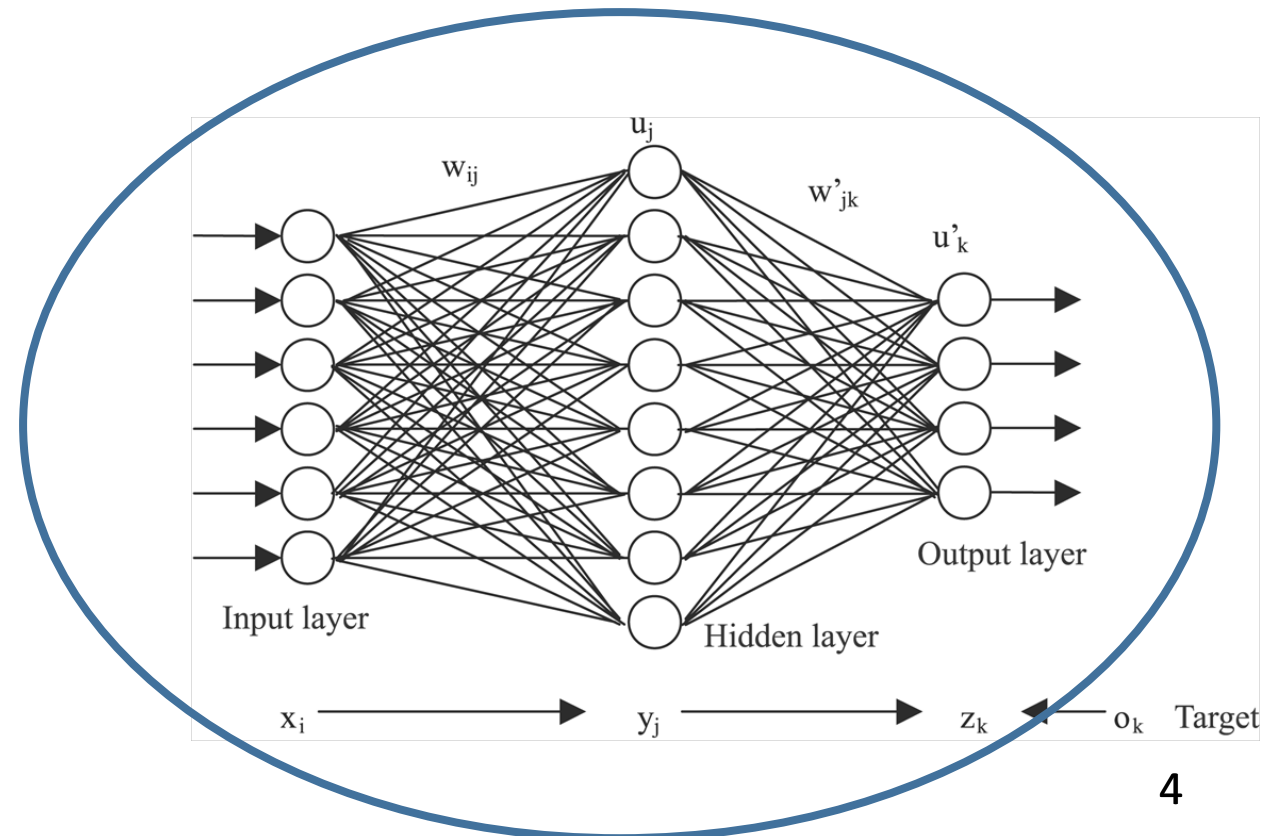
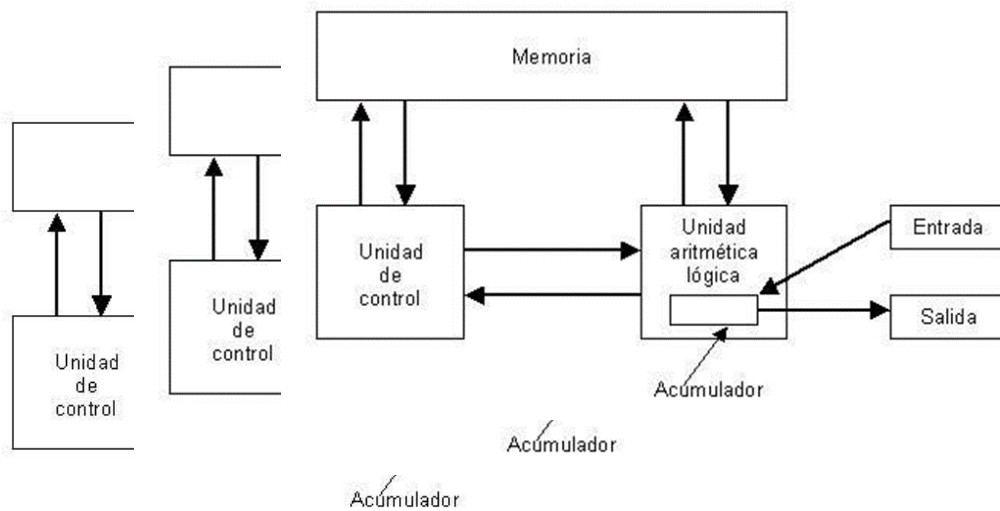
- BrainChip is a leading developer of software and hardware-accelerated neural networking solutions for advanced artificial intelligence and machine learning applications
  - Founded in 2013
  - Public in 2015 on the Australian Stock Exchange, ASX:BRN
  - General, Administration and Sales & Marketing – San Francisco, CA
  - Design centers – Aliso Viejo, CA and Toulouse, France

# BrainChip Overview (Cont'd)

- The Company has pioneered a spiking neural network processor (SNAP) that mirrors the learning mechanisms of the human brain
  - The network recognizes and learns repeating patterns autonomously and spontaneously from spikes that are derived from a stimulus or data stream
- BrainChip acquired Spikenet Technology (Toulouse, France) in September 2016
  - Spikenet has a mature software neural network, “plug-ins” for specific applications, and a user interface that allows customers to quickly deploy high-performance solutions in civil & commercial surveillance and machine vision

# BrainChip Technology

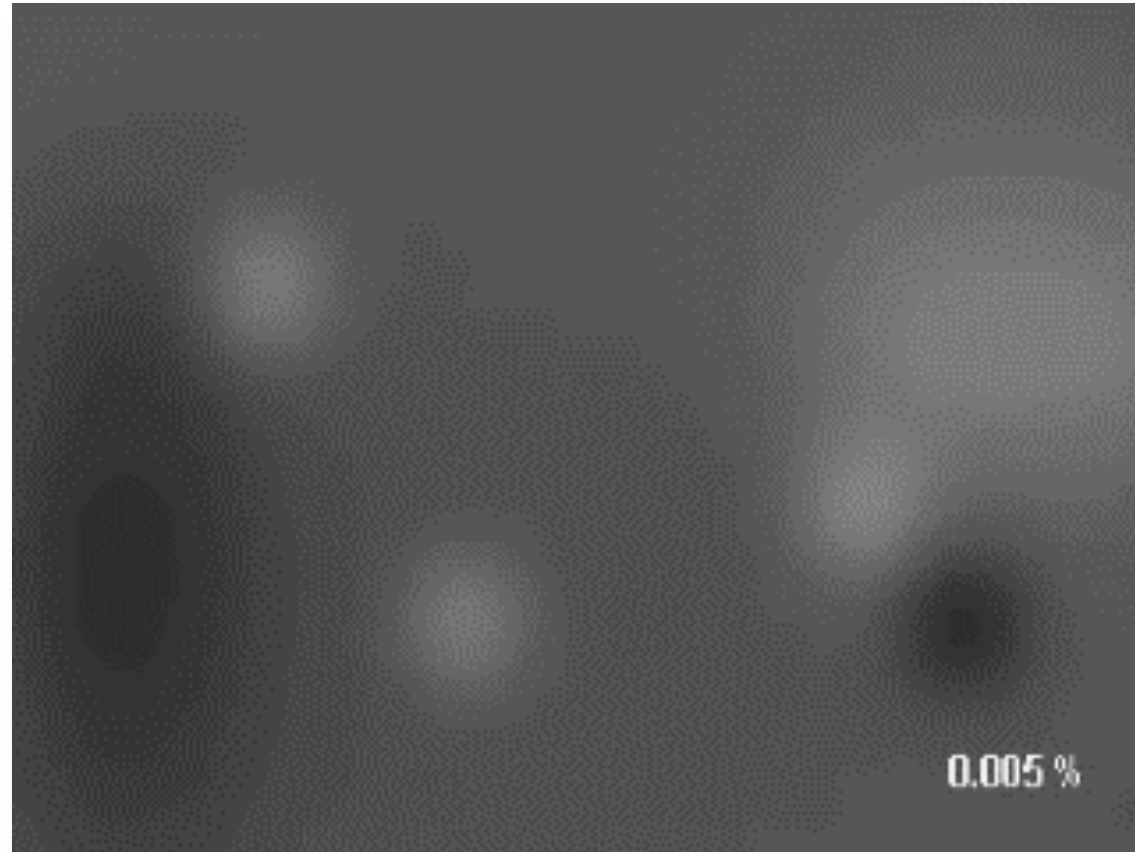
- Artificial intelligence and neural networking
  - Serial processing vs. parallel processing
  - Deterministic outcome vs. probability outcome
  - Proprietary spiking neural network



# Artificial Intelligence Models

- Deep learning
  - Large data sets – millions of samples
  - Long training regimens – weeks or months
  - Requires large memory
- Autonomous learning
  - Supervised learning – small sample sets with known models, provides efficient forensic and real-time analytics
  - Unsupervised learning – small sample sets with no models, provides efficient real-time learning and analytics
- Spiking neuromorphic integrated circuits
  - Process repeating patterns with intensity and temporal integrity for vision, audio, and data analytics

# A Few Neurons are Enough



To view the video, please click on this link:

[http://c.eqcdn.com/brainchipinc/files/videos/few\\_neurons\\_enough.mp4](http://c.eqcdn.com/brainchipinc/files/videos/few_neurons_enough.mp4)

# Video Surveillance

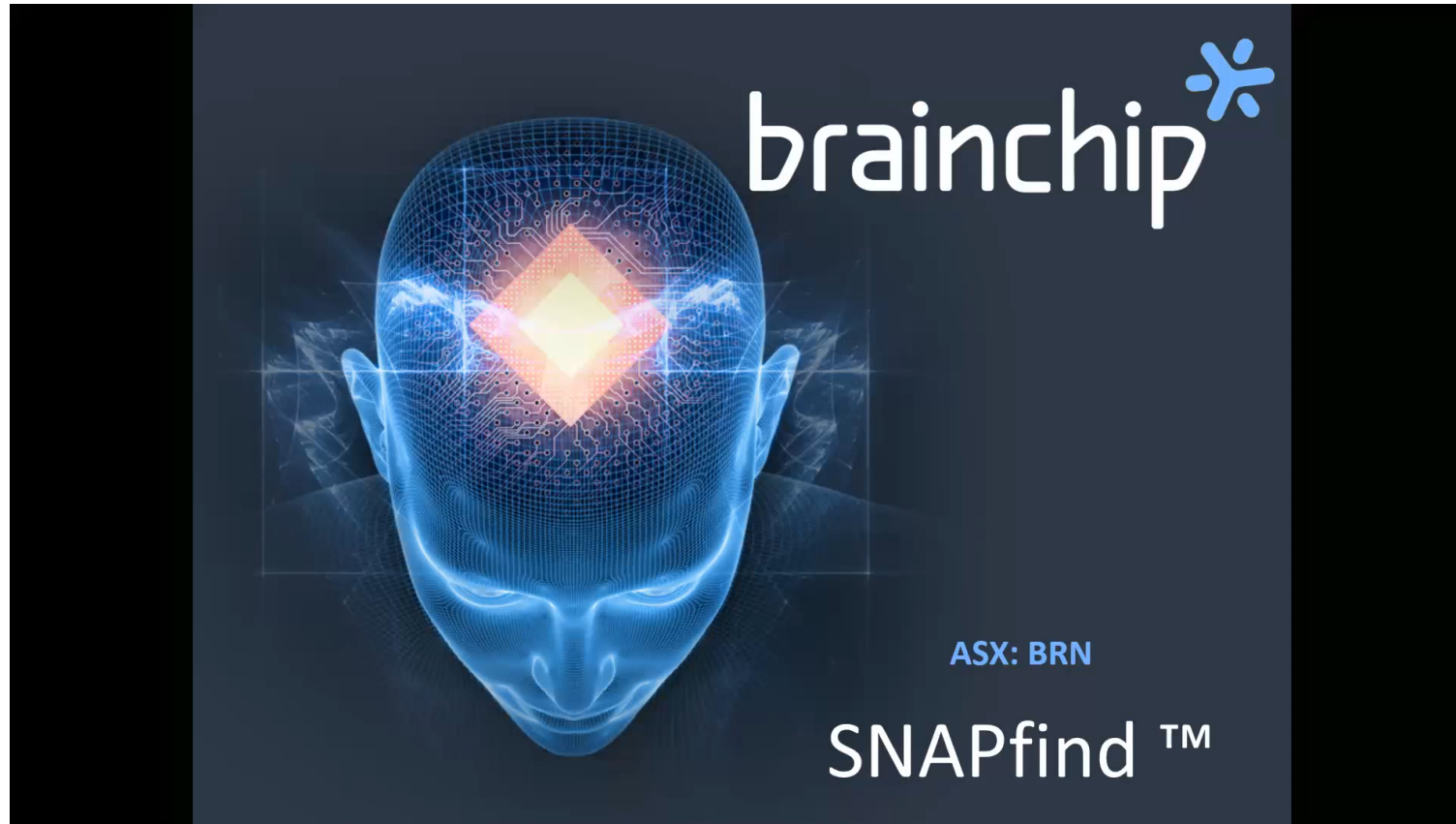


To view the video, please click on this link:

<http://c.eqcdn.com/brainchipinc/files/videos/people-track.mp4>

# Object Recognition

brainchip\*

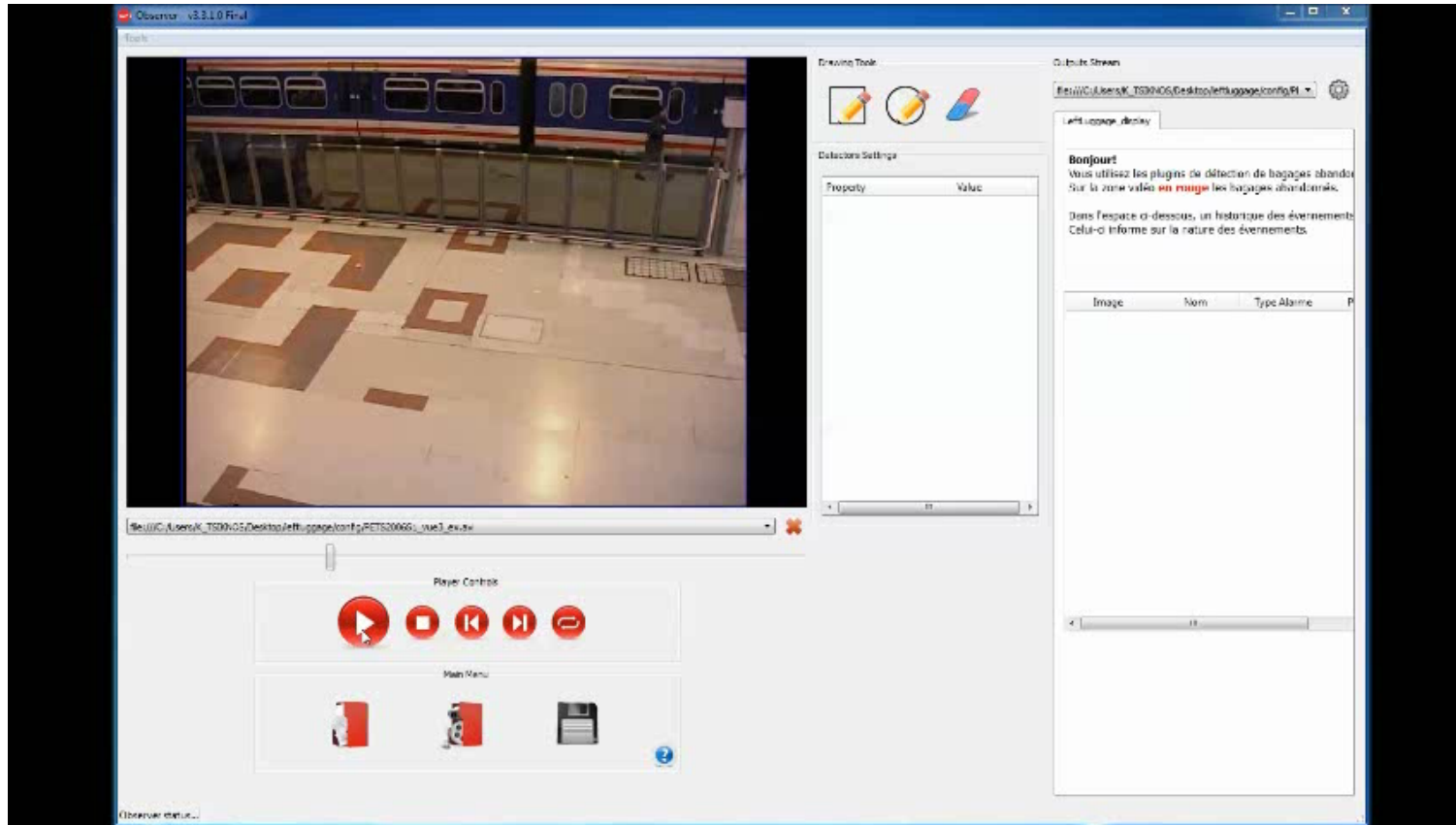


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<http://c.eqcdn.com/brainchipinc/files/videos/SNAPfindDemoTShirt.mp4>



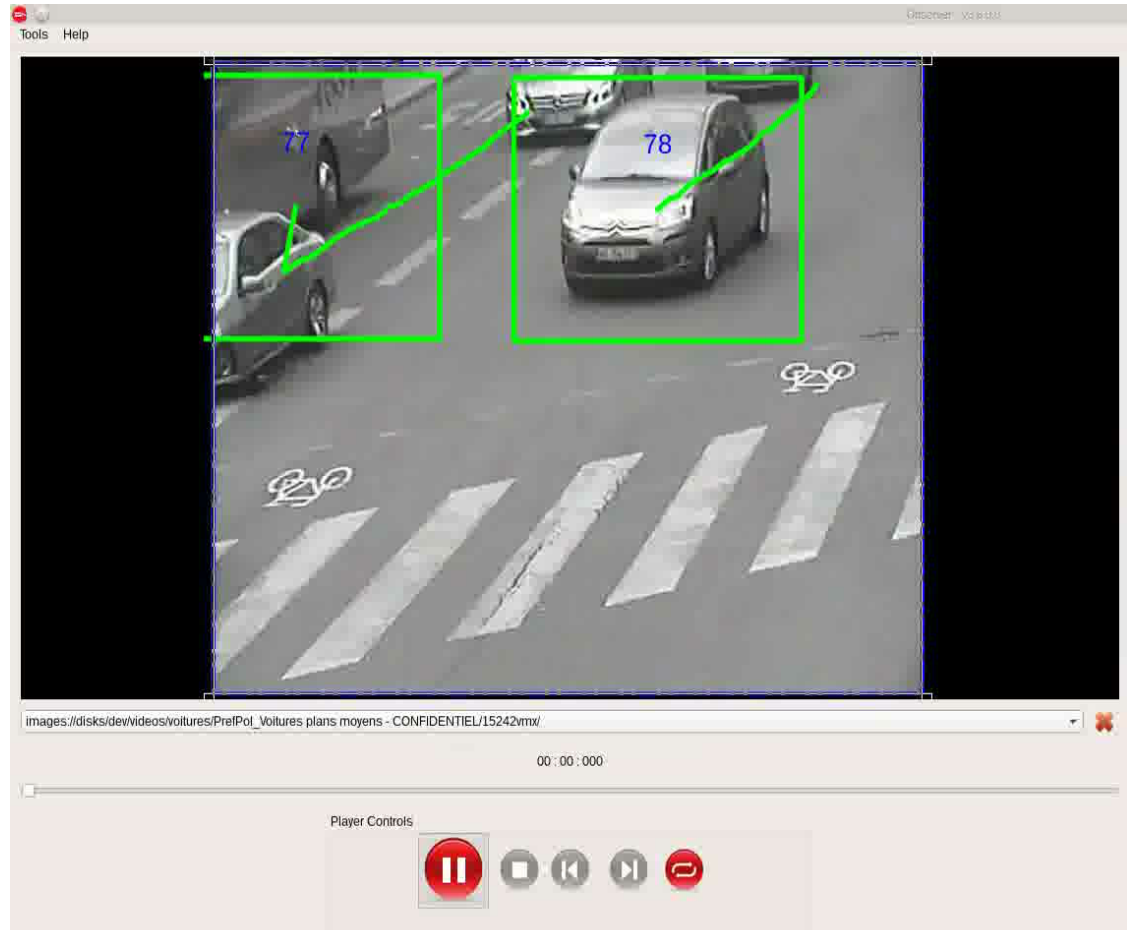
# Left Luggage



To view the video, please click on this link:

[http://c.eqcdn.com/brainchipinc/files/videos/xx\\_demo\\_loitering.mp4](http://c.eqcdn.com/brainchipinc/files/videos/xx_demo_loitering.mp4)

# Vehicle Detection



To view the video, please click on this link:

<http://c.eqcdn.com/brainchipinc/files/videos/car+tracking.mp4>

# BrainChip Competitive Landscape

- General Vision – ASIC pattern comparators
- Intel – Quark SE and microcontroller
- CEA – research and IP license
- TeraDeep – FPGA appliance

# BrainChip Investment Highlights

- Artificial intelligence and machine learning represent one of the highest growth areas in the technology market
  - Public market investors have few opportunities to invest in AI companies
  - BrainChip has been a public company since September 2015 and investors continue to enjoy demand for the stock and liquidity – ASX:BRN
  - The Company has engagements for its software products in civil, commercial surveillance, and machine vision applications including law enforcement, airport security, retail, gaming surveillance, and machine vision for manufacturing operations
  - The Company is integrating its algorithms, learning rules, and application specific plug-ins in an FPGA card solution for server and data center installations

# BrainChip Strategic Plan

- Markets
- Products
- Technology
- Human Resources
- Financial Plan

# BrainChip Markets



## Civil Surveillance

- Airports
- Mass Transit
- Law Enforcement
- Schools / Universities
- Drones

## Commercial Surveillance

- Advertising
- Gaming
- Retail
- Transportation

## Machine Vision

- Manufacturing
- Infrastructure
- Drones

## Data Analysis

- Financial Institutions
- IoT Providers
- Cyber Security

# BrainChip Target Markets

- Civil surveillance – airports, law enforcement, schools / universities, and homeland security
  - Airports – intrusion detection and alert, left baggage, loitering, and facial recognition
  - Law enforcement – facial recognition, car / license plate identification, and left baggage
  - Schools / universities – facial recognition and weapon identification
  - Homeland security – facial recognition

# BrainChip Target Markets (Cont'd)

- Commercial surveillance – advertising, retail, and gaming
  - Advertising – logo recognition
  - Retail – consumer traffic and consumer behavior
  - Gaming – casino “game outcome”, “game statistics”, facial recognition, and player identification



# BrainChip Target Markets (Cont'd)

- Machine vision – visual inspection and augmented reality
  - Industrial mission critical assembly
  - Industrial high volume production
  - Medical image analysis
  - Mass transit – traffic control and tariff

# BrainChip Target Markets (Cont'd)



- Financial transactions – stock trading trends and banking transactions
  - Predictive high frequency trading trends
  - Secure banking threat detection

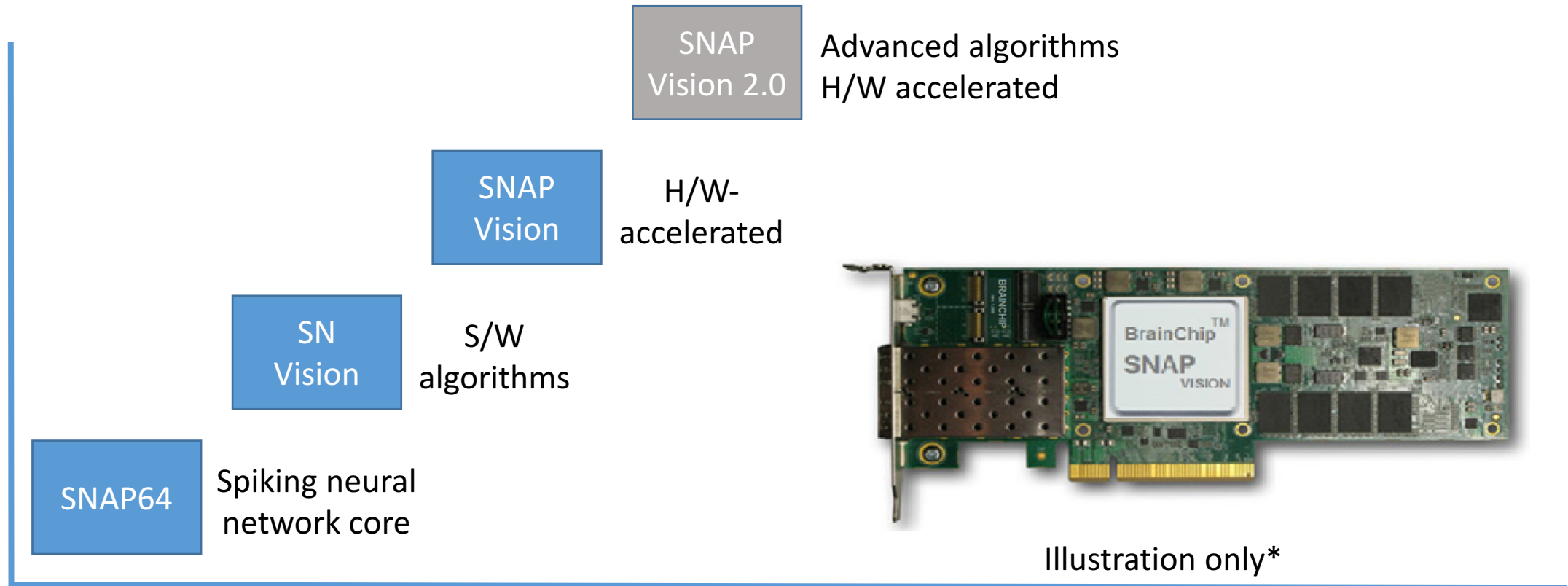
# BrainChip Target Markets (Cont'd)

- Cyber security – advanced threat detection
  - Critical infrastructure
  - Internet-of-things devices

# BrainChip Products

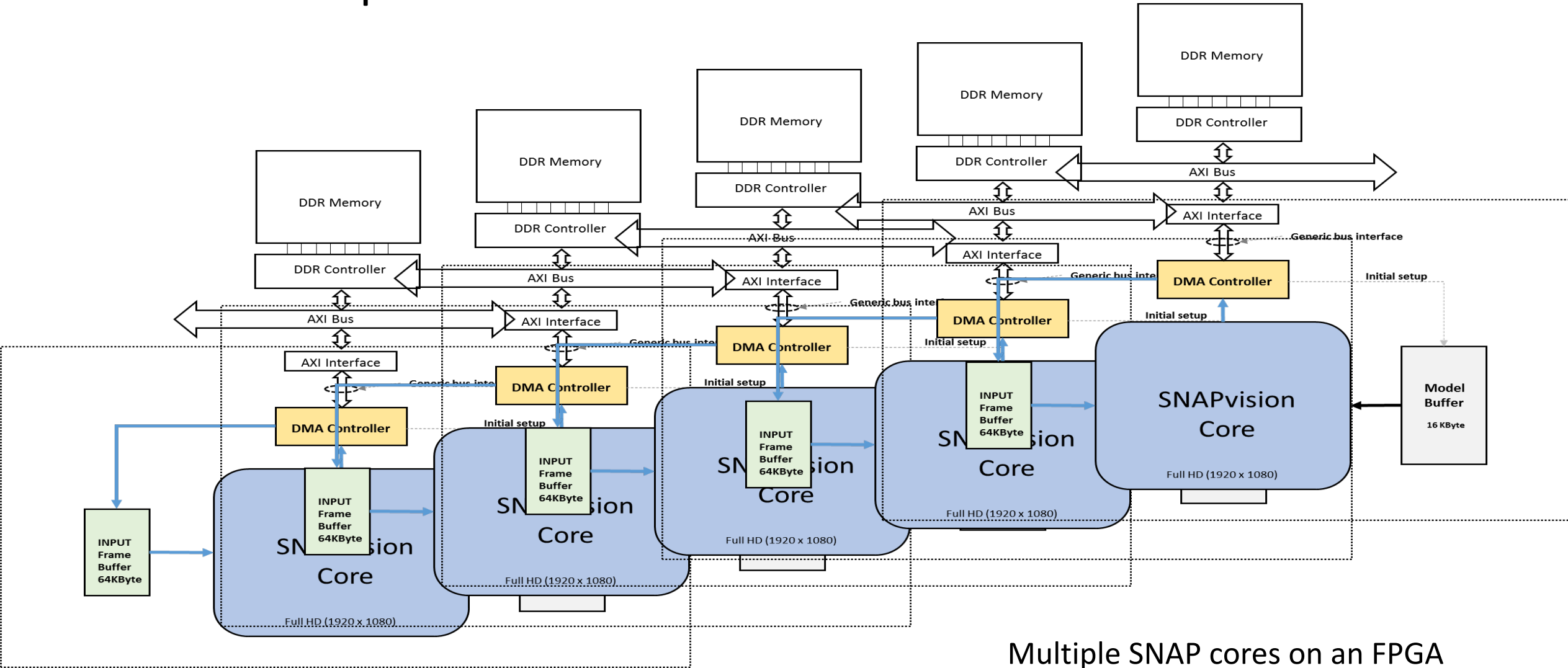
- Software-defined neural networks with Windows libraries
- FPGA-based PCIe hardware-accelerated neural networks with software libraries in development
- Planned application specific integrated circuit (ASIC) hardware-accelerated neural networks with software libraries

# BrainChip Product Road Map



\*Implemented with a commercially available FPGA

# BrainChip SNAPvision



Multiple SNAP cores on an FPGA

# BrainChip Human Resources

- Louis DiNardo – President and Chief Executive Officer
  - Exar – President and CEO, Crosslink Capital – General Partner, Intersil – President and CEO, Xicor – President and CEO, Linear Technology, and Analog Devices
- Peter van der Made – Founder and Chief Technology Officer
  - vCIS (Computer Immune System) – Founder and CTO, acquired by Internet Security System and later IBM, PGS – Founder and CTO, which developed high speed graphic accelerator boards and ASIC computer, and IBM
- Anil Mankar – Chief Operating Officer
  - MindSpeed Technologies – SVP of Engineering, Conexant – Chief Development Officer, and Western Digital
- Senior Vice President of Marketing
  - Search underway
- Cossette Drossler – Vice President of Finance and Administration
  - CQ Confidential – Founder and CEO and CDA Founder

# BrainChip Financials

- Marketing strategy
  - Vision, pattern recognition, and feature extraction applications
  - Target-specific airports, law enforcements agencies, and infrastructure projects
- Sales strategy
  - Direct business development
  - Appliance manufacturers
  - System integrators and value added resellers (VARs)
- Business model
  - NRE
  - License
  - Royalty



# BrainChip Summary

- BrainChip is a leading provider of software and hardware-accelerated neural networking solutions for advanced artificial intelligence and machine learning applications
- Proven technology commercially deployed in multiple applications and multiple markets
- Public equity ASX:BRN