4DS memory

A DISRUPTIVE TECHNOLOGY FOR STORAGE CLASS MEMORY

Investor Presentation – November 2017

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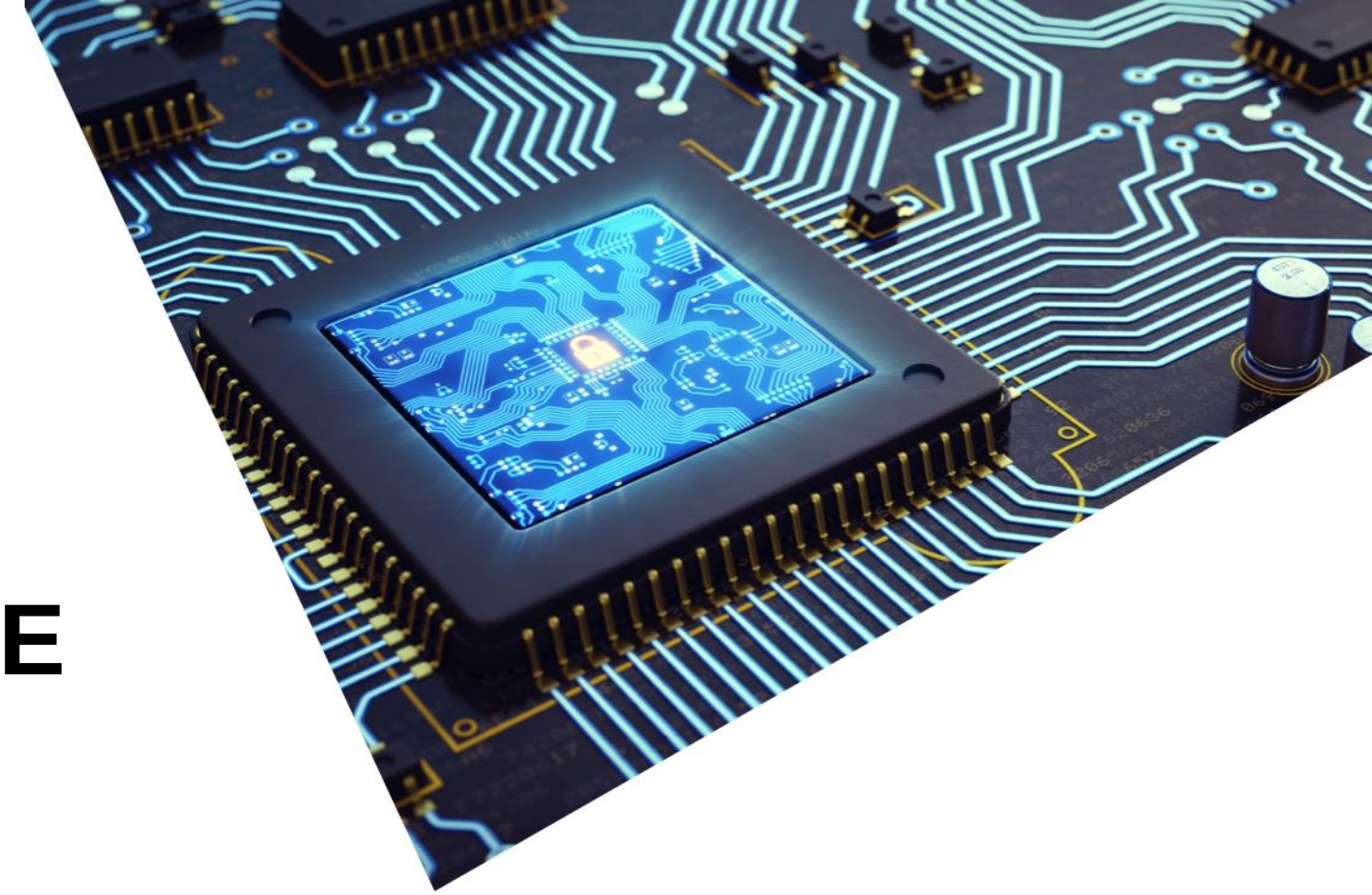
GLOBAL DATA EXPLOSION PRESENTS HUGE CHALLENGES.

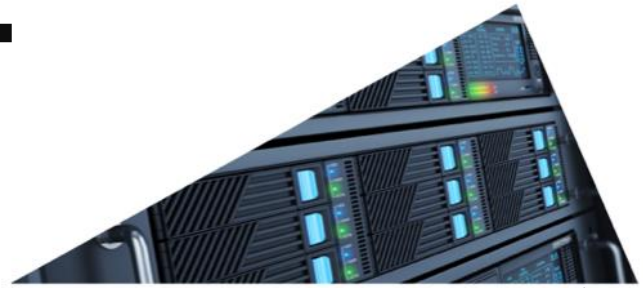


The semiconductor industry recognises the challenge and is investing billions of dollars annually on research and development to create a solution.

THE CHALLENGE.

Currently DRAM and NAND Flash are the main technologies utilized today.

Both are US$40 billion markets.



DRAM is super-fast, has exceptional endurance but is expensive and volatile

NAND Flash is slow, has limited endurance but is cheap and non-volatile

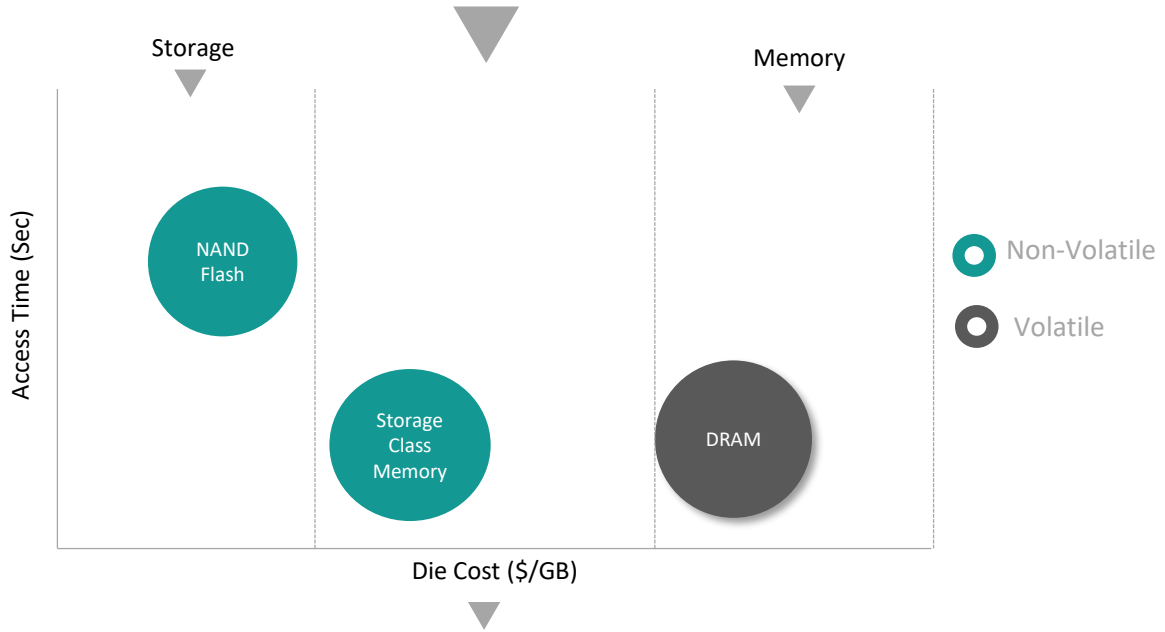
A new innovation is required and the industry refers to it as **Storage Class Memory** - over time this is predicted to have a market size as large as DRAM and NAND Flash

STORAGE CLASS MEMORY.

Emerging as the leading new category to extend the memory hierarchy.

STORAGE CLASS MEMORY

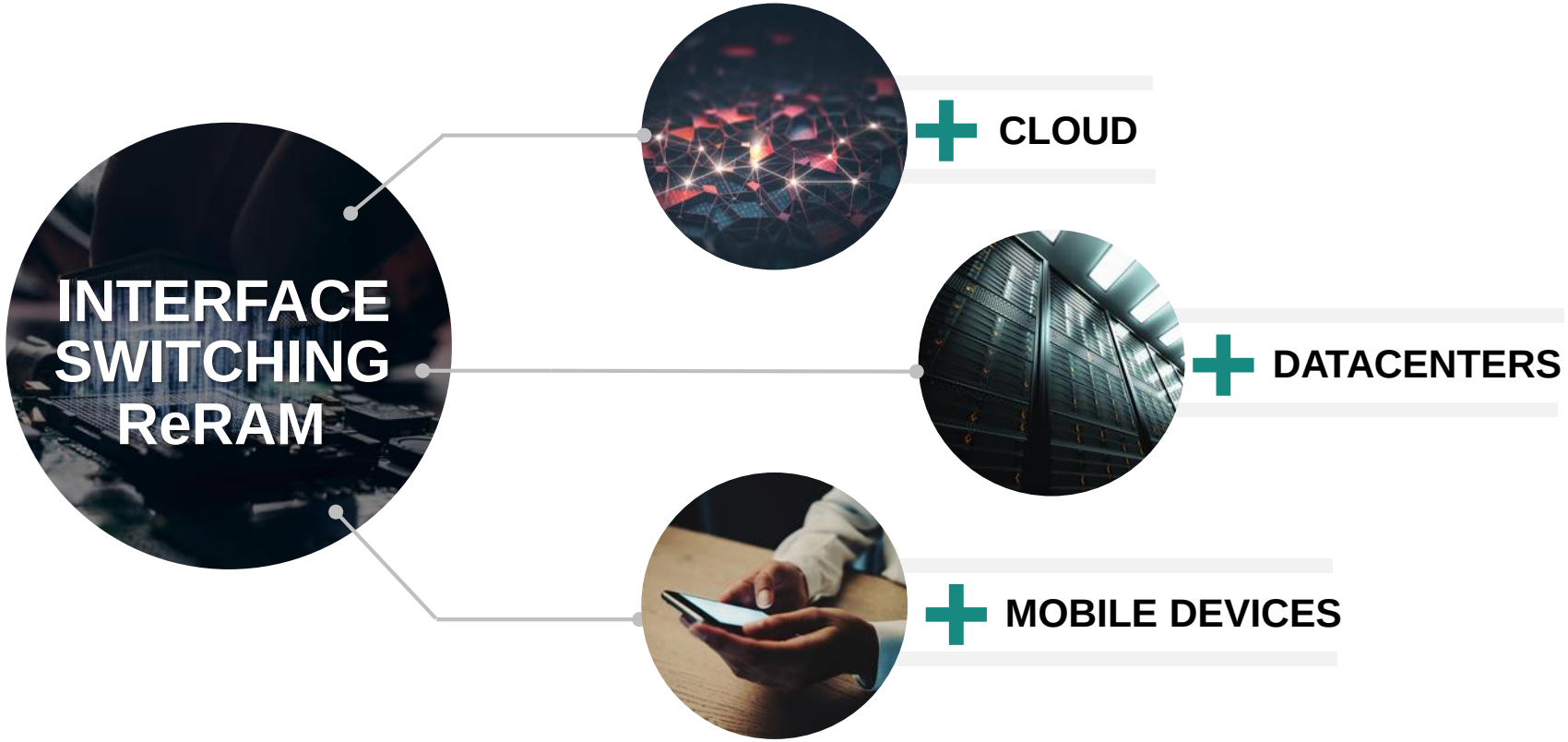
Combines the best characteristics of DRAM and NAND Flash



Battleground for next generation memory technology.

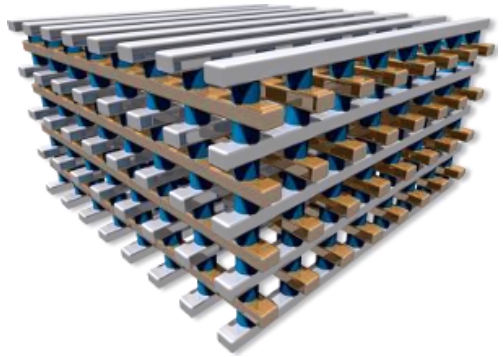
- **Faster** – DRAM-like read speed
- **Cheaper** – NAND Flash-like costs
- **Non-volatile** – Retains data when power is off

MARKETS FOR STORAGE CLASS MEMORY.



THE STORAGE CLASS MEMORY SOLUTION.

4DS memory INTERFACE SWITCHING ReRAM



- **World-leading** Silicon Valley based ReRAM developer
- 4DS is the most **advanced Interface Switching ReRAM**
- **19 US patents** developed and granted and 4 pending
- **The most promising ReRAM cell for Storage Class Memory**
- **Joint development agreement** with Western Digital subsidiary HGST since 2014
- **Strategic collaboration with** imec signed in November 2017
- Successful **A$3.45 mil** placement in November 2017

STORAGE CLASS MEMORY REQUIREMENTS.+

Requirements
• Based on well-understood physics to be sustainable over generations
• Area based to achieve cost and density as close as possible to NAND Flash
• Capable of speed comparable to DRAM
• Endurance suitable for Storage Class Memory
• As much retention as possible to meet Storage Class Memory requirements
• As much retention as possible without sacrificing speed and endurance
• Tunable technology in the vast opportunity between DRAM and NAND Flash

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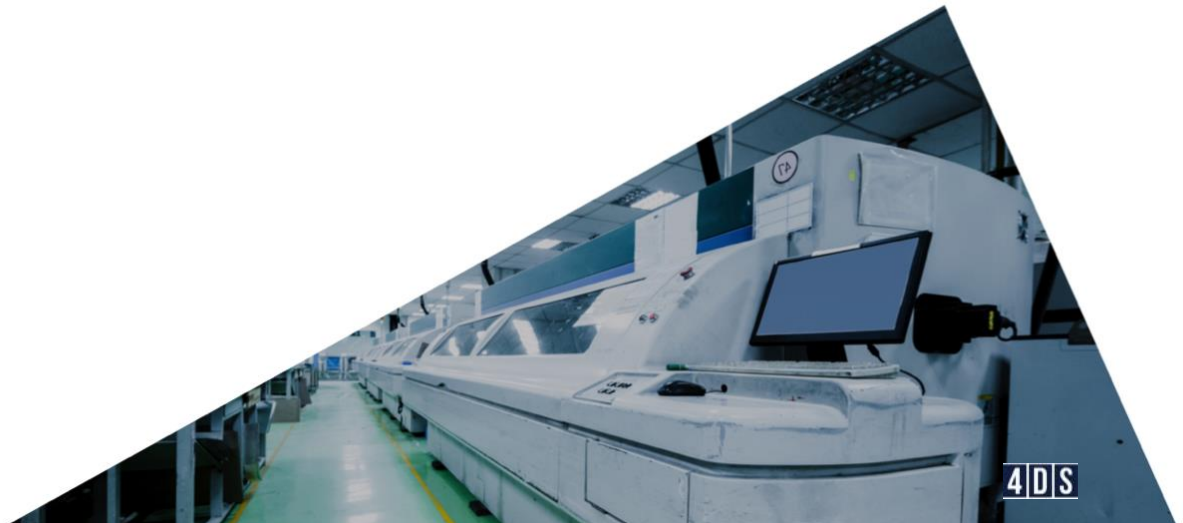
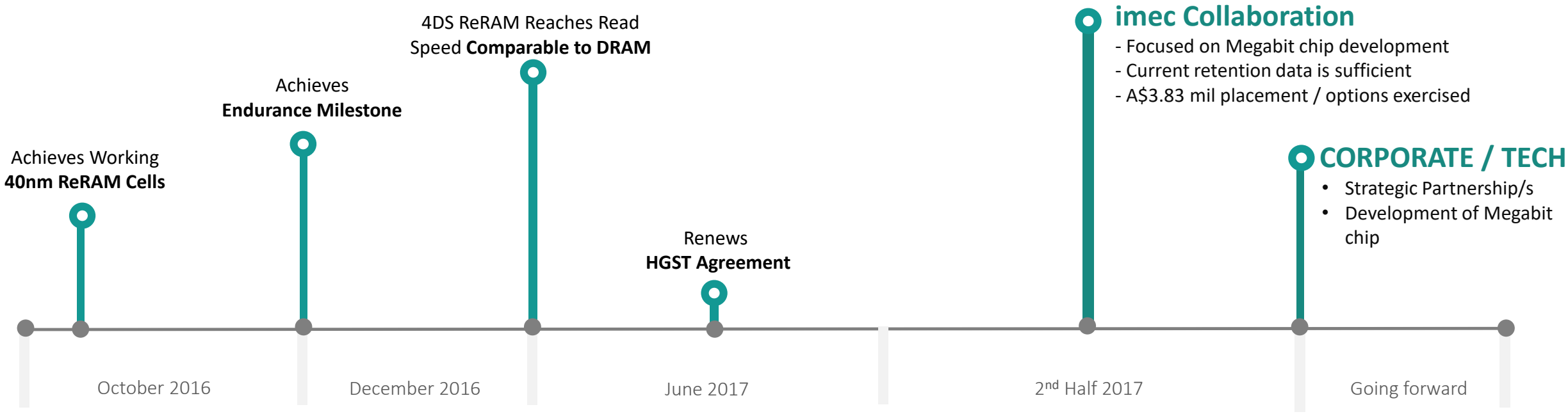
CURRENT STATUS.

4DS Interface Switching ReRAM has displayed enough relevant and meaningful data in each category **to now move immediately to production of a Megabit chip, a giant step forward**.

- Scales to geometries needed for high-density memory and 3D : 40nm memory cell
- Endurance far exceeds NAND Flash
- Endurance yield >97%
- Read speed comparable to DRAM – **an area-based ReRAM first**
- No need for speed crippling error correction – **a ReRAM first**
- **Current retention data adequate for Storage Class Memory**



THE LEAP TO STORAGE CLASS MEMORY.



COLLABORATION AGREEMENT.

imec, is the **world's #1** independent semiconductor development institute

- Collaborates with the who's who of electronic products and systems
- Collaborates with makers of high-volume high-density memories
- Has a world leading track record in the transfer of semiconductor processes
- Uses the same tools as industry for high-volume production of high-density memories
- Has a proven megabit memory platform to fast track development of Megabit chip
- Used this platform to explore a wide range of emerging memories

JOINT DEVELOPMENT AGREEMENT.

HGST, is a subsidary of Western Digital Corporation (US$27 billion market cap), the largest global leader in digital storage.

- Strategic innovator in emerging high growth technologies
- Commenced in 2014 – **Renewed in 2015, 2016 and 2017**
- Insight into what is important in a data-centric world
- Siva Sivaram, Head of Memory at Western Digital, commented **“We are committed to ReRAM, it is scalable with greater density, lower cost and latency and longer endurance”***

12/8/2016 EE Times – 14 Views from the Flash Summit

BOARD AND MANAGEMENT.

Global expertise founding and building high-tech companies.

JIM DORRIAN

Non-Executive Chairman

- Served as CEO of several Silicon Valley companies
- Extensive M&A experience
- Partner at VC firm Crosspoint Venture Partners

Last transaction was the sale of Bill Me Later – a company Jim founded and sold to **PayPal for US$1 billion**

Dr GUIDO ARNOUT

CEO & Managing Director

- 30+ years in commercialising electronics technology
- Successes include, Power-Escape, CoWare, CrossCheck Technology and Silvar-Liso

HOWARD DIGBY

Non-Executive Director

- Former senior roles at IBM, Adobe, Gartner and the Economist Group
- Non-Executive Director Elsight Ltd and Chairman of Omni Market Ltd
- Advisor to a number of early stage technology companies

Dr SESHUBABU DESU

Chief Technology Officer

- Expert in thin films, semiconductor processing and non-volatile memories
- Professor, Dean and Head of Electrical Engineering at various universities

DAVID McAULIFFE

Executive Director

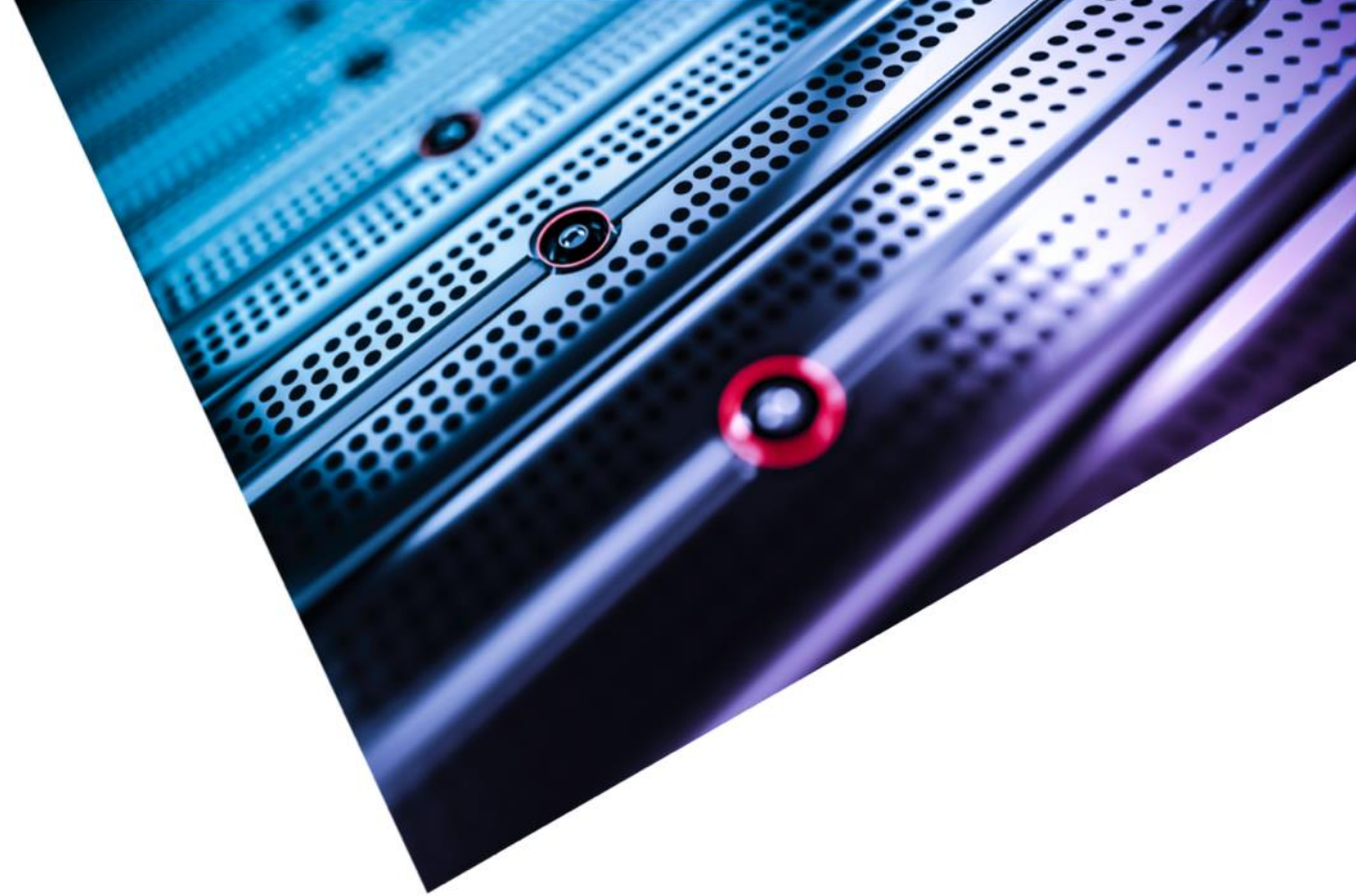
- Experienced company director
- Involved in numerous capital raisings and in-licensing of technologies
- Founder of several companies in Australia, France and the UK, many of which are now ASX listed

MICHAEL VAN BUSKIRK

Chief Engineering Officer

- Executive roles with a number of leading memory companies in Silicon Valley
- These include, Adesto Technologies Corporation, Innovative Silicon Inc and Spansion Inc.

CAPITAL STRUCTURE.



ASX Code	**4DS**
Market Cap (Fully Diluted)	**$48 Million***
Ordinary Shares on Issue	**942 Million**
Unlisted Options	**124 Million**
Cash	**$5 Million – Nov 2017**
Board and Management	**8%**
Top 20	**33%**

* As at 23 November 2017

SUMMARY.

- 4DS is developing a **breakthrough Interface Switching ReRAM Storage Class Memory solution**
- **Significant progress to date is pivotal for Storage Class Memory**
- Four year strategic partnership with HGST, **leader in digital storage**
- **Imec** - strategic collaboration to develop megabit chip with the **world-leading researcher in nano electronics**
- Consistently achieves stated milestones
- **Strong patent portfolio** wholly owned and developed in-house
- **World-class team** of memory specialists, material scientists and test engineers
- Board experienced in founding, building and **exiting high tech companies**

4DS is addressing the massive memory demands of tomorrow

THANK YOU

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