A STORAGE CLASS MEMORY SOLUTION IN THE MAKING.
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DRIVEN BY:

- Mass adoption of mobile devices.
- Increasing demand for digital content.
- Proliferation of cloud based services.
- Emergence of the Internet of Things.

MORE DATA HAS BEEN CREATED IN THE LAST TWO YEARS THAN IN ALL PRECEDING HISTORY.

BY 2020:

- 4X data stored in Flash.
- 5X data stored in the Cloud.
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 Flash are the main technologies utilized today. Both are US$40 billion markets and the technologies are over 30 years old.

- DRAM is super fast, expensive & volatile
- NAND Flash is slower, cheaper by the day and non-volatile

A new innovation is required and the industry refers to it as **Storage Class Memory**.
Emerging as the leading category to extend the memory hierarchy.

Battleground for next generation memory technology.

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

World-leading Silicon Valley based ReRAM developer

4DS is the most advanced Interface Switching ReRAM

18 US patents developed and granted, 5 pending

Multiple significant technical achievements 2016/2017

Strategic partnership with Western Digital subsidiary HGST
BENEFITS OF 4DS INTERFACE SWITCHING RERAM.

Breakthrough Storage Class Memory technology.

+ Higher density / scalability
+ Lower power consumption
+ Greater endurance and reliability
+ Faster access speed and performance
+ Ability to retain data
+ Simple manufacturing steps
4DS MEMORY ReRAM IS UNIQUE.

—

 INTERFACE SWITCHING ReRAM

+ Doesn’t suffer from large random read current fluctuations
+ No speed crippling error correction required
+ **4DS is not aware of any other ReRAM technology that can make these claims**

FILAMENTARY ReRAM

+ Suffers from large random read current fluctuations
+ Requires speed crippling error correction
MARKETS FOR STORAGE CLASS MEMORY.
JoINT DEVELOPMENT AGREEMENT.

HGST, is a subsidiary 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 for the 3rd time in July 2017
+ Collaboration provides access to HGST’s expertise
+ 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”*
MILESTONES REQUIRED FOR COMMERCIAL VIABILITY.

4DS Interface Switching ReRAM has displayed 3 of the 4 key characteristics.
4DS achieved working 40nm Interface Switching ReRAM cells for the first time in October 2016.

Achieving this milestone significantly de-risks the technology.

Scalability to 40nm is vital for Storage Class Memory.

Importantly Interface Switching ReRAM currents scale with cell size.
Endurance is another critical feature to ensure application in Storage Class Memory

4DS Interface Switching ReRAM has shown excellent endurance cycling to date

The Company has tested over 1000 cells of different sizes

Testing demonstrated no failure across a number of cell sizes after 100,000 cycles

On-going test work currently underway pushing significantly beyond 100,000 cycles
Achieved comparable DRAM read speed with Interface Switching ReRAM

No speed crippling error correction required

Both are significant technical breakthroughs

Something considered by industry players as unattainable until now

Patents are pending to secure IP for this technical breakthrough
DATA RETENTION

- Data retention testing is now the focus of 4DS engineers
- Initial results are **encouraging**
- Results expected **mid 4th quarter 2017**
- Data Retention is targeted between DRAM and Flash
Upon establishing viability of Interface Switching ReRAM, 4DS is well positioned to attract additional IP licensing deals with large scale data storage companies.

The semiconductor manufacturing and development space is acquisitive in nature, with many dominant players acquiring smaller companies developing unique technologies.
RECENT ACQUISITIONS.

- **sTec** (USD $340M) - 2013
- **Virident** (USD $685M) - 2013
- **LSI** (USD $540M) - 2014
- **Cypress** - 2015
- **SanDisk** (USD $19Billion) - 2016

Major Acquisitions:

- **Western Digital**
- **Seagate** (USD $19Billion) - 2015
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

Dr GUIDO ARNOT
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 of HearMeOut and Elsight
- Advisor to a number of early stage technology companies

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.

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

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<tbody>
<tr>
<td>ASX Code</td>
<td>4DS</td>
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<tr>
<td>Market Cap (Fully Diluted)</td>
<td>$29 Million</td>
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<tr>
<td>Ordinary Shares on Issue</td>
<td>845.6 Million</td>
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<tr>
<td>Unlisted Options</td>
<td>106.6 Million</td>
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<tr>
<td>Cash</td>
<td>$3.1 Million – March 2017</td>
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<tr>
<td>Board and Management</td>
<td>8%</td>
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<td>Top 20</td>
<td>36%</td>
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SUMMARY.

+ 4DS is developing a **breakthrough Interface Switching ReRAM Storage Class Memory solution**
+ **Significant progress to date** – Data Retention studies underway
+ Four year strategic partnership with the **leader in digital storage**
+ Consistently achieves stated milestones
+ **Strong patent portfolio** wholly owned and developed in-house over the past 10 years
+ **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 storage demands of tomorrow**