Nanoveu Ltd.

Commercialisation in 2026

Ever since Nanoveu (ASX:NVU) acquired EMASS in October 2024, investors have rightly been more intrigued by the company. In acquiring EMASS, Nanoveu has positioned itself to be a major player in Edge AI. It is not the only company to be working in this field, but it has very novel technology that performs second to none.

Turnkey AI inference at the Edge solutions

EMASS' ECS-DoT Edge AI product is a System-on-a-Chip (SoC) with superior power efficiency, high memory capacity, high energy efficiency and an incredible computational efficiency. It can run 30 Giga/Billion Operations per second, compared to 6.4 for the next closest competitor, and it can support up to 13 million simultaneous AI parameters. There are countless potential application areas where Nanoveu could make a difference, most particularly in IoT devices such as medical implantable devices, drones, smart glasses and lenses as well as smart watches.

Commercialisation in 2026 is sooner than expected

2025 has been a year of major progress for Nanoveu. Achievements have included launching Modular AIoT Development Kit to assist with client integration and collaborating with the Centre of Nanoelectronics and Devices (CND) at the American University in Cairo. EMASS and CND will undertake a multi-project wafer fabrication in Q4 of 2025 and a full production tape-out is anticipated in Q1 of 2026.

Nanoveu's eventual plan is to have its chips manufactured by a foundry and sell them directly to OEMs that will use them in Edge devices where they perform specific AI inference tasks. This is expected to happen as early as 2026! This is much faster than most of EMASS' ASX-listed semiconductor peers.

Valuation increased to $0.19 per share (was $0.17)

Our current valuation of Nanoveu is $0.19 per share, previously $0.17 per share. This valuation uses a peer-weighted approach and has changed since our February 2025 initiation report due to the increased valuations of some of Nanoveu's peers, but also due to the increased number of shares on issue due to capital raisings.

In the longer-term we see potential for Nanoveu to be an M&A candidate and continue to be encouraged by the US$307/A$482m acquisition of Edge AI chip developer Kinara by Dutch semiconductor incumbent NXP Semiconductors (NASDAQ: NXPI), which would imply a valuation of A$0.37 per share for Nanoveu. Please see pages 9-10 for further details on our valuation and page 11 for the key risks.

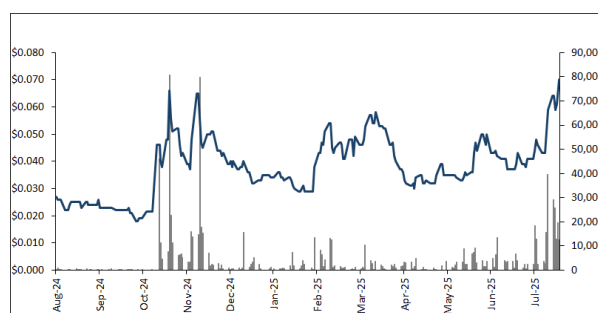|	
Market cap. (A$ m)	57.9
# shares outstanding (m)	918.9
# shares fully diluted (m)	1,303.2
Market cap ful. dil. (A$ m)	82.1
Free float	100%
52-week high/low (A$)	0.07/0.018
Avg. 12M daily volume ('1000)	4,089
Website	https://nanoveu.com

Source: Company, Pitt Street Research

Share price (A$) and avg. daily volume (k, r.h.s.)

Source: Refinitiv Eikon, Pitt Street Research

Valuation metrics	
Valuation (A$ per share)	A$0.19

Source: Pitt Street Research

Disclosure: Pitt Street Research directors own shares in Nanoveu.

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Recap of EMASS and the investment opportunity

EMASS' SoCs are far more energy efficient and perform stronger than competing chips.

Nanoveu is an ASX-listed technology company that bought EMASS in October 2024. EMASS is developing System-on-a-Chip (SoC) solutions that enable processing of data at close proximity to data-generating sensors (i.e. at the Edge of the Internet) rather than at centralised data centres (Figure 1).

EMASS' SoCs are based on the Reduced Instruction Set Computing (RISC-V) architecture, known for its simplicity, extensibility and low power consumption. RISC-V enables chips to be customised to match end-user requirements.

Figure 1: EMASS' SoCs
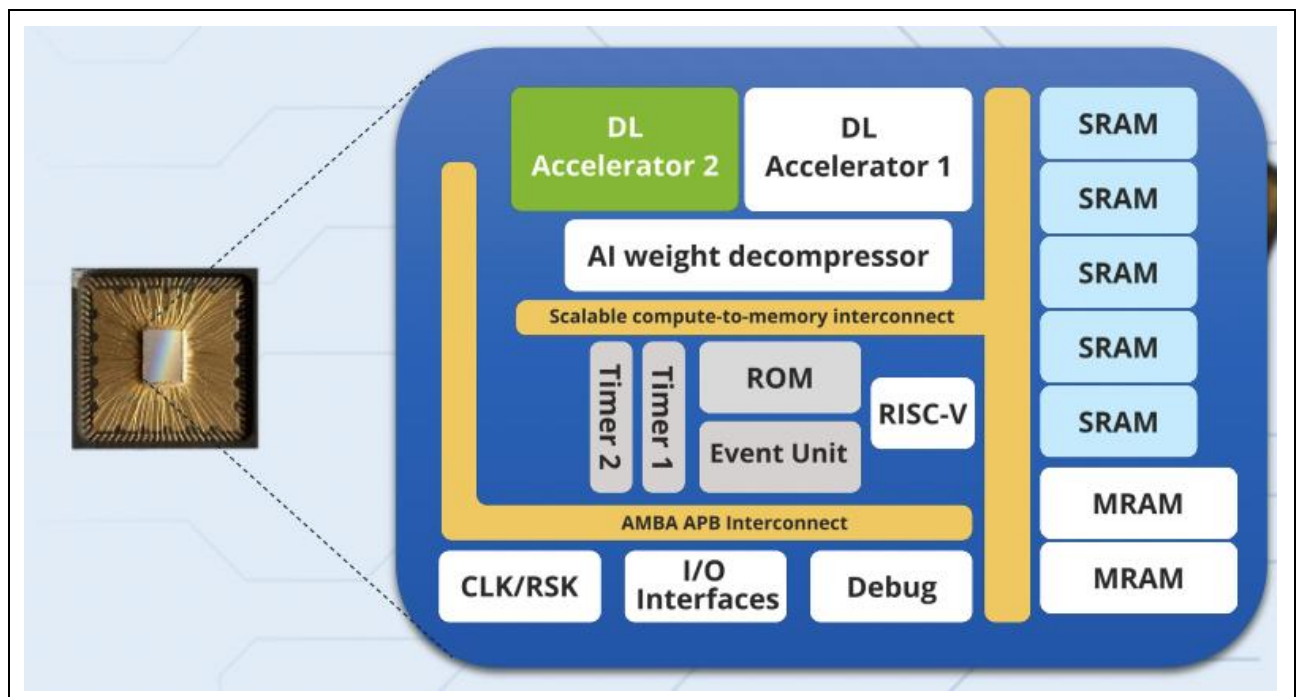
Source: Nanoveu

EMASS' SoCs are superior compared to their peers

EMASS' SoC, called ECS-DoT, has a number of big advantages (Figure 2) compared to existing competing products:

- ECS-DoT is 20x more energy efficient compared to competitor chips,
- It can handle 13 million AI parameters simultaneously and process them at 30 Giga Operations per second (GOPS), which translates to over 10 trillion AI operations per second per watt, and
- It can work at 0.1mW (MilliWatt) of power consumption with a maximum power usage of 10mW, and
- It has 4 Megabytes of memory on a chip with a <10mm^2 footprint.

For an in-depth overview of EMASS' technology and the company's "secret sauce", please have a read of [our research initiation of Nanoveu HERE](#).

Figure 2: EMASS wins a peer comparison heads down

Company	Software Optimization	Target Application	AI Performance per Watt (Avg/Peak)	Power (Avg/Peak)	AI Performance	Max AI Parameters
Nanoveu	YES	3D Vision, Health Monitoring, Wearable, Smart infrastructure	3/15 ToPs	0.1mW/10mW	30 GOPs	13 million
Maxim Integrated	NO	Medical, Patches, Wearable	1.6/64 GoPs	50mW/2W	3.2 GOPs	3.5 million
Himax	NO	Vision, Speech, Gesture, Agriculture, Retail	40/320 GoPs	2.5mW/20mW	0.8 GOPs	500 K
Syntiant	NO	Vision, Smart home, Smartwatches	0.1/1 ToPs	7/30mW	6.4 GOPs	7 Million
Ambiq	NO	Smart home, Smart watches, Fitness trackers, Animal tracker, Voice remote	240/133 GoPs	1mW/1.8mW	0.24 GOPs	1 Million
ETA Compute	NO	Vision	200 GoPs	2mW	0.4 GOPs	256 K

*GoPs ≈ Clock Speed (GHz) × Instructions Per Cycle (IPC) × Number Of Cores

Source: Nanoveu

EMASS' SoCs are designed for optimal and efficient performance.

Extreme energy efficiency is the key differentiator

The design of the chips is also a key factor in their performance. They are designed so that:

- They only do the computations that really matter.
- The application is extremely compressed to limit the use of memory capacity and processing power.
- They use ReRAM technology, which uses resistance change in a material to store data. ReRAM is highly durable to begin with, but EMASS has developed proprietary resilience mechanisms that improve ReRAM's durability even further.
- All components that are not needed to perform the specific task at that specific time are turned off to save energy.
- 'Weights' in the chip are 'compressed' so that they use fewer 'bits'.

Obviously, these all lead to better chip and product performance for customers, but ECS-DoT's extreme energy efficiency is the trump card that we expect will make the commercial difference in conversations with prospects.

The addressable market for AI inference at the Edge is massive

ECS-DoT is useful for any device that requires AI inference at the Edge at ultra-low energy consumption.

ECS-DoT is useful for any device that requires AI inference at the Edge of the Internet and that requires ultra-low energy consumption. This includes both existing devices, which can be embedded with AI capabilities without requiring excessive power or hardware upgrades, as well as the next generation of Edge devices.

The market for Edge AI applications is expected to reach $270bn by 2030, representing a 33.3% CAGR, all because of AI moving towards on-device processing (Figure 3).

Figure 3: Edge AI Market Size
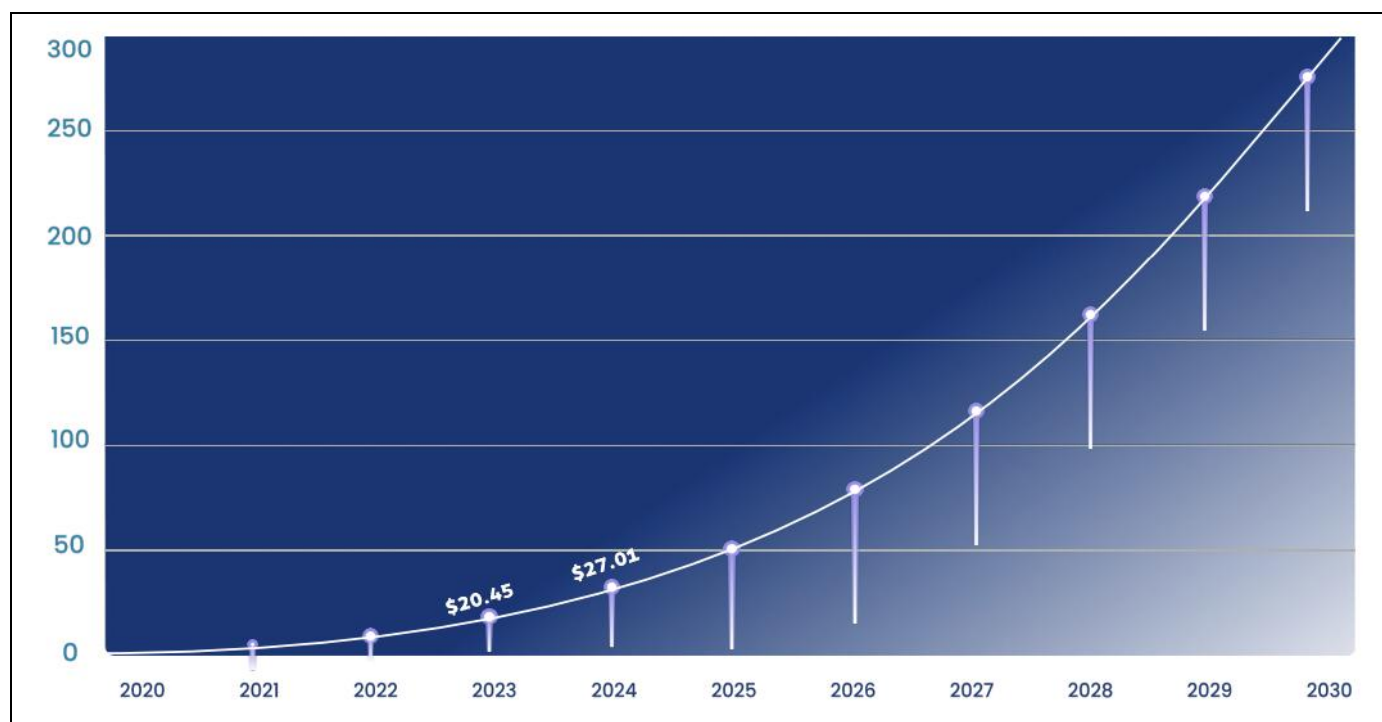
Source: Company, Fortune Business Insights

Specific applications include robotic surgeries, autonomous vehicles, AR/VR conversion from videos, medical imaging, IoT devices like smart watches and medical implants, and security devices. But we believe there are many more applications where ECS-DoT can have a big part to play.

Many of these use cases are available today and so you may be forgiven for thinking technologies like EMASS' are a 'nice to have' rather than 'need to have'. But consider the healthcare sector for instance – even though it is possible today to get delayed data from sensor feeds, it is a lot harder to get live biometric data – but EMASS could make this possible.

As devices and chips continue to shrink in size and increasing amounts of data need to be processed, more and more is demanded of computing devices. And the wait time back and forth to the Cloud will increasingly become an issue and will result in higher energy consumption. By making decisions 'at the Edge', in other words AI Inference at the Edge, better and quicker decisions will be made at lower power consumption levels.

To get a better understanding of just how big the market opportunity for EMASS is, below you can watch the interview we did with EMASS founder Mohamed Sabry recently!

Interview with EMASS founder and CTO Mohamed Sabry

Substantial progress made so far in 2025

The end goal for NVU is to seal commercial deals with semiconductor companies and OEMs

With EMASS, Nanoveu has positioned it as a frontrunner in the development of next-generation SoC technologies for Edge AI applications. It has already undergone extensive testing that has validated the performance and durability of ECS-DoT.

The end goal for Nanoveu is to seal commercial deals similar to Weebit Nano (ASX:WBT), involving companies (most likely semiconductor fabs and OEMs) to license in the chips and integrate them into their respective technologies.

In addition, the company continues to make technical progress. Specifically, EMASS has scaled down its prototype from 22nm to 16nm, in a step that will provide 50% area benefits with 25% power benefits – in other words, it will be able to do more with less. The company has also:

- Commenced chip synthesis of ECS-DoT, having completed a back-end design flow;
- Launched its Modular AIoT Development Kit, which will assist with integration into applications through a suite of plug-and-play modules, such as sensors as well as pre-trained AI models to streamline application development;
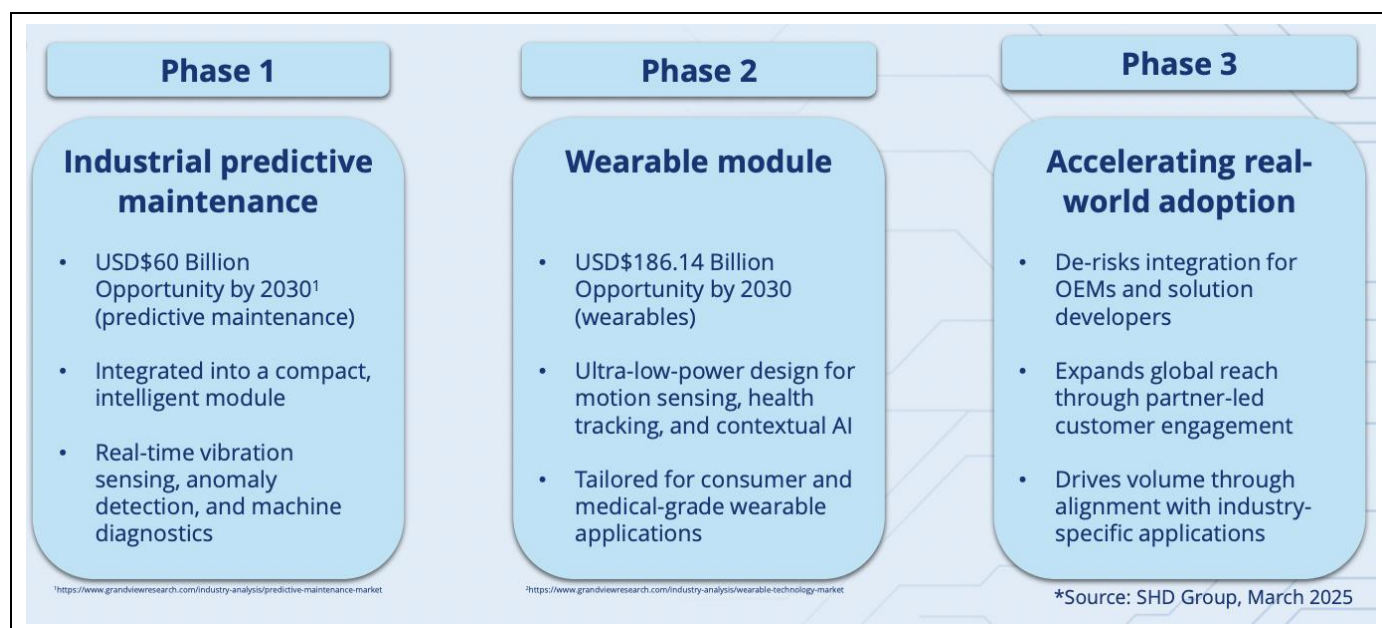
- Released a beta SDK (Software Development Kit) with APIs, documentation and engineering support through its Early Access Developer Program. This will allow select prospective customers to receive evaluation hardware and direct support;
- Undertaken, together with tier-1 drone OEMs, specific testing of ECS-DoT in drones expanding on earlier testing to validate AI control logic in diverse drone types, mission scenarios and environmental conditions. In May 2025, the company revealed that ECS-DoT could provide 50 updates per second;
- Collaborated with the Centre of Nanoelectronics and Devices (CND) at the American University in Cairo, accessing CND's infrastructure in nanoscale design, SoC prototyping and AI hardware modelling. This is the key area of focus for the company right now. Over the last few months, EMASS and CND implemented a complete 16nm SoC development flow, including Register-Transfer Level (RTL) verification, logic synthesis, place-and-route, timing closure and sign-off.

Commercialisation in 2026

In Q4 of 2025, EMASS and CND intend to undertake a multi-project wafer fabrication. A full production tape-out is anticipated in Q1 2026. As a sign of how important this current collaboration is, EMASS appointed CND Director Dr. Yehia Massoud Ismail as a Strategic Advisor to the Company.

During the current quarter, the company will seek a listing on the U.S. OTCQB market to exhibit the company to the North American equity markets and enable them to invest in the company easier than if it just remained on the ASX. This step will also improve the company's brand visibility in America, potentially opening research and commercial partnerships there.

Figure 4: EMASS' commercialisation plan

Source: Nanoveu

Obviously, the end goal for Nanoveu is to commercialise the technology and this may happen sooner than many investors may have been expecting. The company has outlined a multi-phase plan for commercialisation (Figure 4) and is already actively engaging with OEMs to get evaluations going for potential design-ins in wearables, drones and other IoT applications.

Commercialisation likely to be much faster than previously anticipated.

In terms of timelines, the company expects to be able to generate revenues from its first chip sales in 2026, potentially preceded by non-recurring engineering (NRE) fees from customers to help them with the design and integration of ECS-DoT in their respective applications.

We believe this timeline is much faster than what we typically see at ASX-listed semiconductor development companies, where many of them take at least 5 to 7 years as an ASX-listed company to do R&D work before they generate first revenues.

Significant industry interest in EMASS already

NVU has been engaging with leading wearables and drone manufacturers and has reported strong interest.

EMASS has been engaging with leading wearables and drone manufacturers and has reported strong interest because of EMASS' superior capabilities compared to solutions that are already out there. The market is particularly attracted to EMASS' ultra-low power consumption, its integrated sensor fusion (i.e. the fusion of all data at once, thus delivering richer context and higher accuracy) and the portability of AI models across a wide range of frameworks.

We expect EMASS to start up additional collaborations, even if it is unable to disclose them to investors for competitive reasons. The key for investors to look out for will be continued validation work with drones and technical progress. This will provide further evidence to potential customers that ECS-DoT may be the way to go when it comes to implementing Edge AI in their products.

Significant upside: Valuation of $0.19 per share

When we initiated coverage on Nanoveu, we valued the company on a peer-weighted basis thinking it was too early to look at a DCF-based model. We have tweaked our valuation to account for the current valuation of Nanoveu's peers and also for capital raisings completed since February's initiation report.

Our updated valuation is $0.19 per share.

Our valuation of Nanoveu was $195.1m, which was $0.17 per share under the number of diluted shares on issue (1,146.7m). Taking into account the new average market capitalisation of ASX semiconductor stocks as at 21 July 2025, we update our valuation to $248m, which is $0.19 per share with 1,303.2m diluted shares on issue.

While some of Nanoveu's options are multiple years away from being exercised, the stock is comfortably above the exercise price at this point in time and we expect further re-rating as EMASS makes further technical and commercial progress.

Our thesis assumes that Nanoveu can successfully finalise design, tape-out and qualification of EMASS' first product in the next 12 months that would then be ready for commercialisation. In other words, this share price upside assumes the company can do what Weebit Nano has already done, i.e. sign commercial deals. One can observe (Figure 5) that WBT, and BrainChip (ASX:BRN) for that matter, trade at a premium to companies at earlier development stages.

Figure 5: Peer group valuation of ASX semiconductor stocks

Company	Ticker	#shares (m)	Share Price (A$)	Market Cap (A$ m)
4DS Memory	4DS	2,060.9	0.029	59.8
Archer Materials	AXE	254.8	0.31	79.0
BluGlass	BLG	2,567.0	0.011	28.2
BrainChip	BRN	2,025.7	0.225	455.8
Adisyn	AI1	617.3	0.073	45.1
Weebit Nano	WBT	362.6	2.26	819.5
Average				**247.9**
Nanoveu (fully diluted)	**NVU**	**1,303.2**	**0.063**	**82.1**
Nanoveu valuation **per share** based on peer group valuation (fully dil.)				**0.19**

Source: Pitt Street Research

M&A is a possibility too

Another possibility is that Nanoveu ends up being acquired by a larger company in the semiconductor space. Back in February 2025, a company in EMASS' domain (Kinara) was bought by Dutch semiconductor manufacturer NXP Semiconductor (NASDAQ: NXPI) for US$307m, which equates to A$482m at current exchange rates. While EMASS has some way to go in terms of development as well as manufacturing, testing and qualification of demo

chips, we believe the Kinara acquisition illustrates what the semiconductor industry is willing to pay for the right technology.

Applying the purchase price of Kinara by NXP would derive a valuation of $0.37.

The A$482m for Kinara is close to Weebit Nano's and BrainChip's average valuation and it would equate to A$0.37 per Nanoveu share – suggesting more than 400% upside from the current share price. We believe these numbers underline the potential for Nanoveu if and when an M&A scenario materialises.

It is easy for analysts to continually bring up one particular deal and say it is relevant. But in the case of Kinara, we think it is EMASS' closest peer. Yet, it has some shortcomings compared to EMASS (Figure 6), suggesting that an even higher price would not be out of the question at the appropriate time.

Figure 6: Side by side comparison of Kinara's products with EMASS ECS-DoT

	Kinara Ara-1	Kinara Ara-2	EMASS ECS-DoT
Neural Cores	Flexible AI accelerator for vision applications	8 second-generation neural cores with custom ISA	General-purpose AIoT SoC with embedded AI cores
Dataflow Architecture	Dedicated dataflow engines for optimized tensor partitioning	Enhanced dataflow engines for improved routing and performance	Custom AI pipeline with on-chip power gating
Supported Data Types	INT8, FP16	INT4, MSFP16, INT8, FP16	INT8, FP16, and optimized low-bit data types
On-Chip Memory	Not officially disclosed (~128KB RAM listed in some sources)	4MB SRAM	1MB SRAM + 2MB MRAM (Non-volatile AI processing)
External Memory Support	1GB LPDDR4 DRAM	Up to 16GB LPDDR4/DDR4X per chip	Supports off-chip RRAM/MRAM/FLASH/nVSRAM via Parallel, SPI, or I2C interface
Max AI Model Size	1 Billion parameters (optimized for compact AI models)	Up to 30 Billion parameters in INT4	13 Million parameters (uncompressed format)
Chip Size	15mm × 15mm (FCBGA package)	17mm × 17mm (EHS-FCBGA package)	2.2mm × 3.4mm (Ultra-compact for Edge AI)
Fabrication Technology	28nm process	16nm process	≤22nm with integrated MRAM
Power Consumption	1.7W	6W	1.5mW (0.0015W)
Maximum	5 TOPS	40 TOPS	30 GOPS (0.03 TOPS)
Computation Efficiency (TOPS/W)	2.94 TOPS/W	6.67 TOPS/W	20 TOPS/W

Source: Pitt Street Research, Nanoveu

Investment risks

We see the following key risks to our investment thesis:

– **Funding risk**: Nanoveu will likely require additional funding to support its commercialisation plans. Raising funds on favourable terms (both debt and equity) along with timeliness can be a key challenge for the company.

– **Regulatory risk.** The company's ability to commercialise its product is contingent on regulators maintaining approval where it already exists (including meeting ongoing regulatory compliance requirements) and giving approval to new products. A failure to give new products approval, or even a withdrawal of approval, could be detrimental to the company's future ambitions.

– **Intellectual Property risk.** Key to the company succeeding will be the ability to protect its Intellectual Property. An inability to protect it will result in competitors being able to capitalise on the hard work Nanoveu has undertaken to get its products to market.

- **Key personnel risk**: There is the risk the company may lose key personnel and be unable to replace them and/or their contribution to the business.
- **Commercial risk**. There is the risk that the company may fail to execute its commercial objectives for a variety of reasons including:
  i) The failure to find commercial partners,
  ii) Supply chain issues,
  iii) Lack of acceptance by the market,
  iv) Competition.

Appendix I – Nanoveu's Capital Structure

Security Class	Number	Percentage
Ordinary shares	918,945,764	71%
Options	266,249,467	20%
Performance rights	118,010,833	9%
Total	**1,303,206,064**	

Source: Company

Appendix II – Analysts' Qualifications

Marc Kennis has been an equities analyst since 1996.
- Marc obtained an MSc in Economics from Tilburg University, Netherlands, in 1996 and a postgraduate degree in investment analysis in 2001.
- Since 1996, he has worked for various brokers and banks in the Netherlands, including ING and Rabobank, where his focus has been on the technology sector, including the semiconductor sector.
- After moving to Sydney in 2014, he worked for several Sydney-based brokers before setting up TMT Analytics Pty Ltd, an issuer-sponsored equity research firm.
- In July 2016, with Stuart Roberts, Marc co-founded Pitt Street Research Pty Ltd, which provides issuer-sponsored research on ASX-listed companies across the entire market, including technology companies.

Nick Sundich is an equities research analyst at Pitt Street Research.
- Nick obtained a Bachelor of Commerce/Bachelor of Arts from the University of Sydney in 2018 and the designation of Financial Modelling and Valuation Analyst from the Corporate Finance Institute. He has also completed the CFA Investment Foundations program.
- He joined Pitt Street Research in January 2022. Previously he worked for over three years as a financial journalist at StockHead.
- While at university, he worked for a handful of corporate advisory firms.

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