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ASX: NVU

Nanoveu Launches Embedded AI Evaluation to Extend Drone Flight Time

Real-world trials underway to demonstrate ECS-DoT chip ability to significantly enhance drone endurance and onboard intelligence

Highlights

- Nanoveu subsidiary, EMASS has commenced a two-phase program to demonstrate how its ultra-low-power ECS-DoT chip may extend drone flight time and enable real-time, on-board AI capabilities.
- Targeted benefits are longer flight time, less data uplink and sub-milliwatt power draw (< 1mW) from edge AI processing without reliance on the cloud.
- Australia's drone sector is projected to reach 60 million flights annually by 2043 driven by high growth applications in delivery, emergency response and infrastructure monitoring.
- In parallel, ECS-DoT will be evaluated for high-impact drone AI applications, including infrastructure inspection, autonomous landing, formation flight, and environmental analytics.
- Phase 1 is expected to be completed this quarter and will use hardware-in-the-loop testing with the PX4/Gazebo platform; Phase 2 evaluations will involve live drone trials.

Nanoveu Limited (ASX: NVU) ("Nanoveu" or the "Company"), a technology innovator across advanced semiconductor, visualisation, and materials science applications, is pleased to announce a structured evaluation program led by Embedded A.I. Systems Pte. Ltd ("EMASS"), its embedded AI subsidiary, aimed at demonstrating the real-world performance of its ECS-DoT system on a chip (SOC) in commercial drone platforms.

The two-phase initiative aims to assess how ECS-DoT can enhance flight endurance and enable AI-driven autonomy using less than 1 milliwatt of operational power. Global demand for energy-efficient, intelligent drones is predicted to grow rapidly driven by increasing use of drones for couriering items, emergency response, and industrial inspections. The evaluation program has been developed to position ECS-DoT at the forefront of next-generation UAV hardware.

Program Overview

Phase 1 is underway using the PX4/Gazebo platform[1] and hardware-in-the-loop (HIL) testbenches to validate:

Metric	Targeted Metrics	Technical Detail
Flight Time Extension	1.2× to 1.3× increase	To add approximately 12–18 minutes to a 60-minute baseline mission by optimising control via real-time AI-driven adjustments.
Energy Efficiency	15–25% improvement	Measured in meters per watt-hour, to be achieved through more efficient power usage driven by live sensor fusion and AI-based control modulation.
Data Uplink Reduction	Up to 50% fewer raw frames	ECS-DoT to enable on-board edge inference, seeking to reduce the need to transmit raw visual data to ground stations, saving bandwidth and improving responsiveness.

[1] Gazebo Simulation | PX4 User Guide (v1.12)

Metric	Targeted Metrics	Technical Detail
Predictive Maintenance Alerts	≥ 90% early-warning reliability	Real-time vibration analysis powered by ECS-DoT may detect mechanical anomalies early, reducing the risk of in-flight failure and enabling pre-emptive maintenance.
Operational Power Budget	< 1 milliwatt total AI load	All embedded AI tasks run within a sub-milliwatt envelope, making ECS-DoT ideal for compact, battery-limited drone platforms.

Phase 2 will involve the embedding of ECS-DoT in live drone platforms for field testing, validating Phase 1 insights and advancing toward commercial deployment.

Dr. Mohamed M. Sabry Aly, EMASS Founder, commented: *"This phased approach ensures we ground our findings in measurable real-world outcomes. With Phase 2, we're taking ECS-DoT from the lab to the skies where we can demonstrate how efficiently embedded AI can transform UAV performance."*

Figure 1: An example of the Gazebo platform illustrating the drone simulation software

Additional AI Use Cases

Beyond flight endurance and energy efficiency, the two-phase evaluation program is designed to validate ECS-DoT's suitability for real-time, on-board AI tasks across a wide range of drone-enabled industries.

By demonstrating that ECS-DoT can process complex control and sensing tasks under tight power constraints, and in real-world conditions, the program is also intended to support commercial applications in the following high-impact applications:

- **Smart Infrastructure Inspection**: Instantly detect cracks, corrosion, and structural faults in real time using ultra-compact AI models (tiny-CNNs) running directly on the drone with no uplink or cloud processing required.
- **Autonomous Precision Landing**: Execute pinpoint landings with camera-based marker recognition and AI-powered touchdown logic, enabling drones to safely dock or deploy in remote or unstructured environments.
- **Swarm Intelligence & Formation Flight**: Coordinate fleets of drones using edge-based policy networks for peer-to-peer communication making it ideal for synchronized missions, asset coverage, and scalable fleet control without central command.
- **Next-Gen Environmental Sensing**: Unlock new capabilities in field analytics with onboard detection of gas leaks, thermal hotspots, and crop stress through AI-enhanced sensor fusion.

Mark Goranson, **CEO of Nanoveu Semiconductor Division, added**: *"ECS-DoT represents a major leap forward in energy-efficient AI processing at the edge. Its energy efficiency and compact footprint make it ideal for drones and wearables, health sensors and AR/VR hardware wherever power is a limiting factor. This testing program is intended to help validate the chip's potential in drone applications as well as showcase its scalability across a wide range of embedded systems from aerospace to agriculture. The ECS-DoT is engineered to bring powerful AI to the world's most power-constrained platforms and enable smarter machines, longer missions, and entirely new categories of intelligent hardware."*

Market Context

With the global drone market projected to reach USD $163 billion by 2030, demand for energy-efficient, AI-driven solutions is expected to surge across various sectors. Among these, UAV shipments are set to exceed 7.51 million units annually by 2029[2], and Australian flight volumes set to leap 40x by 2043, the timing of ECS-DoT's real-world validation aligns with surging demand for intelligent, efficient drone platforms. Beyond drones, ECS-DoT is being considered for use in wearables, IoT sensors, and spatial computing, including Nanoveu's own EyeFly3D platform.

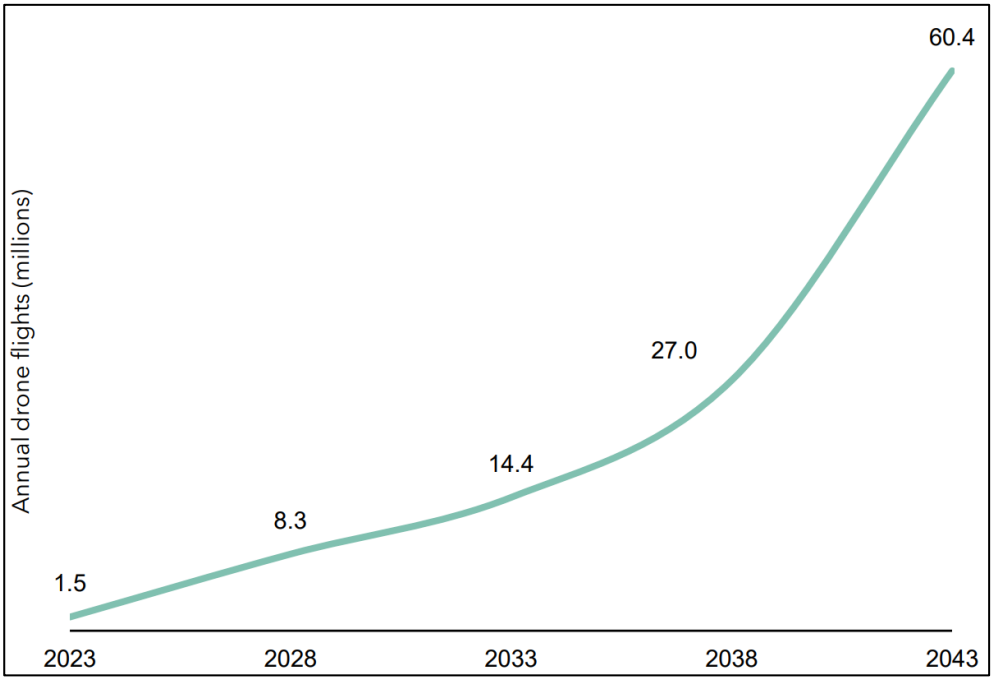

Figure 2: Predicted number of annual drone flights in Australia, 2023-2043[3]

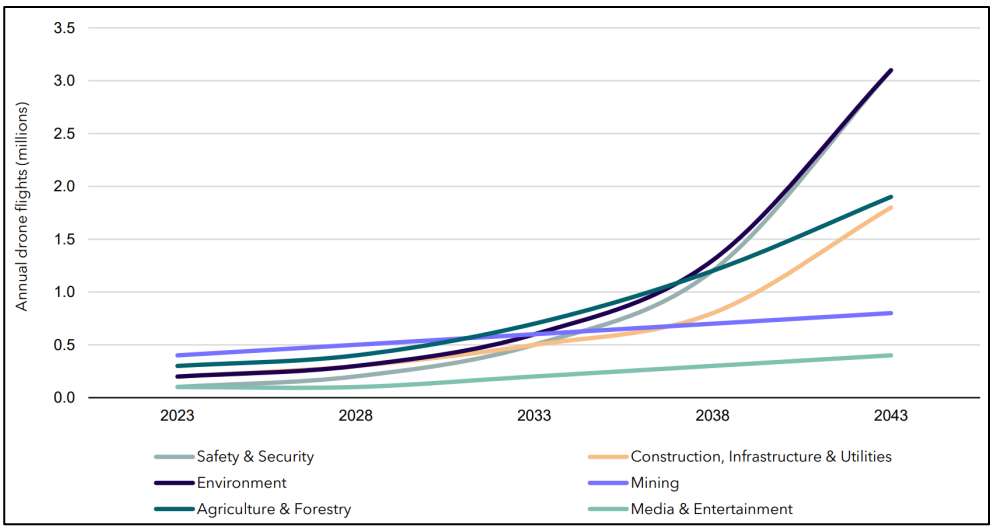

Figure 3: Drone flights in Australia per industry group excluding transport and logistics[3]

[2] UAV (Drone) Market Size, share, Trends and Growth Analysis, May 2024
[3] Sizing-the-Future-Drone-Industry-in-Australia, Scyne Advisory, February 2024

Next Steps

A comprehensive technical report outlining the methodologies, datasets, and independently validated performance metrics will be developed. During testing, EMASS will be actively seeking engagement from aerospace integrators, infrastructure inspection providers, and research institutions for commercial collaboration opportunities.

This announcement has been authorised for release by the Board of Directors.

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About Nanoveu Limited

Further details on the Company can be found at https://nanoveu.com/.

EMASS is a pioneering technology company specialising in the design and development of advanced systems-on-chip (SoC) solutions. These SoCs enable ultra-low-power, AI-driven processing for smart devices, IoT applications, and 3D content transformation. With its industry-leading technology, EMASS will enhance Nanoveu's portfolio, empowering a wide range of industries with efficient, scalable AI capabilities, further positioning Nanoveu as a key player in the rapidly growing 3D content, AI and edge computing markets.

EyeFly3D™ is a comprehensive platform solution for delivering glasses-free 3D experiences across a range of devices and industries. At its core, EyeFly3DTM combines advanced screen technology, sophisticated software for content processing, and now, with the integration of EMASS's ultra-low-power SoC, powerful hardware.

Nanoshield™ is a self-disinfecting film that uses a patented polymer of embedded Cuprous nanoparticles to provide antiviral and antimicrobial protection for a range of applications, from mobile covers to industrial surfaces. Applications include, *Nanoshield™ Marine*, which prevents the growth of aquatic organisms on submerged surfaces like ship hulls, and *Nanoshield™ Solar*, designed to prevent surface debris on solar panels, thereby maintaining optimal power output.

Forward Looking Statements This announcement contains 'forward-looking information' that is based on the Company's expectations, estimates and projections as of the date on which the statements were made. This forward-looking information includes, among other things, statements with respect to the Company's business strategy, plans, development, objectives, performance, outlook, growth, cash flow, projections, targets and expectations and related expenses. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as 'outlook', 'ambition', 'anticipate', 'project', 'target', 'potential', 'likely', 'believe', 'estimate', 'expect', 'intend', 'may', 'mission', 'would', 'could', 'should', 'scheduled', 'will', 'plan', 'forecast', 'evolve' and similar expressions. Persons reading this announcement are cautioned that such statements are only predictions, and that the Company's actual future results or performance may be materially different. Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the Company's actual results, level of activity, performance, or achievements to be materially different from those expressed or implied by such forward looking information.