6 November 2025

dorsaVi Begins Evaluation of Advanced 22nm RRAM Node

Scaling plan targets higher density, faster switching, and lower energy; 40 nm program tracking to expectations

Key Highlights

- **40 nm RRAM on track:** Switching speeds of **50–200 ns**, operating voltage **~1.8 V**, **>10^7** endurance cycles, and **>10-year** retention at **85 °C** validated through Artemis Labs.
- **22 nm node evaluation underway:** Assessment focuses on performance, density, and manufacturability benefits of migrating the oxide-based RRAM architecture to **22 nm**.
- **Projected gains at 22 nm:** Early analysis indicates **~3.3×** density increase, **~50%** energy reduction per bit, **sub-100 ns** switching, and **~1.5 V** write operation from improved interconnect efficiency and lower parasitics.
- **Production-aligned integration: Mid-of-line (MOL)** compatibility at 22 nm mirrors full CMOS production flows, supporting mixed-signal integration for compute-near-memory and reflex architectures.
- **Path to tape-out:** Subject to final validation, dorsaVi intends to proceed to 22 nm test-chip tape-out via TSMC's 22 nm process, marking the transition from evaluation to fabrication.

Melbourne, Australia, 6 November 2025: dorsaVi Limited (ASX: DVL) ("**dorsaVi**" or "the **Company**") a leader in FDA-approved wearable sensor technologies and motion intelligence, is pleased to announce the commencement of a formal evaluation program to scale its oxide-based RRAM from 40 nm to an advanced 22 nm process node.

The initiative builds on strong device- and wafer-level results at 40 nm[1] and is aimed at delivering higher density, lower energy, and faster switching consistent with the Company's roadmap for embedded non-volatile memory, wearables and AI driven systems.

The Company's near-term applications emphasise real-time biosignal processing (EMG, ECG) and always-on motion intelligence for wearables and industrial safety. Backed by strong US PT traction for ViMove+ and surgeon-led AMI referrals[2], the initiation of a 22 nm RRAM evaluation

[1] Refer to ASX Announcement dated 16 July 2025
[2] Refer to ASX announcement 7 October 2025

signals dorsaVi's continued innovation, targeting longer wear time, faster objective reporting, and smaller devices, positioning ViMove+ to remain best-in-class as the rollout expands across large clinic networks.

By evaluating a 22 nm implementation of the RRAM platform, building on the validated 40 nm baseline, dorsaVi is targeting:

- up to **~3×** higher bit density,
- **~40–60**% lower energy per bit, and
- **sub-100 ns** switching (subject to validation).

These scaling gains are intended to relieve NAND bottlenecks, extend device battery life, and enable tighter closed-loop responsiveness in edge workloads. Over the longer term, the same improvements strengthen compute-near-memory and robotics reflex functions being advanced within Artemis Labs, providing a clearer integration path from today's 40 nm results to next-generation embedded AI systems at 22 nm.

Progression of 40nm RRAM Baseline

At the 40 nm node, dorsaVi's oxide-based RRAM has demonstrated a stable and repeatable baseline across multiple devices and wafers, including

- **50–200 ns** switching, operating voltages around
- **~2 V**, **>10 million** program/erase cycles, and
- **>10-year** retention at **85 °C**.

In short, the 40 nm platform already performs strongly for today's embedded and low-power edge uses and now serves as the reference point against which the Company is evaluating the expected scaling benefits at 22 nm.

Evaluating the 22nm Opportunity

Working with Nanyang Technological University and the Company's fabrication intermediary, dorsaVi is modelling how scaling from 40 nm to 22 nm affects both device-level cells and array-level behaviour (latency, energy/bit, variability, and uniformity).

Targeted benefits:

- **Density:** up to **~3×** more bits per mm^2 (geometric scaling from 40→22 nm), enabling larger models/buffers in the same silicon area.
- **Latency: sub-100 ns** switching from reduced RC parasitics and shorter interconnects, improving closed-loop responsiveness in edge workloads.
- **Write voltage:** trending toward **~1.5 V** due to stronger electric-field coupling, lowering per-operation energy and easing I/O design.
- **Energy per bit: ~40–60%** reduction from smaller capacitances and shorter current paths, extending wearable battery life.
- **Reliability:** maintain **≥10 million** P/E cycles with tighter distributions from improved process control and MOL integration options.

These scaling gains build directly on the validated 40 nm baseline and are expected to strengthen the platform for embedded NVM and edge-AI applications where speed, energy efficiency, and resilience are critical.

Why 22nm is the right Entry Point

The 22 nm node balances meaningful scaling gains with process maturity and broad foundry availability, making it a pragmatic next step for dorsaVi's RRAM.

- **RRAM-ready voltage headroom:** Continued access to thick-oxide I/O devices preserves the SET/RESET voltage margin required for reliable RRAM operation.
- **Analog + mixed-signal integration:** 22 nm supports the mixed-signal peripherals used in compute-near-memory and reflex architectures, enabling always-on, low-power processing close to the array.
- **Manufacturability and uniformity:** Improved lithography at 22 nm reduces RC delay and tightens device variability, while avoiding the yield and complexity trade-offs often encountered at 16/14 nm FinFET nodes.

Parameter	40 nm Baseline	22 nm Target	Improvement
Bit Density	1×	~3.3×	Higher channel integration
Switching Speed	50–200 ns	<100 ns	≈ 2× faster
Write Voltage	~1.8 V	~1.5 V	Reduced power
Energy per Bit	–	–40–60 %	Higher efficiency
Endurance (cycles)	$>10^7$	$\geq 10^7$	Maintained reliability

Figure 1: Comparison table of 40nm and 22nm nodes

Application Impact in Wearables & Robotics

Advancing to a **22 nm** RRAM implementation positions dorsaVi's motion-sensor technology to deliver better outcomes at a smaller scale. For clients, that means more responsive analytics and longer wear time in lighter, slimmer devices, supporting cleaner EMG/ECG capture, faster objective reporting, and simpler clinic workflows. For robotics, it enables smaller reflex modules with tighter control loops and lower power draw, improving placement inside constrained joints/end-effectors and supporting more consistent real-time performance across cobots, exosleeves, and safety-critical systems.

Subject to final device- and array-level validation and commercial terms, dorsaVi intends to proceed to a 22 nm test-chip tape-out on TSMC's 22 nm platform, marking the transition from evaluation to fabrication. The Company will keep the market informed as it progresses through early evaluation milestones and tape-out preparation and will continue to assess complementary technologies to strengthen the technical stack at 22 nm.

This release has been authorised for lodgement to the ASX by the Board.

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About dorsaVi

dorsaVi Ltd (ASX: DVL) is an ASX company focused on developing innovative motion analysis device technologies for use in clinical applications, elite sports, and occupational health and safety. dorsaVi believes its wearable sensor technology enables, for the first time, many aspects of detailed human movement and position to be accurately captured, quantified, and assessed outside a biomechanics lab, in both real-time and real situations for up to 24 hours. dorsaVi's focus is on two major markets:

- **Workplace:** dorsaVi enables employers to assess risk of injury for employees as well as test the effectiveness of proposed changes to OHS workplace design, equipment or methods based on objective evidence. dorsaVi works either directly with major corporations, or through an insurance company's customer base with the aim of reducing workplace compensation and claims. dorsaVi has been used by major corporations including London Underground, Vinci Construction, Crown Resorts, Caterpillar (US), Boeing, Monash Health, Coles, Woolworths, Toll, Toyota, Orora, Mineral Resources and BHP Billiton.

- **Clinical:** dorsaVi is transforming the management of patients with its clinical solutions (ViMove+) which provide objective assessment, monitoring outside the clinic and immediate biofeedback. The clinical market is broken down into physical therapy (physiotherapists), hospital in the home and elite sports. Hospital in the home refers to the remote management of patients by clinicians outside of physical therapy (i.e. for orthopaedic conditions). Elite sports refer to the management and optimisation of athletes through objective evidence for decisions on return to play, measurement of biomechanics and immediate biofeedback to enable peak performance.

Further information is available at www.dorsaVi.com