


AusBiotech
AusMedtech 2026

MEDTECH —
— UNLOCKED

CROWN TOWERS
PERTH
19-21 May 2026

Professor Jingbo Wang

Director, QUISA at UWA

Node Lead, Quantum Australia

Director, Quantum Girls

@AusMedtech2026
#AusMedtech2026

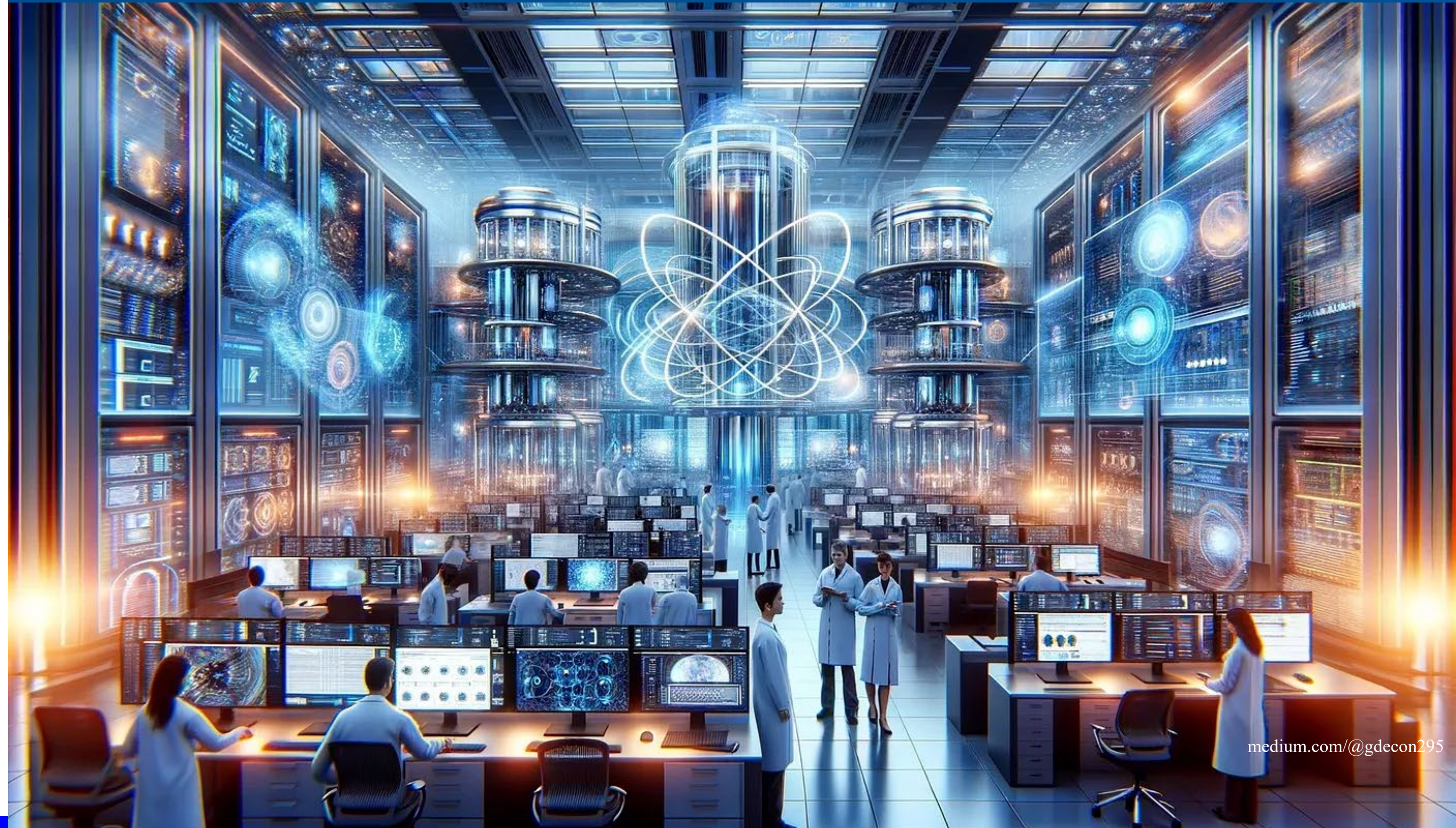
Host State Partners



BUSINESS
EVENTS
PERTH

Quantum Computing

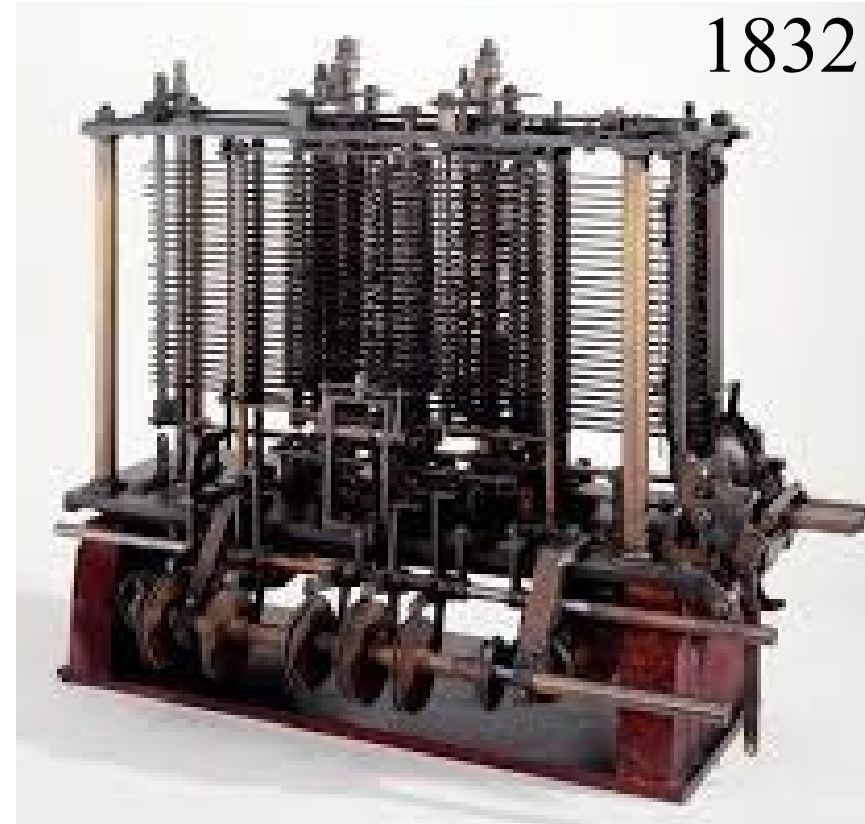
Promises, Opportunities, and Key Challenges



Historical Development of computational tools



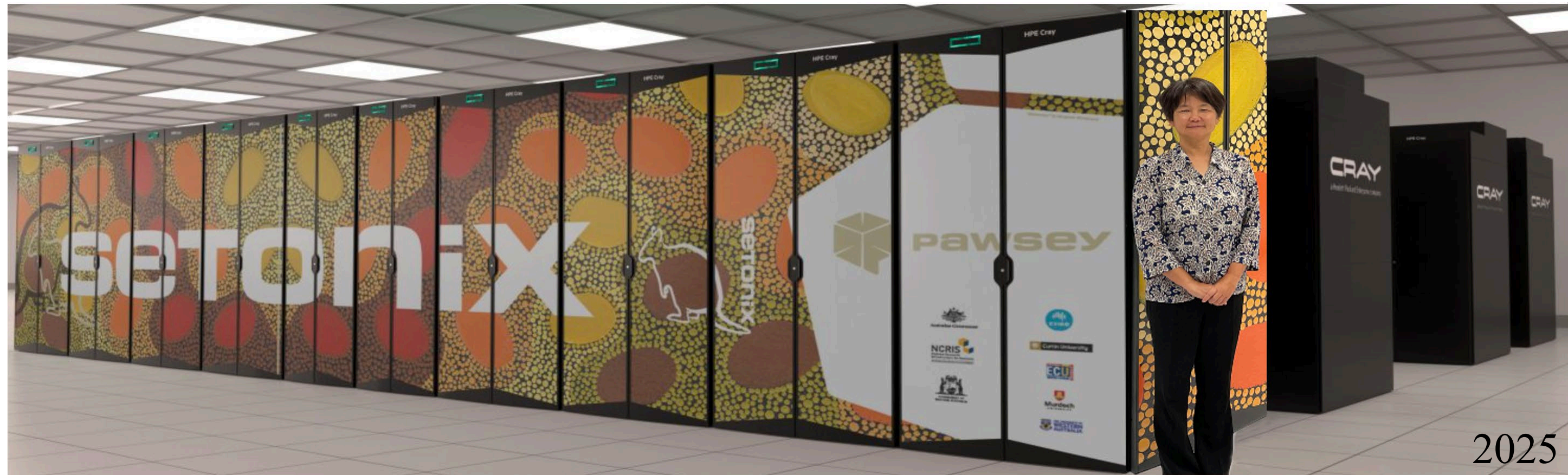
2500 BC



1832



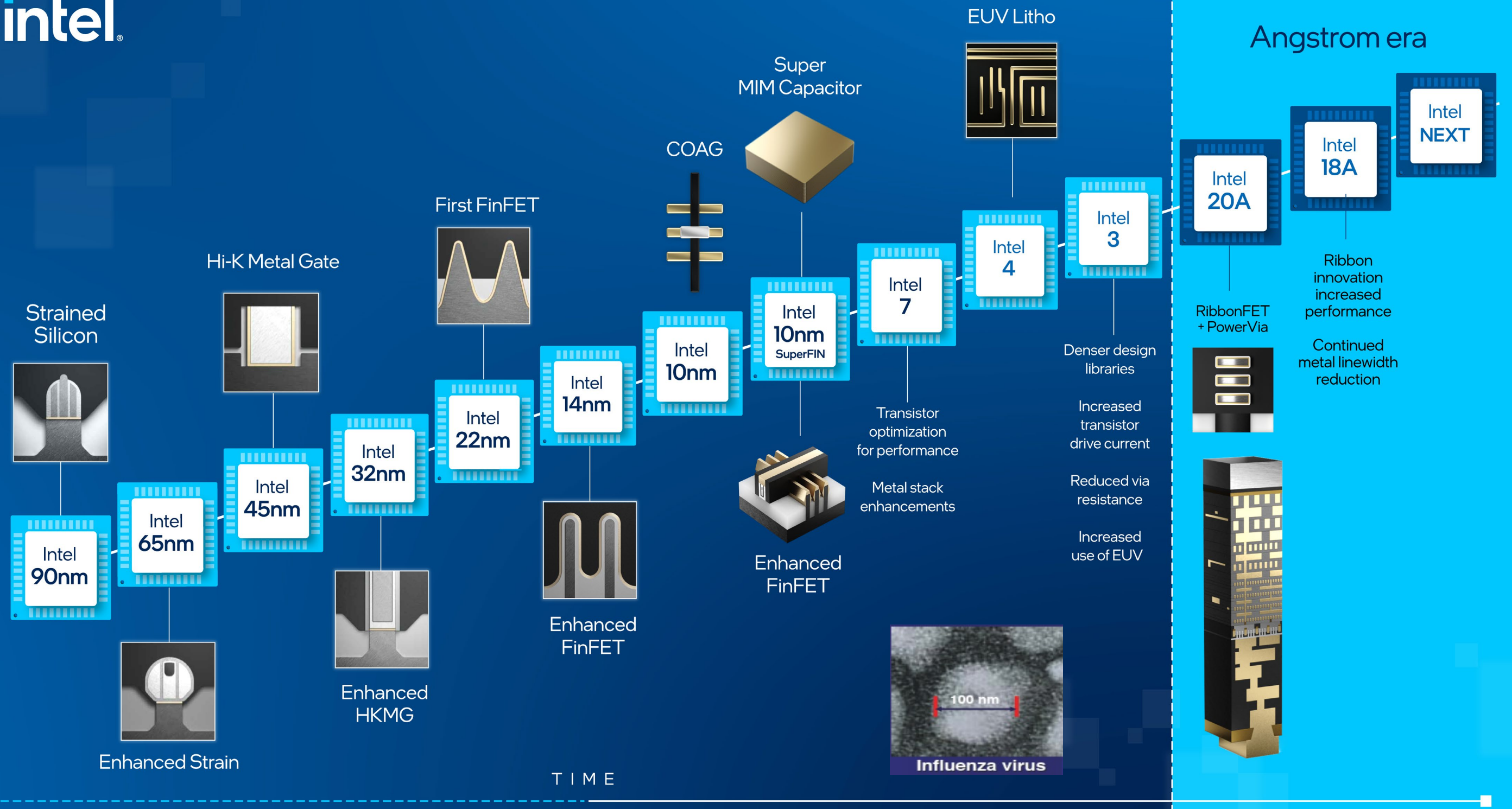
1945



2025

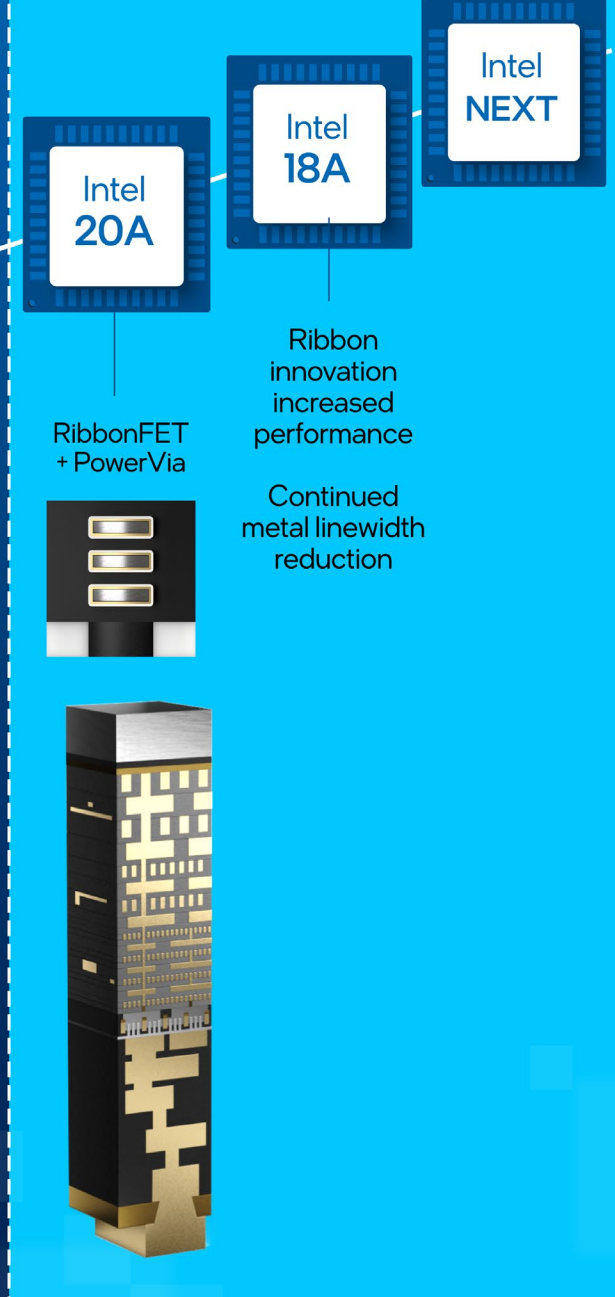


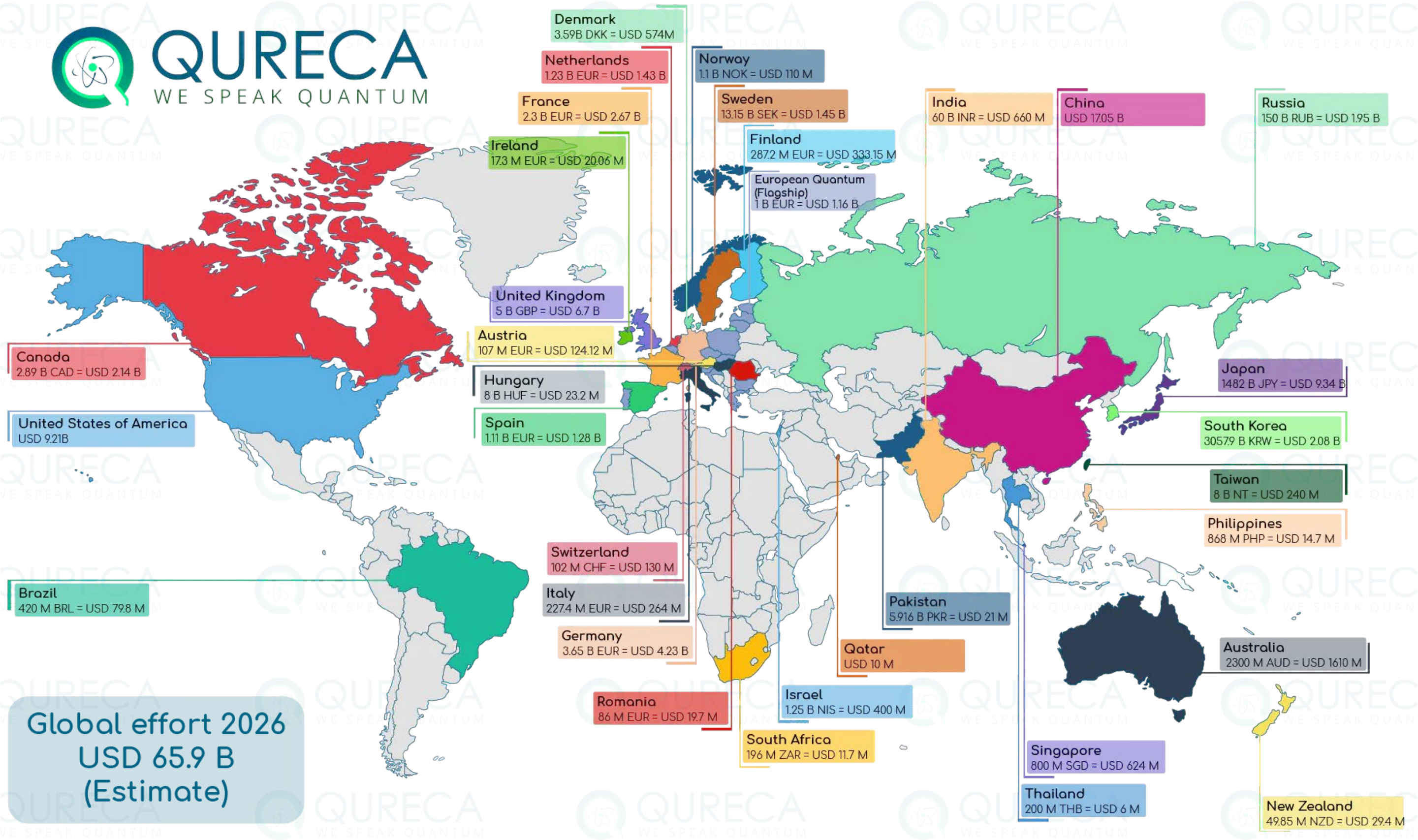
PERFORMANCE PER WATT



TIME

Angstrom era





Global effort 2026
USD 65.9 B
 (Estimate)



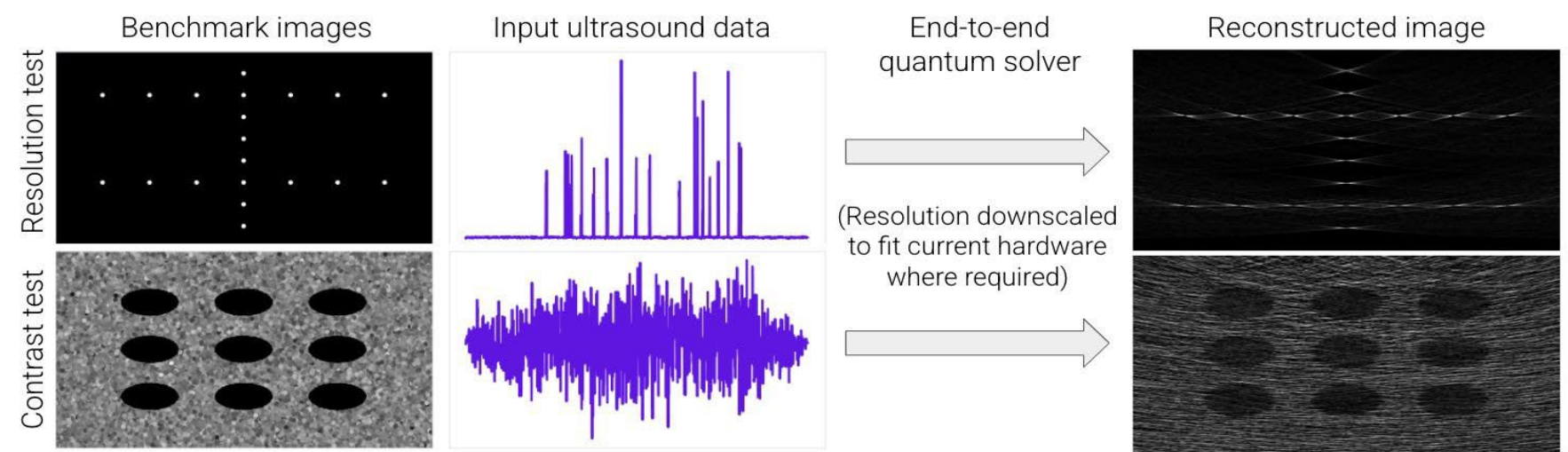
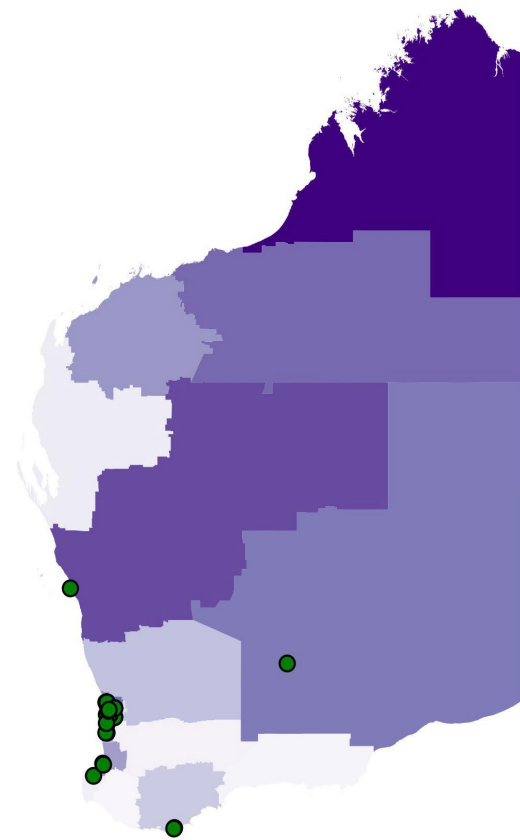
Centre for Quantum Information Simulation and Algorithms (QUISA)



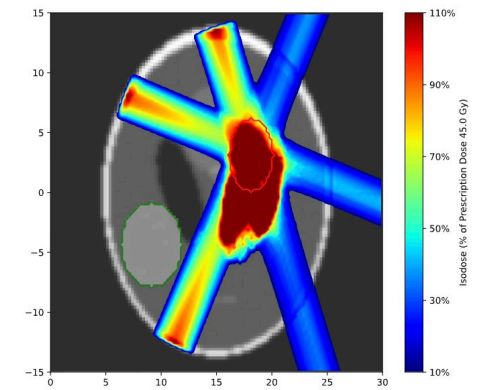
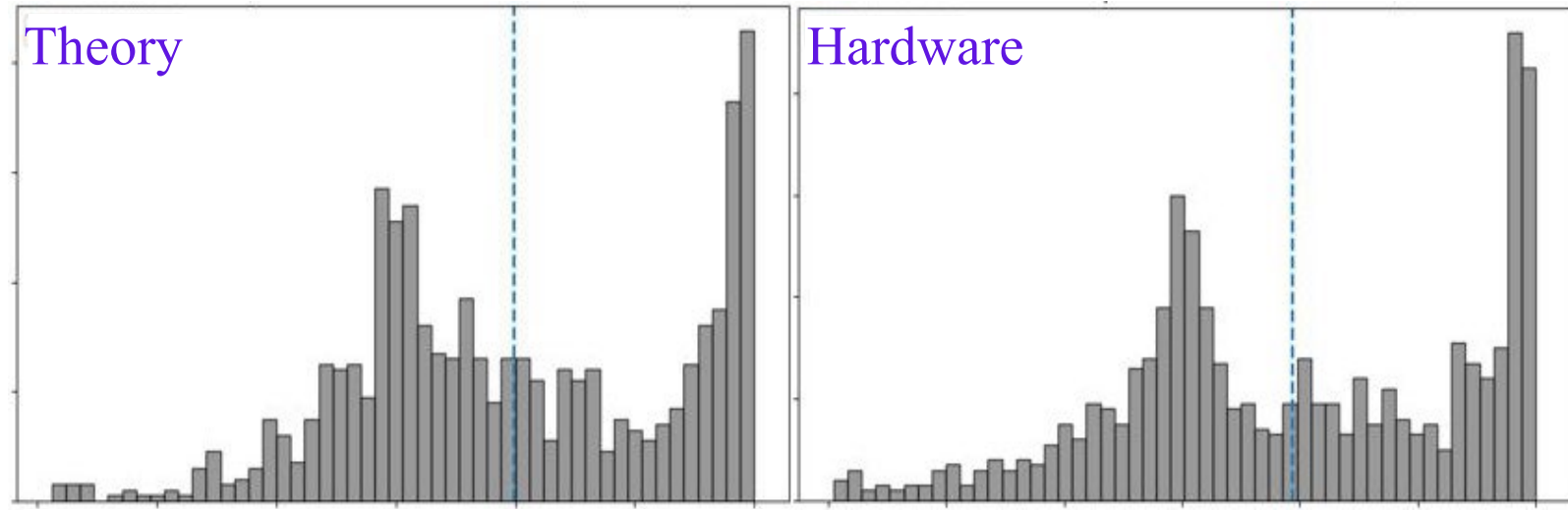


Co-design : Through deep partnerships across healthcare, finance, transport, resource, and defence, we co-develop quantum solutions from the outset to ensure high-value, deployable outcomes.

Example project: Quantum-Enhanced Medical Imaging Diagnostics for Remote Communities



Implemented end-to-end quantum beamforming pipeline and API



Designed an efficient tensor-product-based ultrasound data loading algorithm and validated on Quantinuum hardware


AusBiotech
AusMedtech 2026

MEDTECH —
— **UNLOCKED**

CROWN TOWERS
PERTH
19-21 May 2026

Dr Jeremy Bourhill

Quantum Dark Matter Lab, UWA

Co-Founder - Twisted

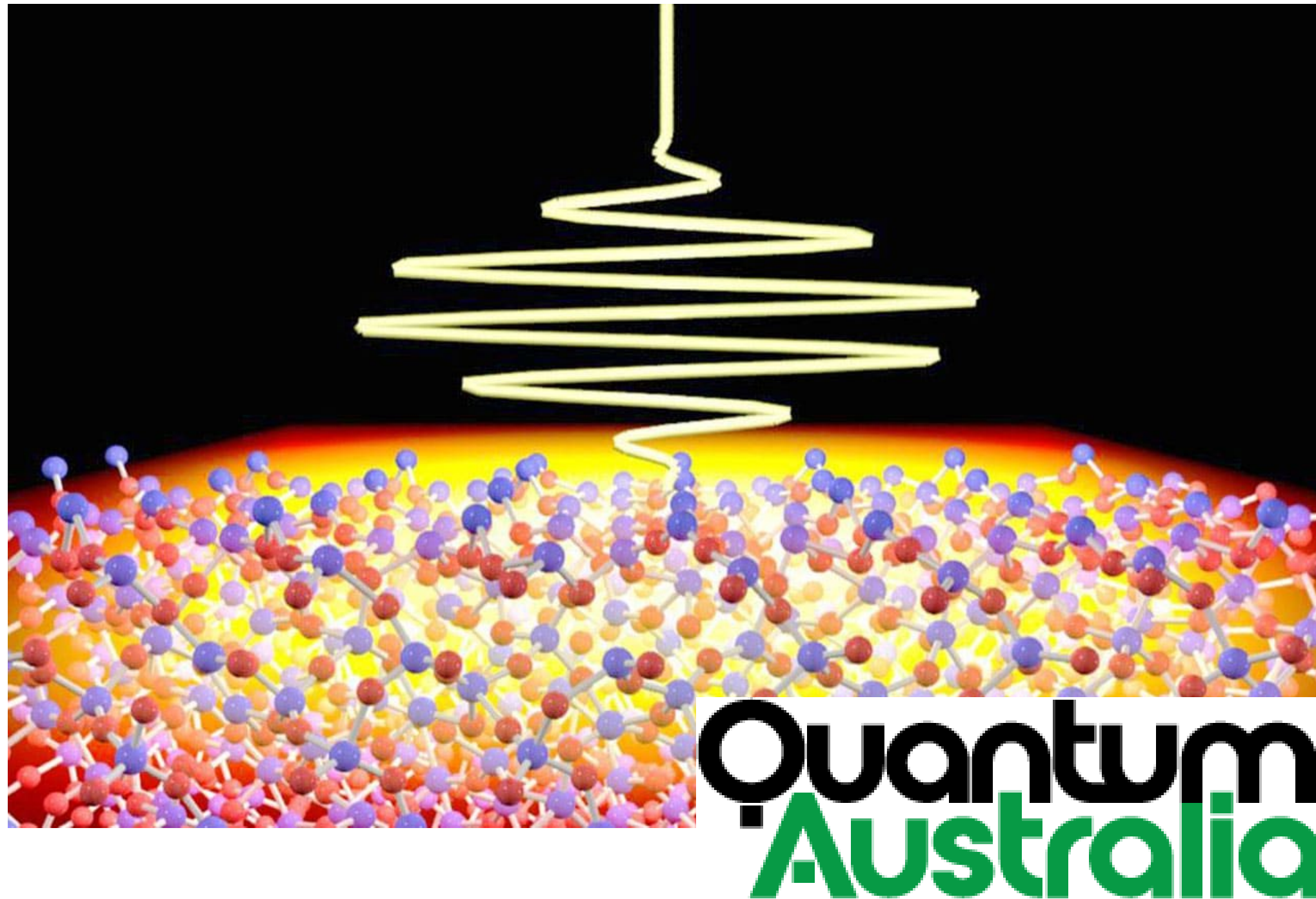
@AusMedtech2026
#AusMedtech2026

Host State Partners



**BUSINESS
EVENTS
PERTH**

Quantum in Medtech



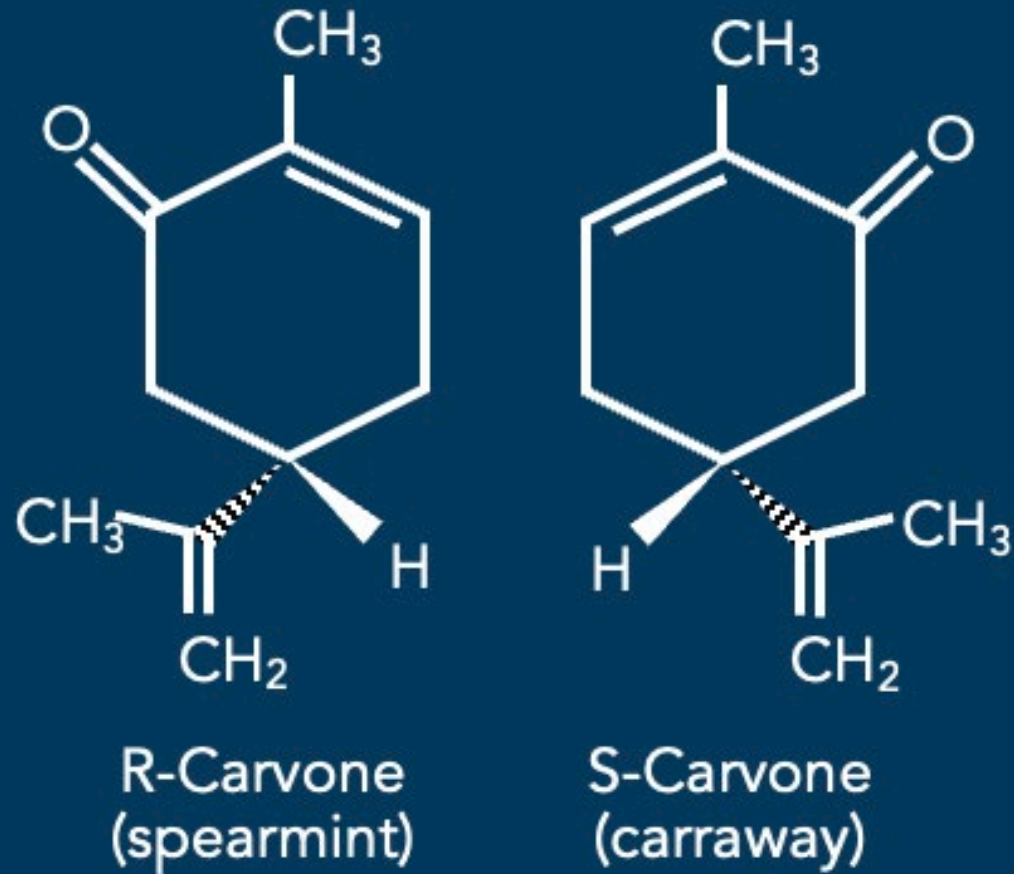
A major outcome of **quantum mechanics** is our deeper understanding of the interactions between **light** and **matter**

Now, using new fabrication capabilities, we can **engineer** novel photonic instruments capable of extracting a **quantum advantage** for **sensing**:

- Microscopy
- Diagnostics
- Magnetoencephalography
- **Chemical manipulation**

These devices are **coming online now**, and are **outperforming their classical counterparts**

The Problem



Chemicals can exist in two **mirror-image** forms:

Right (R/D) + Left (L/S)

With drugs,
one form will be **therapeutic...**

...while the other can
cause harmful
side effects



Current separation
technology is:

Slow
Batch-Limited &
Expensive

A single device can output
mg/hour

US \$6B is spent per year
on chiral purification

The Solution

TWISTED

Our solution uses a specifically engineered state of resonant “twisted” light

This has previously only ever been engineered in special materials or on surfaces

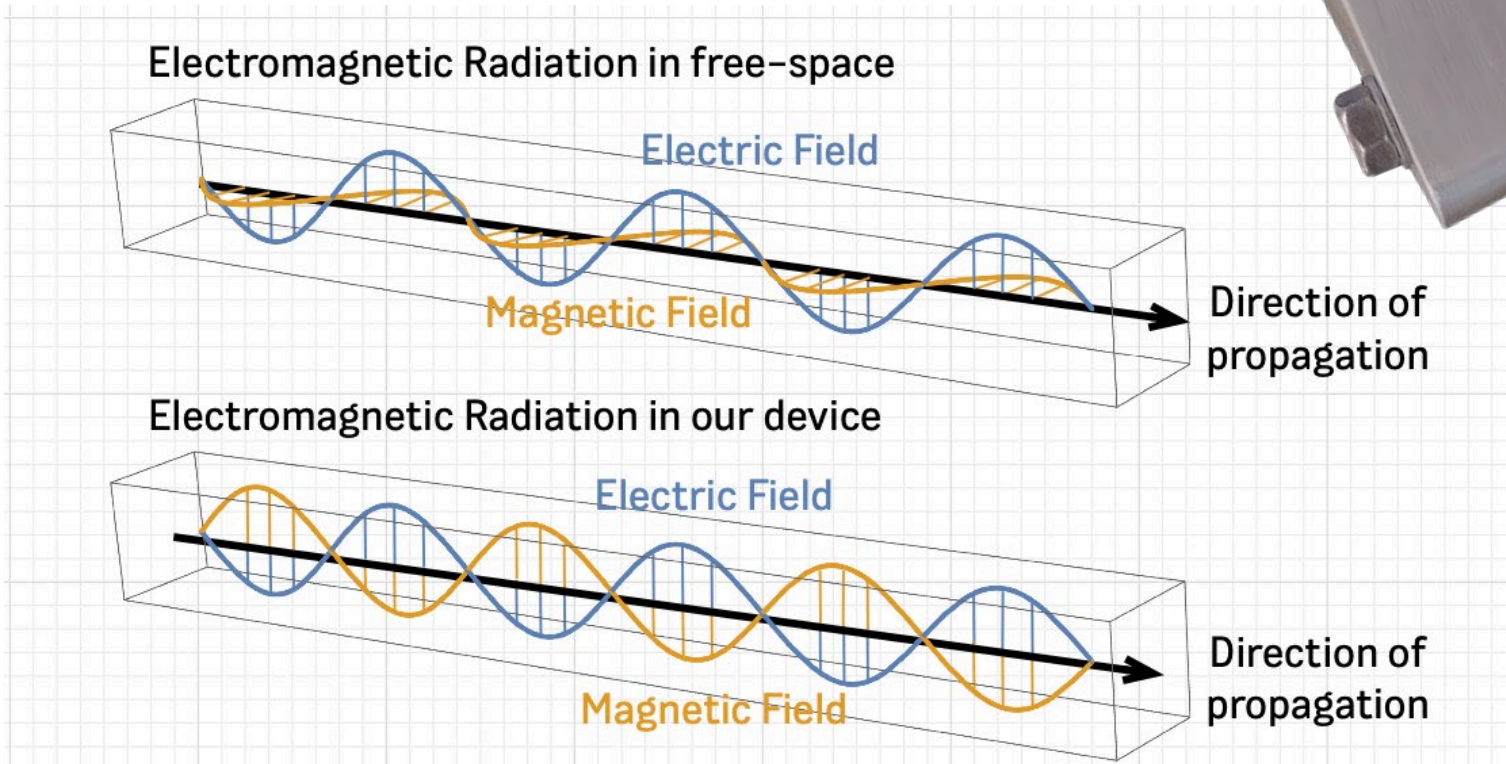


The twisted light creates a **chiral force** on molecules that match the light’s handedness, allowing the two types to be separated.

Our device can do this in a **bulk, through-put** manner

Targeting **kg/hour**

Cheaper medicines More abundant medicines
Reduced side-effects New discovery opportunities



Christos Papadimitriou PhD, MAICD

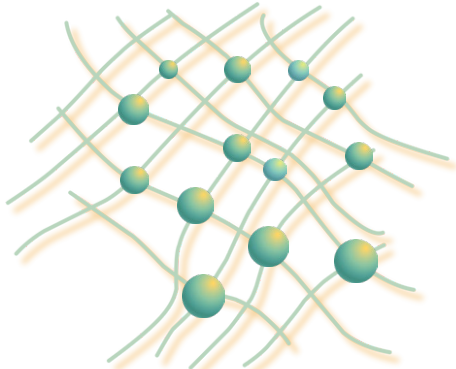
Tessara Therapeutics Pty Ltd
CEO & Managing Director

RealBrain® Platform – Human, neural micro-tissues

Human neural stem cells



3 weeks in vitro development



Biomaterials



@AusMedtech2026
#AusMedtech2026

MEDTECH —
— **UNLOCKED**

CROWN TOWERS
PERTH
19-21 May 2026

Host State Partners



**BUSINESS
EVENTS
PERTH**

A pipeline of models to address the largest unmet needs in neuroscience drug discovery

ARTIBrain

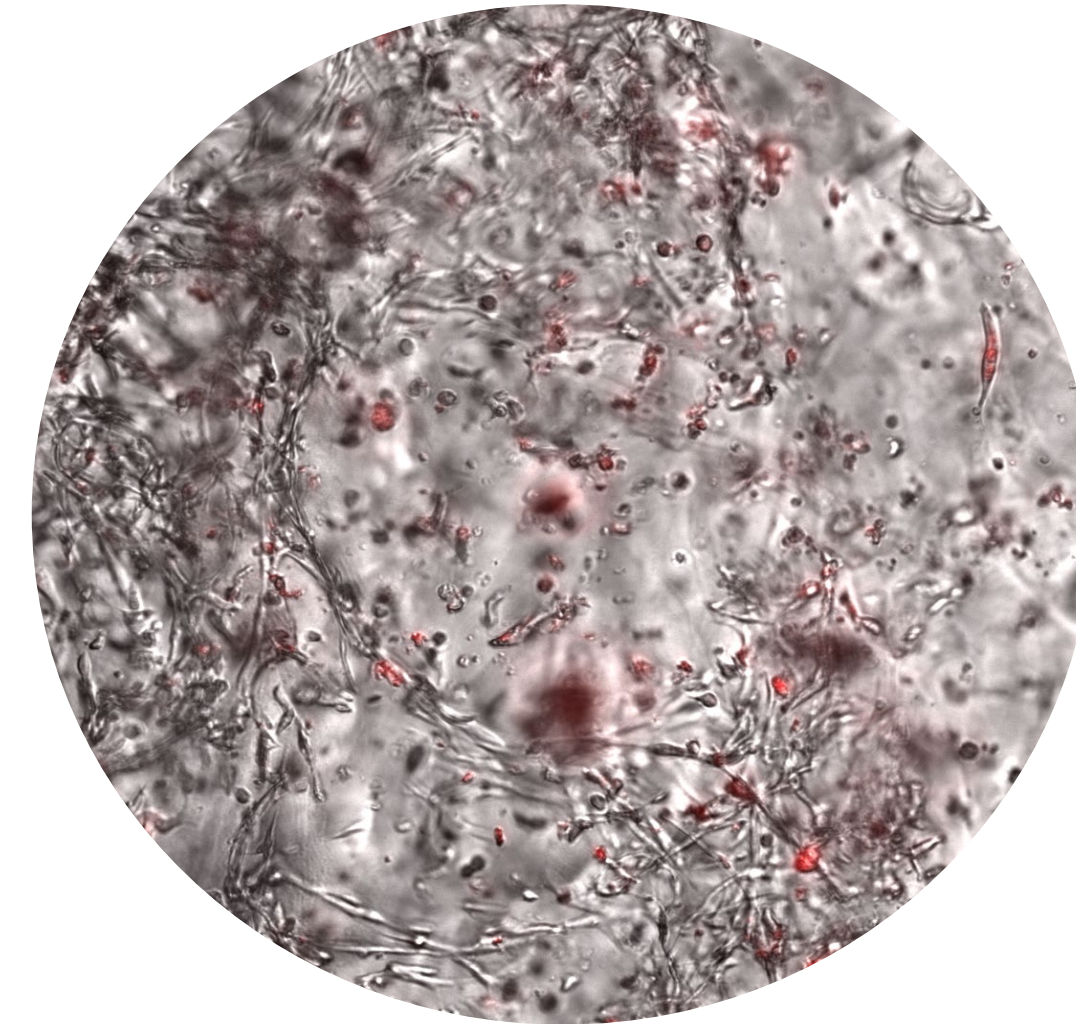
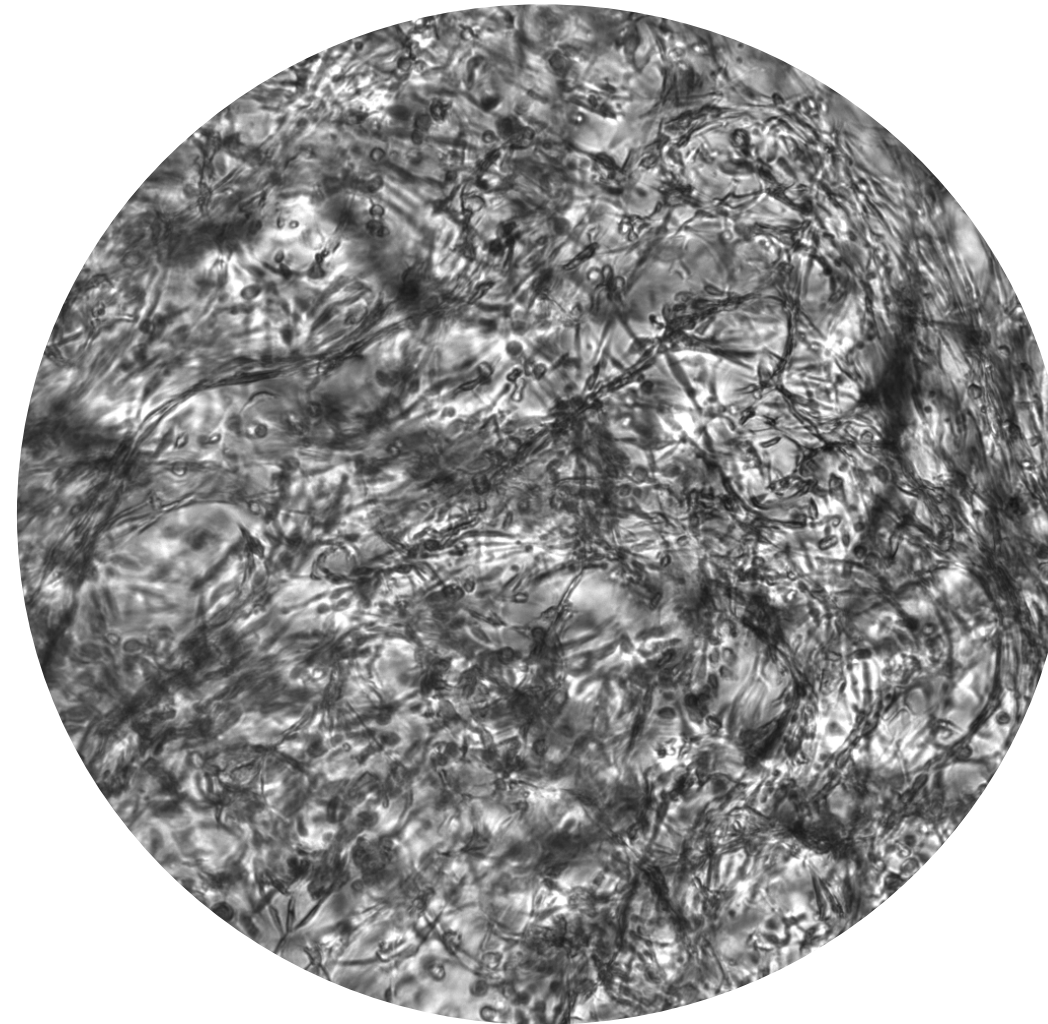
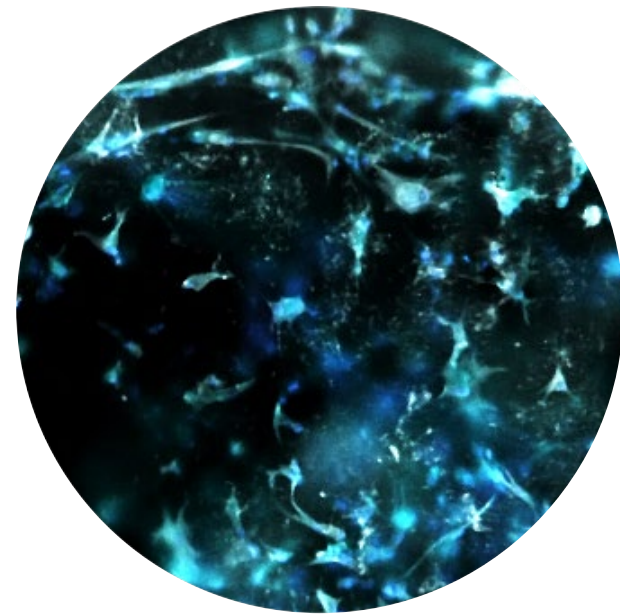
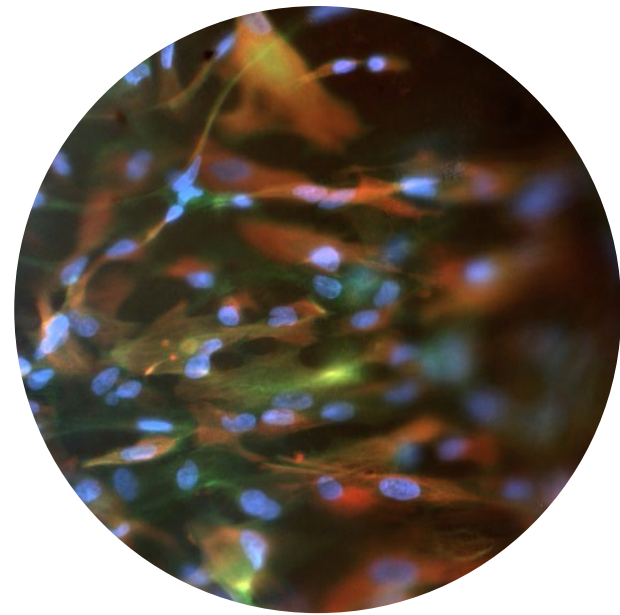
ADBrain

HEALTHY BRAIN

ALZHEIMER'S
DISEASE MODEL

Healthy mini-brain

Alzheimer's disease
mini-brain



Dense neural network
of healthy brain cells

Red spots are toxic Alzheimer's
disease-associated proteins
which cause reduced neural network density

Commercially available

@AusMedtech2026
#AusMedtech2026

MEDTECH —
— UNLOCKED

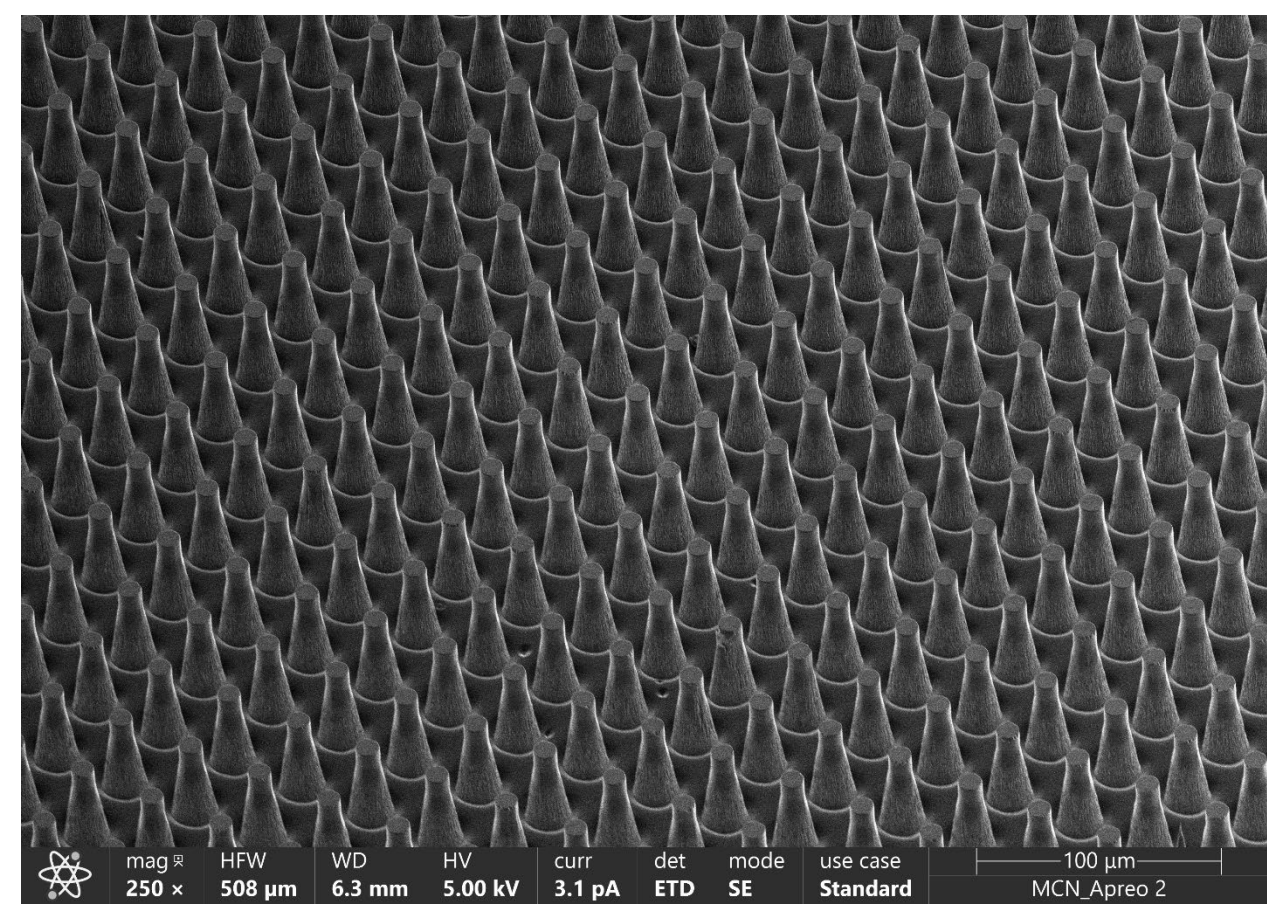
CROWN TOWERS
PERTH
19-21 May 2026

Host State Partners

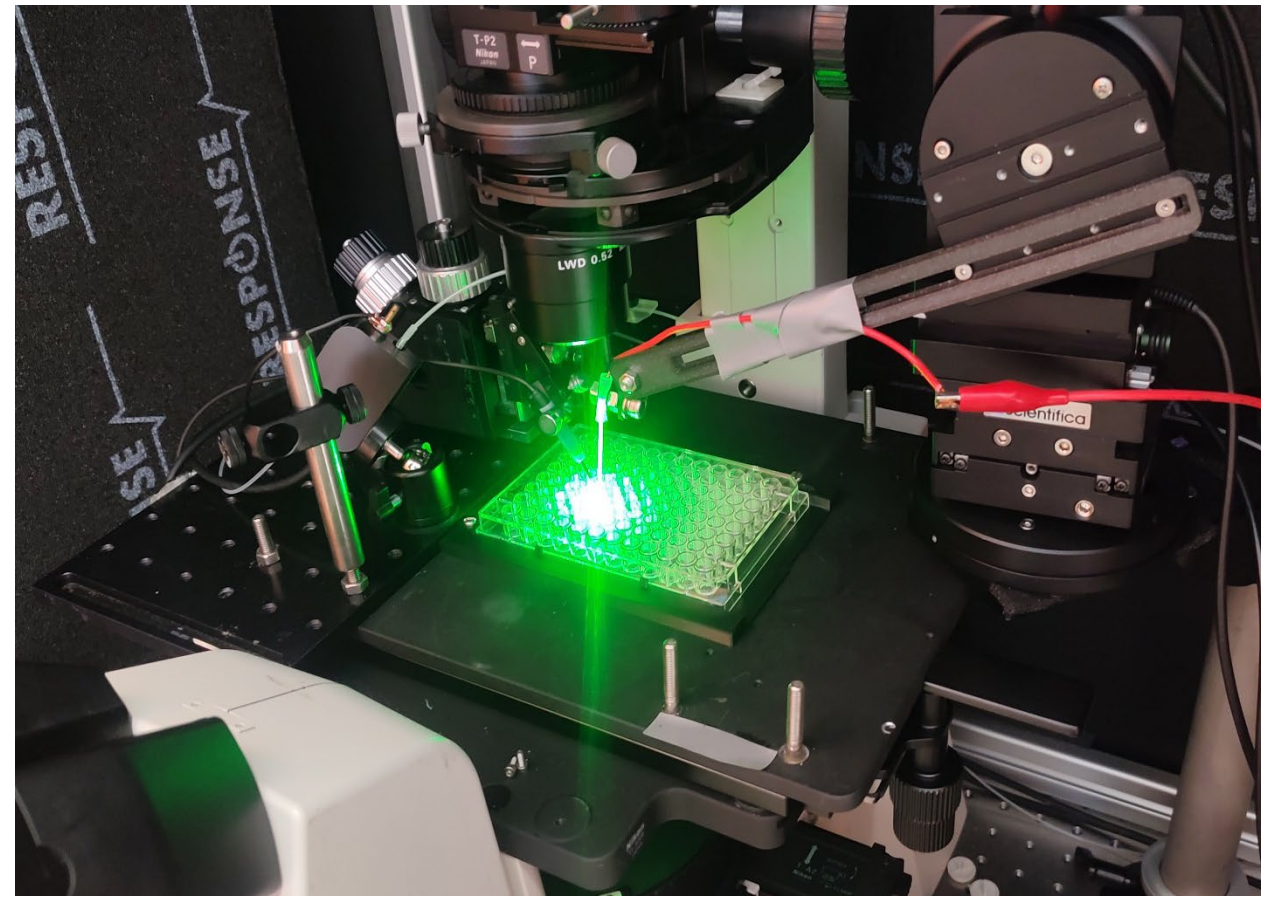


BUSINESS
EVENTS
PERTH

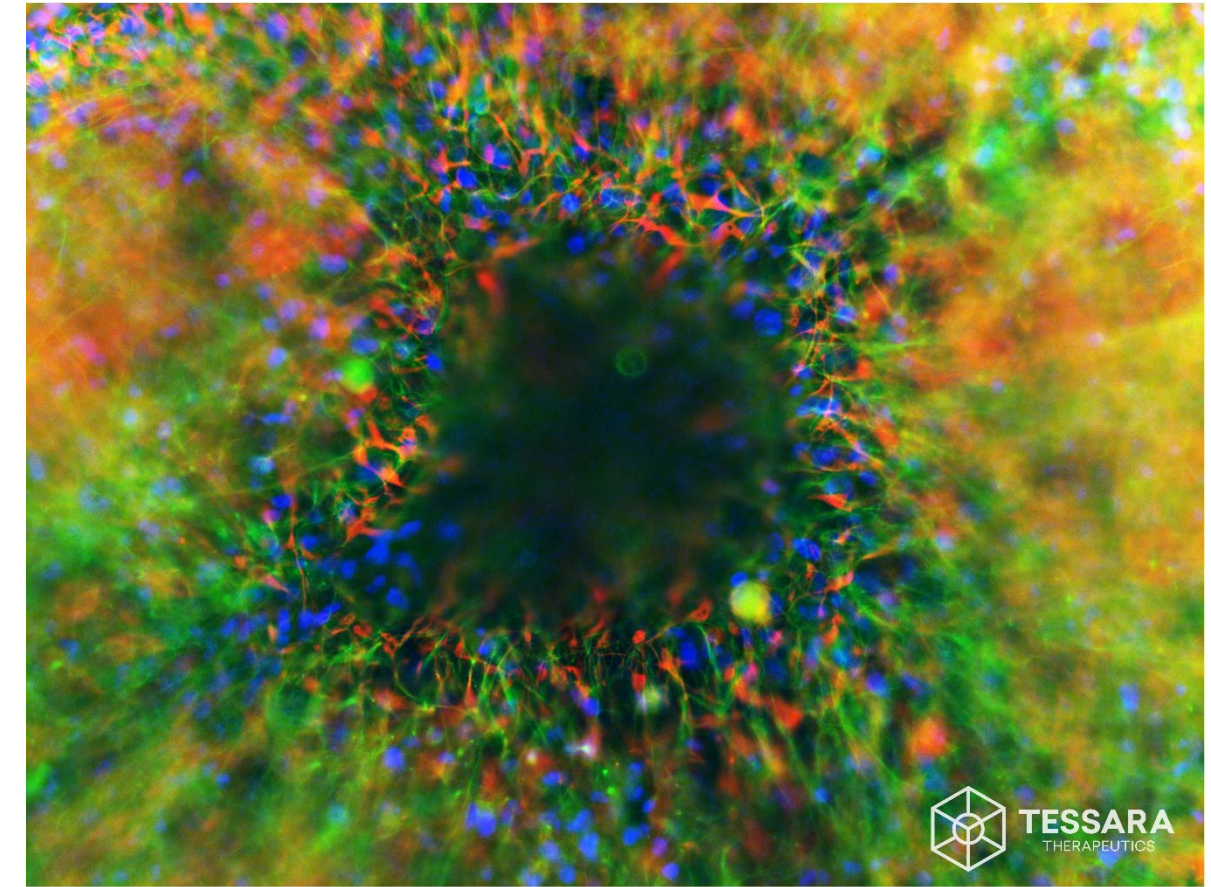
3D quantum -based voltage imaging of RealBrain® human “mini -brains”



Chip on diamond nano -pillars



Laser -based recording of voltage differences during neuronal communication



The interface of quantum diamond (dark center) and RealBrain® human brain micro -tissues



@AusMedtech2026
#AusMedtech2026

MEDTECH —
— **UNLOCKED**

CROWN TOWERS
PERTH
19-21 May 2026

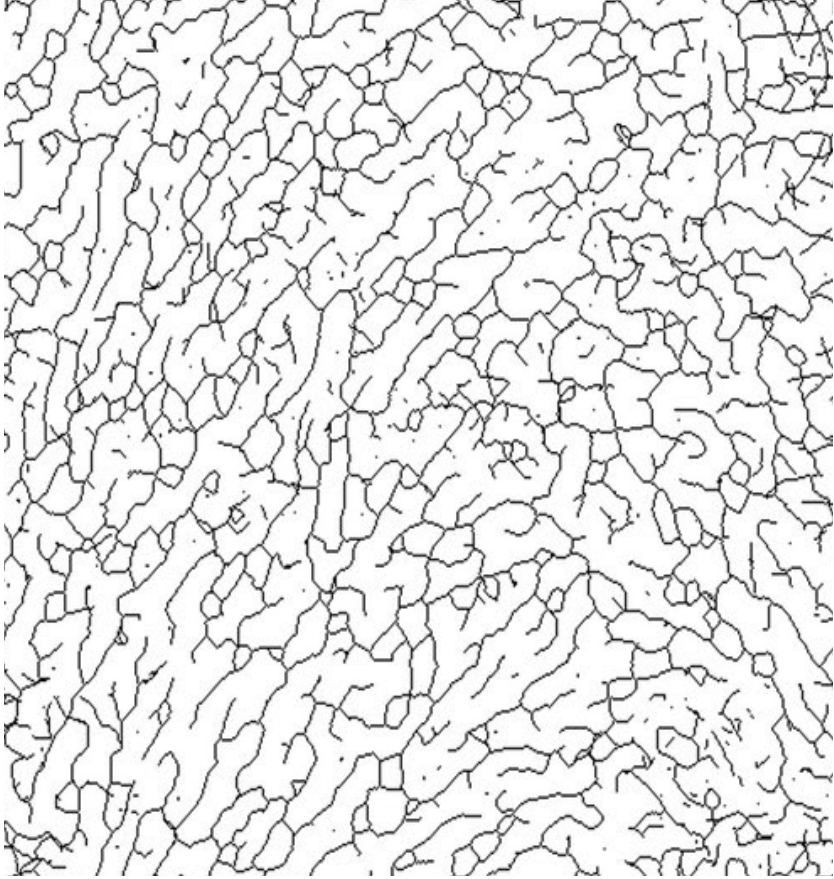
Host State Partners



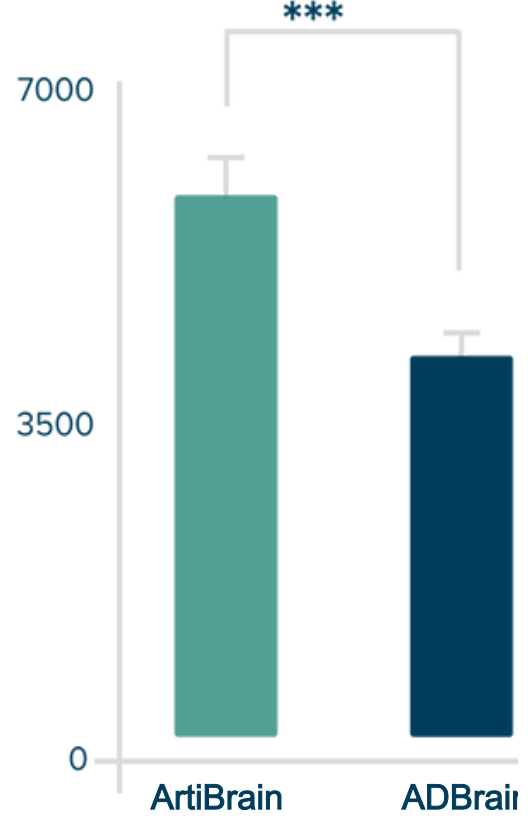
**BUSINESS
EVENTS
PERTH**

Drug screening based on quantum -based voltage imaging

Mapped Neural Networks



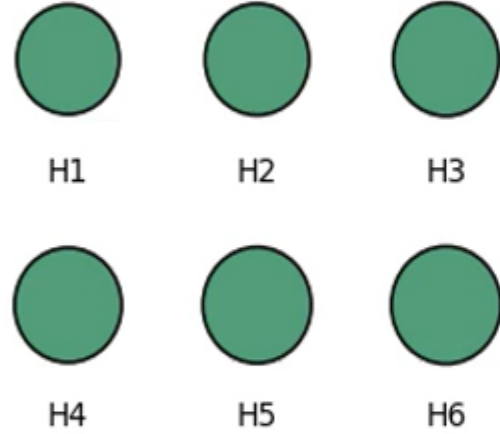
of neural networks



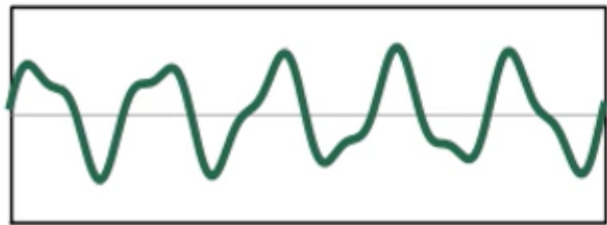
Baseline: Healthy and ADBrain samples show clearly different activity

Healthy micro-tissues

6 sample spheres with stronger, coordinated voltage activity

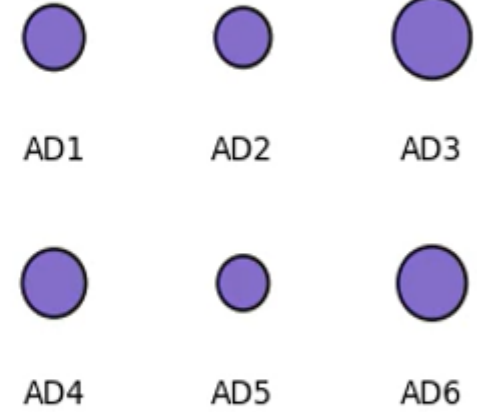


Healthy voltage profile

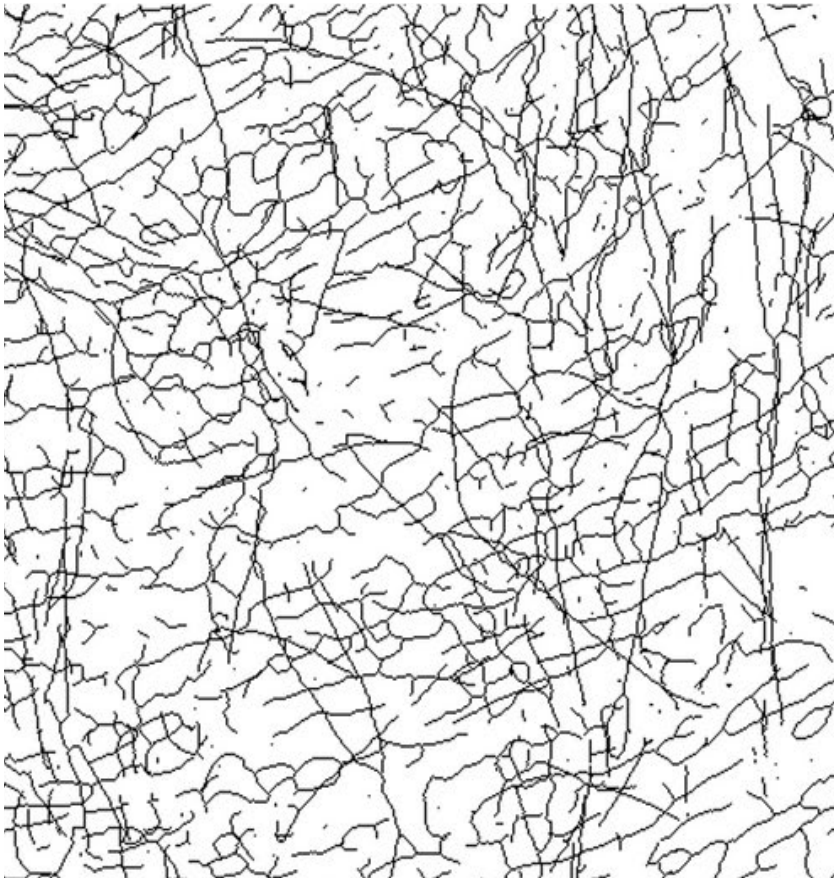
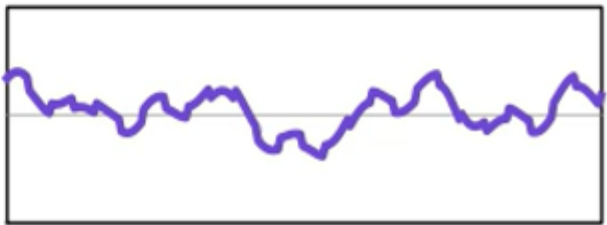


ADBrain model

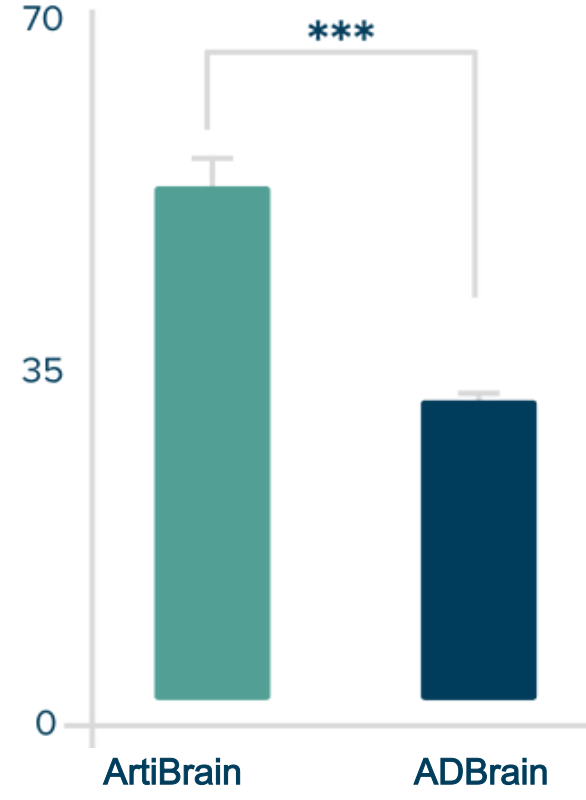
6 sample spheres with disrupted, dysregulated voltage activity



ADBrain disrupted voltage profile



average axon length μm



QUANTUM MEETS MEDTECH

12 Nov 2026 The University of Western Australia, WA Node Quantum Australia

See the Future of MedTech
Powered by Quantum Technologies Today

