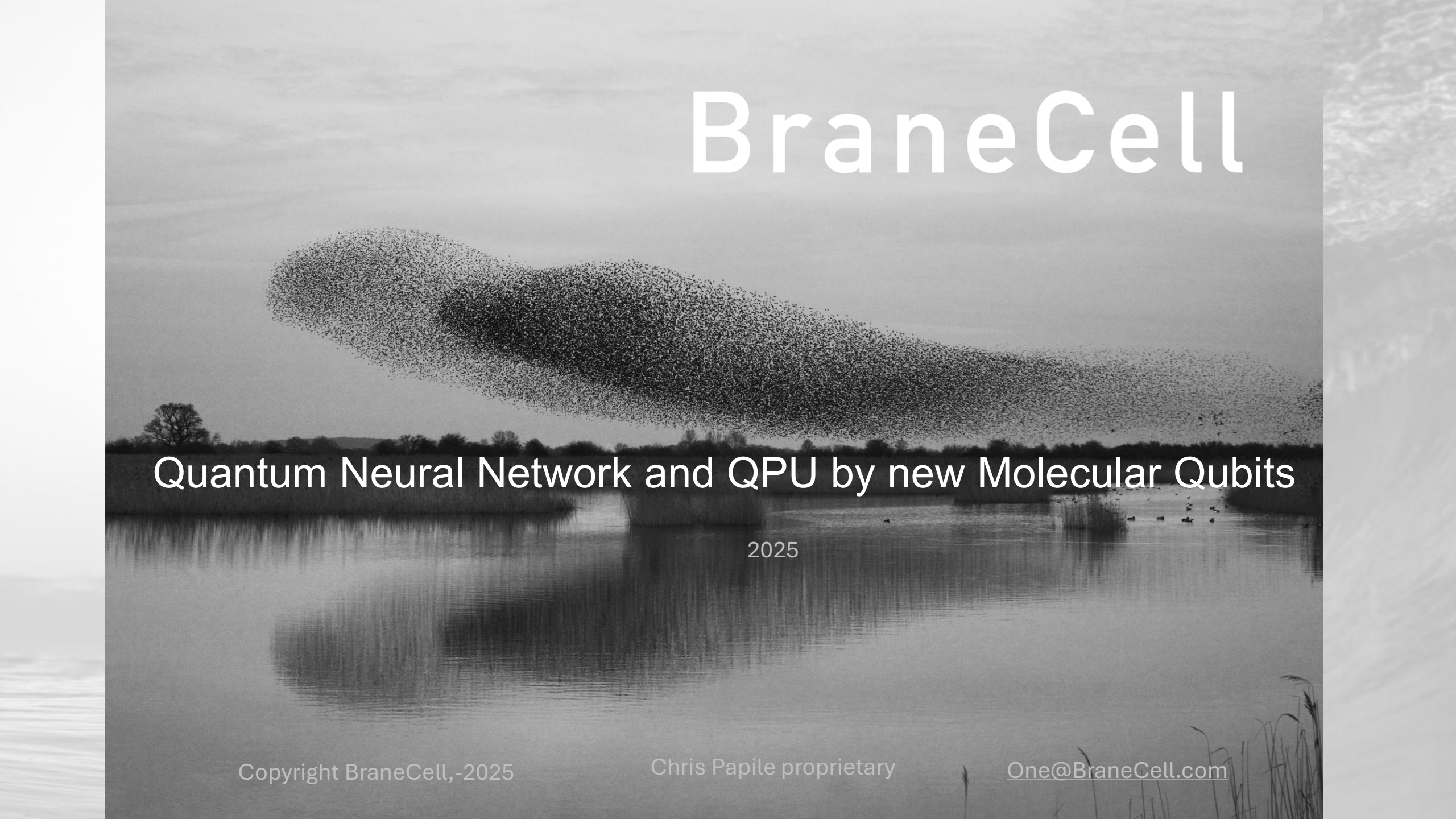


BraneCell

A black and white photograph of a large flock of birds, possibly waterfowl, flying in a V-shape over a body of water. The birds are in the center of the frame, and their reflection is visible in the water below. The background shows a distant shoreline with trees and a cloudy sky.

Quantum Neural Network and QPU by new Molecular Qubits

2025

Executive Summary

BraneCell

1st invented new qubit class	\$ >400 Billion Market (at 19 % CAGR)	10⁻² decreased AI power consumption	10⁻² lower Fab invest and nature footprint.
Patent portfolio and experienced team enables world-class QML positioning.	AI Chips (2030) plus quantum-enabled properties and accelerator markets.	-10 ² increased IT density -Some applications exponential speedup. -No chip heat-up	Decentralizes APM Fab, private Fab, gentler on the environment, more common metals, biomimetic basis.

BraneCell is pioneering next level AI chip hardware with entangled-qubit properties: denser information, exponentially faster in some applications, decentralized fabrication, secure processing. Quantum machine learning (QML) is early stage. We have invented a new molecular qubit.

Snapshot

BraneCell

Ambient temperature, strongly-correlated many body nanomaterials
used in quantum neural networks, as the foundation for chips for:

Quantum AI

Fits with a new decentralized; a private chip fabrication.
Uses a natural quantum biomimetic, never before productized.
Molecular photon emitting/receiving qubit.

Proprietary Chris Papile

BraneCell experimental results image

One@BraneCell.com

The Problems with today's AI and Quantum Chips

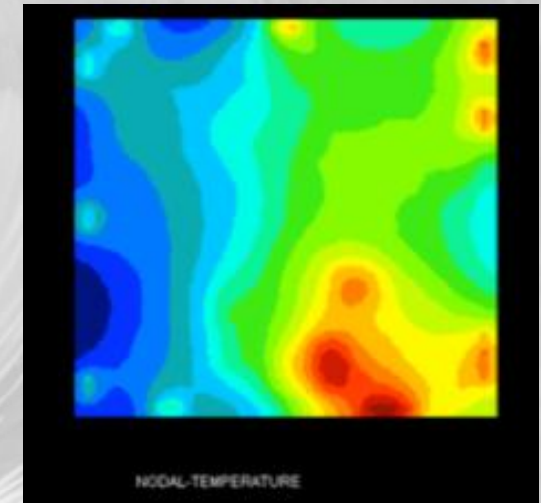


AI

1. Excessive heat up and internal temperature gradients lowering (40 %) chip life in 24/7 cloud use
2. Excessive cost to invest in a new fabrication facility
3. Oligopoly of manufacturers
4. Energy consumption while in use, ultimately injures environment
5. Data compression strategy

Quantum Chips

1. Single photon gate operations are delicate
2. Cold temperatures or large footprints are often needed
3. Only very specific applications provide exponential speedup



Solved by Molecular Qubits

BraneCell

Molecular qubits operating particularly in topological (or quantum-gate) mode controlled by photons solves the challenges and expands the market.



Smaller than Classical Warmer than Quantum

BraneCell Approx. 110 X smaller Node + Interconnect Feature Size		
	Interconnect + Node (nm ²)	BraneCell shrinkage (improved density)
BraneCell	9	1
3 nm, Samsung	1,010	1/112
5nm, Classical	1,530	1/171

We can fit our complete quantum network on their chip replacing only 2 of their transistors.

New Class of Material for Quantum Information Processing

BraneCell

Our Materials are:

- Low Cost
- Abundant in the USA
- No disposal issues
- No heat degradation

Quantum biomimetic.

BraneCell Proprietary

Quantum Machine Learning & BraneCell

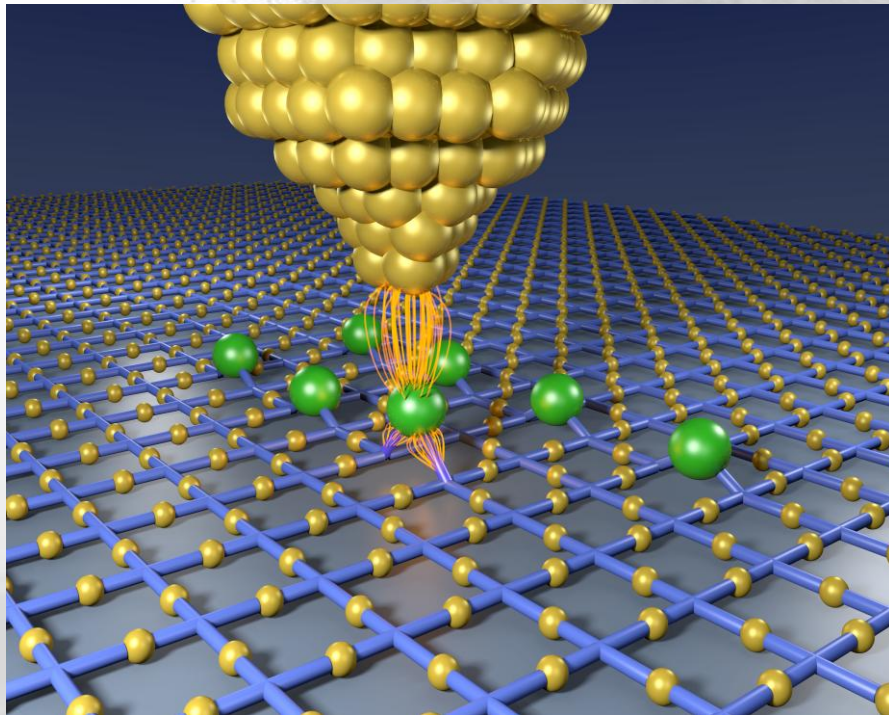
The BraneCell logo is a blue circle with the text "BraneCell" in white.

Unlike semiconductor-based AI, BraneCell's QNN, QML:

- Better information density [1]
- Our photon-induced operations are a non-self-heating QNN [4]
- Potentially much lower power consumption
- May train quicker [IBM-2]
- AI with quantum combination is better. [Microsoft, Xanadu]
- Our approach may circumvent vanishing gradient issue [3]
- Low investment for a Fab facility
- Inter-quantum AI chip communications by BraneCell qubit QSDC

We will Onshore the Neural Network Fab at 1/100th CAPEX

BraneCell



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Surface of molecular placement

Development of the newest methods in Atomically Precise Manufacturing (APM) changes the game of chip fabrication, from a > \$ 8 Billion CAPEX to a < \$ 80 Million Fab facility (at same \$/chip, lower throughput per facility). Such Fabs can be distributed/decentralized and application-specific, tailor-made quantum AI chips. This is the frontier of AI chip manufacturing.

Intellectual Property Portfolio



2 granted patents:

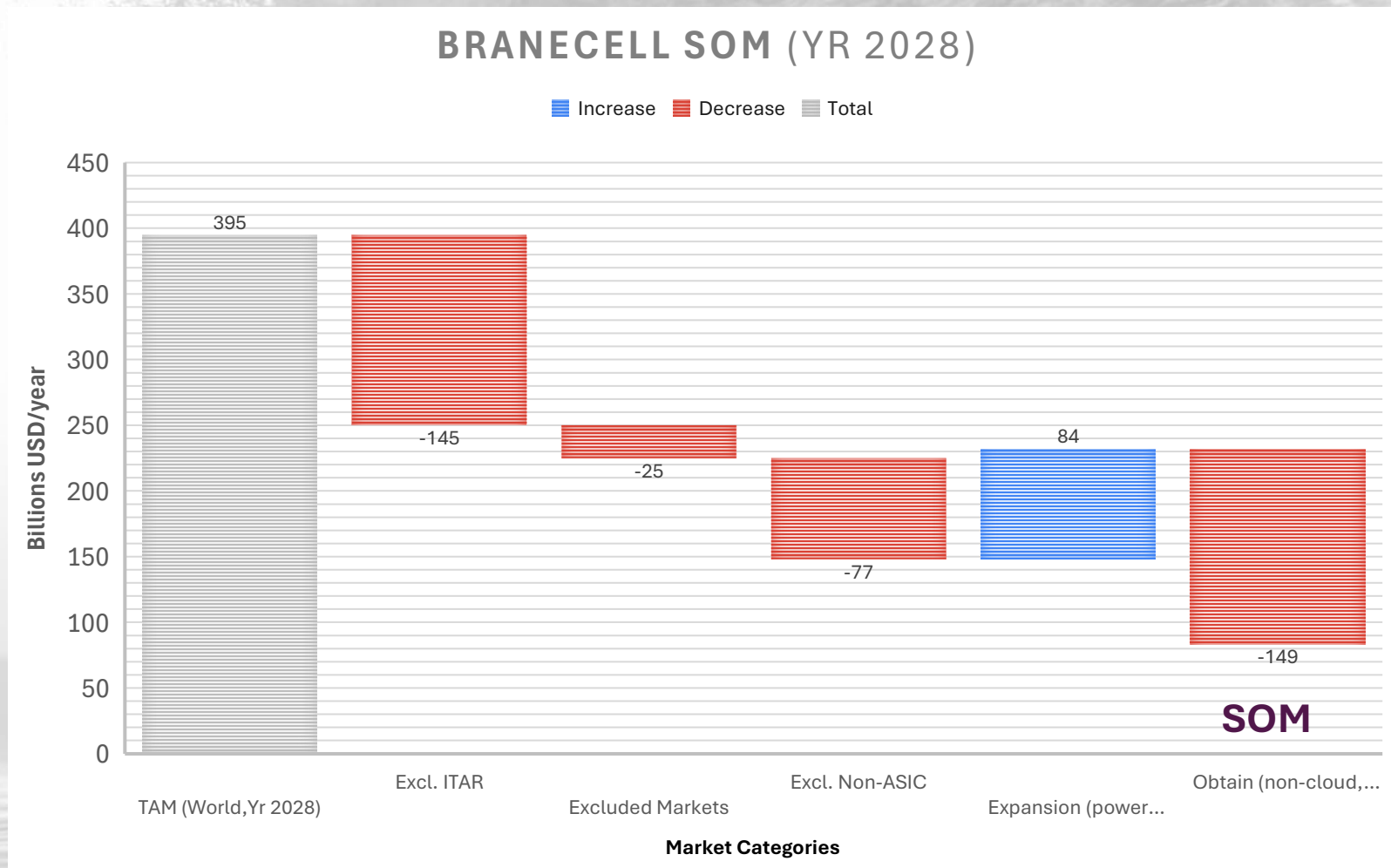
-US20160189054A1 - Isothermal Quantum Computing Apparatus and Materials

- US9231707B2 - Methods and materials for integer quantum computing

Several applied and provisional patents on hardware.

Next funds increase patent portfolio in hardware, algorithms

SOM from TAM

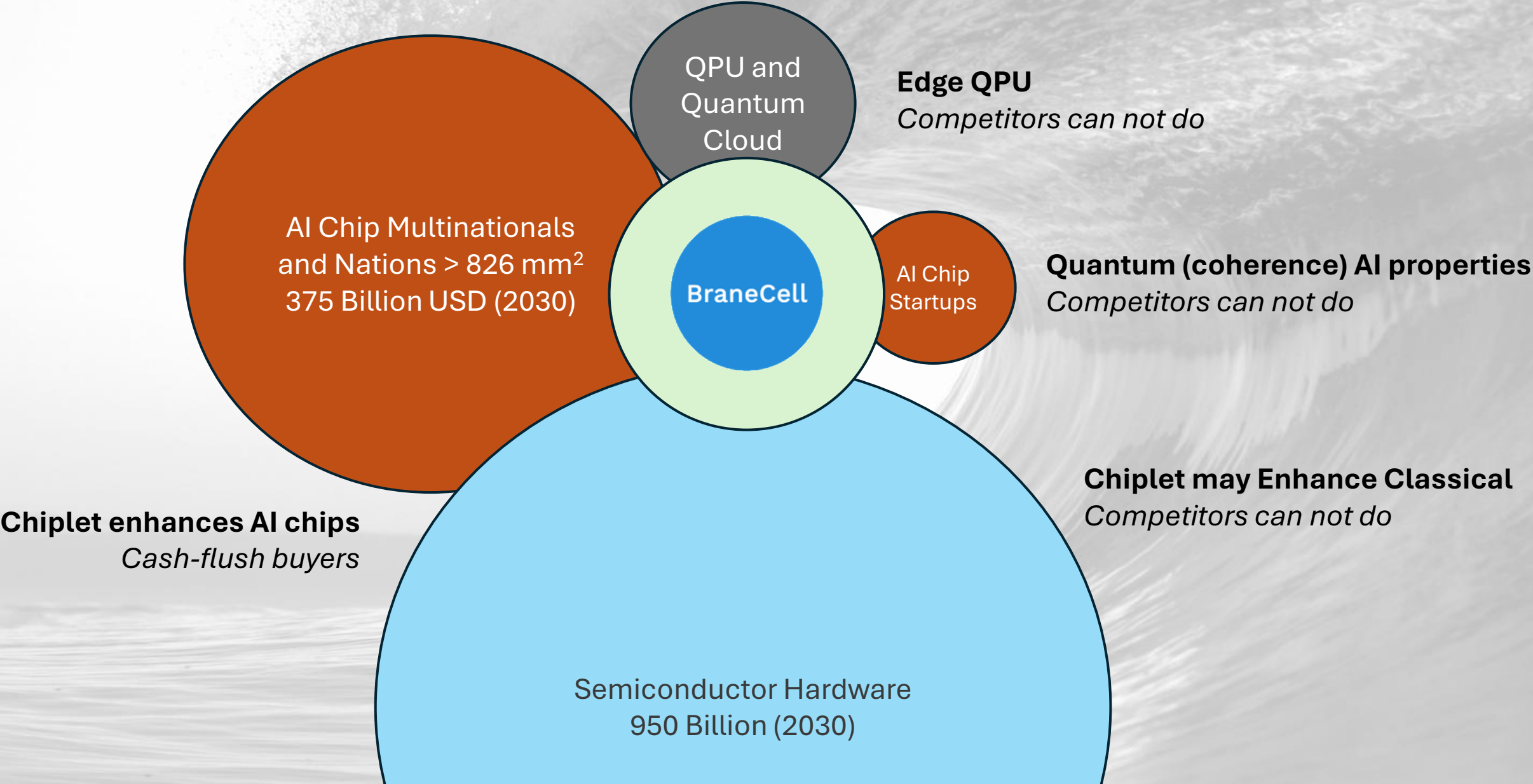


Financial Quant Exponential Speedup, examples:

BraneCell

HFT	10 ⁻⁴ s; non-vibration sensitive, better if photon signaling and ambient temperature; a BraneCell potential
Real-time trading	Quantum excels in correlations (inter/intra markets).
Stock Market Forecasting (SOFM, Boltzmann Machines, Support Vector Machine)	
Portfolio Optimization	Quantum excels in registering correlations
Arbitrage	Inter-stock exchange, electricity grid, ...
Swap Netting	
Ripple-effect; Alpha Capture	
Quantum Hacking Protection	USA Federal will co-invest over time
Cryptocurrency proof-of-work	Exponential Speedup
Scheduling Problems	Exponential Speedup
Option Pricing	Quantum Black-Scholes
Self-organizing Feature Maps	Exponential speedup

Taking a portion of existing markets and expanding the quantum (QPU), AI and semiconductor chip markets.



USA & EU Established Principal Investigators



Christopher Papile, Ph.D.

- Ludwig-Maximilians-Universität München (Prof. Helmut Knözinger) & University of Delaware Ph.D. Chem. Engineering, USA
- Global Head at a ThyssenKrupp New Technology Task Force (> \$ 2 B spin-out, IPO of Task Force, became **Nucera**)
- Leader of portion R&D at ExxonMobil/Technip licensing 50/50 JV
- Co-started Arthur D. Little's Epyx Fuel Cells (now **Nuvera** Fuel Cells)
- Co-started, out of **Novartis**, Solvias AG (*supramolecular R&D*)
- Won & P.I. for > \$ 28 Million in USA + EU grants; > 50 PCT, national stage, granted, applied patents and publications in peer-reviewed journals.



Prof. Lauren Sammes, Ph.D.

- Ph.D. Imperial College, London
- Former Distinguished Prof. Colorado School of Mines
- Former chaired professor University of Connecticut
- Adjunct professor Husson University
- Co-founder, CTO, LERC, the start-up raised \$ 43 Million
- Previous Max Planck Alexander von-Humboldt Fellow
- Frequently USA Grant Principal Investigator
- > 200 peer reviewed scientific publications



Whatever Politics, this Topic will Only Grow

BraneCell



CYBERSCOOP



GOVERNMENT

Trump administration planning expansion of U.S. quantum strategy

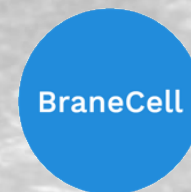
Multiple sources tell CyberScoop that options under consideration include executive orders or a national action plan, similar to the one the administration released for AI in July.

BY DEREK B. JOHNSON • SEPTEMBER 19, 2025



Listen to this article 7:03 Learn more.

Business Postulate



Unlike the “quantum community’s” focus on materials modeling, we believe applications paid from client revenue streams, namely:

- (1) Real-time stock market and other financial markets
- (2) waste classical chip energy (improvement),
- (2) security,
- (3) provenance (proving where something was manufactured)
- (4) business functions

are larger, more urgent, more willingness to pay.

BraneCell

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HUBZone and Disadvantaged Company

Dr. Lauren Sammes
Dr. Christopher Papile
and BraneCells (team)

***Proprietary
Starter PDF***

Quantum and AI

Den Haag

Award-1

Award-2

Seminar series Universität Düsseldorf

Introduction.

Links-1

Links-2

Links-3

Links-4

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