MULTIVERSE

Indispensable

AI Energy-efficient Methods

for Climate Transition

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RATIONALE, in short

1. *AI* computing and energy needs are growing at double-exponential rate. And the usage of *AI* systems is also exploding. Something must be done about it.

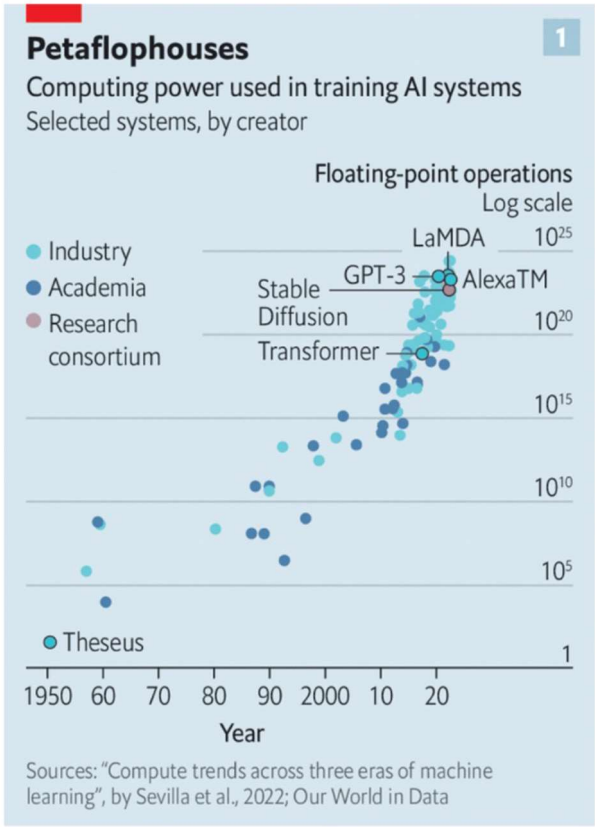
2. Climate Transition by itself brings a number of problems that need more powerful AI systems, like the optimization of electrical networks for renewable energies, batteries, new hydrogen fuels and others

3. Multiverse has a set of extremely powerful green technical solutions coming from the Quantum-Inspired field to solve these problems, 100 to 1,000 times more efficiently

4. Multiverse has also an industrial software platform (with maintenance fee), Singularity, to deliver these new solutions in large and small companies

5. Multiverse has developed and deployed these solutions in a large number of blue-chip customers across a broad set of industries (more than 50 this year), in climate-transition /energy problems

6. Consequently, we are the only company generating significant recurring revenue in this new field of *AI Energy-efficient Computing*, €10+M in 2022 and ramping up



The Economist

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Today's Presenters

Dr. Enrique Lizaso

CEO & Co-Founder

Highly Accomplished CEO

At Scaling Start-Ups

Experienced in growing and scaling disruptive technology start-up companies

20+ years in finance including as CEO of Unnim Bank

Director & Treasurer of the European Quantum Industry Consortium (QuIC)

PhD (Biostatistics), MD (Medicine & Surgery), MBA, BSc (Mathematics), BSc (Computer Engineering)

Prof. Roman Orus

CSO & Co-Founder

Quantum Computing &

Tensor-Network Thought-Leader

World-Renowned Professor with 7,000+ citations

A founding father of Tensor Networks

20+ years of experience including working with key scientists (Cirac, Vidal, Verstraete)

PhD (Physics), MSc (Physics)

Dr. Samuel Mugel

CTO & Co-Founder

Quantum Computing

Thought-Leader

Experienced founder, technology leader & McKinsey Global Technology Council member

6+ years of experience in quantum technologies at Groundstate and Cortirio

Served as a Scientific Advisor at the Quantum Revolution Fund

PhD (Physics), MSc (Physics), BSc (Physics)

Marta Garcia

CFO

Seasoned

Financial Executive

Experienced corporate financial leader

10+ years of experience at top tier banks including RBS, DB, BBVA

Experience in syndicated agency loans and CDO management

BSc in Business Administration

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Quantum-Inspired Computing is the Fundamental Technology To Accelerating ESG and CLIMATE Priorities Across All Verticals

Clean Energy

- Improved energy efficient in energy production and distribution
- **Key applications:** energy demand forecasting, high-density electric batteries, solar cells and hydrogen fuel

Green AI

- Energy-efficient machine learning computation
- **Key applications:** tensor networks, compact AI and deep learning at scale

Sustainable Materials

- Improved chemistry simulation for discovering advanced environmentally friendly materials
- **Key applications:** green fertilizers, advanced low-emission materials

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Health & Life Sciences

- New simulation algorithms for drug discovery and algorithms for managing and optimizing critical healthcare infrastructure
- **Key applications:** connected ICUs, new medicine

Industrial Operations

- Highly efficient industrial operations, reducing waste and material use
- **Key applications:** predictive maintenance, new supply chains and highly-optimized logistics

Climate Technology

- Fundamental approach to modelling complex dynamical systems and discovery of new solutions
- **Key applications:** carbon emission reduction, weather forecasting and fighting climate change

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MULTIVERSE IN ENERGY: WHAT IS HAPPENING NOW?

Some examples

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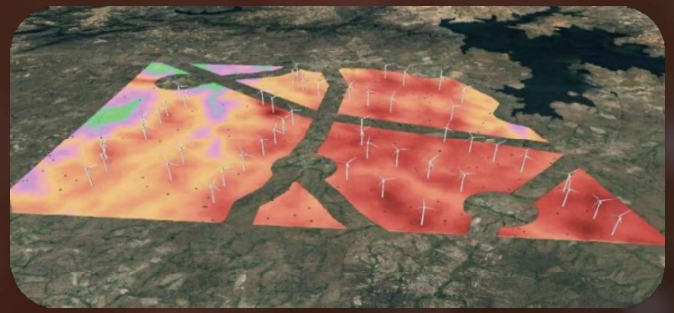


Wind Farms design - Optimization

Direct sales.

Members: Iberdrola

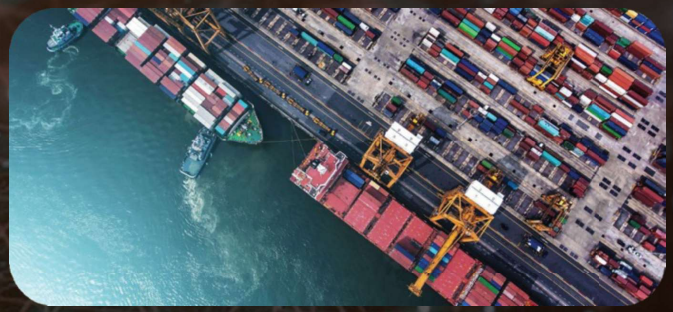
Problem to solve: how to determine the optimal configuration of a wind farm, regarding the mean wind profile of the geographical location.

Batteries - Whole value chain

One-year Consortium

Members: Celsa, CIRCE, Nutai, SAV, Volkswagen. Council Gipuzkoa and Cidetec.

Problem to solve: how to monitor and optimise the whole value chain of battery recycling? BMS, chemistry, qML.



OPS- Enabling green ports (energy hubs)

Multi-year Consortium.

Members: Puerto de Bilbao (OPS), Petronor, + 40 members

Problem to solve: how to provide with a layer of intelligence for monitoring OPS infrastructure resources?

Hydrogen - Boosting quantum chemistry

Multi-year consortium (CUCO consortium)

Members: Repsol, BBVA, GMV

Problem to solve: how to accelerate Hydrogen industrial adoption and characterisation?

Market optimization - qVAM

Direct sales.

Members: Repsol.

Problem to solve: Repsol is also developing a device that aggregates EMS systems so they can operate as a single unit on the electricity market. This way, the system known as virtual assetmanagement (VAM) will respond to the market by supplying energy or reducing customer demand

Predictive maintenance- Nuclear Fusion

One-year Consortium

Members: Orolia - IFMIF-DONES consortium

Problem to solve: This Fusion Programme is based in three main pillars, ITER, DEMO and IFMIF-DONES, being this last one the fusion neutron source facility for materials development and qualification.

Energy communities- Optimal Markets

Multi-year license.

Members: Council of Gipuzkoa & Petronor

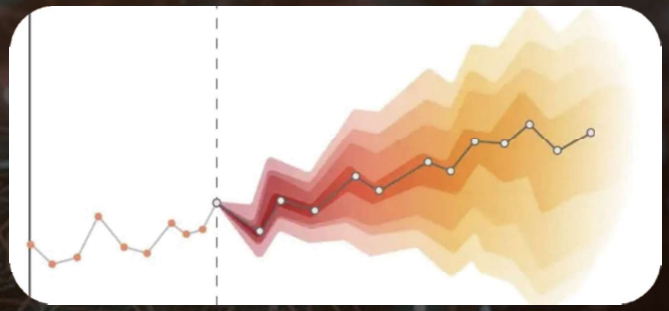
Problem to solve: how to allocate a dynamic index to consume/produce optimally based on market forecast. Links: Batteries life cycle (energy storage - recycle cells)

Smart Grids - Battery placement

Direct Sales

Members: Iberdrola

Problem to solve: how to determine the placement of supplementary batteries in smart grids in order to adapt to flexible demand and minimise voltage peaks.



Energy markets- Production Forecasting

Direct Sales - license.

Members: Acciona Energia

Problem to solveimprove estimation error in order to transform accuracy in revenue. 1% of improvement is translated in 1M€ annually

Energy Allocation- Optimization

Direct Sales

Members: CAF

Problem to solve: Trains can obtain energy from catenary or from onboard batteries. Considering the route to follow, what is the optimal configuration for energy consumption?

Manufacturing- Product Optimization

Multi-year consortium.

Members: Bosch, Celsa, Repsol

Problem to solve: Can we rebalance the configuration of machine parameters in order to minimise scrap and improve overall and sustainability functioning KPIs?

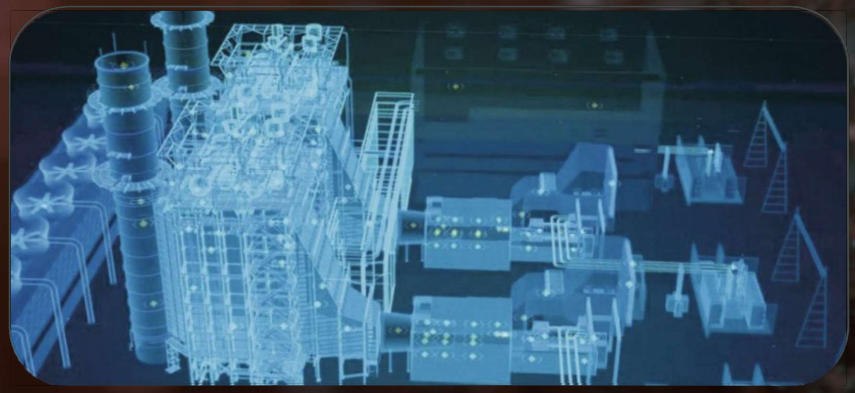
Energy & Routing- Optimization

Multi-year consortium

Members: Navantia

Problem to solve: Ships can obtain energy from catenary or from onboard batteries. Considering the route to follow, what is the optimal configuration for energy consumption?

MULTIVERSE IN ENERGY: WHAT IS HAPPENING NOW?



Digital Twin- Hydrogen

Licensable implementation.

Members: Idea [redacted]

Problem to solve: Can we simulate the hydrolysis process for 3D Digital Twin integration?

Swarm control- EVs

Direct Sales

Members: Sapa & 30+ members

Problem to solvehow to manage a swarm of lightweight swarm of EVs in order to maximise eco-efficiency and resource allocation?

[redacted]

And even more customers benefit from our Energy-efficient Computing Methods

Defense / Cybersecurity

Aerospace Predictive Maintenance

AI- Trading

Forex Trading

AI- Finance

Price Derivatives Accurately

Manufacturing / Supply Chain

Quantum Digital Twin

Logistics

Routing Optimization

Renewable Energy

Simulate Energy Demand

Chemistry

Green Hydrogen

Life / Healthcare

Predict Patient Health Crises

Government

Market Simulation

Automotive

Optimize Component Functionality

Customers and Qualified Prospects

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MULTIVERSE: OUR TECHNOLOGY

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Multiverse at the Heart of Unlocking Energy Efficiency of Quantum Computing Infrastructure

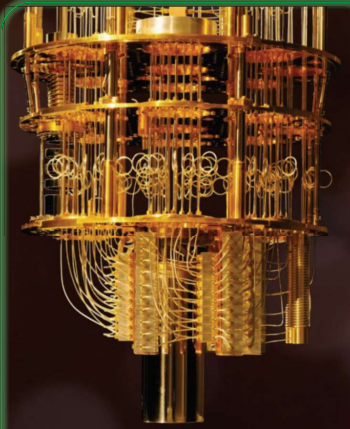
This is what we use most: 100-1,000x faster, no need to adopt quantum, success guaranteed

Exascale and Petascale Supercomputers

Typically require 15MW-25MW to operate

Typical AI / ML Algorithm Platforms

Massive (over 1,000 units) GPUs and CPUs clusters



Quantum Computers

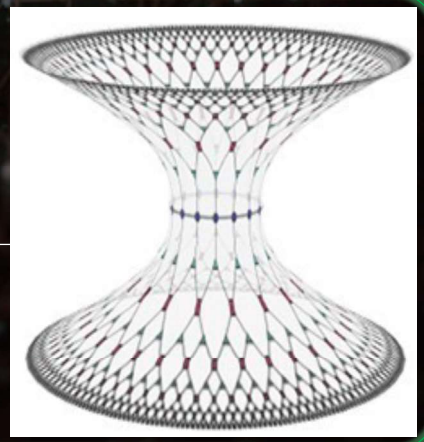
Typically consume 25KW of energy

When Quantum Supremacy is achieved, no computer will be able to match the energy quantum computers

Tensor Networks

Already 100x – 1000x faster requiring 80x less memory and providing higher precision

Uses 100x-1000x less energy to deliver same results while also minimizing data flow require for training



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We Win with Our World-Leading Highly-Scalable Full-Stack Industrial Software Platform, Singularity...

Any Hardware

Quantum Computers

D-Wave
IBM
IONQ
rigetti
PASQAL
XANADU

Classical Computers

Dual quantum-classical workloads to optimally leverage all hardware

Quantum Software

Multiverse Computing
Singularity

- Better results solving real complex problems
- Hardware-agnostic
- Quantum & Quantum-Inspired

Any End-User

- Any Industry
- Easy to Deploy - Even by Third Parties
- Easy and Intuitive

python™

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Singularity is Powered by a Unique Combination of Quantum & Quantum-Inspired Methods

This is what we use most: 100-1,000x faster, no need to adopt quantum, success guaranteed

Quantum-Inspired Methods[1]

All the cases from Quantum, now!

Differentiated Tensor Network ("TN") approach to quantum-inspired

First to use TN for a commercial use case

Founders-led development of TN research

Limited TN experts in the field today

100x Faster

Than Traditional Approaches

Deployable Today

On Classical Computers for High-Value Use Cases

Highly Differentiated

World-Class Expertise in Tensor Networks Provides Distinctive Edge

AND PREPARED FOR THE FUTURE

Quantum Methods

Quantum optimization

Quantum machine learning

Quantum simulation

Quantum stochastic modelling

Solving The Once Unsolvable

Fundamentally Different Way of Physical Computation vs Classical Computers

Strong Results

With NISQ QC Which Will Only Improve (Quantum Advantage Nearing)

Dramatic Performance Increase

Harnessing the Powers of Quantum Computing Technology

Note: (1) Quantum-inspired methods are hybrid techniques that exploit advantage of quantum computing in order to improve performance of classical algorithms

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MULTIVERSE: GO-TO-MARKET

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Our Go-To-Market Commercial Strategy and Singularity Platform Finalizing our Full Transition to Recurring Revenue (fee) model

Projects and Singularity –Industrial Software Platform Fee model

Projects

4-6 months one-time collaboration

Multiverse works with clients to develop algorithms

Deliver a scientific paper or internal know-how

Workshop and quantum-readiness training

~10 Projects each year

Singularity Industrial Software Platform

ENERGY	Manufacturing	Mobility	Life / Healthcare
AI Finance	Aeronautics / Space	AI Defense / Cybersecurity	Other

Recurring relevant quantum algorithms

Maintenance & upgrades included

Technical support

Multiverse Computing Singularity

~650 Estimated customer increase from 2022 to 2027

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MULTIVERSE: THE ECOSYSTEM

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Multiverse is the at the Top in Quantum-Inspired Software

	MULTIVERSE	SANDBOXAQ	ZAPATA
HQ			
Global Offices			
Number of Employees[1]	75+	55+	75+
Revenues			
Sector Positioning	Enterprise Software	Research Solutions	Middleware Software
Tensor Networks	✓ All Industries	✓ Cybersecurity Public Sector	✗ General Middleware
Full-Stack Industrial Software Platform	✓ Singularity	✗	✗ Orchestra (Middleware)
Hardware-Agnostic			
Number of Real-World Use Cases	All Industries		
Users	Anyone	Quantum-Savvy	Quantum Experts

Note: (1) Zapata – Company Website; SandboxAQ – "Interview Of The Week: Jack Hidary, SandboxAQ" (innovator.news)

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