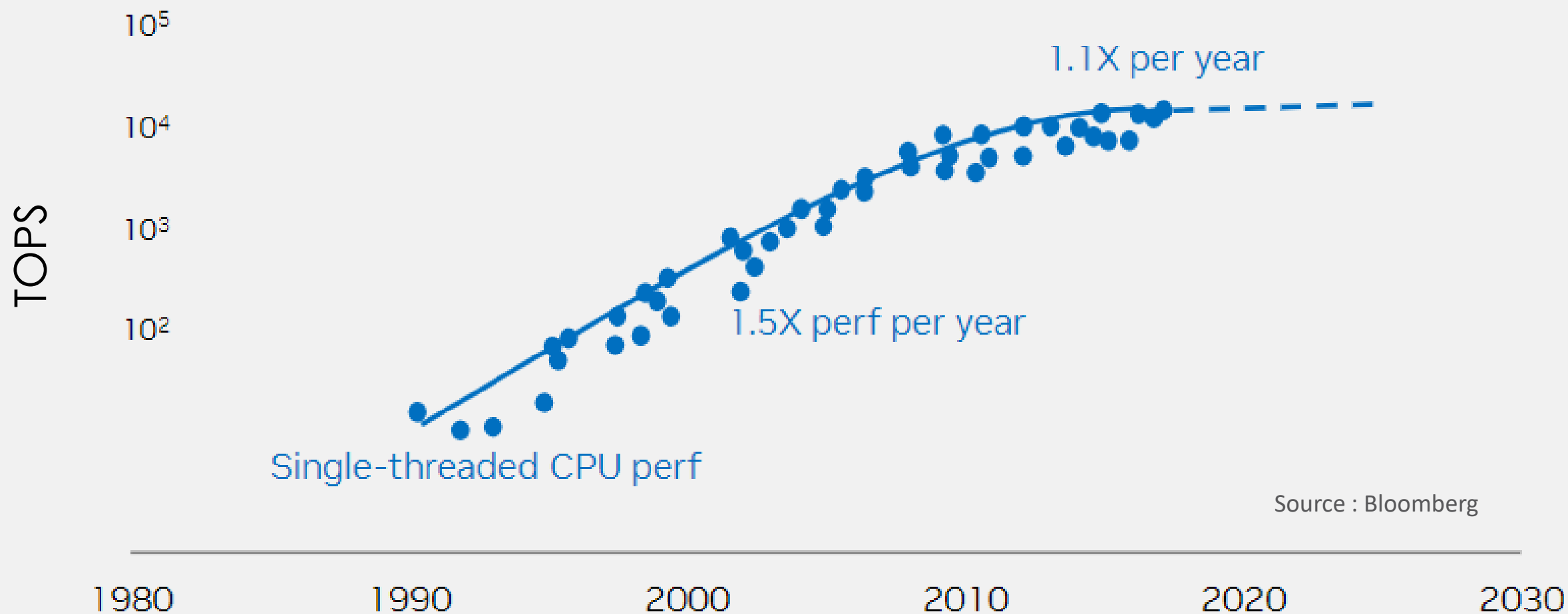


Deploying Quantum Computers

ENI Next Day 2025

By Georges Reymond, Pasqal – Co-Founder & chief of strategic alliances officer

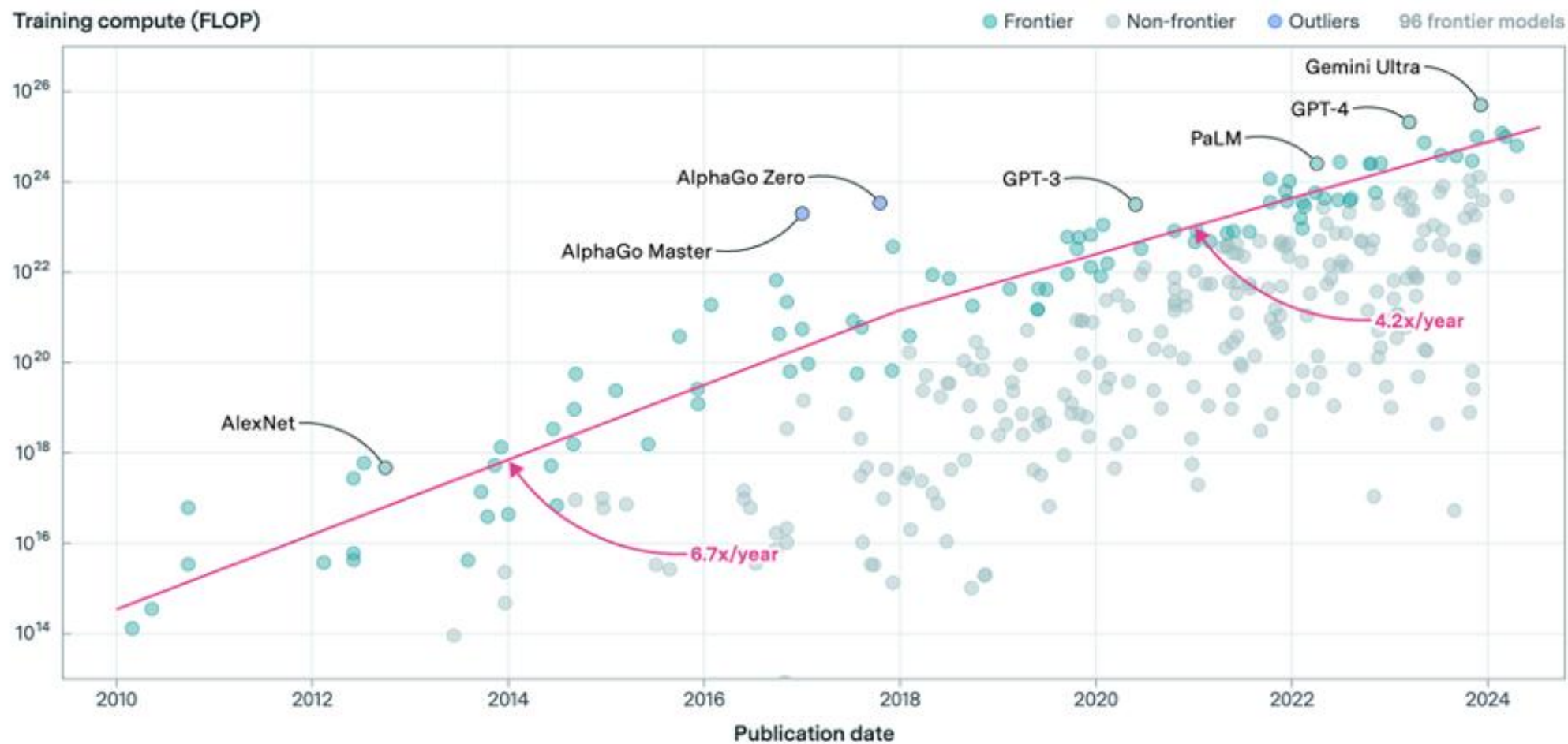
The Moore's law

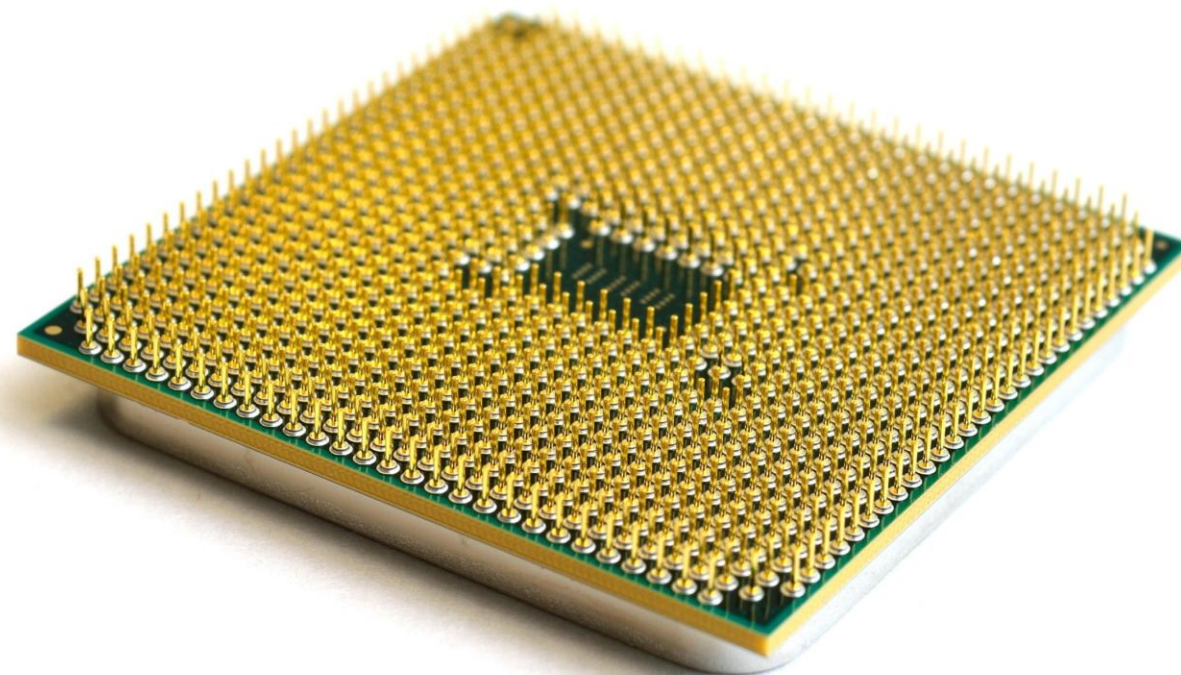
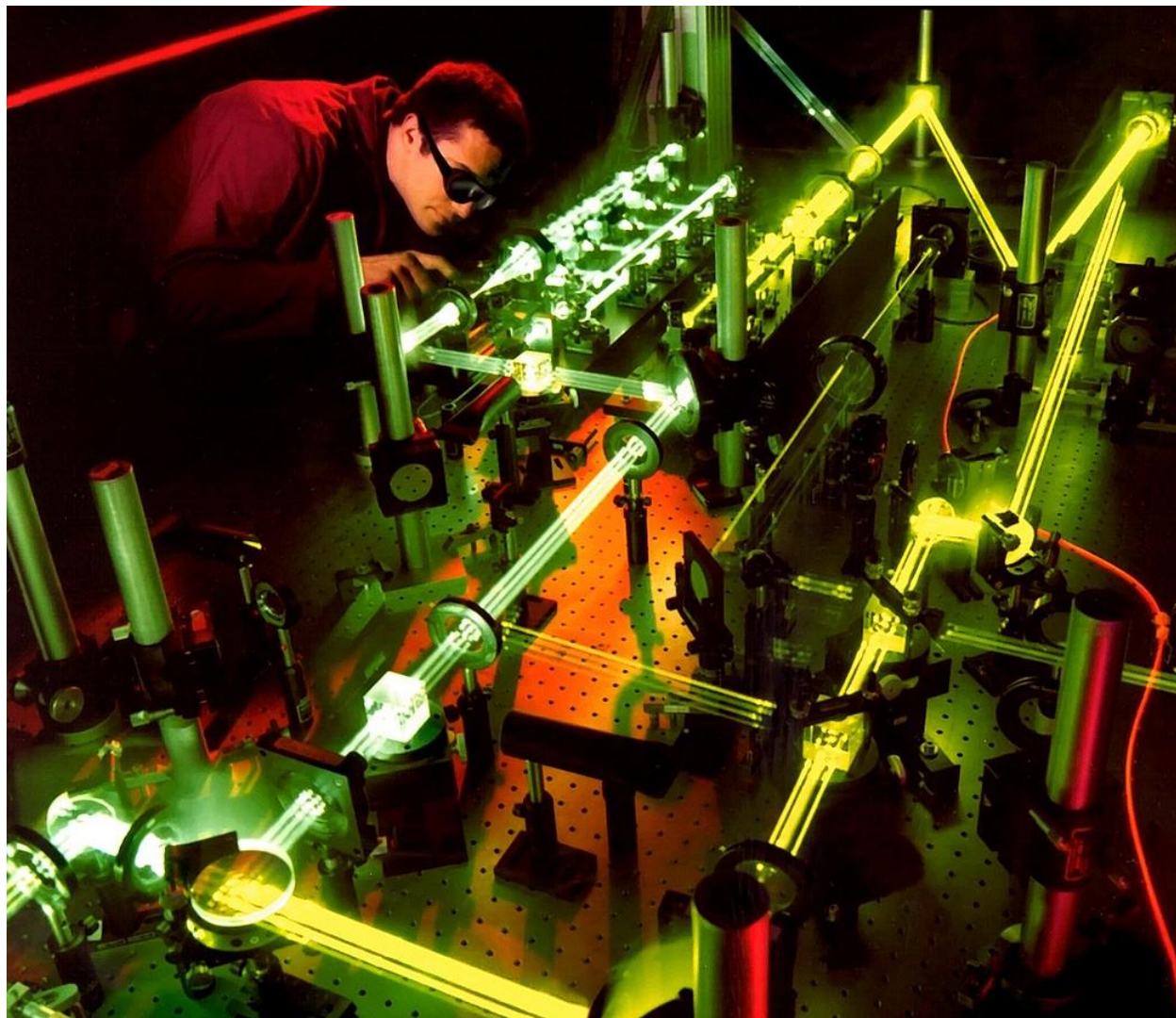


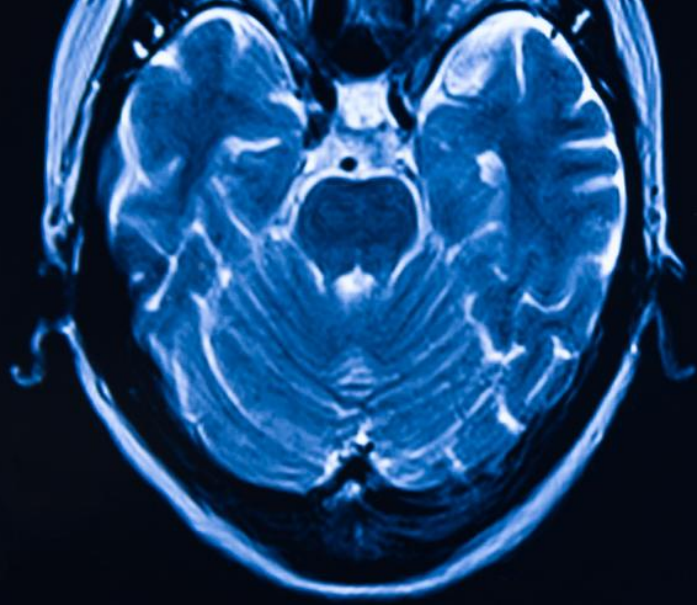
Training compute of frontier models

EPOCH AI

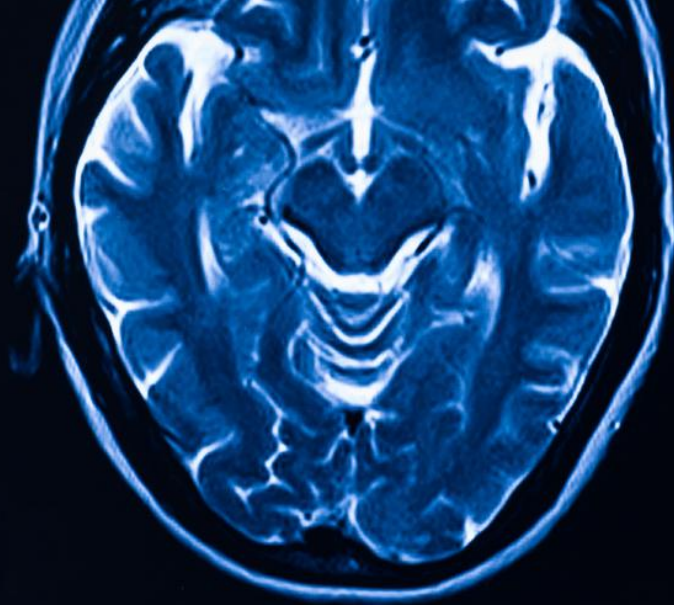
Training compute (FLOP)



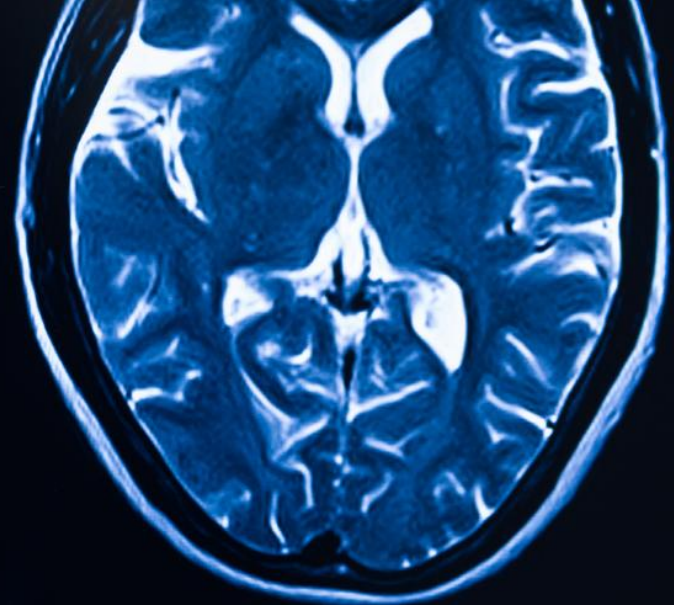




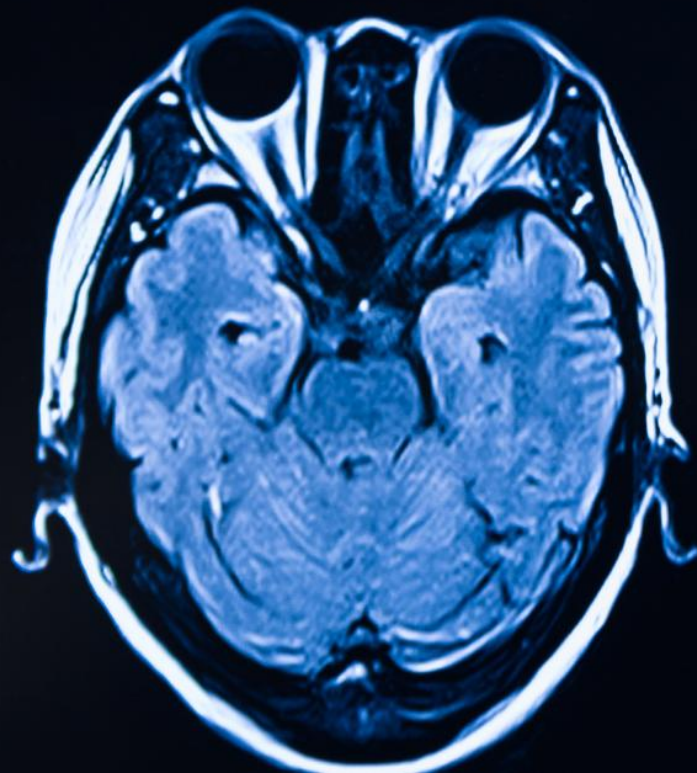
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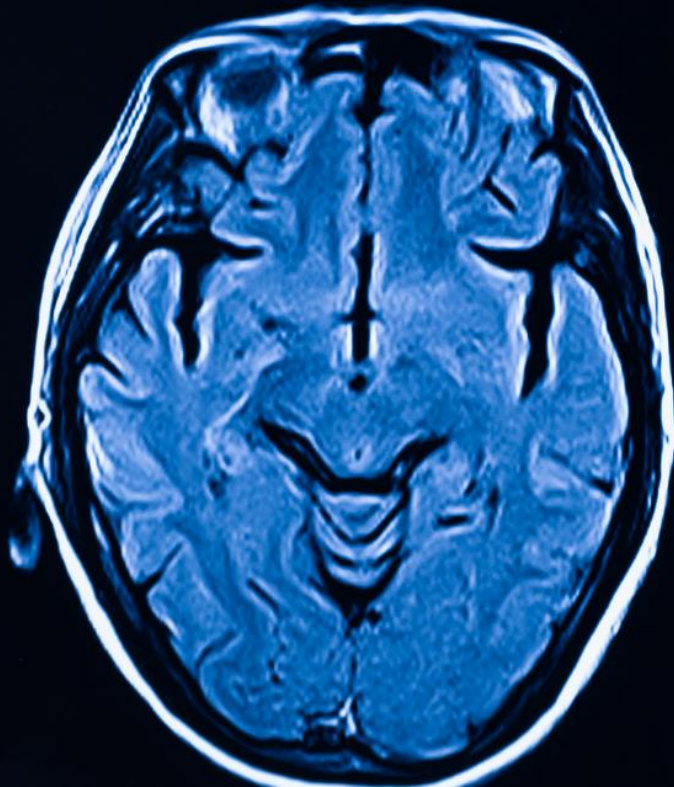
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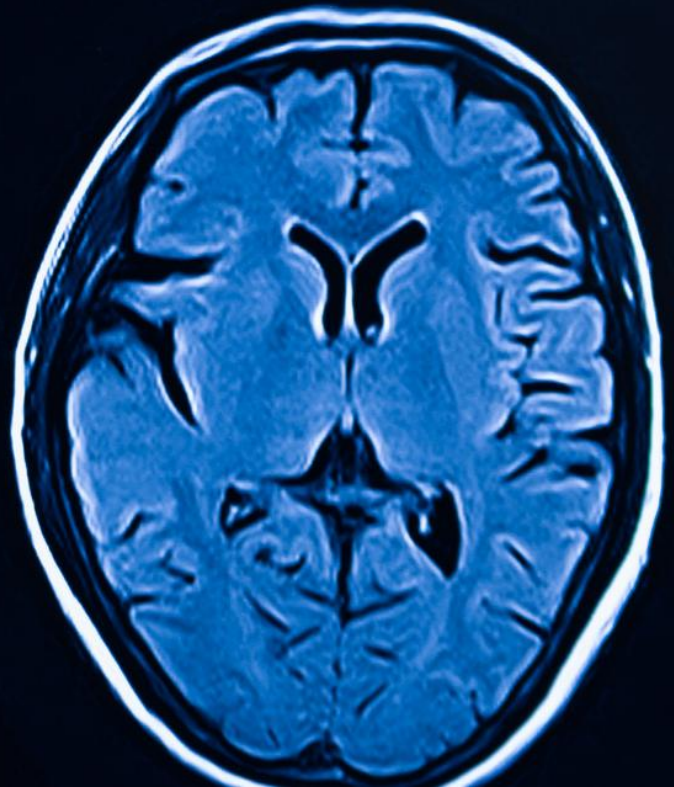
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60



60



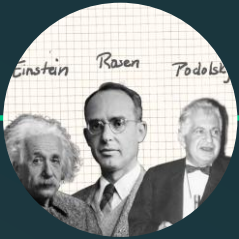
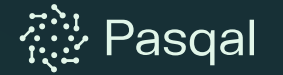
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Entanglement: 2^N states at the same time



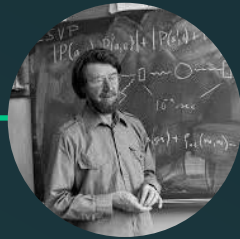


The 2nd Quantum revolution: entanglement & single particle control



1935

The EPR Paradox
Einstein, Rosen, Podolsky



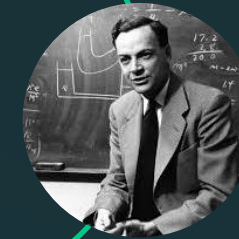
1964

Elaboration of a
criteria
by J.S. Bell



1982

Experimental test by A.
Aspect



"Nature isn't classical,
dammit, and if you want
to make a simulation of
Nature, you'd better
make it quantum
mechanical"
by R. Feynman



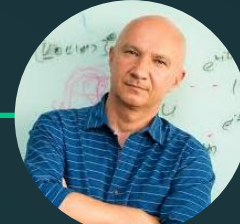
2001

First single atom in an
optical tweezer
by P. Grangier
Nature 411, 1024–1027



1994

Algo with exponential
speed-up by P. Shor



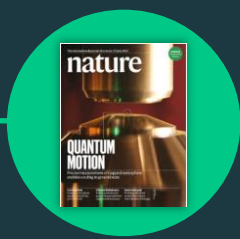
1993

Quantum Cryptography
by A. Ekert



2019

Founding of Pasqal by
T. Lahaye, A. Browaeys,
G. Reymond, C. Jurczak



2021

Simulation with 196 qubits-
Quantum Advantage- by
T. Lahaye & A. Browaeys
Nature volume 595, 233–238



2023

"When there are no
fundamental limitations,
engineers find a path."⁸
A. Aspect, Nobel Prize 2022

Neutral atoms operating on Etna




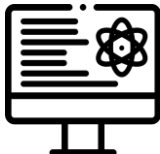
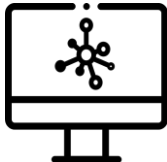




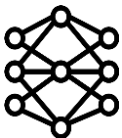









JÜLICH
Forschungszentrum

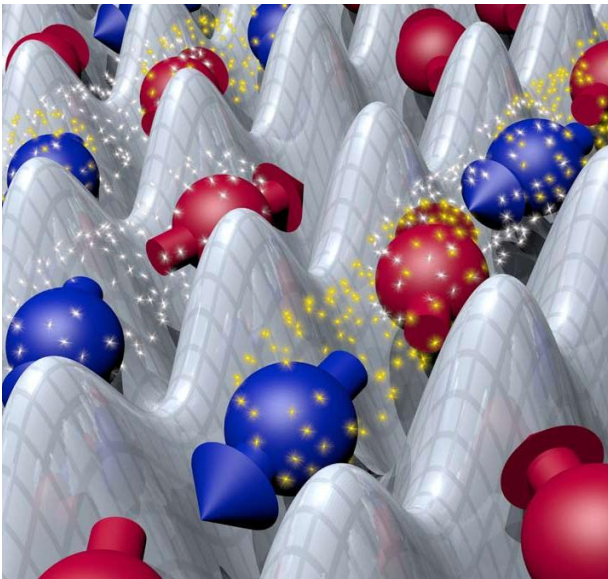


Full-stack approach: easy and open programming

Access	  	<ul style="list-style-type: none">• Cloud & on prem
Platform	  	<ul style="list-style-type: none">• Coding platform & Software integrations
Solutions	  	<ul style="list-style-type: none">• Chemistry, finance etc...
Libraries	  	<ul style="list-style-type: none">• SDK for PDE, optimization, ML
Support	  	<ul style="list-style-type: none">• R&D support• Community

Quantum Advantages in the near term

Simulating Quantum Systems



Optimization



Machine Learning



THANK YOU FOR YOUR ATTENTION

