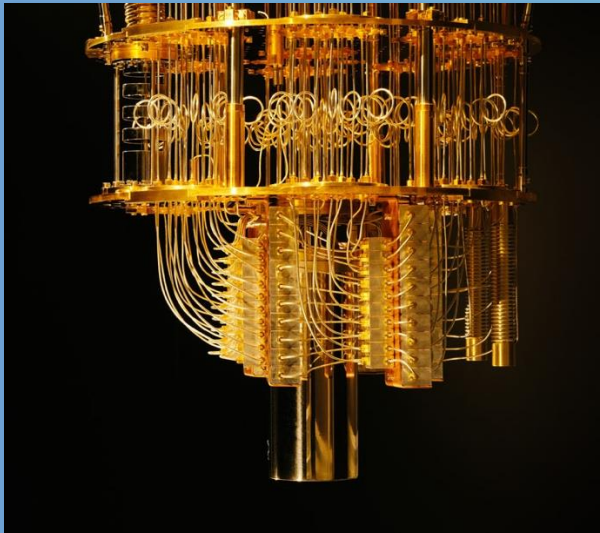


From Laboratorium zur industriellen Anwendung

2 Dec 2025
Rajiv Krishnakumar

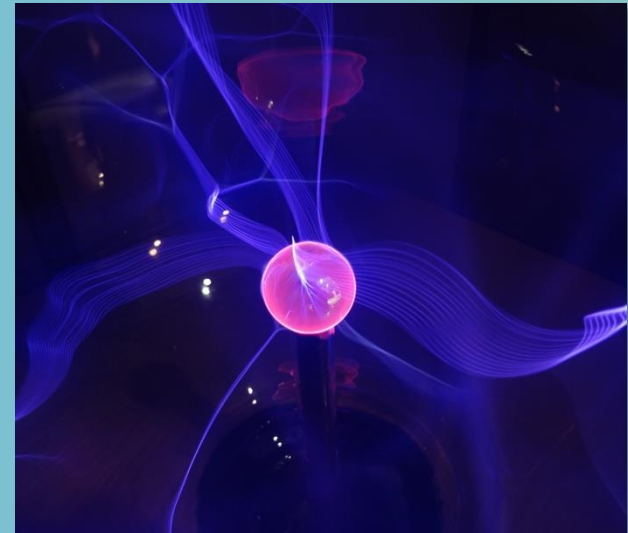
What are (new) quantum technologies?



Quantum computing

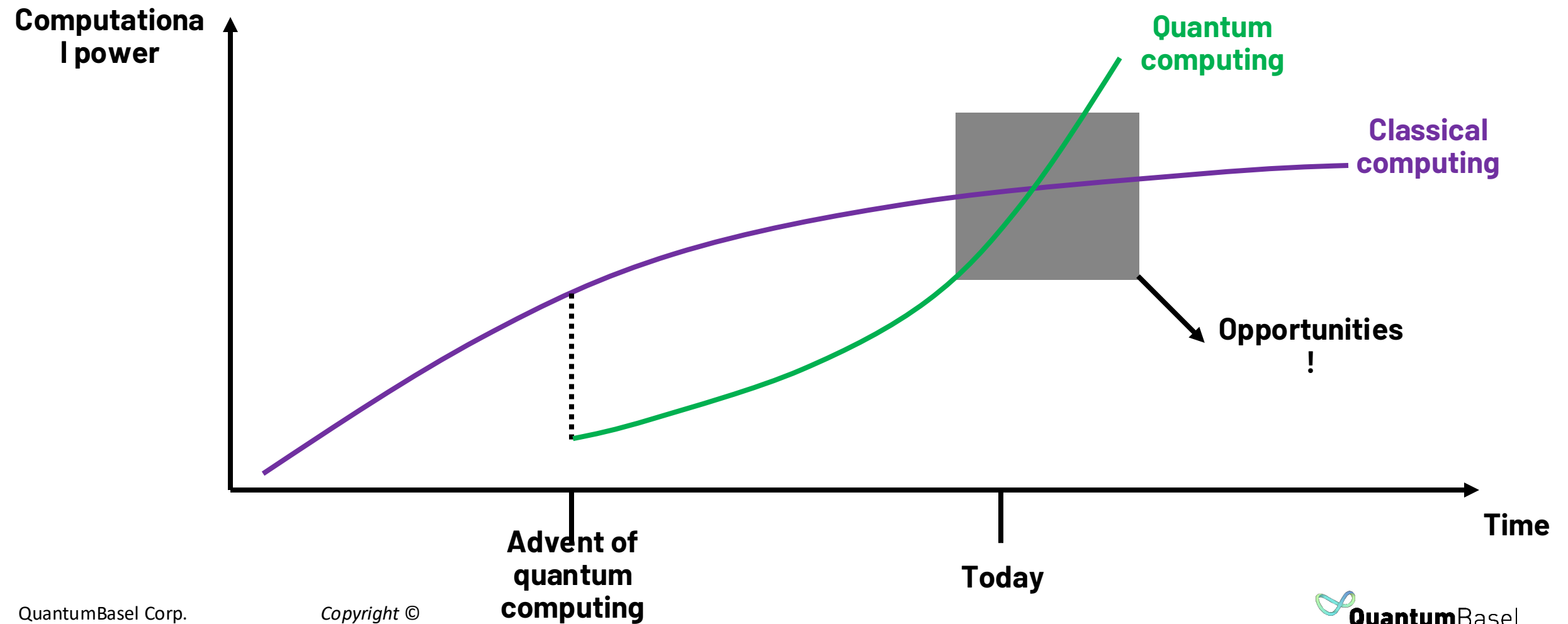


Quantum
communication &
security



Quantum sensing

For the first time, computing has bifurcated



Potential use-cases

Simulation

Optimization

Artificial Intelligence (AI)

Cryptography

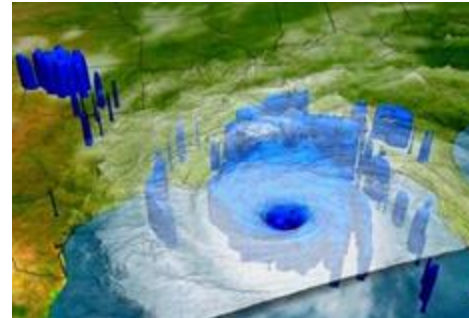
Differential Equations



Drug discovery^[1]



Financial fraud detection^[2]



Weather/climate forecasting^[3]



Encryption breaking^[4]

How we (eventually) do better with the addition of *quantum* computers than we can with the computers we have today?

[1] <https://www.verdict.co.uk/colegene-exscientia-ai-drug-discovery/>

[2] <https://appinstitute.com/10-best-financial-fraud-detection-apps-and-software/>

[3] https://www.gps4us.com/uu_uploads/NOAA_Supercomputer.jpg

[4] <https://www.usprotech.com/encryption/>

Bringing Quantum Computers to Industry

Build powerful
quantum computers

Figure out how to use
quantum computers



Bringing Quantum Computers to Industry

Build powerful
quantum computers

Figure out how to use
quantum computers



Quantum Hardware

Quantum Error Correction

Solid State Physics

Software for Quantum Computers

Quantum Algorithms

Complexity Theory

Hardware technologies

Superconducting qubits

Ions

Photons

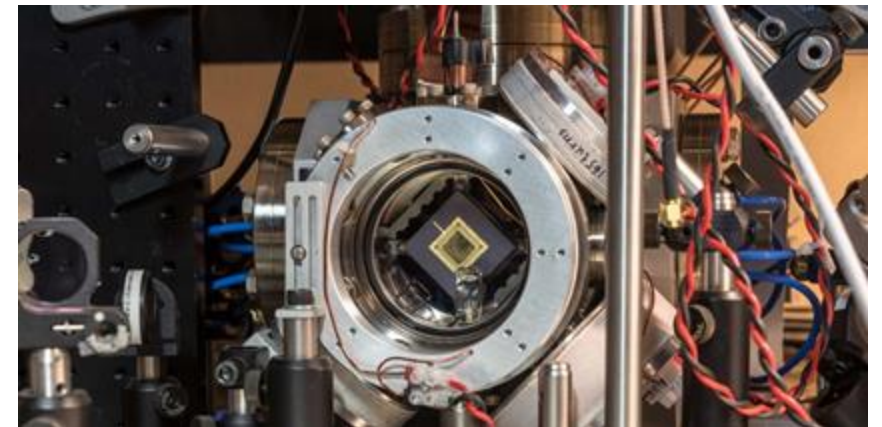
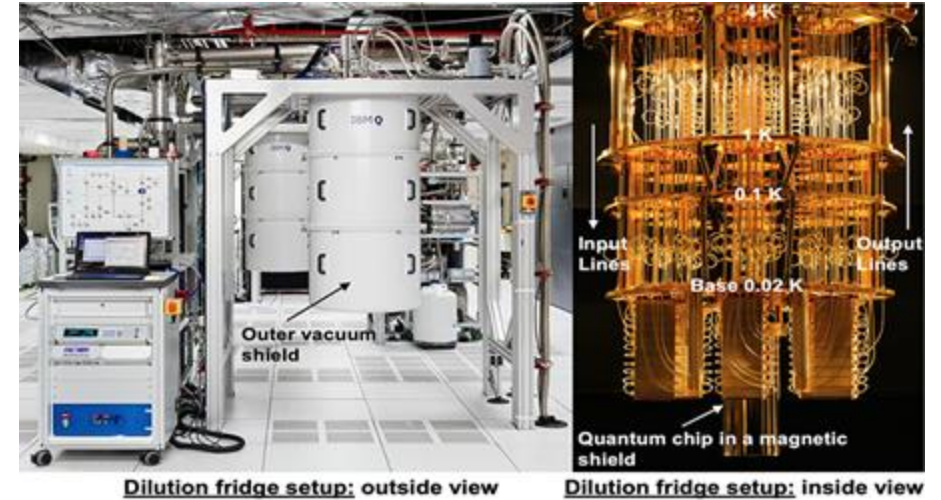
Atoms

Quantum dots

Silicon

Majorana fermions

<https://www.ibm.com/blogs/research/2020/01/quantum-limited-amplifiers/>



Domain of Science ✓

1.16M subscribers

The Map of Quantum Computing | Quantum Computers Explained

Research publications and patents in quantum technology have increased significantly over the last decade.

@Redstone 2024

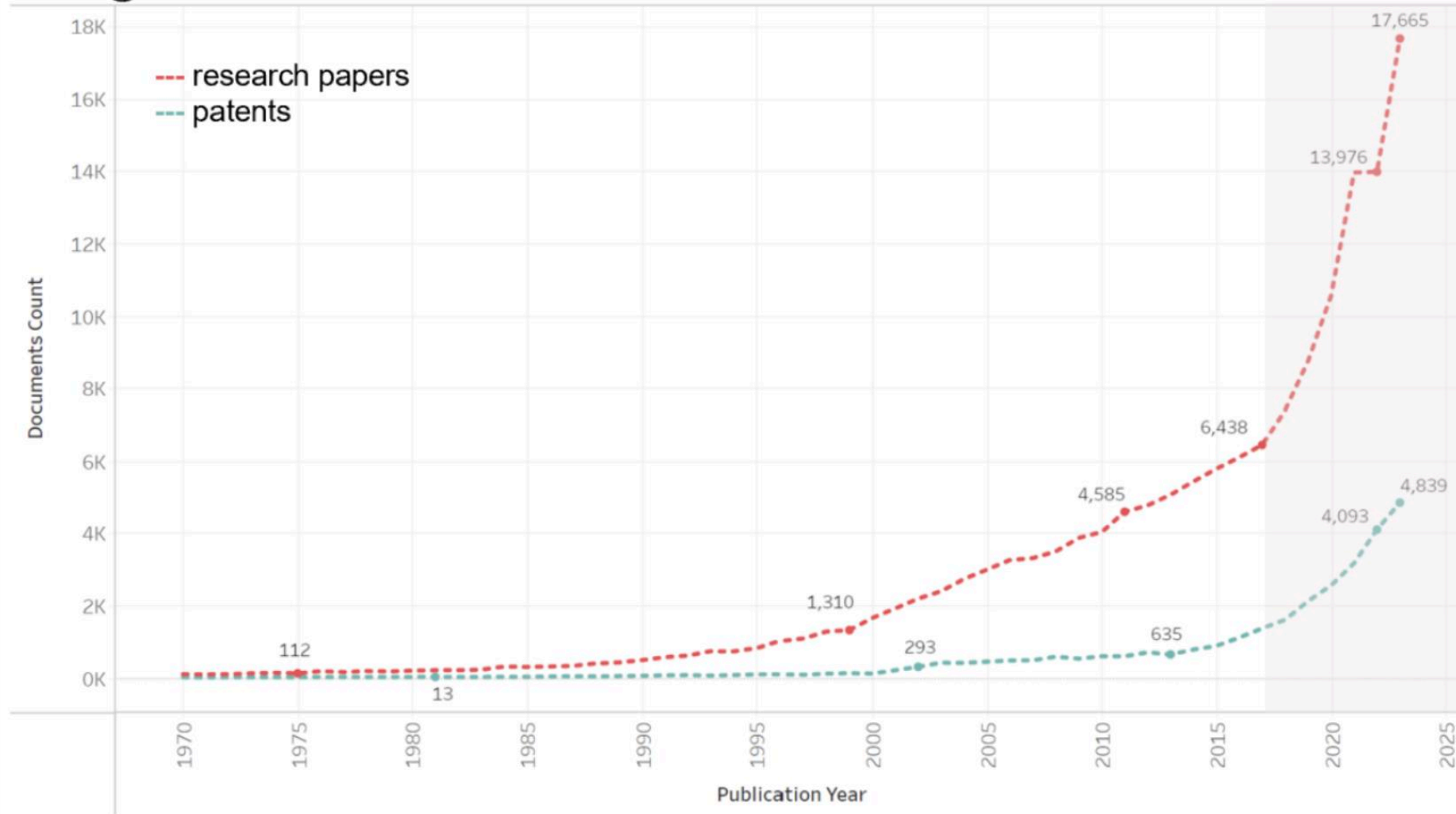
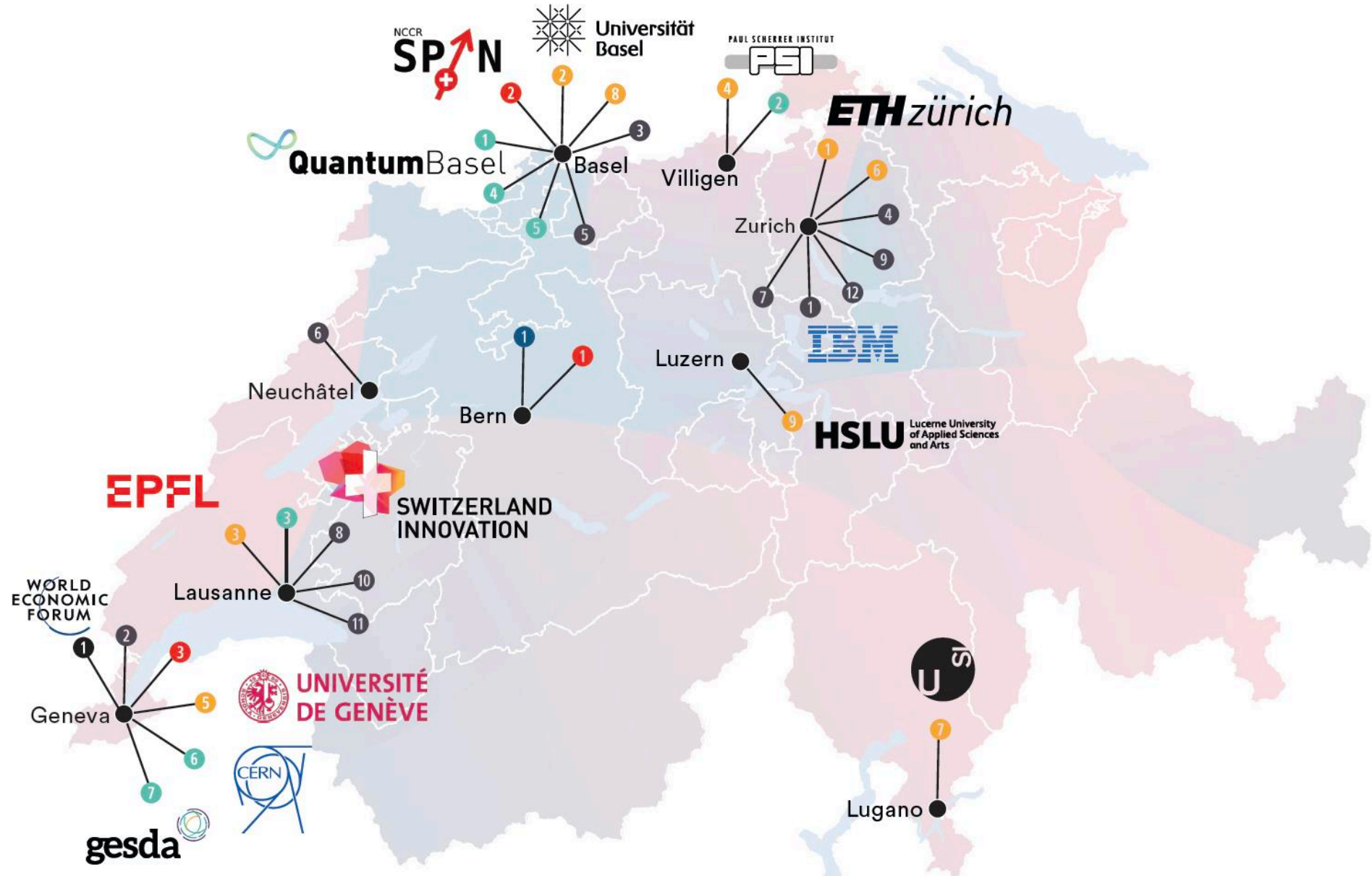


Figure 2: number of research publications and patents with keywords related to quantum technology (quantum computing, quantum computer, quantum sensing, quantum communication, quantum cryptography). Data extracted from lens.org, and elaborated by Redstone.

Swiss quantum ecosystem



<https://swissnex.org/app/uploads/sites/8/2023/11/Switzerland-A-Hub-for-Quantum-latest.pdf>



QuantumBasel - Our Ecosystem enables us to be a NEUTRAL hub to accelerate innovation

Vision - Democratizing the power of quantum computing & AI

Technology Partners



Academic Partners



Accelerators & VCs



QuantumBasel

Mission -

Some of our projects



HVAC
quantum
optimization



LLMs for
genomic
reports



QML in
computational
pathology



Quantum-
enhanced
delivery
efficiency



MERIAN ISELIN
Klinik für Orthopädie
und Chirurgie

Fine-tuned LLMs for
emergency wards

**Swiss Retail
Bank**

Quantum
applications in
financial
services



Quantum-
enhanced NMR
data analysis
for molecular
modelling

Zürcher Hochschule
für Angewandte Wissenschaften



Quantum machine
learning (QML)



QML in
tissue
analysis

[commutator, studios]

Corrosion inhibition
through quantum
(computing)
chemistry



Hardware-
specific
quantum
algorithms



Quantum
annealing
for optimization
problems

Endress+Hauser

Data analytics and AI
models



Energy
system
planning



AI and optimization
applications in
pharma

**Industry-Specific
Innovation Hub**

Keynotes

Events

**National and
international
media coverage**



Professional Enablement

Management trainings Quantum seminars

Technical and hands-on trainings

Project-based trainings



Projects

Industry projects

Academic projects

Hub projects

Quantum strategy



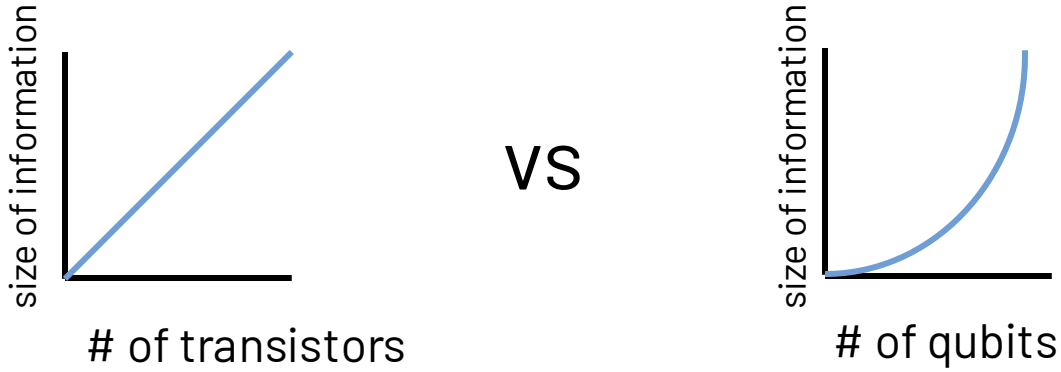
**Technology
Access**

Industry

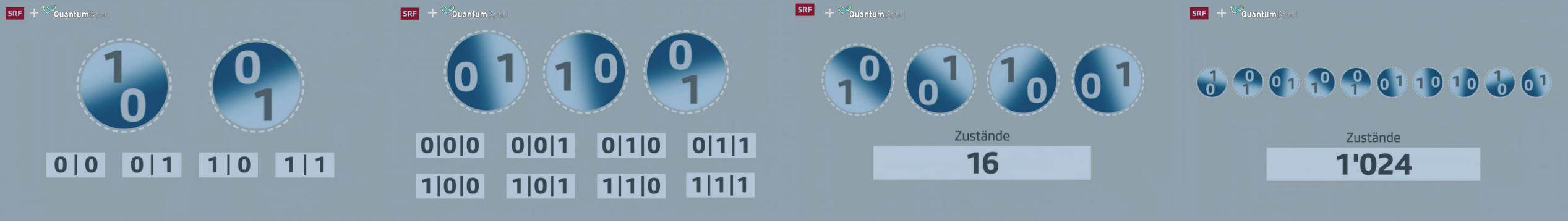
Startups

Academia

Quantum computer



Why can they explore calculations simultaneously?



Exponential increase in possible states

Problem



Solution 1

Solution 2

Solution 3

Solution 4

Problem



Solution 1
Impossible

Solution 2
Inefficient

Solution 3
Very efficient

Solution 4
Inefficient

Problem



Solution 1
Impossible



Solution 2
Inefficient



Solution 3
Very efficient



Solution 4
Inefficient



Problem



Solution 1
Impossible



Solution 2
Inefficient



Solution 3
Very efficient



Solution 4
Inefficient



QuantumBasel Team

CEO



CEO

Quantum Team



CQO & Deputy CEO



Quantum Algorithms Researcher



Quantum Algorithms Researcher



Quantum Algorithms Researcher

Business Development Team



Delivery Manager



CRO

Innovation, Marketing & Academia



Business Intern



Lead Operations



Lead Marketing



Lead Academia & Partnering



Event & Project Manager



Lead Business Innovation

AI Team



Technical Consultant IBM



IT Architect



IBM

ThanQ



QuantumBasel

Center of Competence
for Quantum and Artificial Intelligence



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