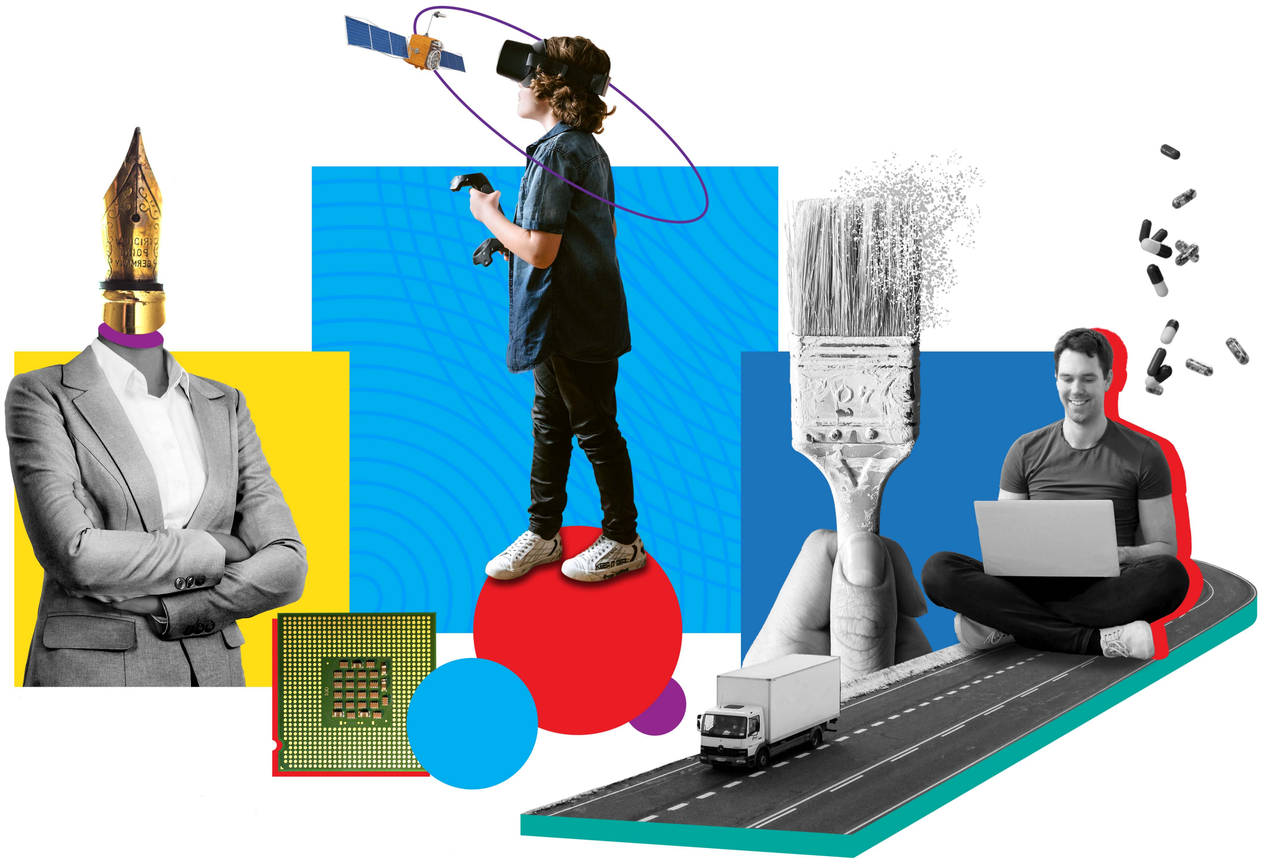
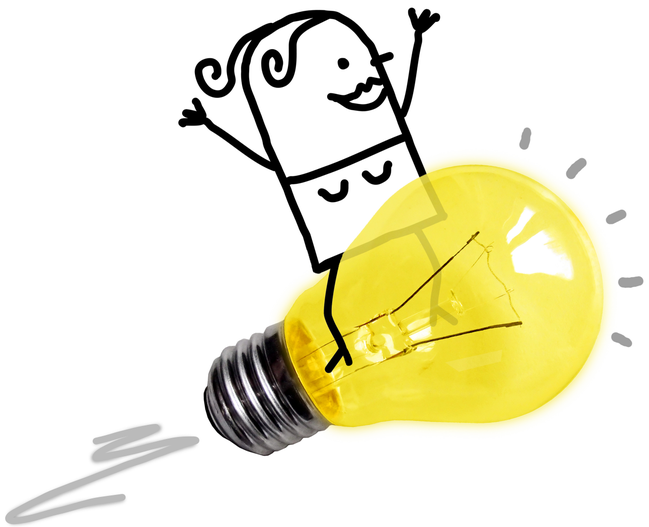
qplaylearn

www.qplaylearn.com

Caterina Foti

Rosario Maniscalco



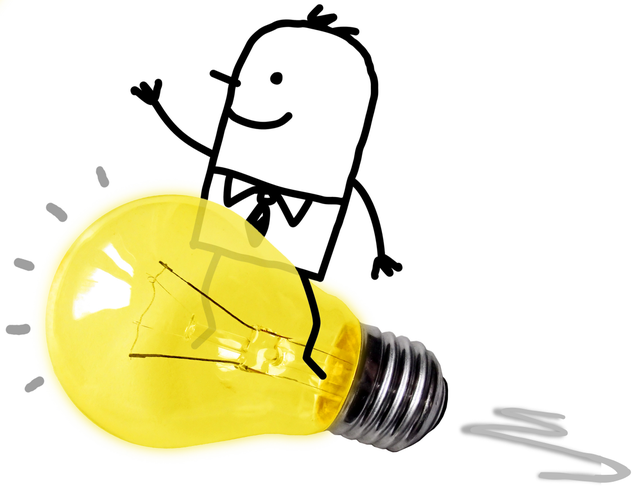


Sabrina Maniscalco

Professor,
University of Helsinki
Algorithmiq Ltd

Cecilia Chiaracane

PhD,
University of Helsinki



Daniel Cavalcanti

PhD,
Algorithmiq Ltd

qplaylearn

www.qplaylearn.com

MISSION: to teach the beauty of quantum science and inform about the impact of quantum technologies to everyone, regardless of their age or background

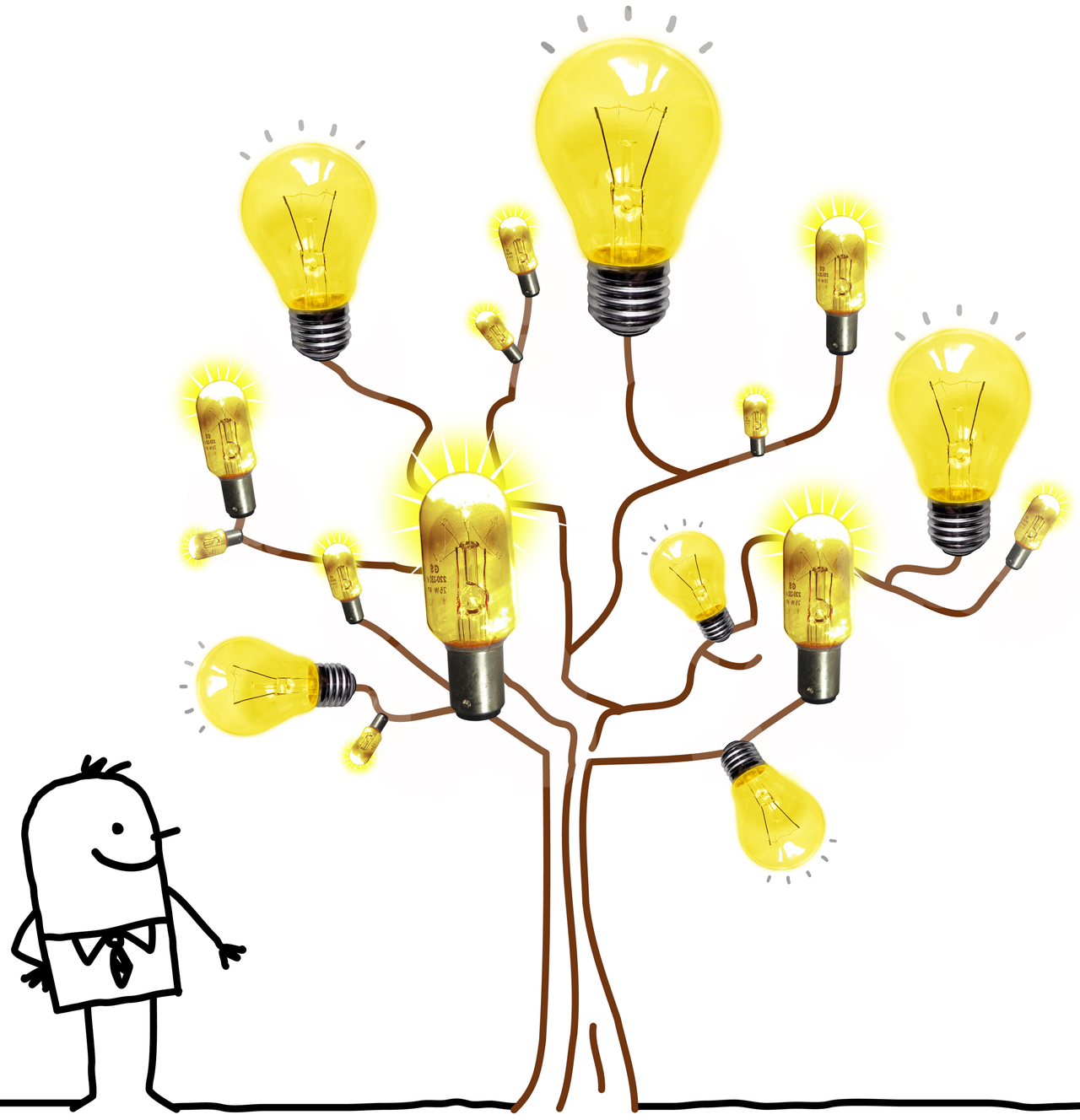
Joint project algorithmiq

Institute Q

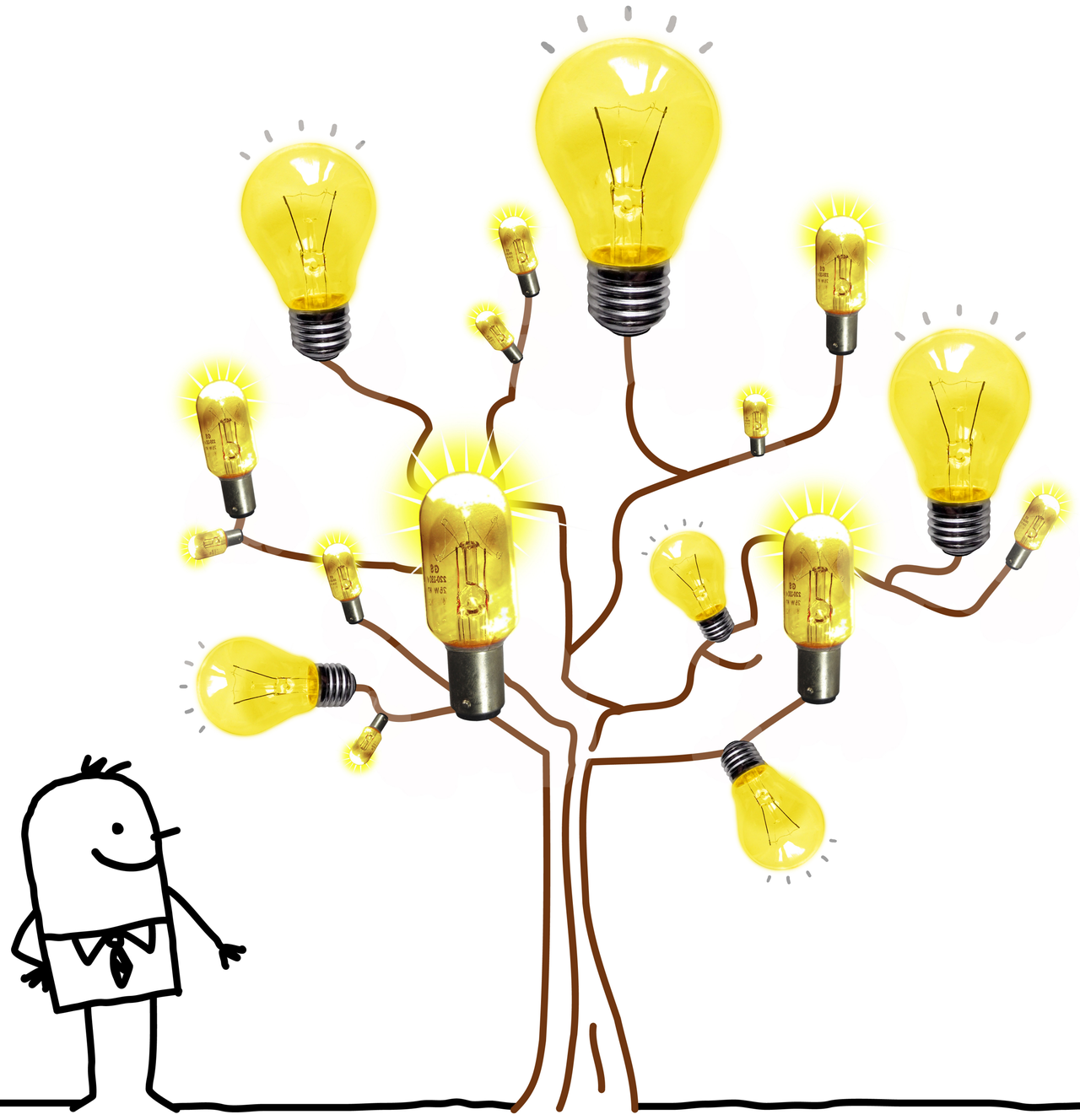
UNIVERSITY OF HELSINKI

Aalto University

Sponsors IBM STRANGE WORKS



We believe in the importance of science education **&** scientific literacy **for our society**



We believe in the importance of
quantum education
& quantum literacy
for our society

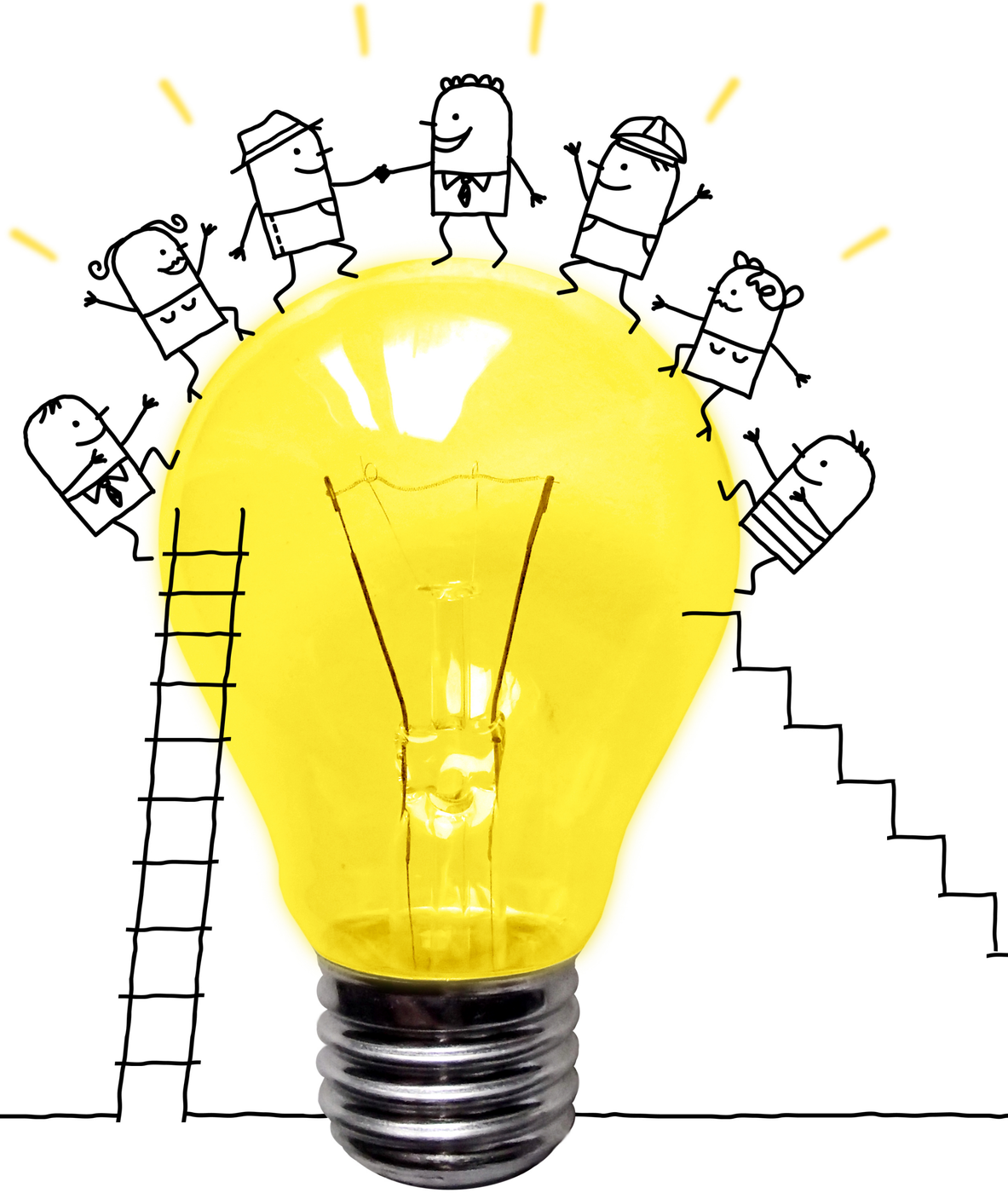
We build connections

Companies

Schools

Citizens

Academia



Intelligence is diverse

Multiple Intelligences, Howard Gardner

Intuition

playfulness

enjoyability

interactivity

Understanding

physical concepts

experiments

easy-to-follow descriptions

Formalisation

formal understanding

mathematics

Intelligence is diverse

Multiple Intelligences, Howard Gardner

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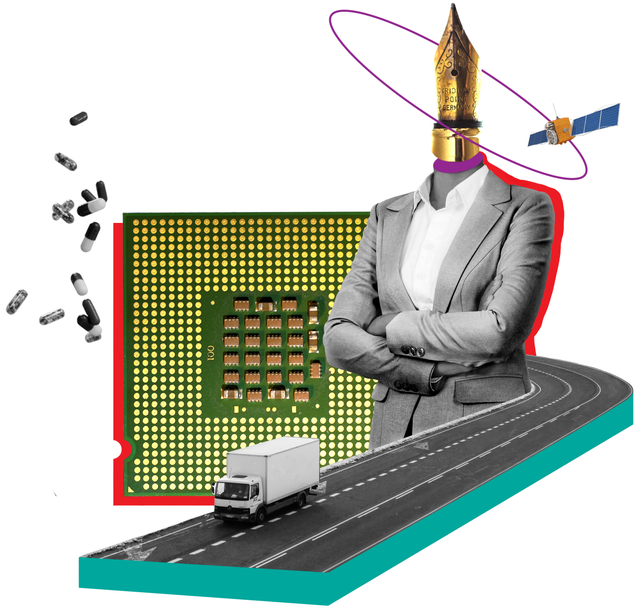
MULTILEVEL EDUCATION

EDUCATION

For educators, students, and the curious



BUSINESS & SOCIETY

For companies, policy makers and the media

ART & CULTURE

For artists, curators, and cultural managers

Education

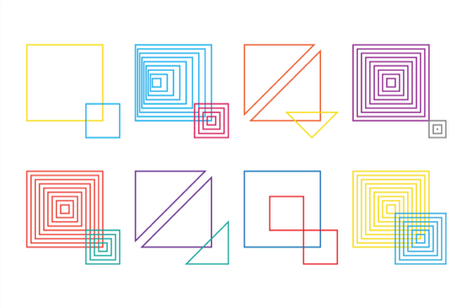
For educators, students and the curious

We develop stimulating content for teachers, students and the general public to introduce the basic concepts of quantum physics in a playful, clear and accurate way.

Intuition	Understanding	Formalisation
Play	Discover	Learn

Education

Resources



QUEST–Quantum Dictionary
Education

Photonic Trail
Education

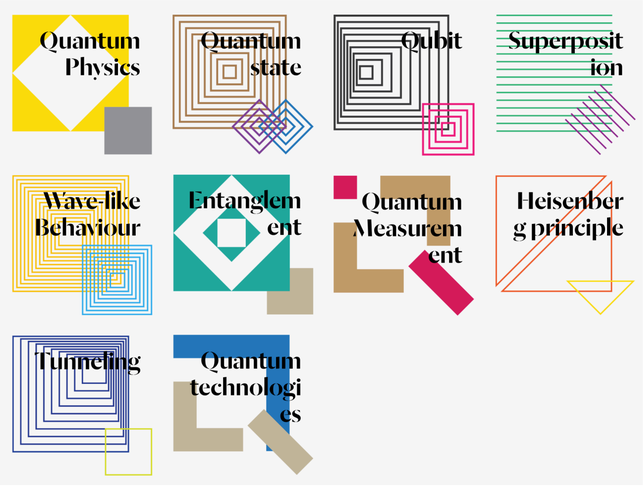
QCards
Training

QUEST

Choose a concept and start qplaylearning.

Quest is a quantum dictionary, a free resource where you can find key concepts of Quantum Physics.

Each entry of the Quantum Dictionary is tackled by our unique methodology relying on three different approaches to learning: we use games, videos, and graphics to form intuition, simple yet accurate explanations to understand physics, and mathematics to formalise your knowledge.



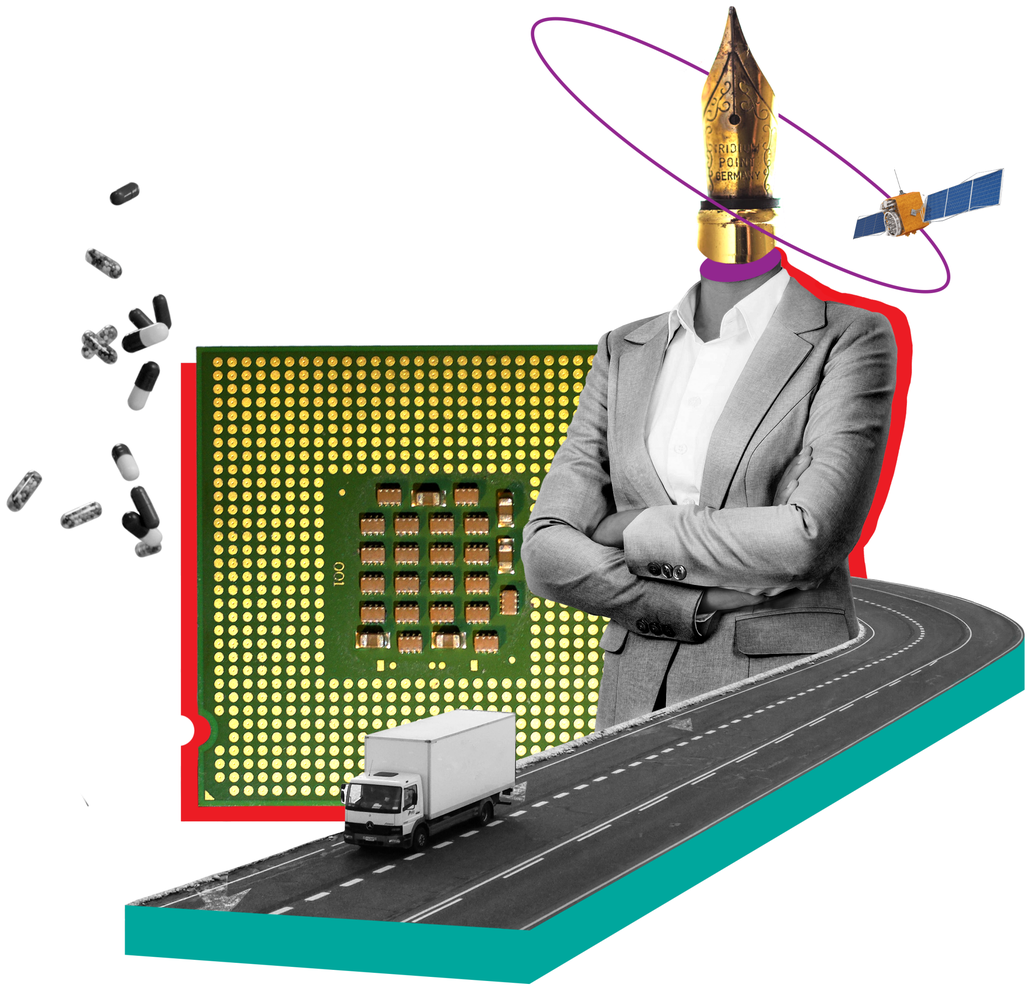
Business & Society

For companies, policy makers and the media

We offer courses and training materials that explain how quantum technologies work and how they will impact society.

Self-contained courses to:

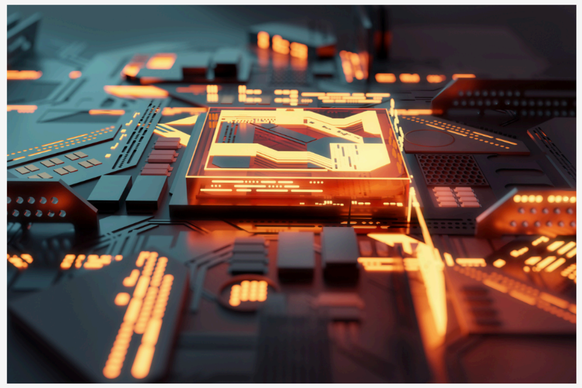
- Distinguish hype from reality;
- Identify new marketing possibilities;
- Stay up-to-date on the latest trends in quantum technologies.



Business & Society

Training

Inspiration quantum
Training



Quantum computing - The soft way
Training

general course focusing on Quantum Computing

Target audience: business' leaders, managers; policymakers

freely available on demand

Introduction to Quantum Computing

Target audience: employees, students interested in a career in quantum technology

Art & Culture

For artists, curators, and cultural managers

We create art-and-science projects and exhibitions inspired by quantum concepts and technologies.

We support artists and cultural agents with:

- Production and co-production of artworks related to quantum physics and quantum technologies
- Scientific training and mentoring on quantum concepts.
- Curation of works of art related to quantum mechanics.
- Organisation of art-science events.

Art & Culture

Selected projects

Quantum jungle
Art instalation

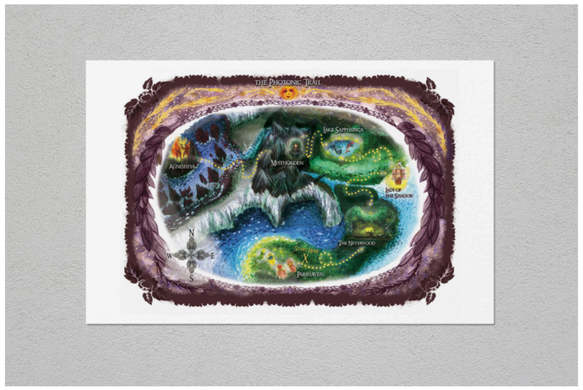
interactive art installation

Visualisation of a quantum walk; real quantum simulations connected to the springs and the LEDs.

We are bits
VR experience

immersive VR experience

Multidisciplinary project involving virtual reality (VR), contemporary dance, and physics.



Photonic Trail Exhibition
Exhibition

exhibition based on the online game

Combination of narratives, artistic illustrations and elements of quantum optics explored through an immersive single-player game.

WORLD QUANTUM DAY

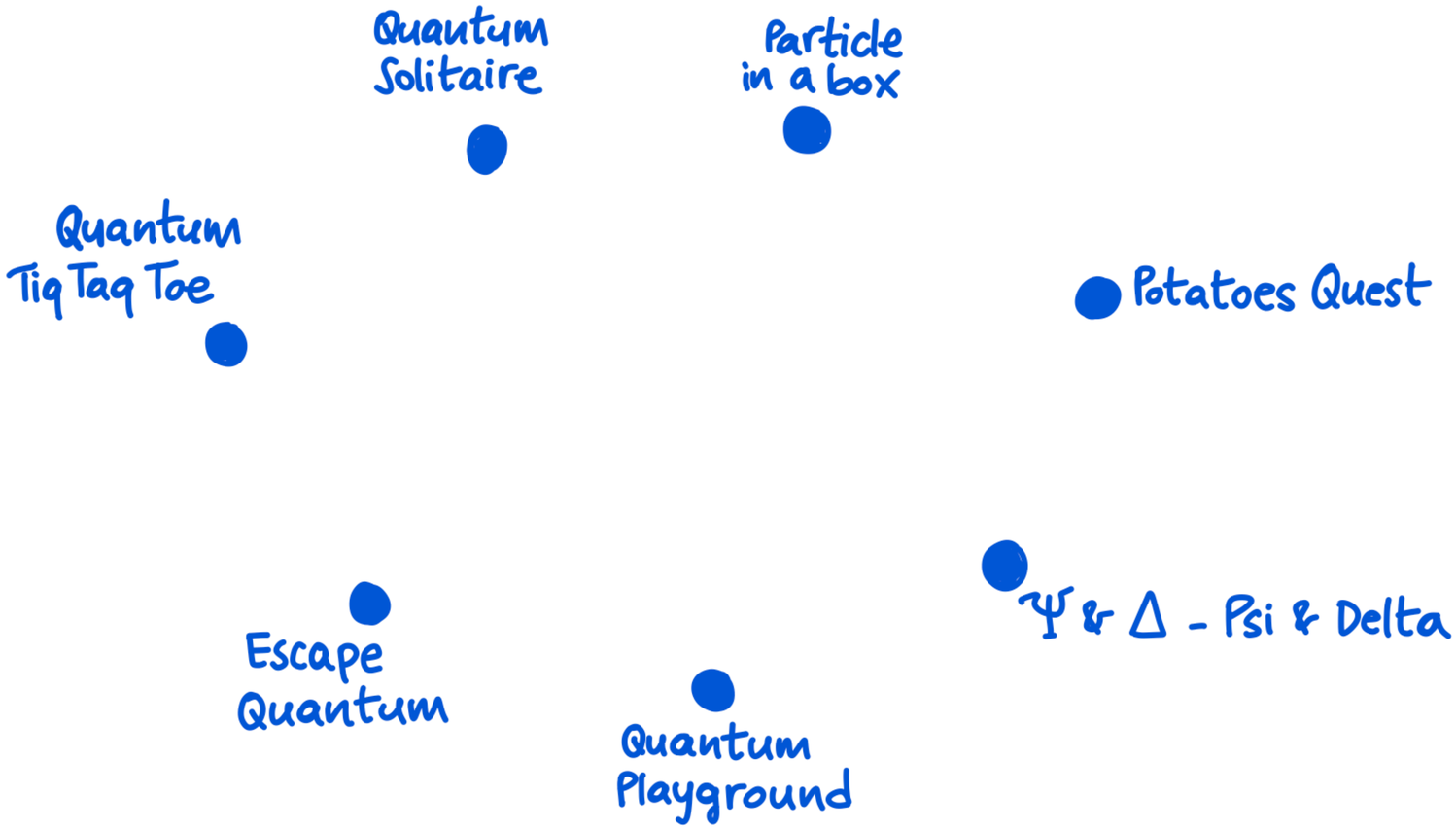
APRIL 14

qplaylearn

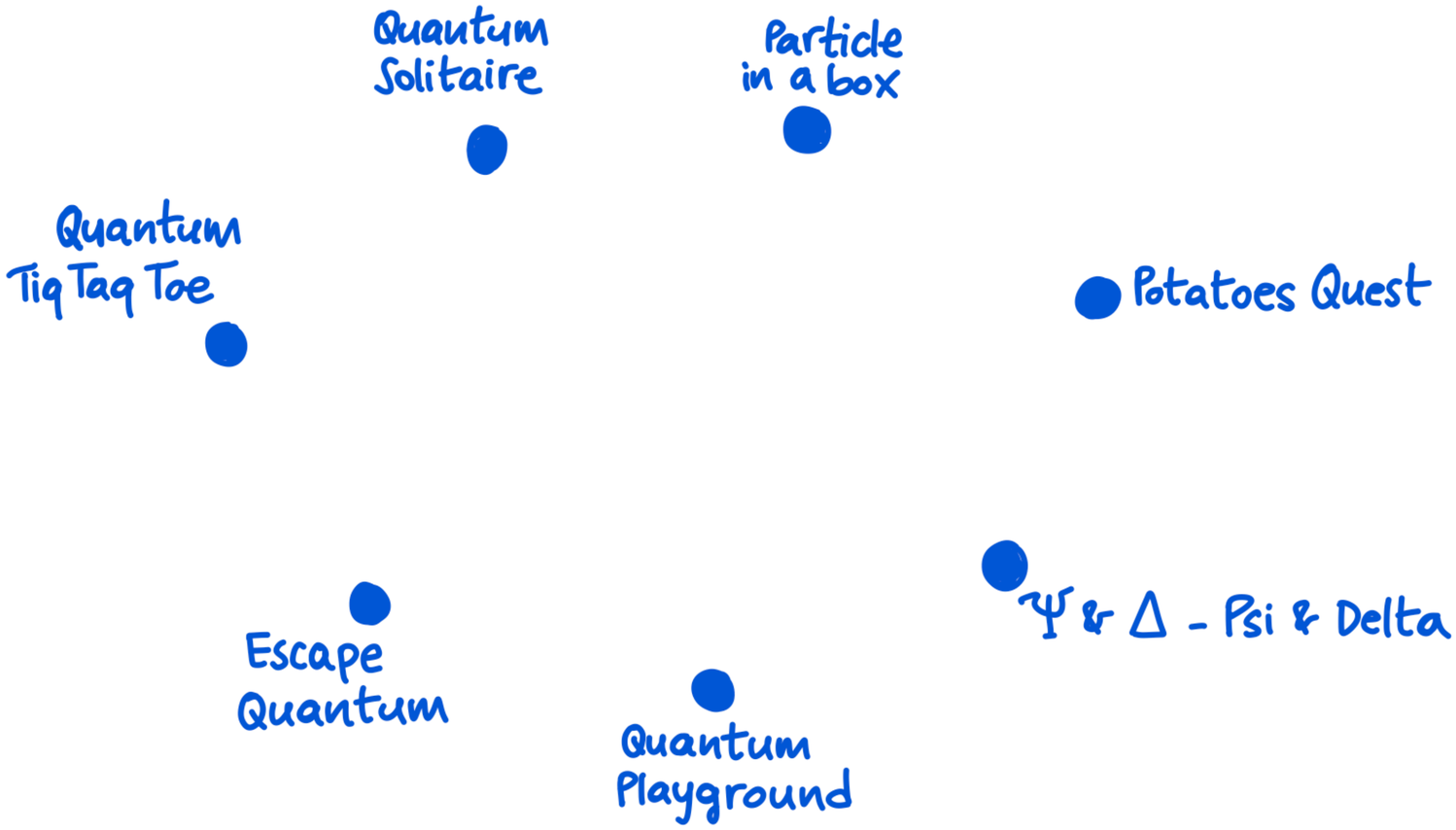
CERN

QUANTUM TECHNOLOGY INITIATIVE

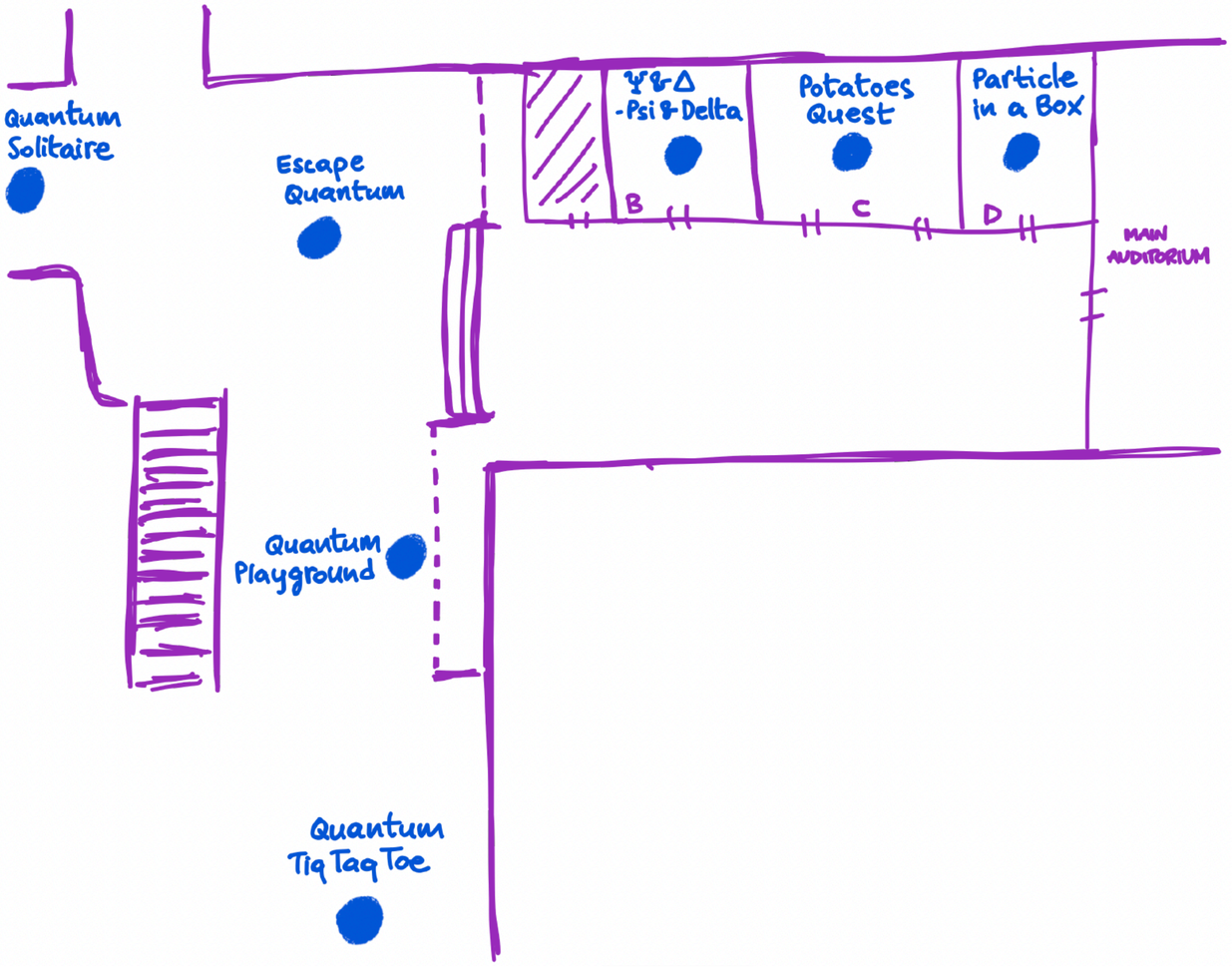
LEARN-by-PLAY — How the tournament works

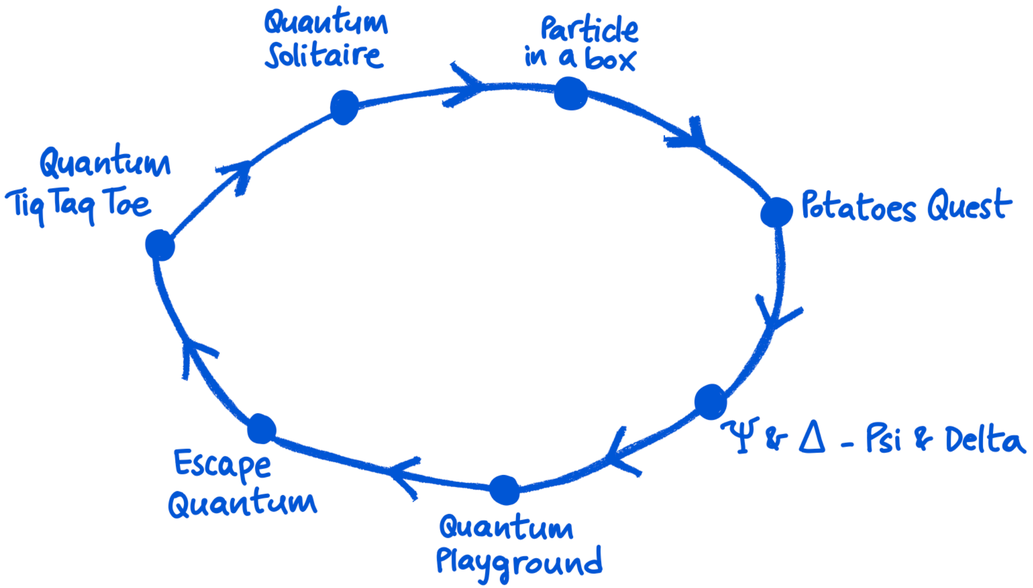


LEARN-by-PLAY — How the tournament works



Remember to collect the cards at each station!


Quantum Solitaire
Escape Quantum
Quantum Playground
Quantum Tiq Taq Toe
Ψ & Δ - Psi & Delta
Potatoes Quest
Particle in a Box
B
C
D
MAIN AUDITORIUM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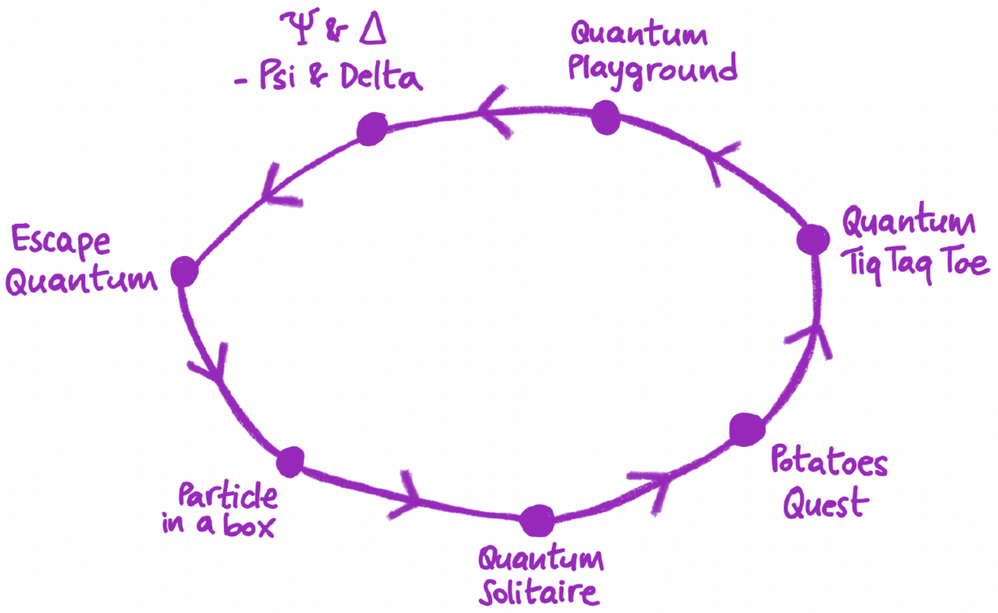
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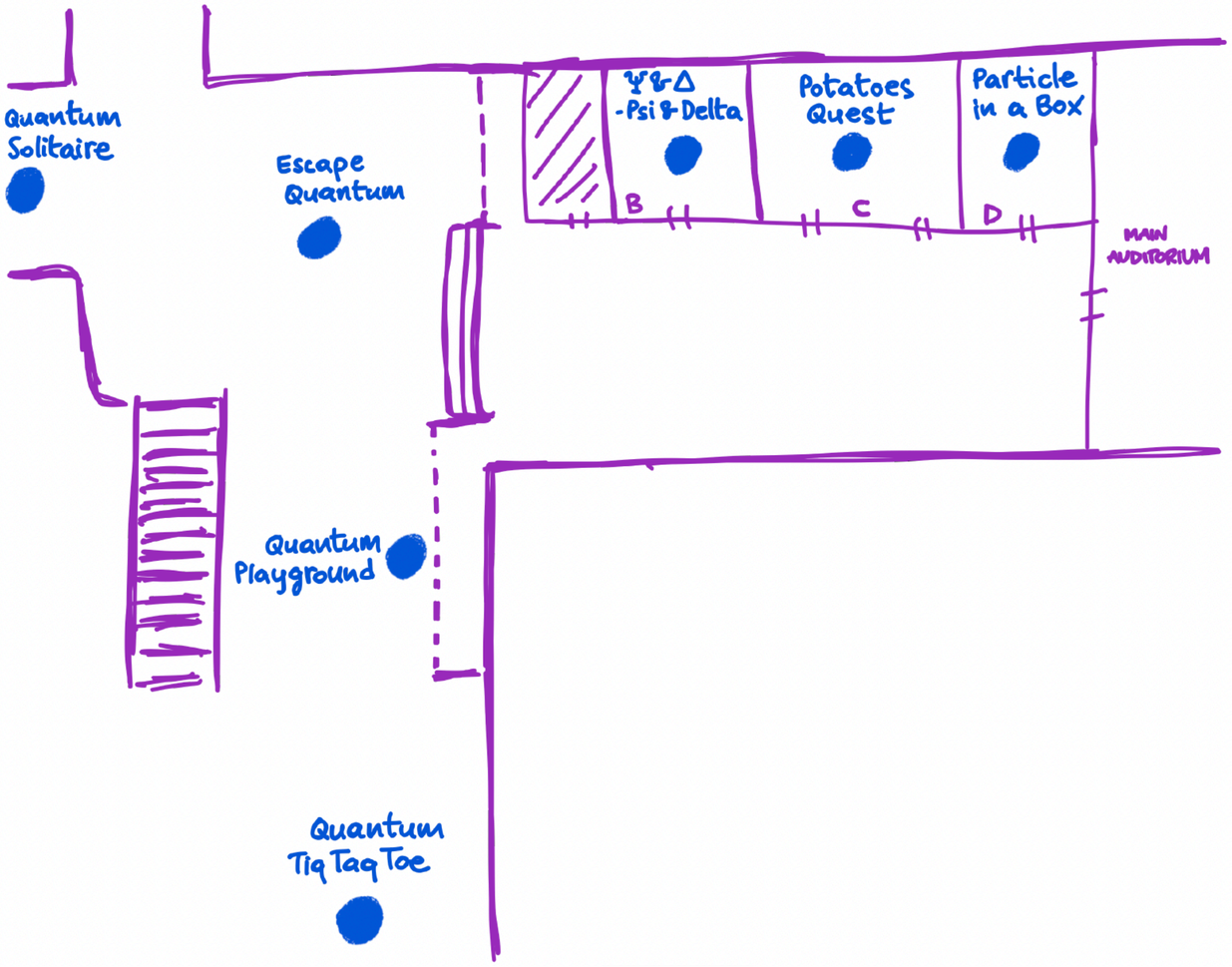
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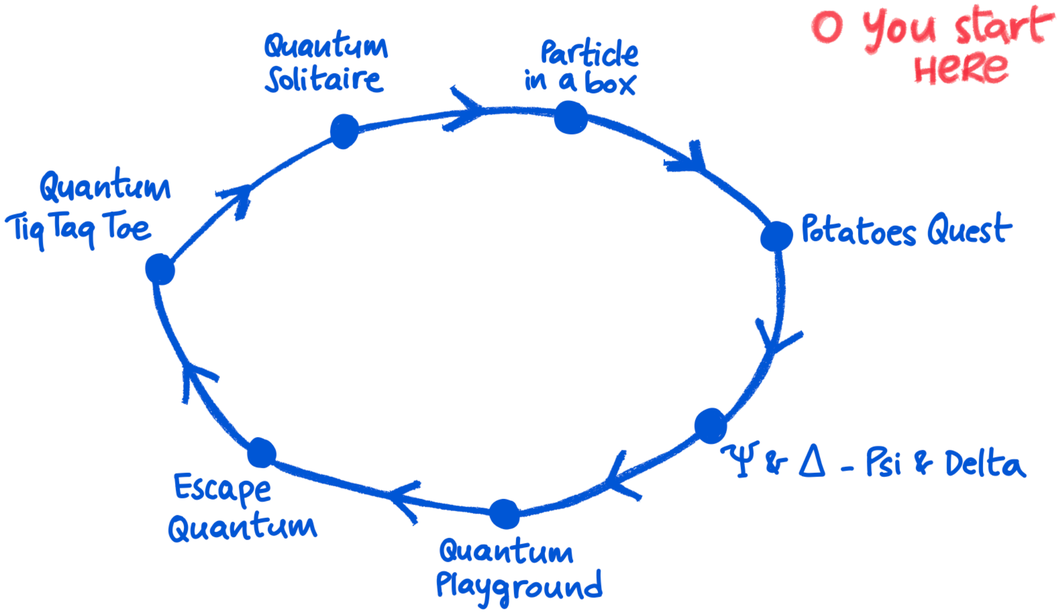
you start HERE
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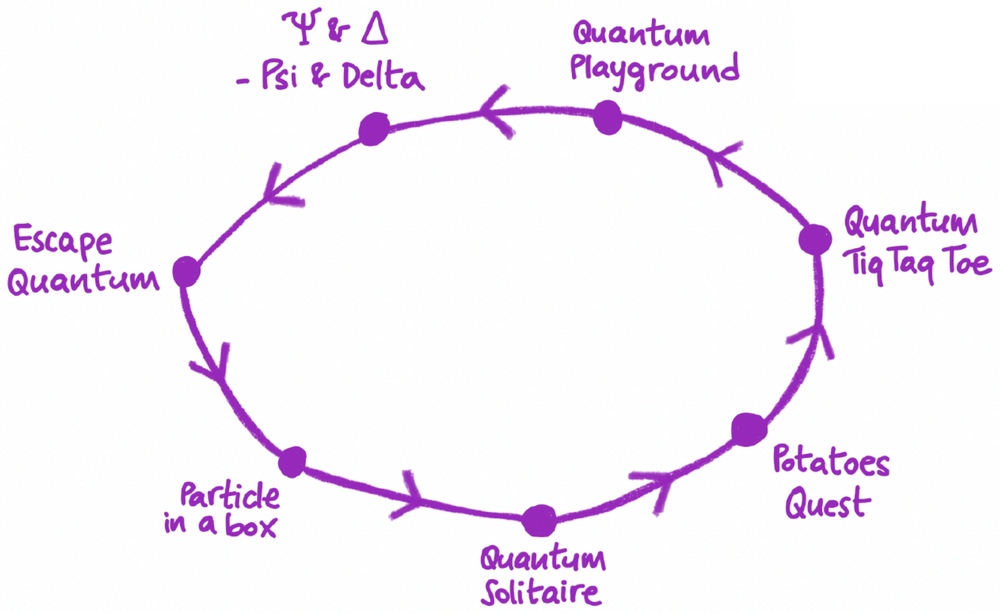
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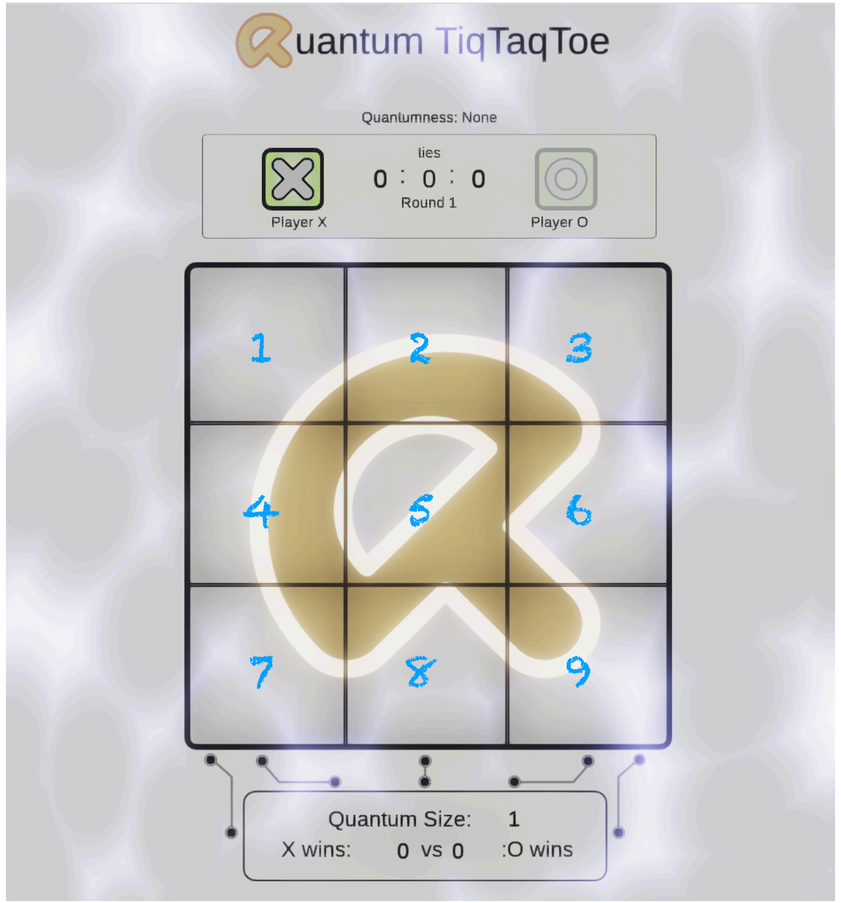
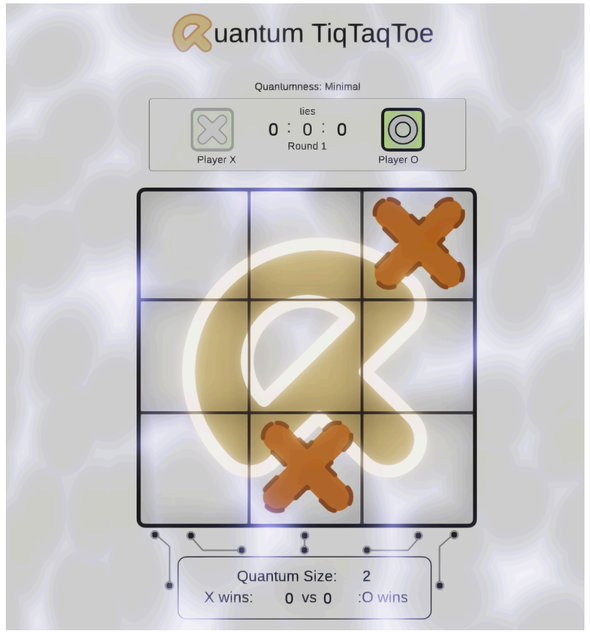
particle X



particle O

SUPERPOSITION

particle X



in general

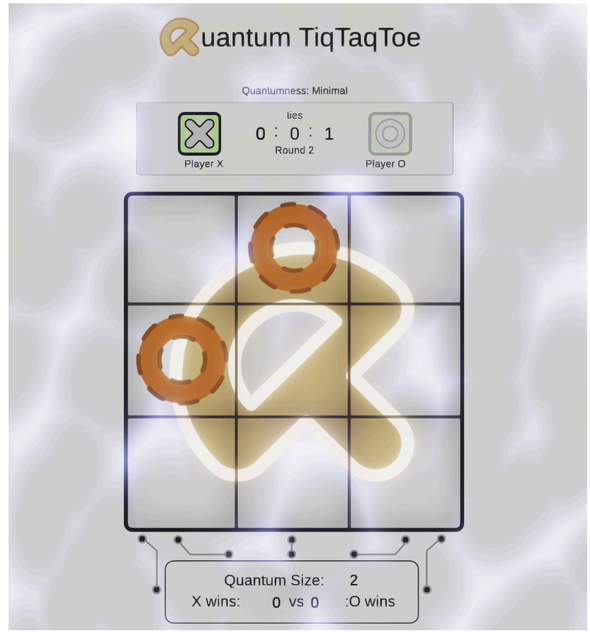
$$|Q\rangle_X = \frac{1}{\sqrt{2}}\left(|m\rangle_X + |n\rangle_X\right)$$

$$|Q\rangle_O = \frac{1}{\sqrt{2}}\left(|m\rangle_O + |n\rangle_O\right)$$

$$1 \le m, n \le 9$$

$$m \neq n$$

particle O



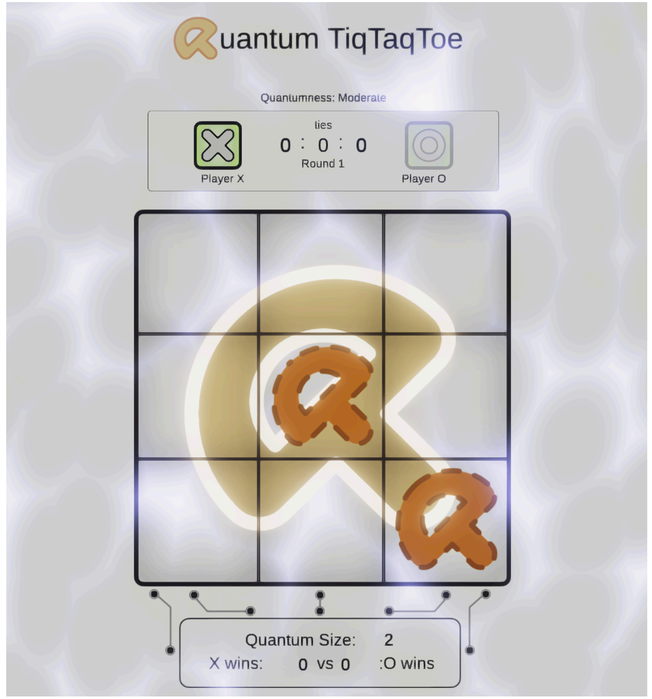
$$|Q\rangle_X = \frac{1}{\sqrt{2}}\left(|3\rangle_X + |8\rangle_X\right)$$

$$|Q\rangle_O = \frac{1}{\sqrt{2}}\left(|2\rangle_O + |4\rangle_O\right)$$

ENTANGLEMENT

$$|Q\rangle_X = |9\rangle_X$$

particle X and particle O
!! are ENTANGLED !!



$$|Q\rangle_{XO} = \frac{1}{\sqrt{2}}\left(|5\rangle_X|9\rangle_O + |9\rangle_X|5\rangle_O\right)$$