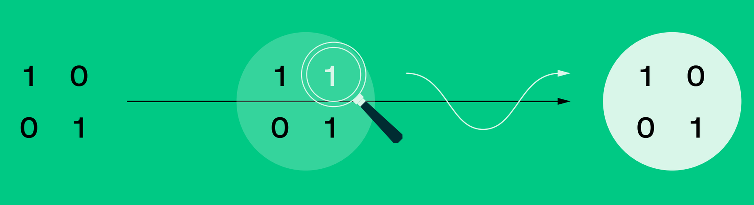
Pasqal

The Path to FTQC

Unlocking the Future with Fault-Tolerant Quantum Computing

Fault-Tolerant Quantum Computing ensures reliable computations by correcting errors in quantum systems.



Building Blocks

Qubit

Just as classical computing rely on bits for its operations, quantum compting is based on quantum bits, or qubits.

Superposition

Until it is measured, the qubit is a superposed state, with a potential value of both 0 and 1.

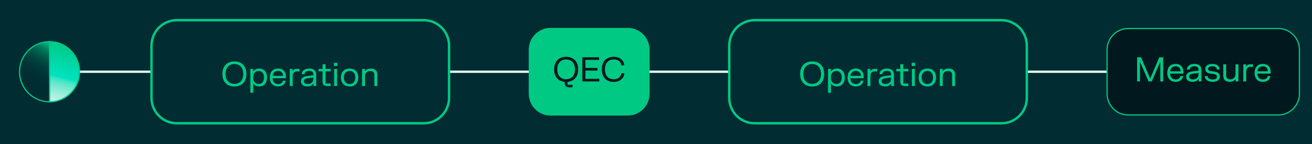
Entanglement

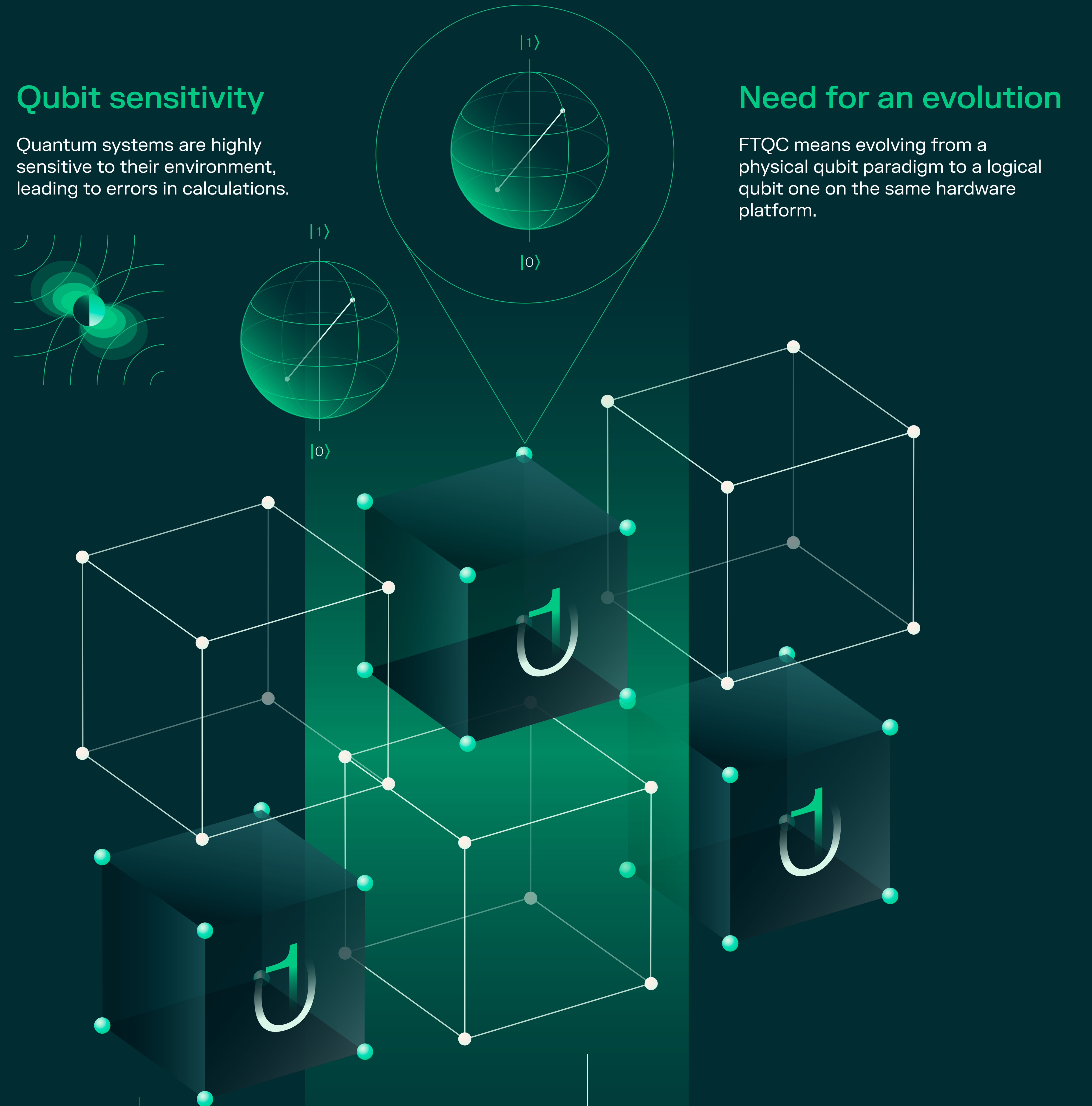
Two particles — and so two qubits — can be linked together so the state of one qubit can be deduced from the measure of the other.

37 Rb Rubidium 85,4678

Pasqal uses neutral rubidium atoms act as physical qubits.

The Challenge of Quantum Error Correction





Qubit sensitivity

Quantum systems are highly sensitive to their environment, leading to errors in calculations.

Need for an evolution

FTQC means evolving from a physical qubit paradigm to a logical qubit one on the same hardware platform.

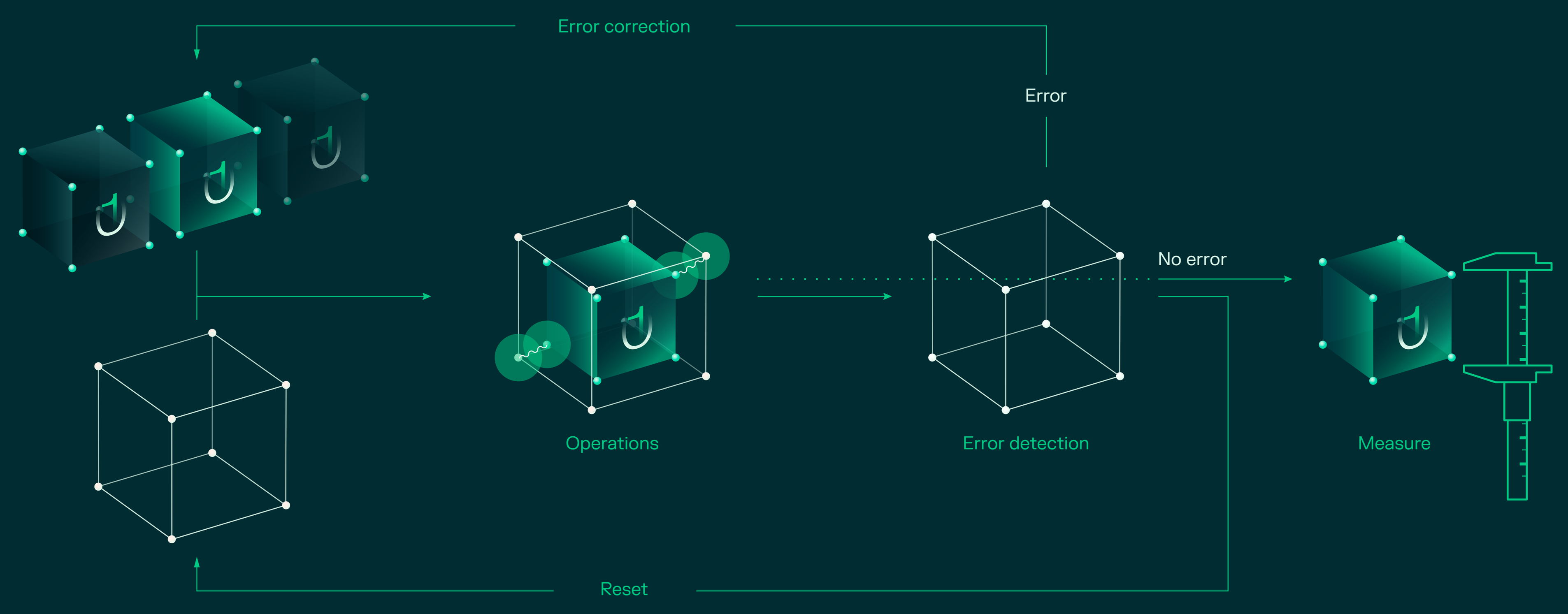
Logical qubit

Entangling multiple physical qubits to create a logical qubit.

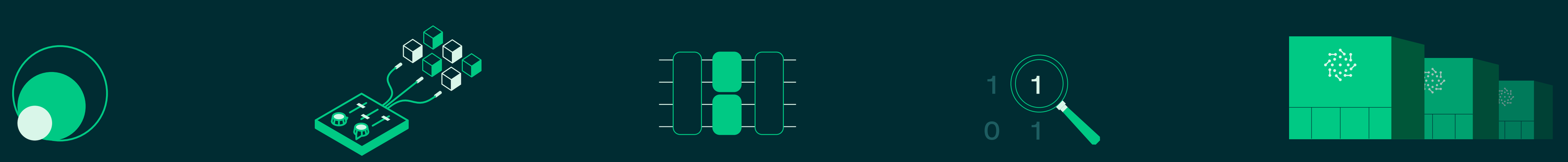
Ancillary qubits

Ancillary qubits are measured to detect if errors have occurred, without disturbing the logical qubits' states

The logical qubit solution



Pasqal's approach to FTQC



Qubit Scaling

Increase the nulmber of qubits in a single QPU.

Adressability

Run & parallelize multiple qubit operations.

Repetition Rate

Increase the maximum number of calculations per second.

Error Correction

Implement active error correction on logical qubits.

Interconnect

Interconnect QPUs to increase logical computational power.

1,100 atoms in a single register

99.85% 1 qubit gate fidelity reached by Pasqal

4 partnerships dedicated to FTQC

Pasqal