PhD Spotlight 2024
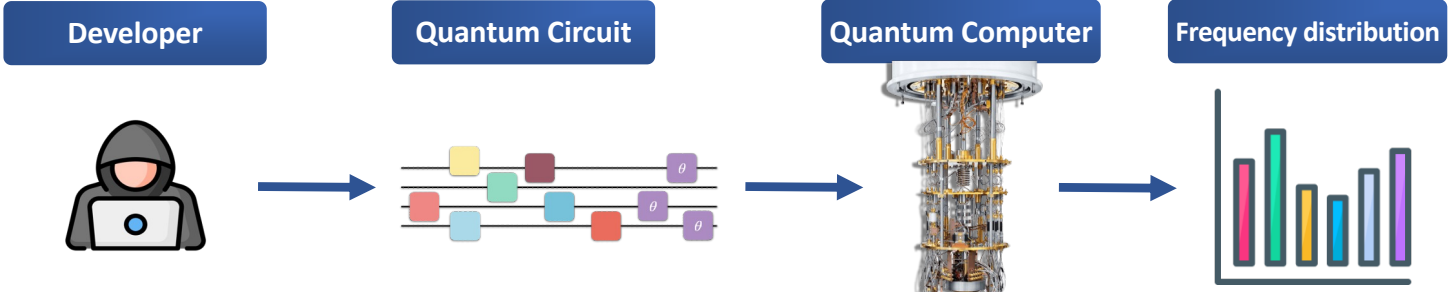# *Quantum Software Engineering*
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Contacts

Developer

Quantum Circuit

Quantum Computer

Frequency distribution

Quantum Computing Sucks! *(currently)*

Current Quantum Computers are:

• **Noisy**: We can only perform small computations, or the output becomes unreliable!

• **Small**: Only a few dozen to a few hundred qubits are available for use.

• **Overloaded**: The waiting queue can be hours or even days long!

• **Heterogeneous**: There's no standard design— each company builds quantum computers differently.
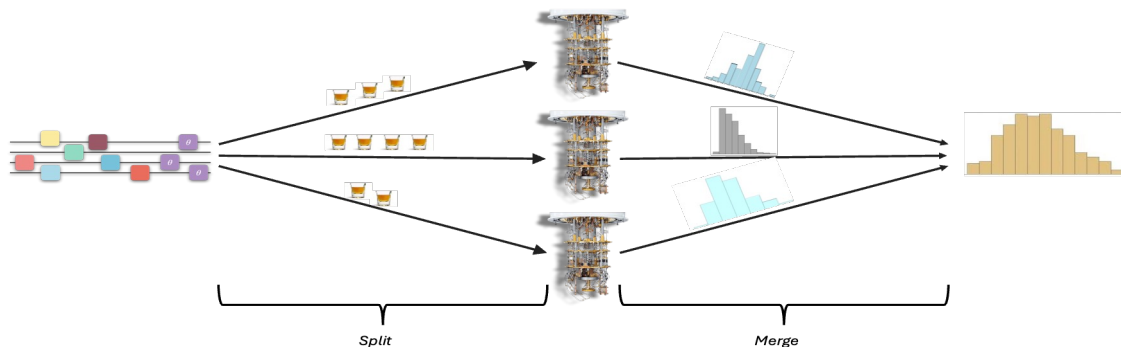
Quantum Software Engineering

Aims to make the **interaction** with Quantum Computers **smooth** and **effective**
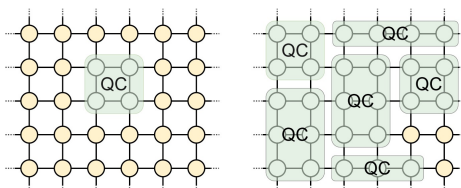
Our Solution: *Shot-wise Distribution*

Shot-wise Distribution is an approach we developed to **distribute** a **quantum computation** across **multiple heterogeneous** Quantum Computers while also considering *Quality-of-Service* objectives
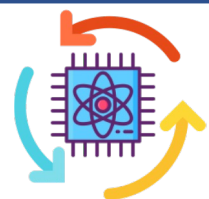
Split

Merge

Research Directions

Circuit Cutting

Circuit Composition

Holistic Quantum Deployment