

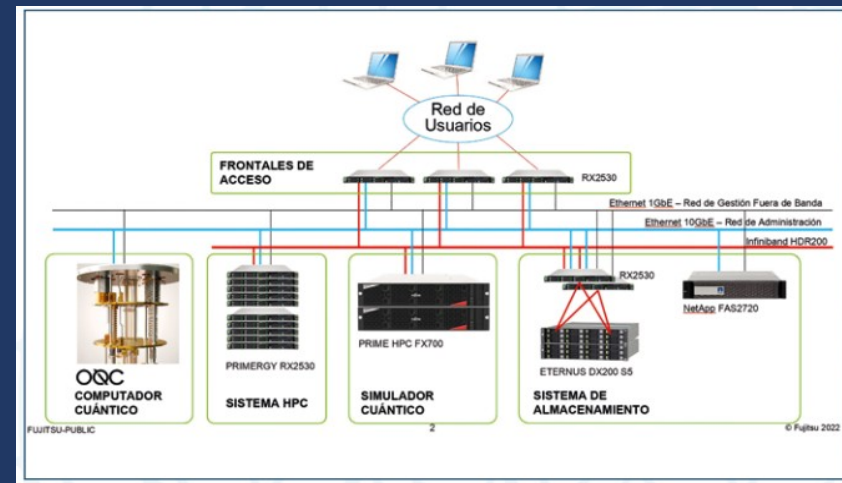
Qm10»

Introduction



What is Qmio?

- Computing infrastructure designed to research in Quantum Computing and Quantum inspired computing
- It is composed of:
 - Quantum Processing Unit (QPU)
 - HPC System
 - Quantum Computer Emulator
 - Storage system
- Access is granted through specific open calls

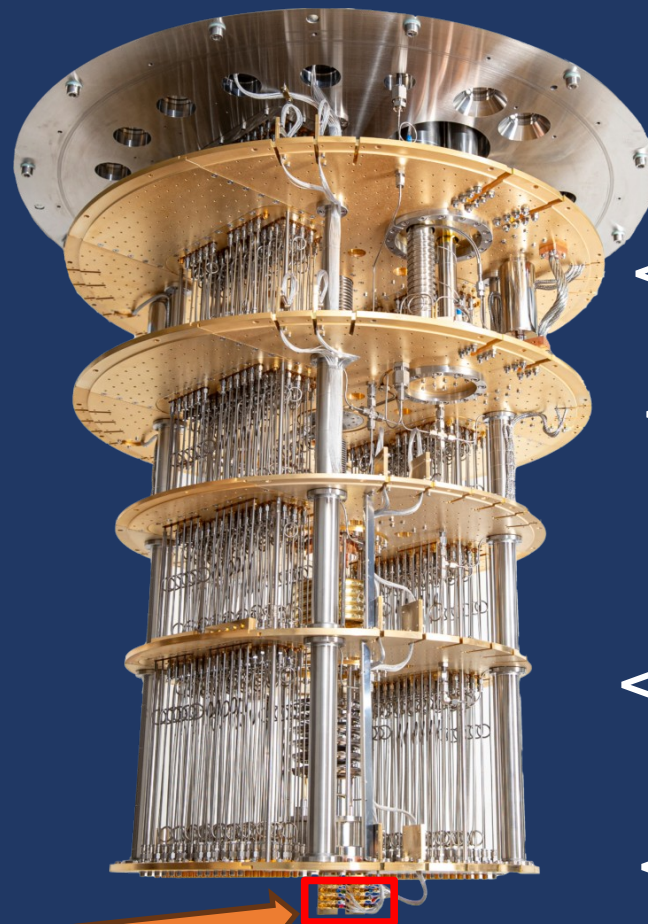


QPU Cooling

QPU Control



QPU



$<40\text{K}$

$<4\text{K}$

$<1\text{K}$

$<100\text{mK}$

$<20\text{mK}$

Qmio QPU Specs

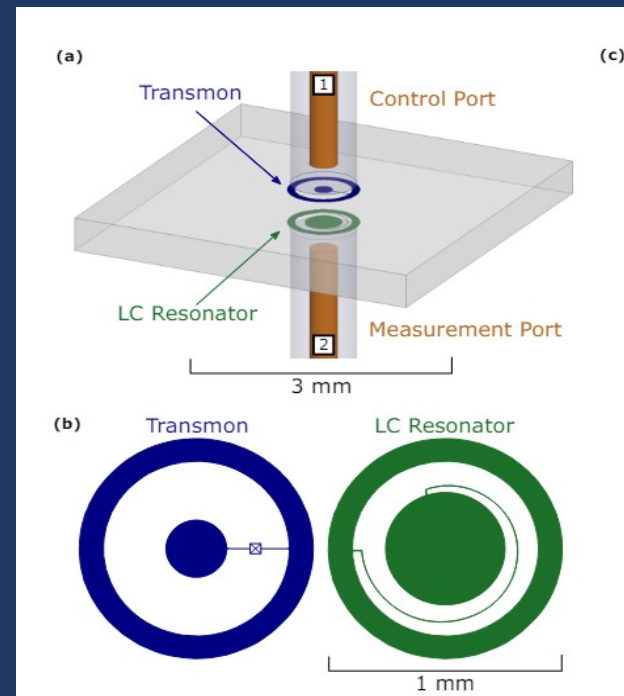
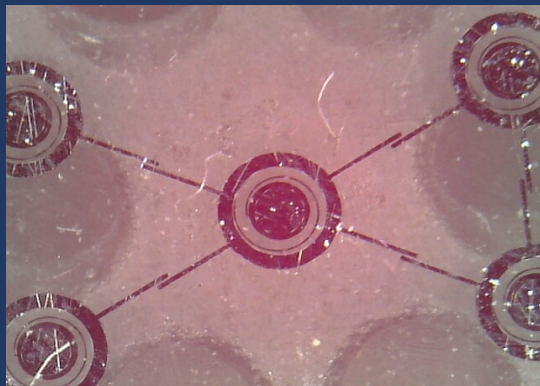
Qubits: 32 (35)

Qubit technology: CoaxMon

Native Gates:

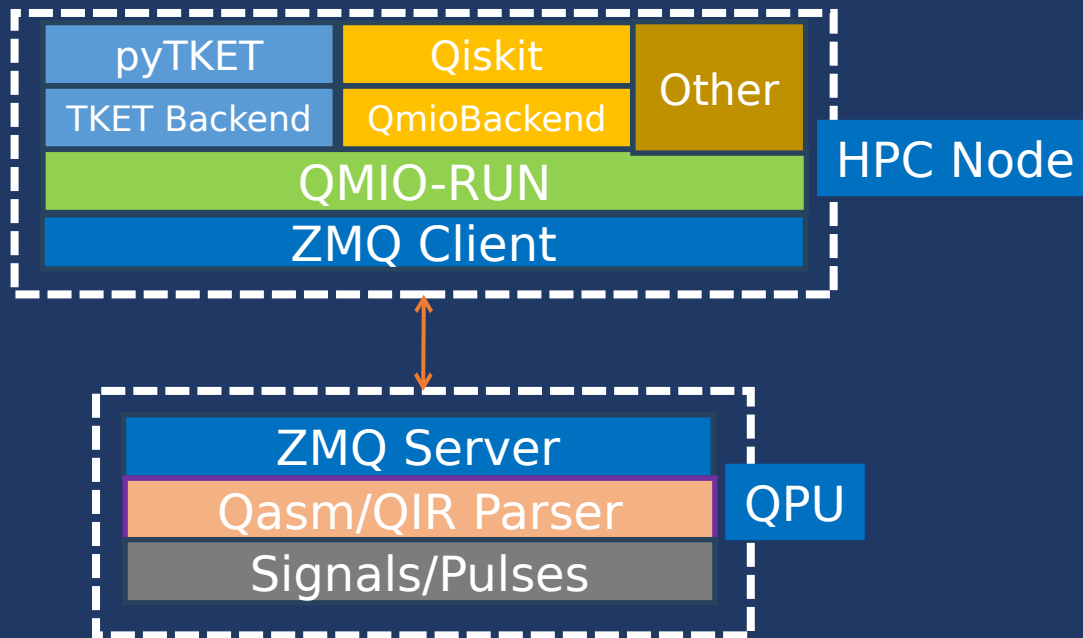
1Q: **RZ** (virtual), **SX**

2Q: **ECR** (actually $RZX(\pi/4)$)

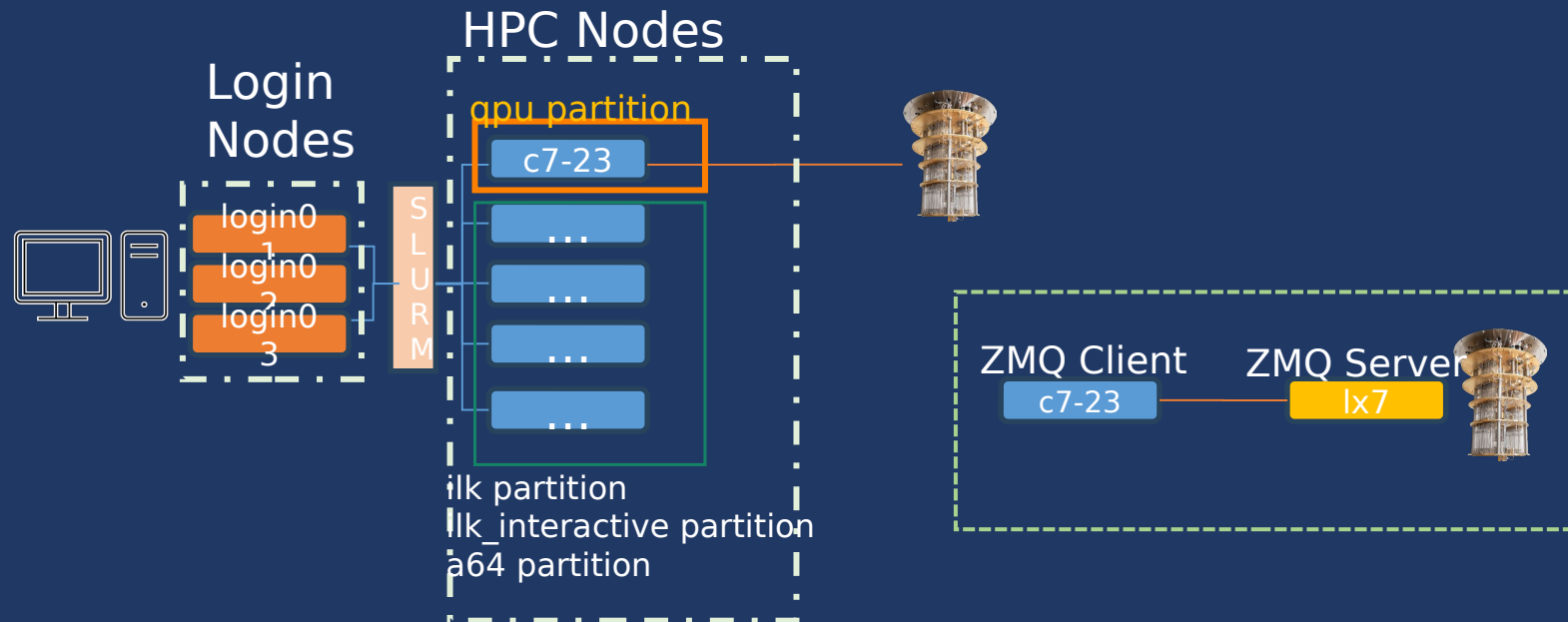


ArXiv:1703.05828

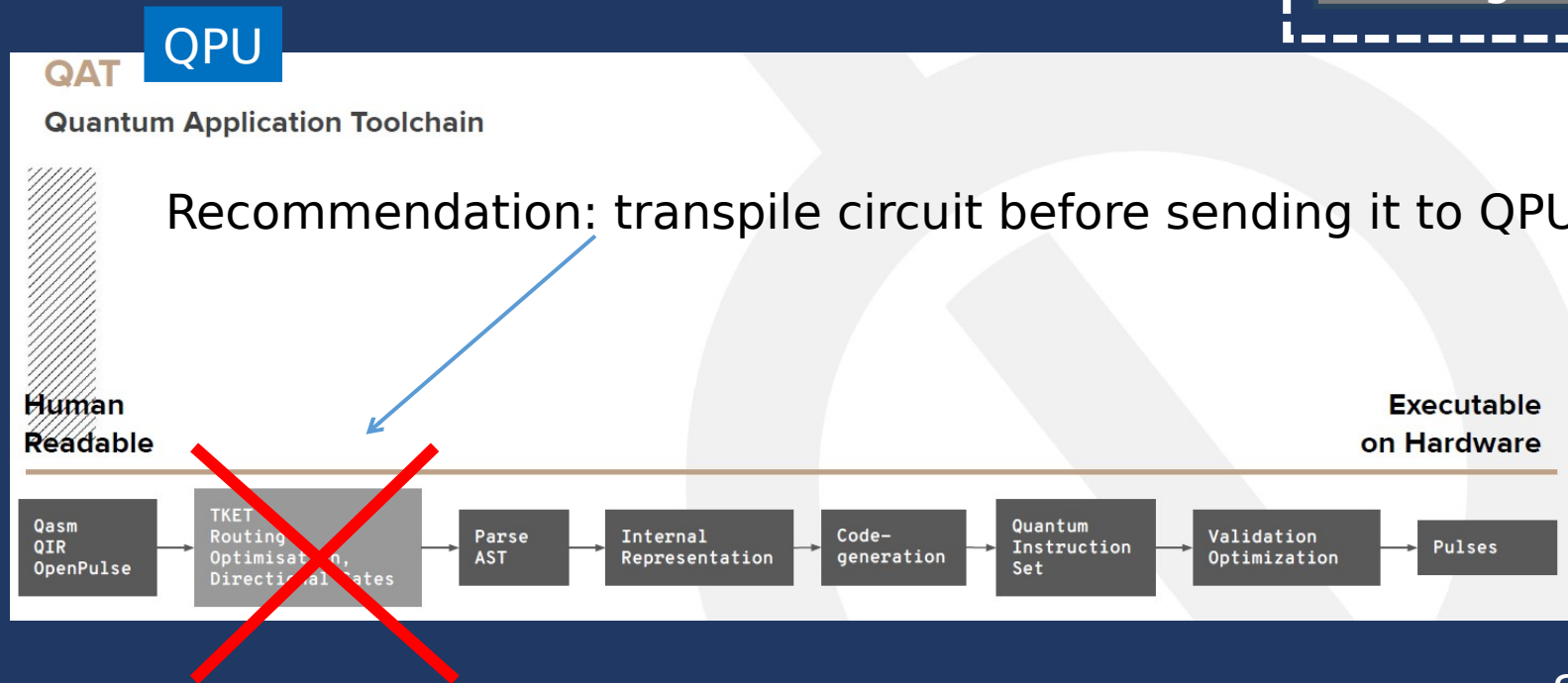
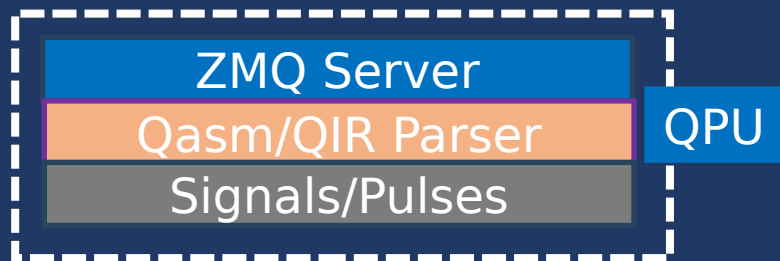
Qmio QPU Software stack



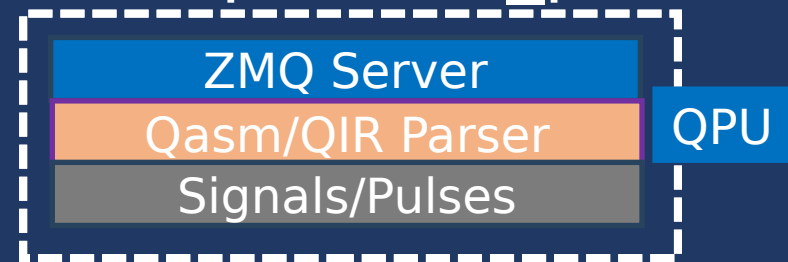
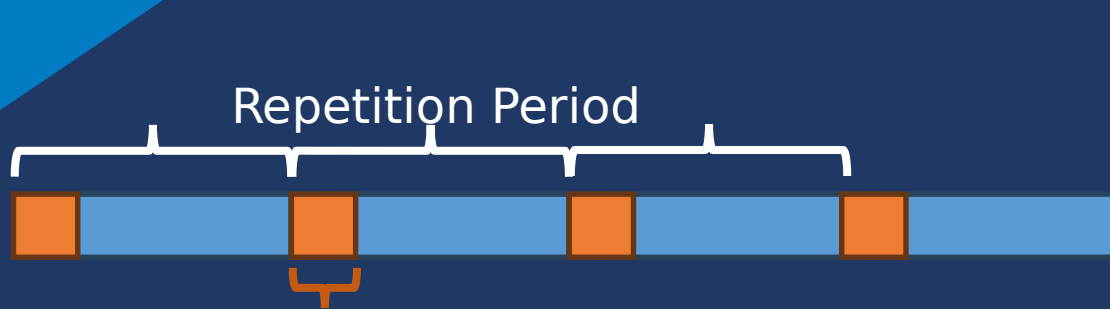
Qmio QPU Software stack- Lowest level



Qmio QPU – QPU Software stack



Qmio QPU – Software stack- Repetition_period



How to use it:

```
service = QmioRuntimeService()  
with service.backend(name="qpu") as backend:  
    results = backend.run(input, shots, repetition_period, res_format)
```

It is useful because there is no active initialization (not yet): good value $\sim 5 \times T_1$

Qmio QPU Topology

