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Feedback on IQM Spark 5 Integration at Eviden’s HPC Lab

TQCI Seminar | December 4, 2025

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EVIDEN–IQM

A Strong Partnership Driving Quantum Innovation

Eviden's manufacturing facility in Angers

- Flagship Site for Advanced Computing
- Factory of the Future & Sustainability Focus

IQM Spark™

- 5-qubit superconducting quantum computer
- Made for research and education – delivered across the globe

Architecture & Quantum Implementation at Angers

Students
Developers
Researchers
Customers

Qaptiva Access

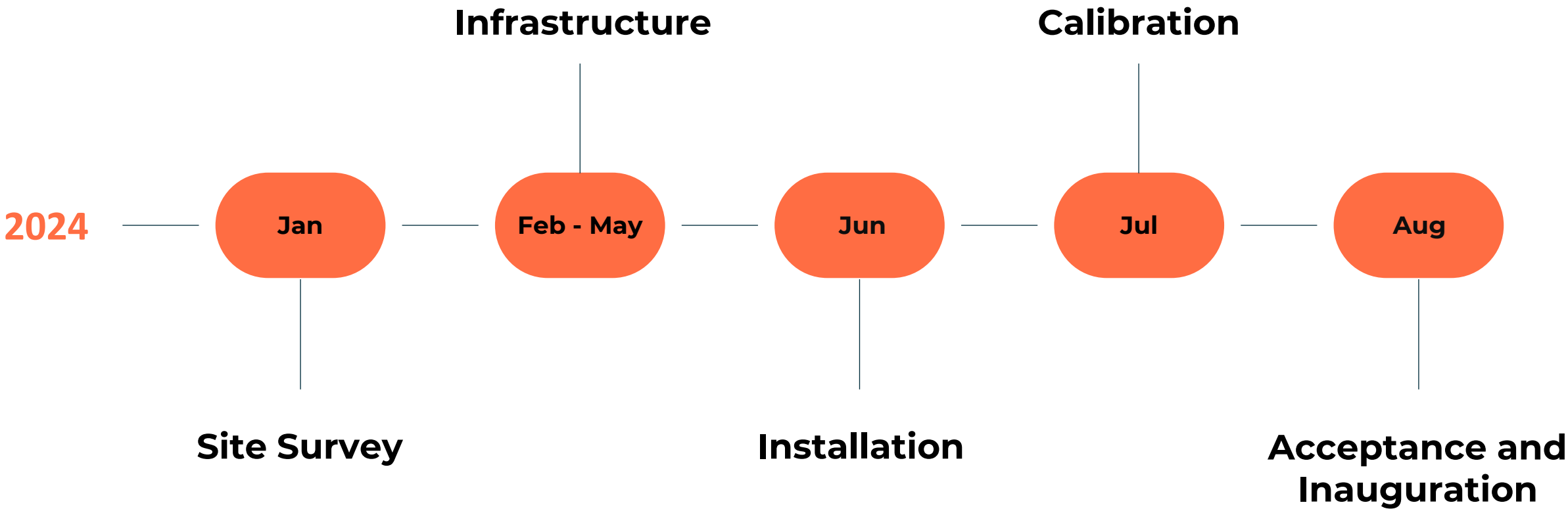
and

Qaptiva Programming Framework

Qaptiva 800

IQM Spark

Project Timeline & Milestones



2024 — Jan — Feb - May — Jun — Jul — Aug

Site Survey

- Technical visit
- Constraints
- Supplies
- Report

Measurement	Requirement
DC magnetic field	< 100 µT for each of the axes.
AC magnetic field	< 1 µT peak-to-peak spectrum amplitude for each of the axes at frequency range 5 Hz – 1000 Hz.
Floor vibrations	< 400 µm/s RMS spectrum amplitude for each of the axes at frequency range 1 Hz – 200 Hz, or equivalently, ISO vibration limit for office spaces.
Sound pressure	< 80 dBA when integrated over the frequency range 20 Hz – 20 kHz.
Temperature	ΔT < ±1 °C within 12 hours around any set point between 20 – 25 °C.
Humidity	25 – 60%, non-condensing

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Infrastructure

Before :

- Air compressor
- Cold water cooling system
- Power supply

After :

- Sound protective room

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Installation

- Installation time: 3 weeks
- Doorways need to be 60 cm wide and 200 cm tall

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On-premises superconducting quantum computer for education and research

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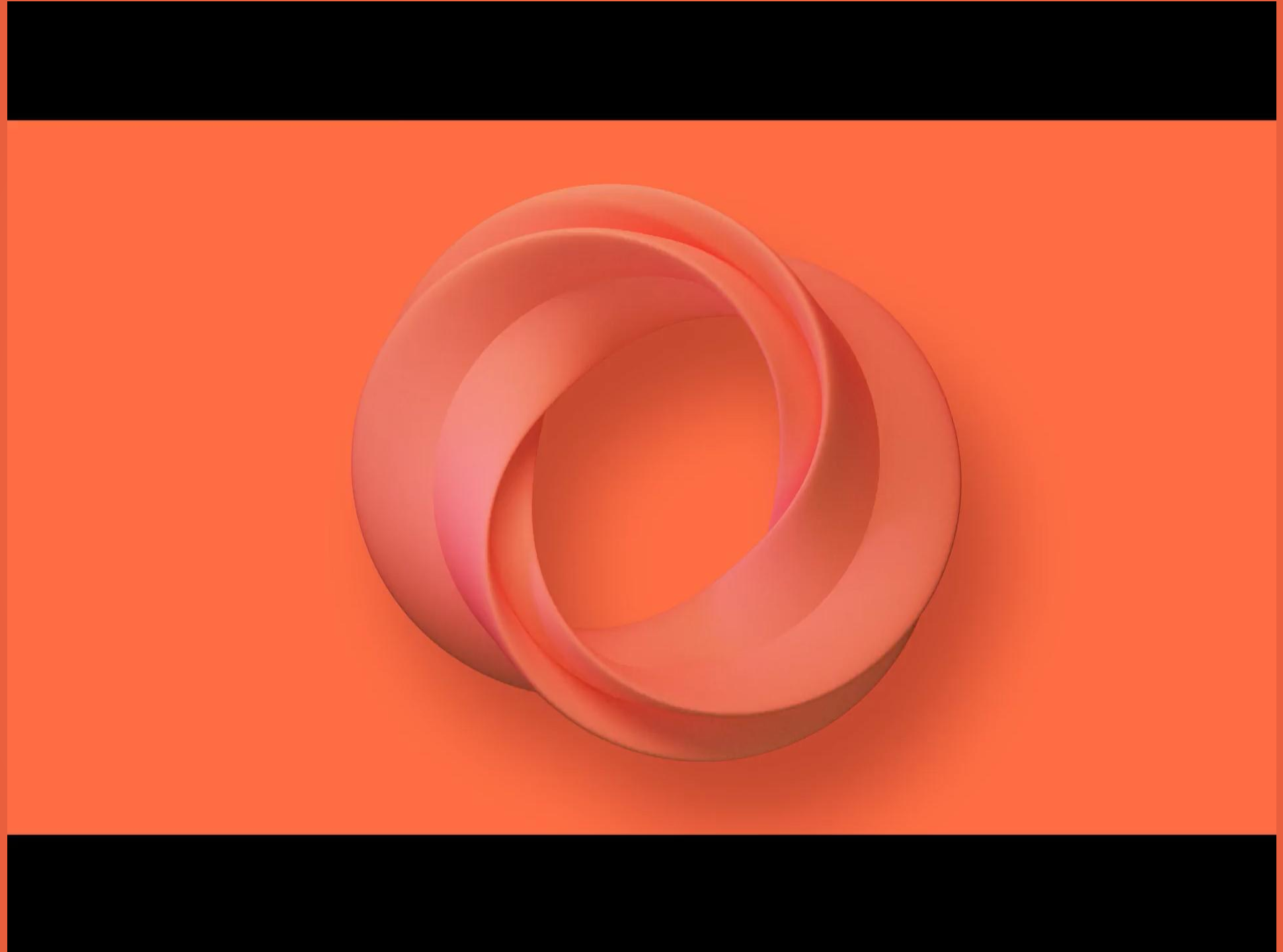
Abstract

With a growing interest in quantum technology globally, there is an increasing need for accessing relevant physical systems for education and research. In this paper we introduce a commercially available on-site quantum computer utilizing superconducting technology, offering insights into its fundamental hardware and software components. We show how this system can be used in education to teach quantum concepts and deepen understanding of quantum theory and quantum computing. It offers learning opportunities for future talent and contributes to technological progress. Additionally, we demonstrate its use in research by replicating some notable recent achievements.

Keywords: Quantum computer; Transmon qubits; Quantum algorithms



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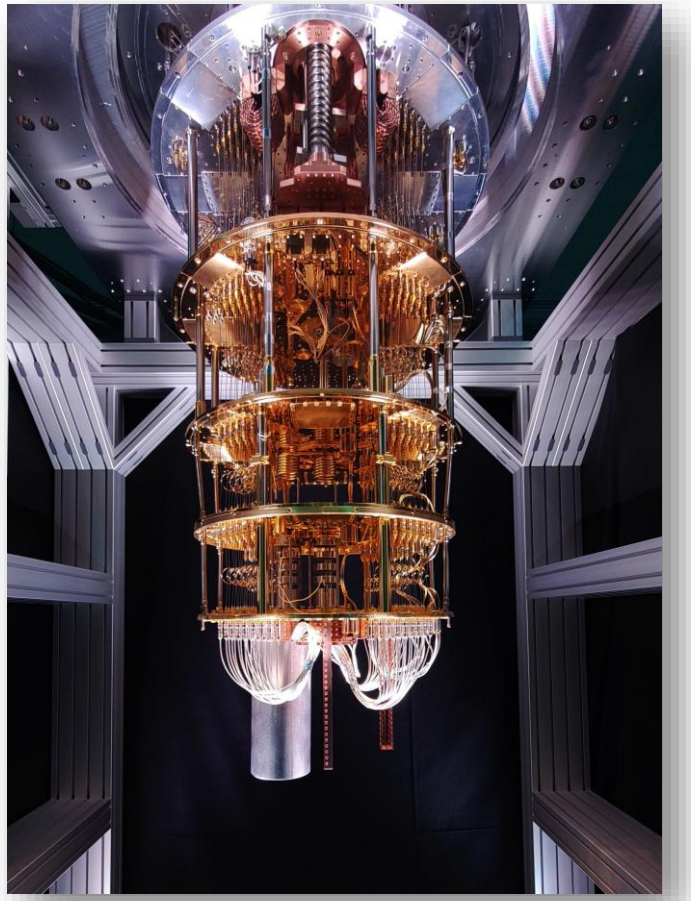
Calibration

- Qubits are fundamentally dynamic and their state varies
- Calibration is needed
- Automated calibration takes either 40 or 100 minutes
  - 20.5 hours per day of availability for research



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Acceptance

Functional validation
First quantum calculation

Inauguration

Press event
Official communication

Long Term Hosting

- Liquid nitrogen management
- Cold trap cleaning
- Annual maintenance
- Software update

Thank You

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