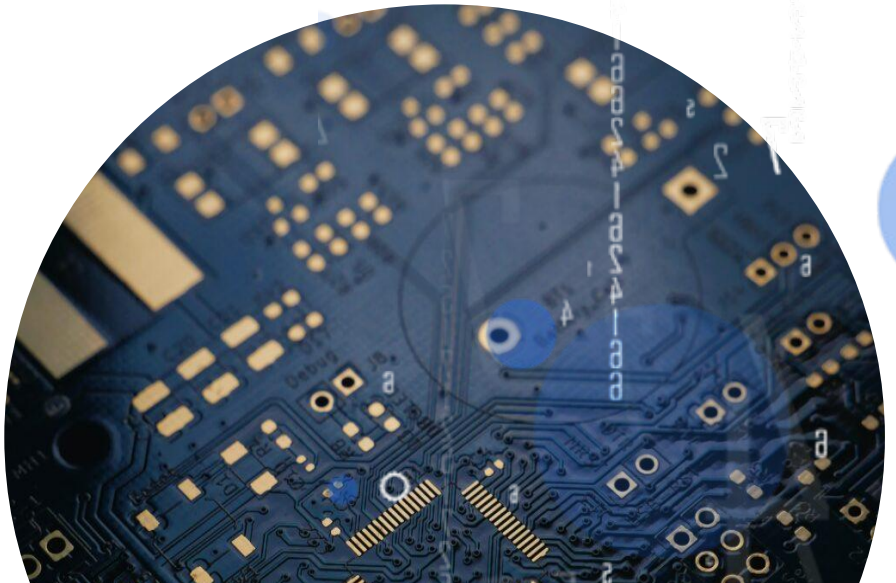
Quantum Circuits for Superconducting Digital Computing

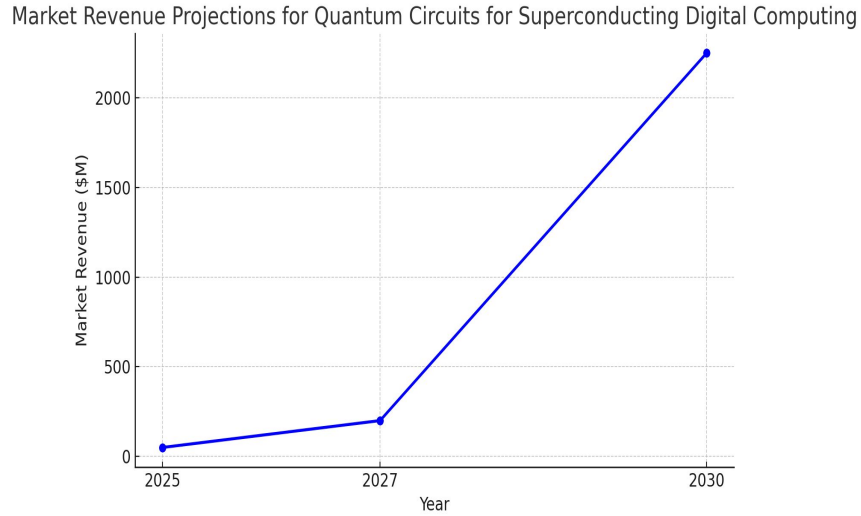
Unlocking the Future of High-Performance Computing and Quantum Technologies



Market Overview

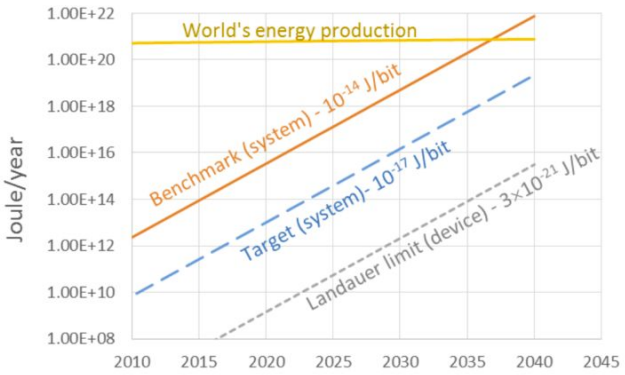
- **Superconducting Digital Computing** technologies are gaining momentum due to their **ultra-fast speeds, low power consumption, and potential for scalability** in high-performance computing (HPC), quantum computing, and advanced signal processing.
- **Increasing demand for high-speed, energy-efficient computing** is pushing the industry towards post-CMOS solutions.

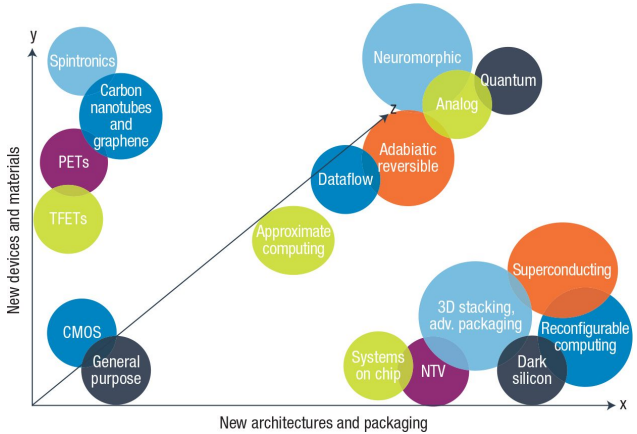
projected to grow at a CAGR of 20.8% and could reach $2.25 billion by 2030, driven by innovations in material science and digital design.



Challenges in Traditional Computing

Industries are seeking post-CMOS alternatives





High energy consumption and heat dissipation in CMOS-based systems are limiting further advancements.

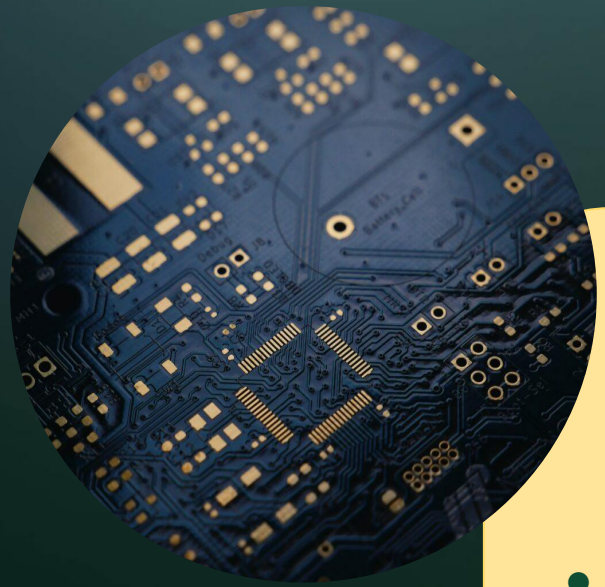
Scaling issues with Moore's Law are forcing companies to look for post-CMOS alternatives.

Traditional **data centers, AI applications, and simulation-based systems** need next-gen technologies to meet growing computational demands.

Our Solution:

Quantum Circuits for Superconducting Digital Computing

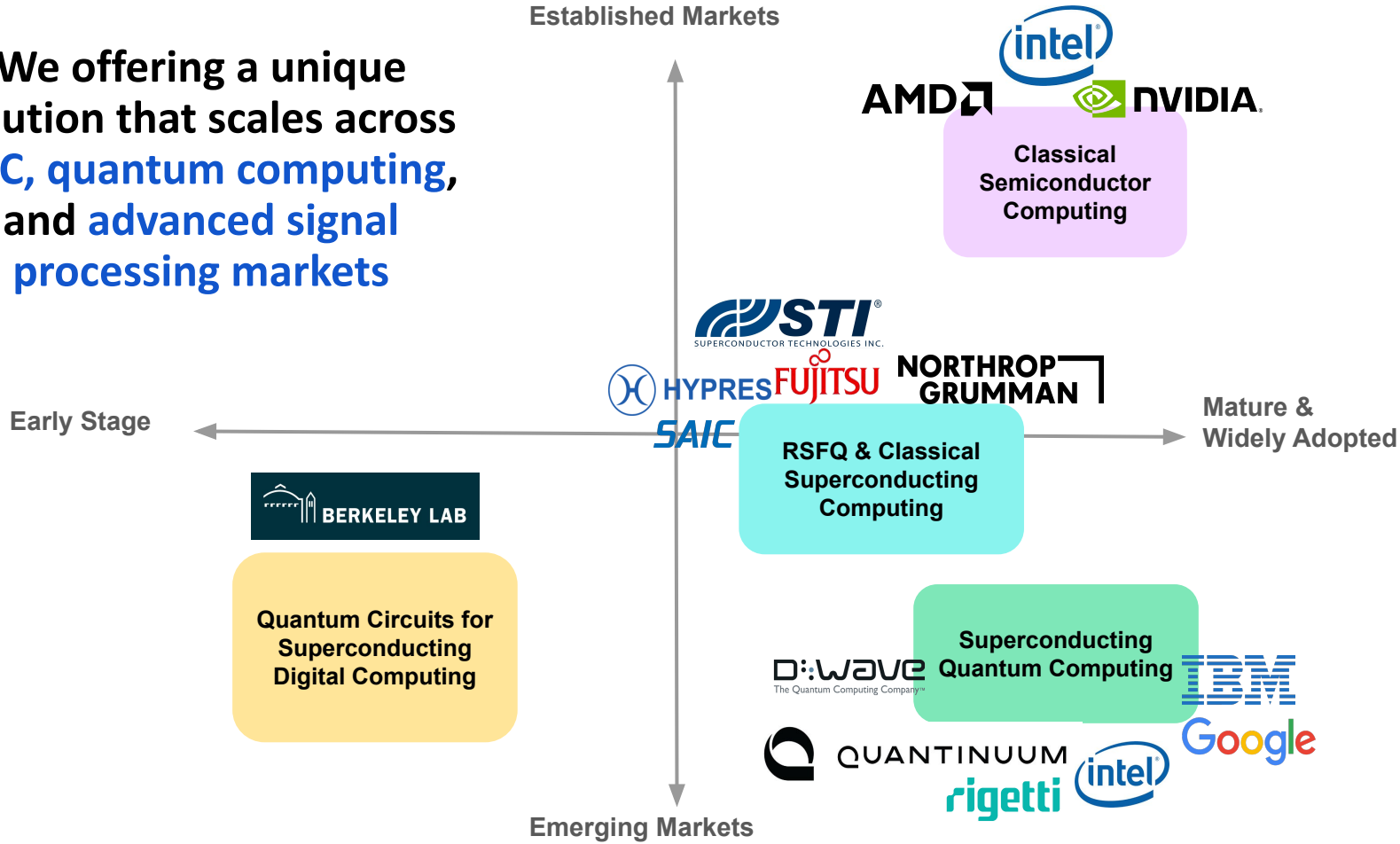
- **Reduces** the number of **JJs** needed by **40-70%.**
- **Cuts power** consumption up to **70%.**
- **Lowers delay** up to **64%** compared to traditional designs

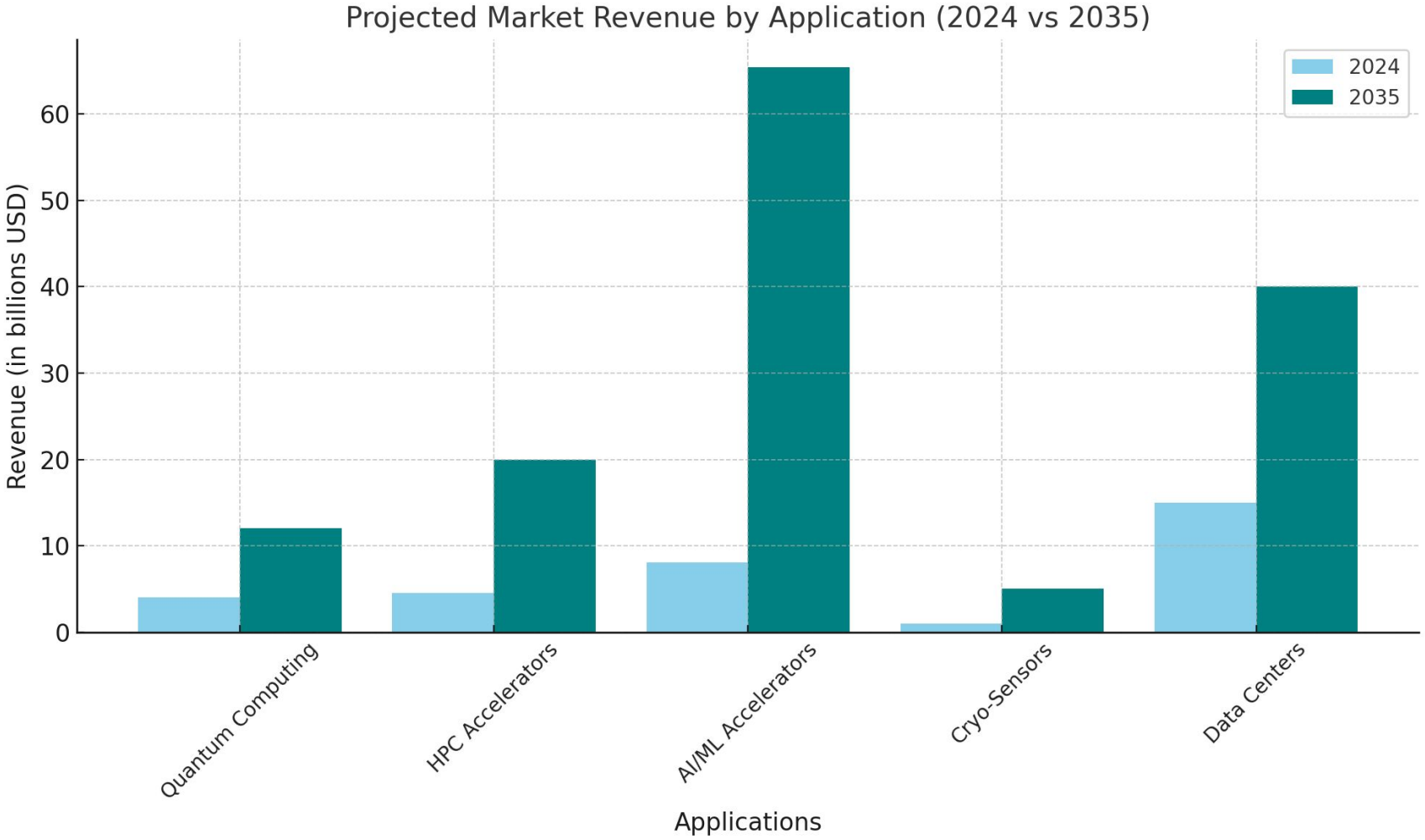


Our technology: Quantum Circuits for Superconducting Digital Computing leverages Rapid **Single-Flux Quantum (RSFQ)** logic to deliver **ultra-fast speeds, low power consumption, and compact designs.**

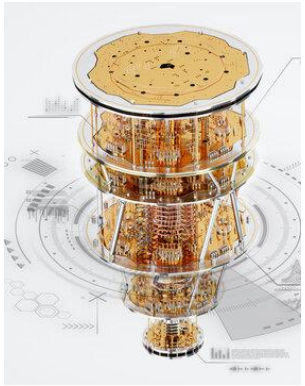
- **MOT-FF (Multiple Output Toggle Flip-Flop)** enhances scalability and area efficiency, essential for high-density computing environments.
- Offers **breakthrough potential** for both **high-performance computing** and **quantum control systems.**

We offering a unique solution that scales across HPC, quantum computing, and advanced signal processing markets



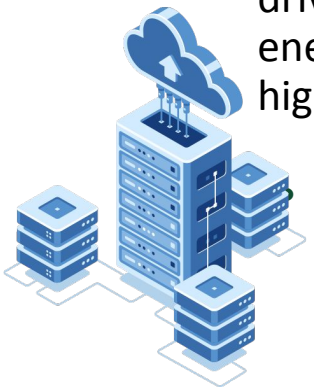

Projected Market Revenue by Application (2024 vs 2035)
2024
2035
Revenue (in billions USD)
0
10
20
30
40
50
60
Quantum Computing
HPC Accelerators
AI/ML Accelerators
Cryo-Sensors
Data Centers
Applications

Proposed Target Market



Primary Market:
High-Performance Computing (HPC)

Immediate Demand: HPC applications like AI/ML accelerators, advanced simulations, and exascale computing are rapidly growing, driving demand for energy-efficient, high-performance technologies.



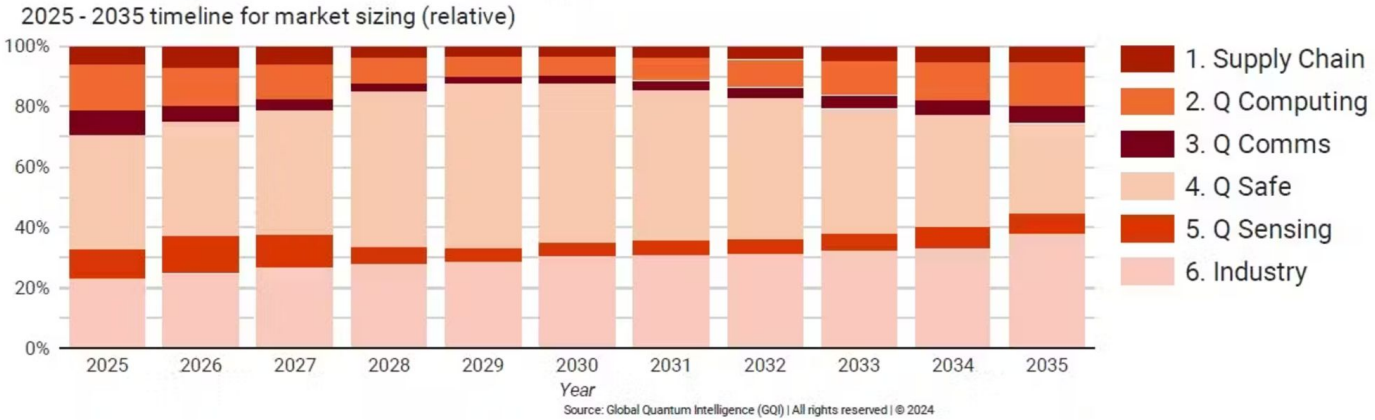
Opportunity: Increasing government and private sector investments in **exascale computing and AI-based simulations.**

Secondary Markets:
Quantum Computing

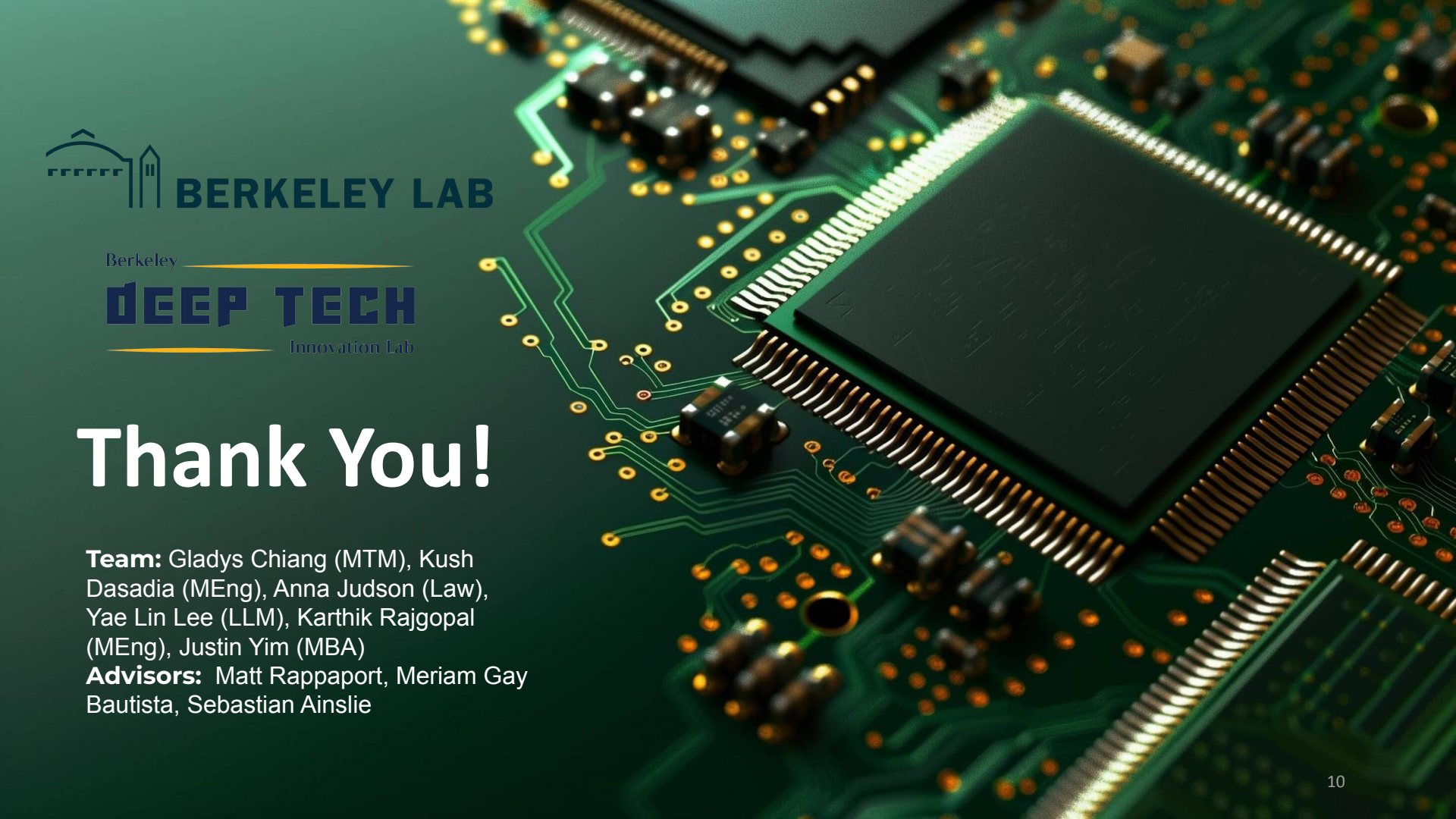
Strategic Focus on Error Correction. The quantum computing market is projected to grow at a CAGR of over 40%, reaching $25.6 billion by 2030.

Quantum circuits designed with area and power efficiency in mind can **enhance quantum processor stability and processing power**, thereby addressing key challenges like **qubit coherence time, control, and scalability.**

Emerging Market:
Cryptography & Security



- **QCSDC can accelerate Post-Quantum Cryptography (PQC) development to counteract quantum computing threats.**
- **Its ability to enhance Quantum Key Distribution (QKD) systems is critical for secure communication in defense, finance, and critical infrastructure.**



Thank You!

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