# JPMorgan and Infleqtion’s open-source quantum library slashes qubit requirements, accelerating finance’s quantum leap



This month, JPMorgan Chase and the technology company Infleqtion unveiled a groundbreaking open-source quantum software library designed to enhance the efficiency of quantum applications, signalling a significant leap towards the practical use of quantum computing in finance. This innovation aligns with the visions of industry leaders like Brad Levy, Chief Executive of Symphony, who has expressed the belief that quantum computing could radically unsettle existing business paradigms, particularly around encryption methods that underpin security in financial transactions.

The new library developed by Infleqtion addresses a critical barrier in the field of quantum computing: the often prohibitive scale of hardware required to achieve practical fault tolerance. Notably, it enables a remarkable reduction of between 10 to 100 times in the number of physical qubits needed for executing quantum programs. This enhancement positions quantum technology to compute at speeds exponentially faster than traditional models reliant on binary logic. Pranav Gokhale, General Manager of Computing at Infleqtion, noted, “Through our work with JPMorgan, we’re showing how software and hardware innovation... can work together to move the financial industry toward commercial use of quantum computing faster.”

At the Symphony Innovate conference held in London on 21 May 2025, Levy underscored the imperative of addressing cybersecurity challenges posed by advancements in quantum technology. He remarked to Markets Media that if frameworks enabling security cannot keep pace with the increasing velocities of information technology, then the financial sector must be prepared for vulnerabilities. This sentiment echoes broader industry warnings, most notably articulated in a white paper published last year by the World Economic Forum and the UK’s Financial Conduct Authority. This document indicated that the financial sector stands on the cusp of a transformation from a digitally-driven to a quantum economy.

The implications of quantum technology extend far beyond encryption; Levy, alongside Dietmar Fauser, Symphony’s Chief Information Officer, have highlighted the potential for quantum computing to substantially accelerate developments in artificial intelligence — an enhancement that could shift financial workflows radically. They conveyed an analogy comparing global markets to a galaxy, suggesting that individual companies must adapt their operations to survive and thrive in a quantum-infused environment.

Furthermore, Symphony is actively crafting quantum-secure workflows tailored to the nuances of market dynamics, including the intricacies of collateral and margin structures vital for maintaining financial stability. These efforts have direct relevance to ongoing industry challenges surrounding market liquidity and security.

As the financial industry prepares for the quantum future, Symphony remains dedicated to integrating advanced voice and messaging solutions. Levy stated, “Voice is a big deal for us and we are pushing that product hard,” affirming that maintaining secure and compliant communication channels remains essential. Symphony’s fusion of AI with Google Cloud’s capabilities has resulted in enhancements to its Cloud9 voice product, enriching it with refined speech-to-text and natural language processing features.

This ongoing progression towards a convergence of communication methods reflects a broader industry trend towards integrating public and private investment avenues across various asset classes. Levy has noted the significance of Symphony’s Federation, which consolidates multiple communication platforms into one secure interface — a critical step in facilitating collaboration in an increasingly complex financial landscape.

Looking forward, Symphony is engaged in strategic partnerships that could reshape the post-trade processing landscape. Their collaboration with Euroclear Bank on collateral management services exemplifies a concerted push towards leveraging technology to expedite query resolutions and enhance operational efficiency across both the buy and sell sides of finance.

As developments in quantum technology advance, industry leaders contend that now is the time for the financial sector to adapt. With foundational shifts on the horizon, companies must prepare not only for enhanced computational capabilities but also for the transformation of customer interactions and operational workflows designed to mitigate risk and enhance stability in an increasingly volatile global financial environment.

### Reference Map

1. Lead article content and context
2. Information on JPMorgan's collaboration with QC Ware
3. Insights on Symphony's views on quantum's impact
4. Research from JPMorgan and collaborations related to algorithmic speedup
5. Details on vitality of quantum computing for deep hedging techniques
6. Summary of the open source library from JPMorgan and Infleqtion
7. Highlights on QA practices in collaboration with QC Ware

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.marketsmedia.com/quantum-technology-to-take-markets-to-mars/> - Please view link - unable to able to access data
2. <https://www.jpmorgan.com/technology/news/jpmorganchase-qcware-evolve-hedging-for-a-quantum-future> - In March 2023, JPMorgan Chase and QC Ware collaborated to explore quantum computing applications in financial services, focusing on 'deep hedging' strategies. Their study demonstrated that integrating quantum deep learning into classical deep hedging frameworks can enhance model training efficiency. Additionally, they investigated the potential of quantum reinforcement learning to develop new quantum frameworks for deep hedging, highlighting the promise of quantum machine learning in improving financial risk mitigation strategies. The research utilized Quantinuum’s H1-1 quantum computer, showcasing the potential for future computational advancements in the field.
3. <https://www.symphony.com/insights/blog/how-quantum-will-change-the-fabric-of-finance-forever/> - In April 2025, Symphony's CEO Brad Levy and CIO Dietmar Fauser discussed the transformative impact of quantum computing on the financial sector. They emphasized that quantum technology could destabilize and potentially invalidate current encryption methods, while also accelerating artificial intelligence to unprecedented speeds. Drawing analogies between global markets and the galaxy, they suggested that quantum computing would revolutionize financial workflows, necessitating adaptation at both macro and micro levels. Symphony is actively developing quantum-secure workflows to ensure market liquidity and security in this evolving landscape.
4. <https://www.jpmorgan.com/technology/news/jpmorganchase-research-collaboration-shows-quantum-algorithm-speedup> - In May 2024, JPMorgan Chase, Argonne National Laboratory, and Quantinuum published a study in Science Advances demonstrating a quantum algorithmic speedup for the Quantum Approximate Optimization Algorithm (QAOA). The research applied QAOA to the Low Autocorrelation Binary Sequences (LABS) problem, revealing that as problem size increased, the quantum algorithm's solution time grew at a slower rate compared to classical solvers. This finding indicates the potential for quantum computing to outperform classical methods in specific applications, marking a significant step toward achieving quantum advantage in practical scenarios.
5. <https://www.qcware.com/news/jpmorgan-chase-and-qc-ware-collaborate-on-quantum-finance-breakthrough-in-deep-hedging> - In May 2023, QC Ware announced a collaboration with JPMorgan Chase to advance quantum computing applications in financial services, particularly in 'deep hedging' strategies. The partnership aims to leverage quantum machine learning to enhance portfolio risk mitigation by improving the efficiency of model training and exploring new quantum frameworks for deep hedging. This collaboration underscores the growing interest in integrating quantum computing into financial risk management practices, potentially leading to more sophisticated and effective hedging techniques in the industry.
6. <https://www.marketsmedia.com/quantum-technology-to-take-markets-to-mars/> - In May 2025, Markets Media reported on JPMorgan Chase and Infleqtion's release of an open-source quantum software library designed to improve the efficiency of quantum applications. The library addresses a significant barrier in quantum computing by reducing the number of physical qubits required for quantum programs, potentially accelerating the commercial use of quantum computing in the financial industry. The collaboration highlights the industry's commitment to integrating quantum technology to enhance financial services and underscores the transformative potential of quantum computing in the sector.
7. <https://www.forbes.com/sites/moorinsights/2023/05/22/jpmorgan-chase-and-qc-ware-collaborate-on-quantum-finance-breakthrough-in-deep-hedging/> - In May 2023, Forbes highlighted the collaboration between JPMorgan Chase and QC Ware to advance quantum computing applications in financial services, focusing on 'deep hedging' strategies. The partnership aims to integrate quantum machine learning into financial risk mitigation, enhancing the efficiency of model training and exploring new quantum frameworks for deep hedging. This initiative reflects the growing interest in leveraging quantum computing to develop more sophisticated and effective financial risk management techniques, potentially revolutionizing the industry.