



Qatalyzing Your Supply Chain

A bridge to the power of
quantum for supply chain

Your critical data holds the key to more profitable business decisions. That's why you collect it.

The challenge? Growing data volumes are increasingly difficult to effectively analyze.

That's why quantum computing is so enticing; it promises to handle the complex computations that processing limitless data volumes demands to provide high quality insights that drive better optimization decisions.

Primary objectives for supply chain optimization include:

- ✓ Creating more flexibility and responsiveness
- ✓ Becoming leaner and more efficient
- ✓ Inventory management and revenue forecasting
- ✓ Improving warehousing and distribution networking
- ✓ Logistics and transportation routing

Each of the above is dependent upon data and reliant on technology to achieve optimal outcomes. The ability to process complex computations that classical—and even HPC—labor to achieve makes quantum worth exploring as the technology makes commercial progress.

However, quantum technology brings another challenge. It's an entirely different paradigm. One that requires highly skilled quantum experts, taking months, if not years, to create the computational workflows using today's quantum software development kits (SDKs).

But what if there were a bridge to the advantages of quantum that saves you time and reduces risk and investment?

One where you could:

- ✓ Immediately derive better insights using a hybrid of quantum and classic computers, without risk.
- ✓ Effectively test use cases for logistics, transportation, and other supply chain optimization objectives across a diversity of quantum computers, without vendor lock-in.
- ✓ Apply the knowledge and value of your current operational researchers, data analysts, and programmers, without the need for, or cost of, hiring quantum experts—which are both issues inhibiting new technology adoption for more than half of organizations considering doing so.

Qatalyst is the only ready-to-run quantum software that accelerates your time to better decisions that impact your bottom line...today.

Accelerate Quantum Business Decisions with Qatalyst

Qatalyst is the only ready-to-run quantum software that accelerates your time to better business decisions. It is the bridge organizations need to leverage hybrid quantum computing for optimizing supply chain management, right now, without the need for expensive quantum expertise.

As a cloud-based platform, Qatalyst makes it easy to capture excellent results for complex computational problems without the complexity, cost, and risk of quantum computing, thanks to:

Simple API and familiar constructs.

Supply chain planners, researchers, data analysts, and programmers can solve their first complex problems within a week, as compared to 6-12 months with quantum SDKs.

Support for current production workflows and applications.

There's no need to create complex new quantum applications and workflows. Simply call the Qatalyst API from the workflow or application, and it immediately accesses the power of quantum across diverse QPU vendors.

Quantum-ready engines tuned for complex computations.

These engines automatically optimize, submit, iterate, and return excellent, diverse results for supply chain and other constrained optimization problems.

Transparent abstraction from quantum hardware variances.

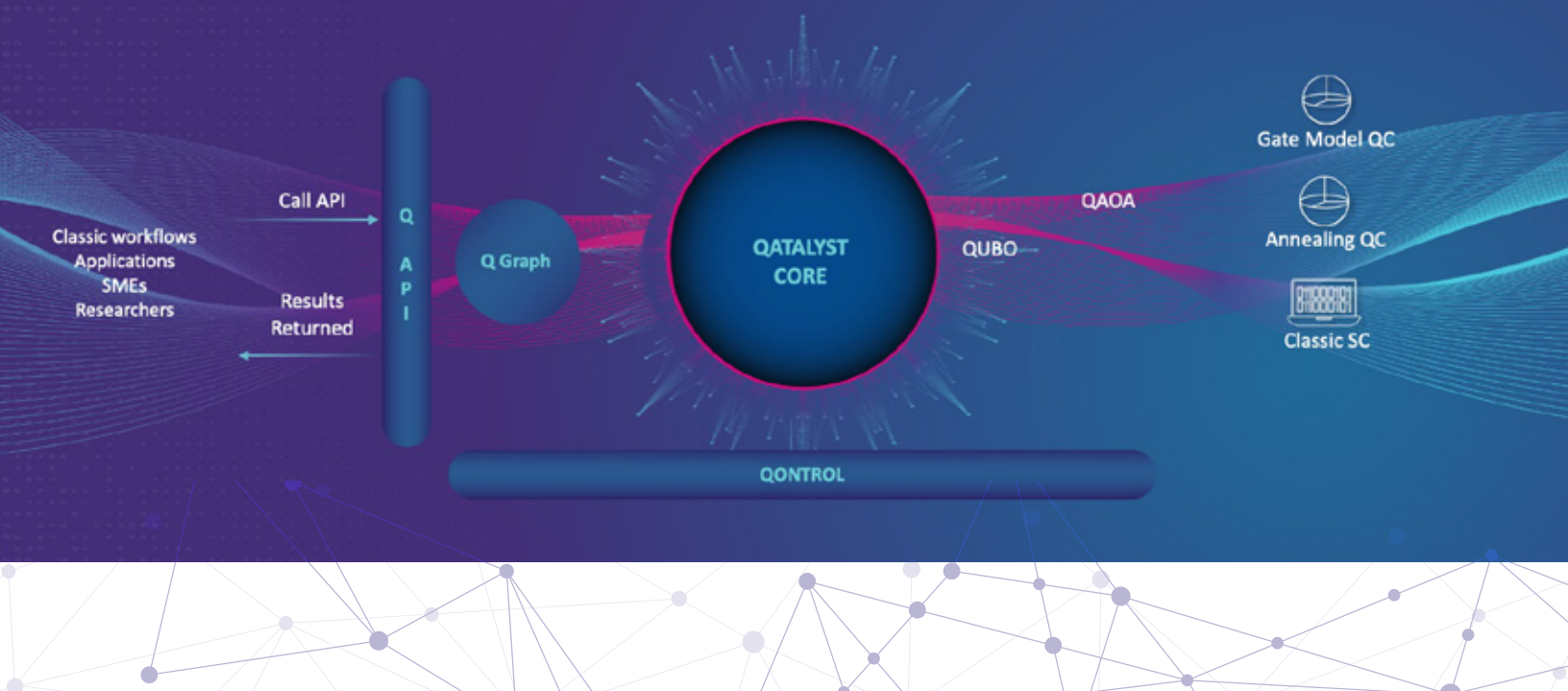
Qatalyst eliminates the need to write low-level, assembly-type code to support different vendors' quantum hardware architectures, such as D-Wave, Rigetti, and ION-Q. The same problem runs seamlessly across all quantum types and architectures.

Bridging the same problem from classic to hybrid to quantum computations.

Get enhanced results today on classic computers, add a hybrid model for even better results, then submit to one or more quantum computers with the same problem, no re-programming required.

Qatalyst is the obvious choice for organizations seeking answers to critical complex questions, right now.

Qatalyst In Action



Your Qatalyst for Optimum Supply Chain Decisions

Optimizing your supply chains requires analyzing growing volumes of data, and producing not only faster results, but more meaningful outcomes.

Qatalyst delivers state-of-the-art quantum-ready computational engines to accelerate and improve your supply chain results on classic computers, right now. Our cloud-based platform and engines are optimized to solve the most computationally intensive supply-chain problems.

For supply chain:

Qatalyst Constrained Optimization Engine for classic and quantum systems. It applies quantum techniques to accelerate classic performance while improving quality and diversity of results. As a quantum-ready engine, it bridges to classic, hybrid or quantum, with no re-programming required.

QGraph automatically transforms your business' graph models into constrained optimization problems, then transforms results back to familiar graph models. This dramatically simplifies the presentation and analysis of complex data and relationships.

For businesses that depend on complex computations to optimize supply chains, Qatalyst:

- ✓ Accelerates performance on today's classic computers, solving today's problems faster and solving currently unsolvable problems today or in the near future.
- ✓ Accelerates time-to-quantum insights by seamlessly bridging from classic to quantum processing. No recoding, no low-level hardware configurations. The same problem runs on classic and quantum, today and tomorrow.
- ✓ Dramatically reduces cost-to-quantum since you don't need quantum experts to solve problems on Qatalyst, you'll save significant investment in rare quantum expertise, even as your current experts, data analysts, and programmers find better results to drive better decisions.
- ✓ Increases quality and diversity of results. Current solvers only provide a single result based on search techniques. They also can miss powerful potential answers. As a quantum-ready solution, Qatalyst delivers a diversity of results to provide better insights into all the potential options for better decision making.

Qatalyst Key Technologies

The **Qatalyst Optimization Engine** mathematically simplifies and compresses the problem using LaGrange multipliers, then creates a QUBO lattice for submission to classic and quantum computers. It applies highly optimized mathematic iterations to solve the problem, delivering high quality and diverse results on classic, hybrid or quantum systems.

Quadratic Unconstrained Binary Optimization (QUBO) creates the data lattice for annealing computers.

Quantum Approximate Optimization Algorithm (QAOA) transforms the QUBO for gate model systems.

Familiar **NetworkX type functions** for quantum, including graph partitioning and clique cover.