Orquestra®

Quantum, unified.

The workflow based, modular toolset for applied quantum computing.

ZAPATA

Don't pick one framework:
Orchestrate across them all

Orquestra unifies quantum software libraries and hardware back ends in one modular, workflow based toolset.

Plug and play software and hardware

Leverage quantum and quantum-inspired libraries in optimization, chemistry and ML.

Run on a full range of quantum simulators, quantum devices and HPC to run hybrid quantum-classical workflows at scale.
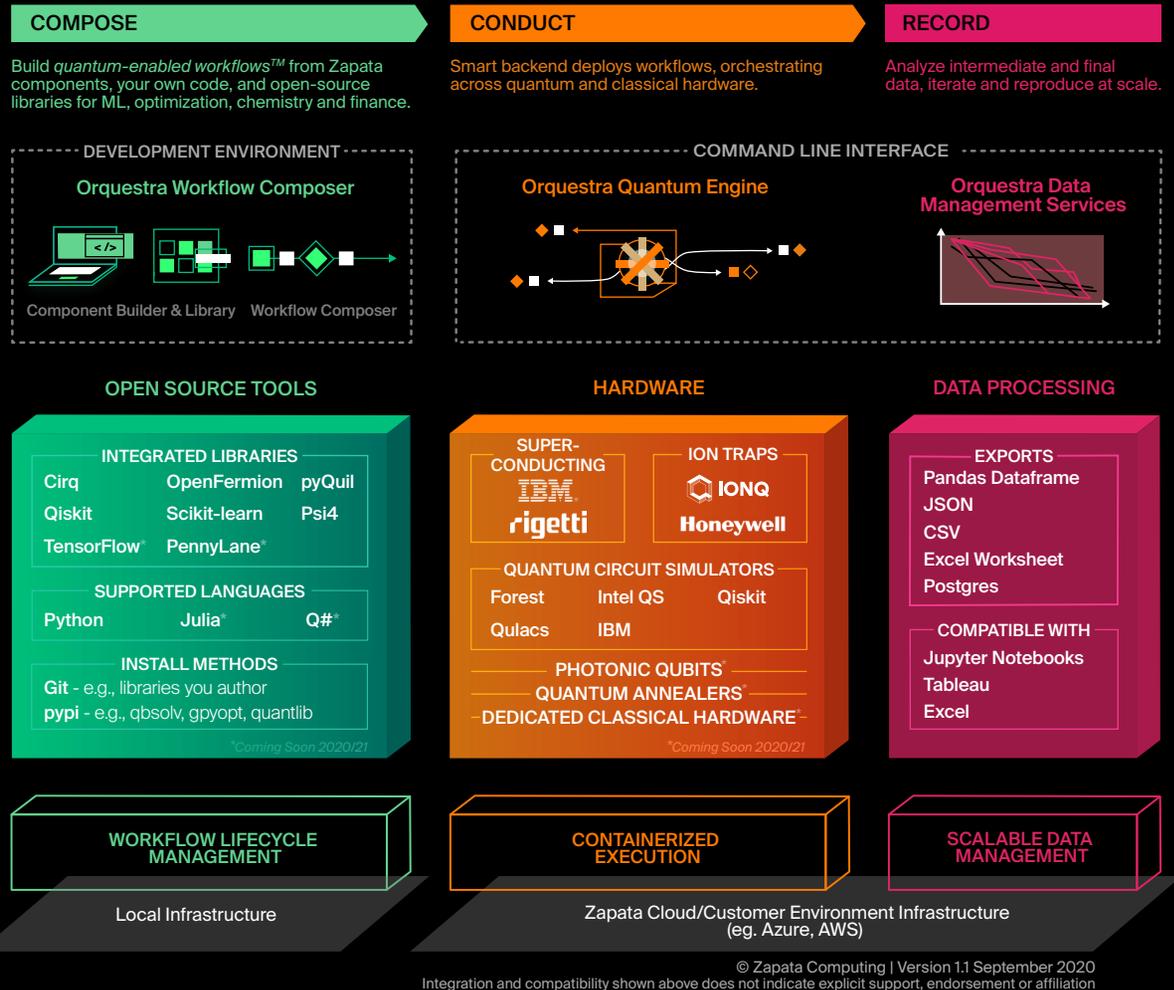
Accelerate experiments

Automate data processing and management.

Reproduce, parallelize collaborate at scale.

Eliminate conflicting dependencies.

De-risk your enterprise toolset:

Scalable, secure, flexible tools and infrastructure to enable quantum work in the enterprise.

Orquestra®

COMPOSE

Build *quantum-enabled workflowsTM* from Zapata components, your own code, and open-source libraries for ML, optimization, chemistry and finance.

CONDUCT

Smart backend deploys workflows, orchestrating across quantum and classical hardware.

RECORD

Analyze intermediate and final data, iterate and reproduce at scale.

DEVELOPMENT ENVIRONMENT

Orquestra Workflow Composer

Component Builder & Library   Workflow Composer

COMMAND LINE INTERFACE

Orquestra Quantum Engine

Orquestra Data Management Services

OPEN SOURCE TOOLS

INTEGRATED LIBRARIES

Cirq	OpenFermion	pyQuil
Qiskit	Scikit-learn	Psi4
TensorFlow*	PennyLane*	

SUPPORTED LANGUAGES

Python   Julia*   Q#*

INSTALL METHODS

Git - e.g., libraries you author
pypi - e.g., qbsolv, gpyopt, quantlib

Coming Soon 2020/21

HARDWARE

SUPER-CONDUCTING
IBM
rigetti

ION TRAPS
IONQ
Honeywell

QUANTUM CIRCUIT SIMULATORS

Forest	Intel QS	Qiskit
Qulacs	IBM	

PHOTONIC QUBITS*
QUANTUM ANNEALERS*
DEDICATED CLASSICAL HARDWARE*

Coming Soon 2020/21

DATA PROCESSING

EXPORTS
Pandas Dataframe
JSON
CSV
Excel Worksheet
Postgres

COMPATIBLE WITH
Jupyter Notebooks
Tableau
Excel

WORKFLOW LIFECYCLE MANAGEMENT

CONTAINERIZED EXECUTION

SCALABLE DATA MANAGEMENT

Local Infrastructure

Zapata Cloud/Customer Environment Infrastructure
(eg. Azure, AWS)

Orquestra

Example Use Cases
for the Enterprise

Orquestra was built to tackle Machine Learning, Optimization, and Simulation & Modeling problems across industries such as Finance, Materials, Pharmaceuticals, Healthcare, Telecom, Logistics, Aerospace & Automotive, and Media.

· · · · · · · FINANCE

Solution

Accelerated sampling for more efficient exotic derivative pricing, valuation adjustments, risk analysis/stress testing (for CCAR and Dodd-Frank compliance).

Approach

Improved efficiency of models for asset value fluctuation through quantum techniques that accelerate sampling from probability distribution.

· · · · · · · LOGISTICS

Solution

Improving the gross service capacity of logistic systems for maximizing distribution and sales.

Approach

Analysis of complex delivery systems to uncover valuable opportunities for process and operational improvement.

· · · · · · · PHARMACEUTICALS

Solution

Promoting drug discovery by simulating the quantum mechanical behavior of electrons in the critical regions of a chemical interaction.

Approach

More accurate approach to computing the binding energy of small molecular drugs to protein targets to increase the accuracy of binding energy simulations.

· · · · · · · MATERIALS

Solution

Materials discovery for Li-ion batteries through more accurate modeling.

Approach

Acceleration of high-throughput screening of electrolyte additives for high-voltage Li-ion batteries, with the goal of improving the energy density of batteries.

Orquestra

The **Unified Quantum Toolset,**
Ready for Enterprise Scale

Plug'n play components

Orquestra's workflow approach doesn't replace SDKs and languages, it automates their management.

- ✓ Leverage Zapata's proprietary components and algorithms.

- ✓ Swap in new quantum hardware as it becomes available.

- ✓ Work at a high-level abstraction across backends while also leveraging low-level features.

Get more scale

Orquestra deals with scaling compute resources to match your problem so you don't have to.

- ✓ Deploy and re-run across backends.

- ✓ Scale up and parallelize via containerization.

- ✓ Go beyond toy problems and notebooks.

Automate data

Orquestra automatically aggregates and collates data into JSON files.

- ✓ Pull results into your favorite analysis tool seamlessly.

- ✓ Share data and workflows with teammates easily.

- ✓ Find errors faster by viewing data produced at each step in the workflow.

Orquestra

ZAPATA

Zapata Computing, Inc. is the quantum software company empowering enterprise teams to accelerate quantum solutions and capabilities.

With its introduction of Orquestra, the first and only end-to-end, workflow based toolset for quantum computing, Zapata is spearheading a new quantum development paradigm. Built on interoperable, extensible and modular classical-to-quantum software and hardware frameworks, Orquestra enables teams to compose, run and analyze complex, quantum-enabled workflows™ and challenging computational solutions at scale. Orquestra is purpose-built for quantum machine learning, optimization and simulation problems across industries.

Working in close collaboration across the quantum ecosystem, including partnerships with Amazon, Google, Honeywell, IBM, Microsoft, Rigetti and others, Zapata is backed by Prelude Ventures, Comcast Ventures, The Engine, Pillar VC, BASF Venture Capital, Pitango Ventures, Robert Bosch Venture Capital and Honeywell Ventures.

orquestra.io
zapatacomputing.com

Orquestra