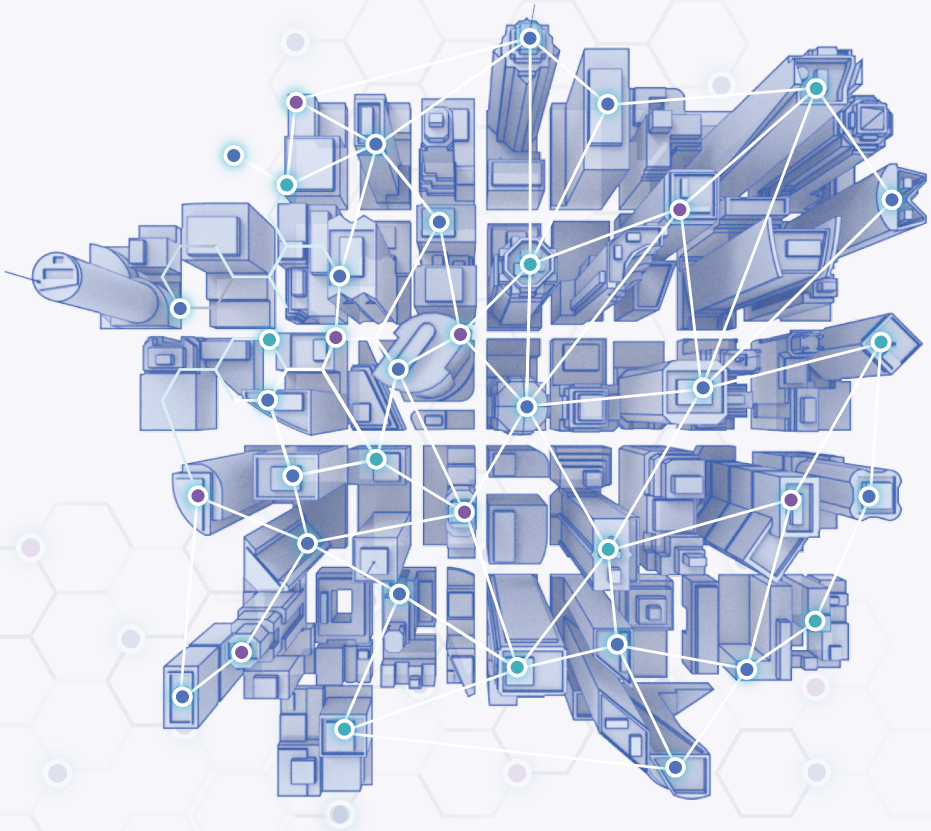
Quantum

The Digital Twin Standard for Autonomous Systems



The first ontology-based physics description language.

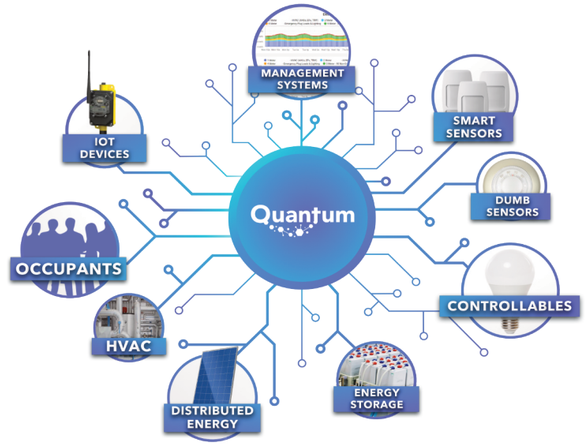
The Quantum™ open standard enables new market solutions and solves existing challenges across industries including automation, building control, equipment manufacturing, systems engineering, and software service development.

One Standard.
A Full Building Description.

Developed with the DOE, the Quantum Digital Twin™ open standard is the first digital twin description language for autonomous systems in the built environment. It is a complete framework for defining portfolios, buildings, systems, equipment, components, media, materials, occupants, events, and environmental conditions. The Quantum model provides one standard to design, build, operate, maintain, and manage your building.

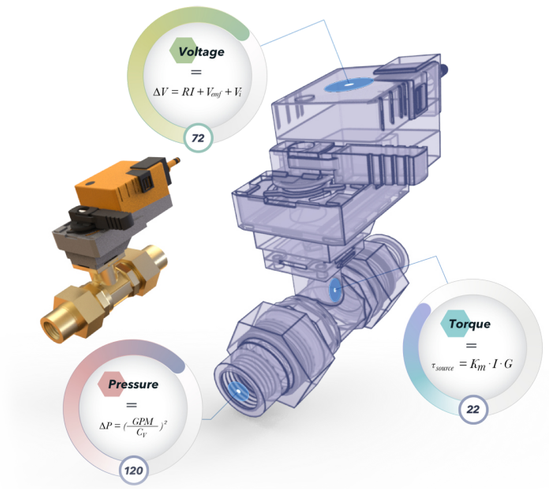
The Meta Language of IoT.
Physics is Fundamental.

Quantum physics-based digital twins bridge the integration gap between IoT, sensors, equipment, assemblies, and controllable devices representing a variety of industries, protocols, and standards. These digital twins model individual component behavior and characterize the interactions and relationships between different domains.



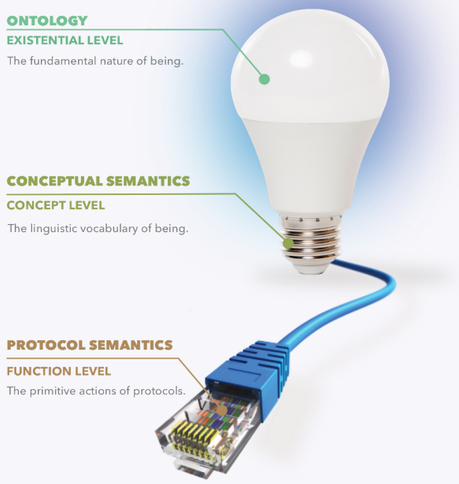
Real Physics.
Real Digital Twins.

The Quantum standard describes the existential purpose of all things using the universal language of physics. A Quantum model is a true digital twin: a complete description of an object's underlying physics and how it interacts with the world around it.



Coordinated Workflow.
All Stakeholders.

Physics is the common meta-language across different areas of expertise. With Quantum models, you can define intent at the architectural stage, coordinate with engineering, ensure design guarantees through a digital worksite, and perform autonomous commissioning, operation, and management. All within one source of truth that stays consistent throughout the entire project lifecycle.



What, Why, and *How.*
Not Just Tagging.

The Quantum standard defines what, why, and how things are, and how things work and interact based on first-principle physics. Defining object existentialism is a critical building block for full autonomy. In contrast, semantic tagging standards will never define how things actually work, and therefore can't achieve full autonomy.

The First API for Buildings.
Eliminate Costly Integration.

Without having to become an ontology expert and with minimal integration effort, the Quantum API™ enables developers to design automation solutions and services grounded in a building's real physics. Write applications once and supercharge them with deeper data than ever before—and deploy in every building and across use cases.

Interact with Quantum.

Visit **QuantumAlliance.org** to get started.

Quantum Explorer.

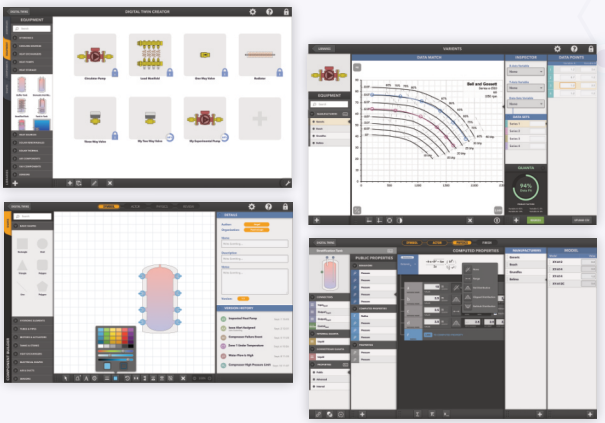
Engage with and Update Your Data.

The Quantum Explorer® app lets you visually navigate the Quantum ontology, revealing all building blocks and their relationships. You can update your building's digital twin in real time and develop your API queries in the IDE (integrated design environment). For no-code Quantum queries, try the Qortex™ AI assistant, which supports natural language interaction, or the drag-and-drop Query Builder.

Quantum Creator.

Build Digital Twins with Physics.

Using the actual physics and properties, construct digital twins of equipment defined by how they function in the real world—making simulations much more accurate. Get started fast with existing templates from the Quantum Creator™ library, or design full-blown custom models. Map out the behavior graph, quantify physics in the equation editor, and trace properties from an equipment's existing data sheets.



Quantum Alliance.
The Network for Quantum Partners.

The Quantum Alliance is a cooperative effort between public agencies and private industry to enable autonomous buildings by extending the library of components, equipment, assemblies, and systems templates. The open-source Quantum API for the Quantum Digital Twin standard is available to create additional applications.

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