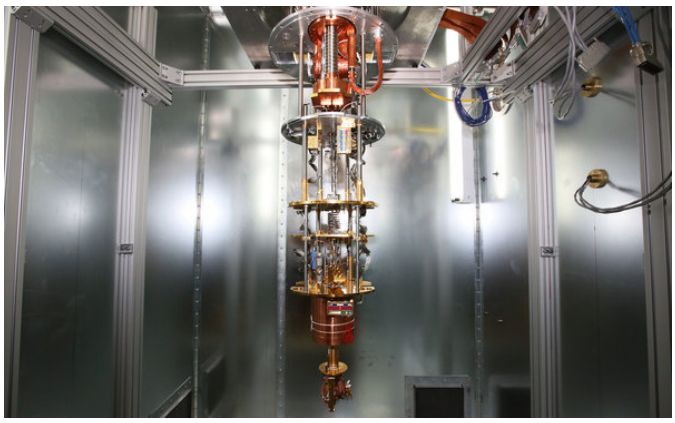
Quantum computing, that great white hope for the super-fast computers of the future, appears come of age-- Lockheed Martin becomes the first company to upgrade its test quantum computer to commercial scale.



The machine in question comes from D-Wave Systems, from whom Lockheed bought an early quantum computer 2 years ago. The military contractor will use the quantum computer to create and test radar, space and aircraft systems, and claims the system can instantly carry out previously impossible such as telling how the millions of lines of code running a satellite network react to a solar burst or a nuclear explosion pulse.

“This is a revolution not unlike the early days of computing,” Lockheed CTO Ray Johnson tells The New York Times. “It is a transformation in the way computers are thought about.”

The subject of at least 3 decades of research by the likes of Microsoft, IBM and HP, quantum computing represents data through the range of states subatomic particles exist in within the quantum state of superposition (creating the "qubit," the basic element of quantum computing). In theory a quantum computer narrows down the probable states to determine the optimal outcome within a near-infinitude of possibilities, rapidly solving certain problems in the process.

D-Wave investors include Amazon founder Jeff Bezos, Goldman Sachs and investment firm In-Q-Tel (one with close ties to the CIA and other agencies). However it fails to convince everyone-- MIT computer science Scott Aaronson remarks D-Wave “has said things in the past

that were just ridiculous, things that give you very little confidence."

The Lockheed machine achieves quantum computing through a lattice of tiny superconducting wires chilled close to absolute zero (-273.15 degrees Celsius) forming a processor designed to calculate a set of mathematical equations. This approach is known as "adiabatic quantum computing," and reportedly shows promise in applications such as protein folding, even if critics say it makes use not of quantum computing but of a form of standard thermal behaviour.

Watch Lockheed Martin Quantum Computing

Go A Strange Computer Promises Great Speed (The NY Times)