Engineers develop quantum computers for specific low-complexity applications.

**FIRST GENERATION 2018–2028**
Quantum computers perform faster than classical computing in applications such as molecular simulation, R&D, and software development.

**SECOND GENERATION 2028–2039**
Quantum computers achieve the scale to perform advanced simulations for modeling and problem-solving.

**THIRD GENERATION 2031–2050**
Quantum computing could soon have a big impact on business.

**THE QUBITS ARE COMING**
WITH LARGE, COMPLEX PROBLEMS, QUANTUM COMPUTERS ARE FAST—REALLY FAST

Entangled qubits act together to process information almost instantaneously.

Drug development times could speed up by 20%.

**GLOBAL HIGH-PERFORMANCE COMPUTING MARKET IN 2018**
$10B

**ESTIMATED QUANTUM COMPUTING MARKET IN THE US PHARMA/INDUSTRY**
$15B to $30B

** HOW QUICKLY COULD QUANTUM COMPUTING TAKE OFF?**
Adoption will vary by industry and by the speed with which complex problems must be solved.

**THE QUANTUM COMPUTING MARKET WILL EVOLVE IN THREE OVERLAPPING GENERATIONS**

**CONSENSUS FORECASTS FOR THE PEAK ADOPTION RATES OF QUANTUM COMPUTING**

- **APPLICATIONS REQUIRING A SIGNIFICANT SPEED ADVANTAGE**
  - 80%
- **APPLICATIONS REQUIRING A MODERATE SPEED ADVANTAGE**
  - 50%
- **APPLICATIONS REQUIRING AN UNDETERMINED SPEED ADVANTAGE**
  - 25%

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**PREPARING FOR A QUANTUM LEAP**
Companies should engage if they are in data-intensive industries or need to run time-consuming, complex simulations.

**EARLY MOVES CAN ESTABLISH A SIGNIFICANT QUANTUM COMPUTING ADVANTAGE IN SEVERAL WAYS:**

- Launch initiatives to gain understanding, capital, and expertise.
- Sponsor academic research in quantum applications.
- Explore molecule simulations using quantum processors.
- Challenge R&D to follow quantum computing breakthroughs.

This infographic is based on the BCG report *The Coming Quantum Leap in Computing.*

Sources: BCG analysis; company reports; expert interviews.

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