



**SWICO**

**Insights for Insiders**

# Quantum Readiness



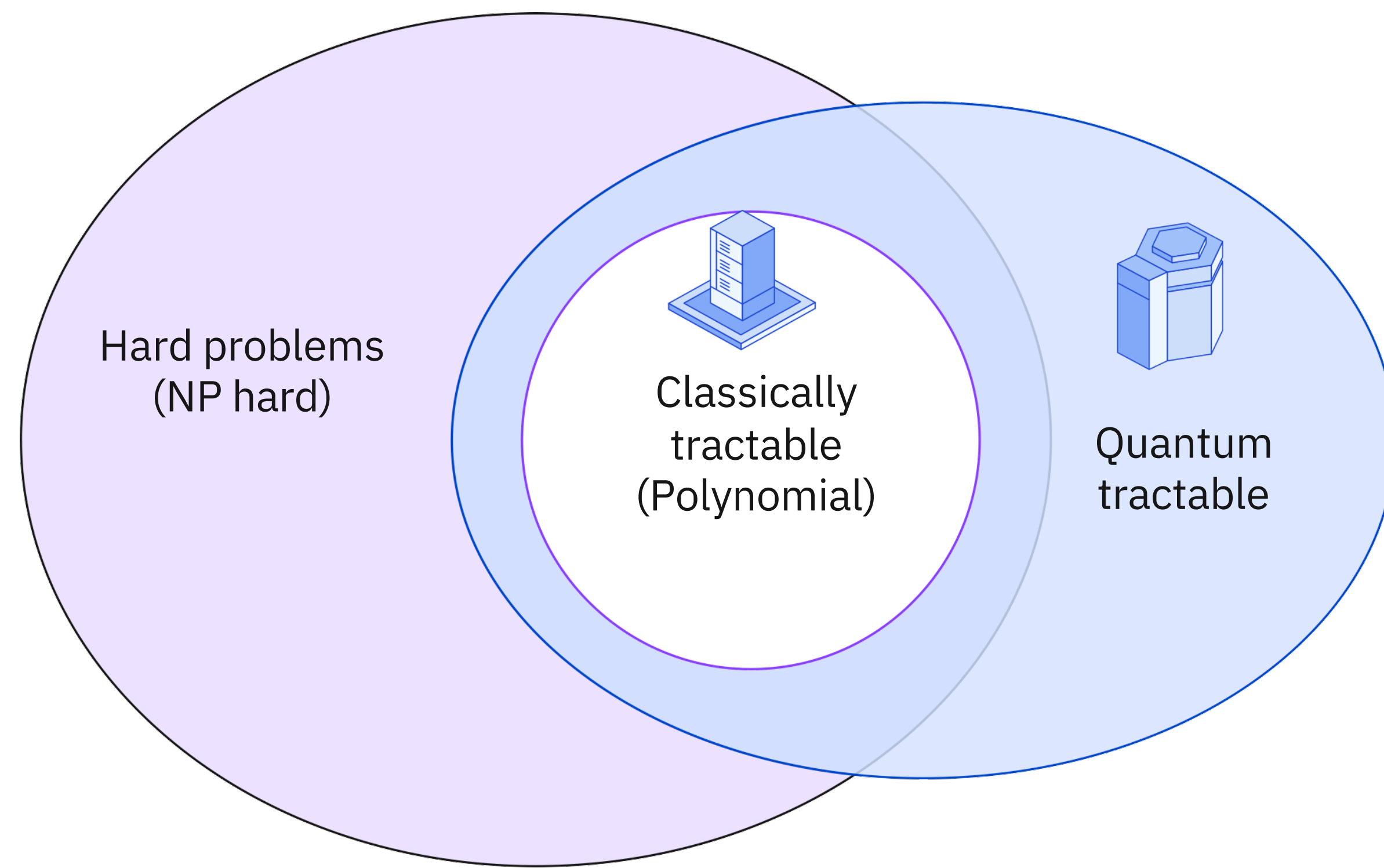
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# Quantum Computing – Built for difficult problems

no matter how powerful,  
there are problems that conventional computers simply cannot solve



## Simulating Nature

Physics  
Chemistry  
Materials Science

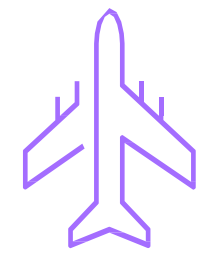
## Mathematics & Data with Structure

Machine Learning  
Ranking  
Symmetric groups  
Factoring

## Other

Sampling problems  
Optimization  
Risk analysis and option pricing

*“Quantum computing has the potential to create over \$500B in value at tech maturity.”* — BCG



Aerospace and  
automotive

Automated vehicles:  
up to \$10B

Fluid dynamics:  
\$10–30B

Materials:  
\$10–20B

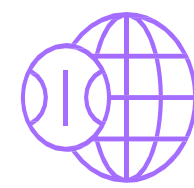


Financial services

Risk management:  
\$10–20B

Market simulation:  
\$30–35B

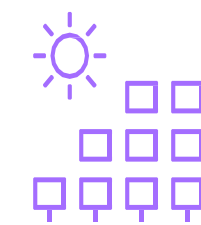
Fraud, money  
laundering: \$20–30B



High tech

Catalysis:  
\$20–50B

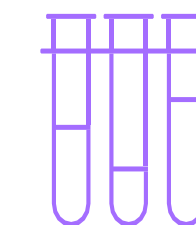
Materials:  
\$20–30B



Energy, environment  
and utilities

Solar conversion:  
\$10–30B

Battery design:  
\$20–40B

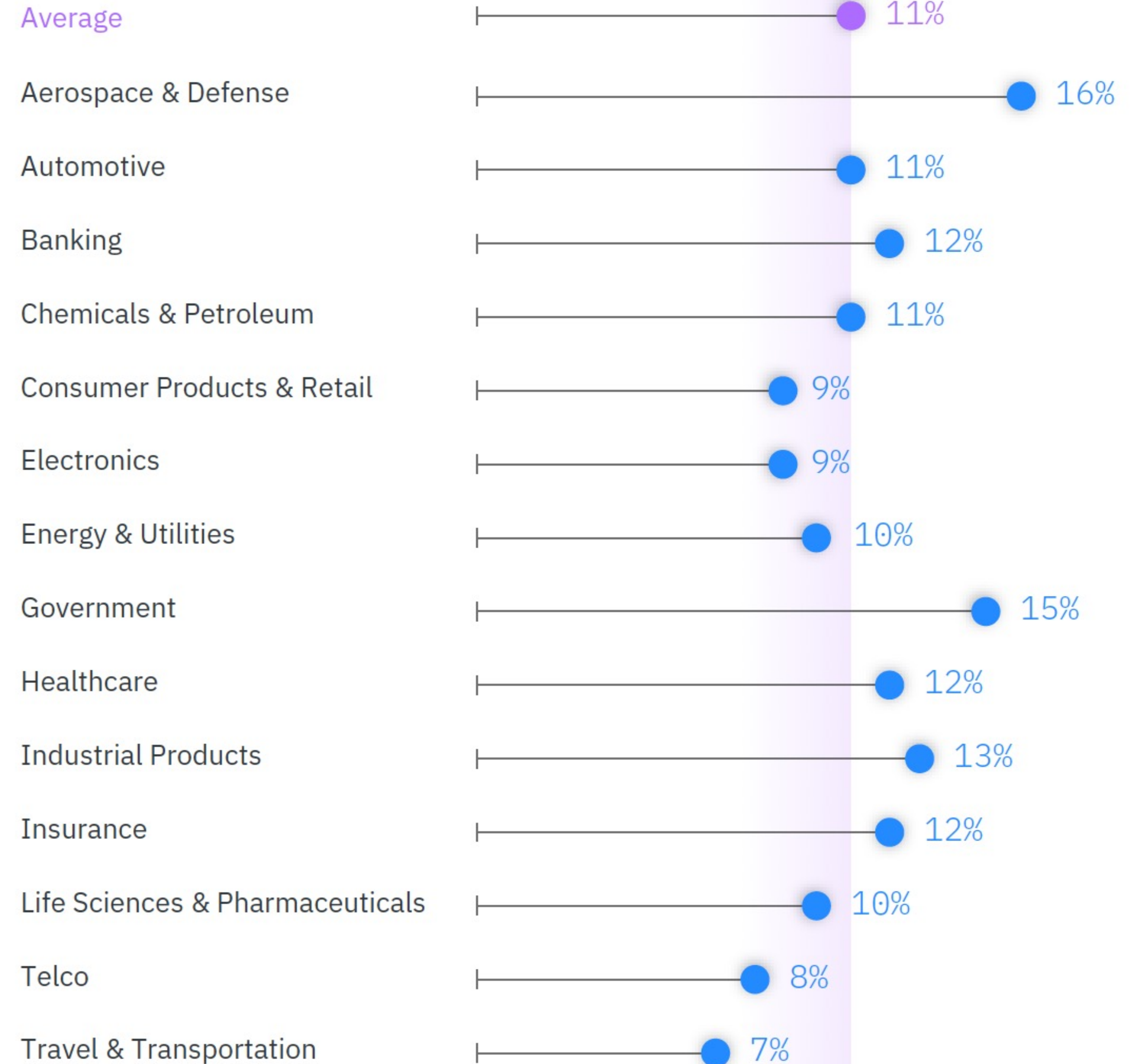


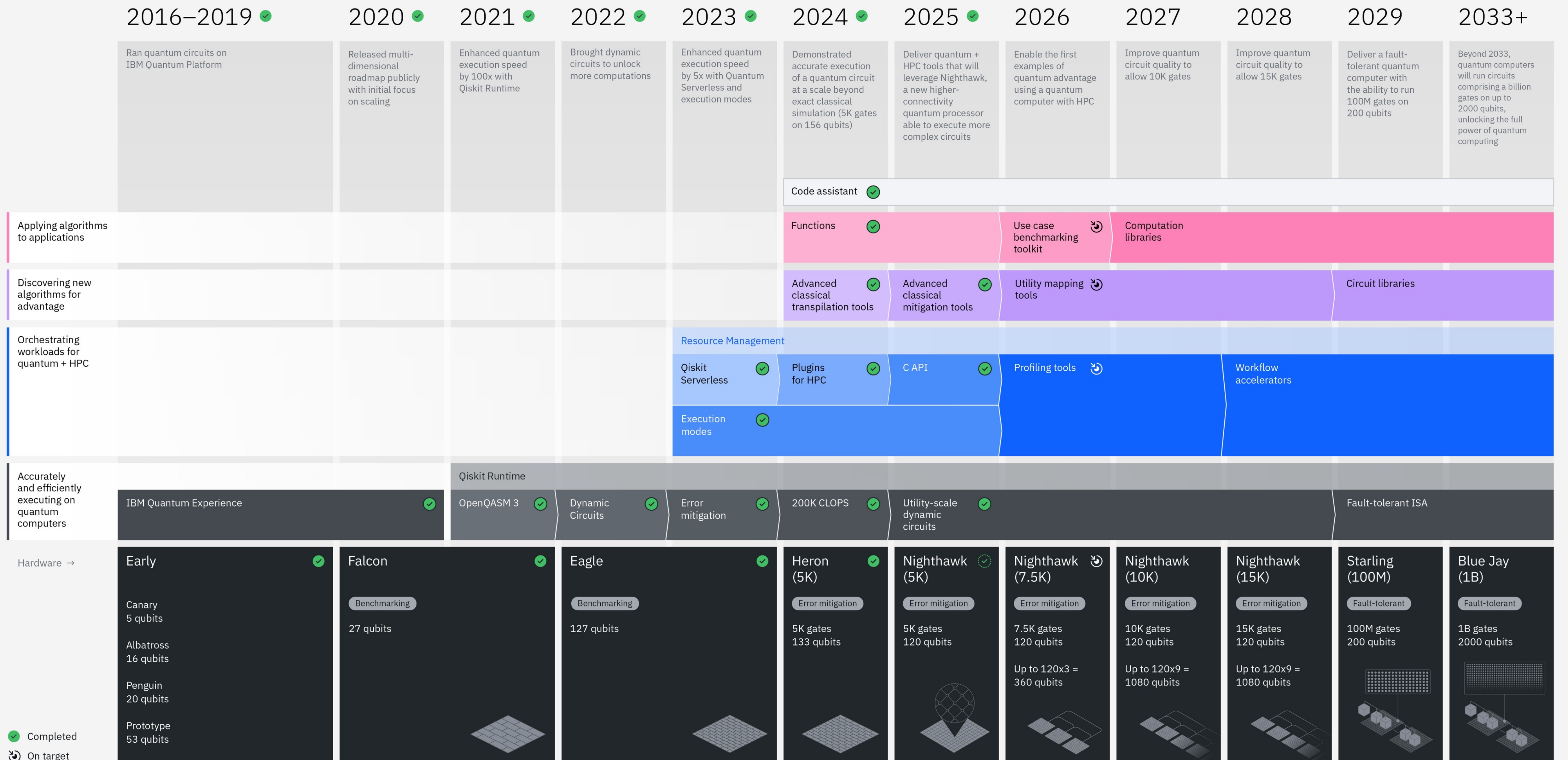
Healthcare and  
life sciences

Drug development:  
\$40–80B

Quantum computing now captures an average of 11% of R&D budgets, up from 7% in 2023

Investment varies significantly by industry, with A&D and Government leading investment.





✓ Completed

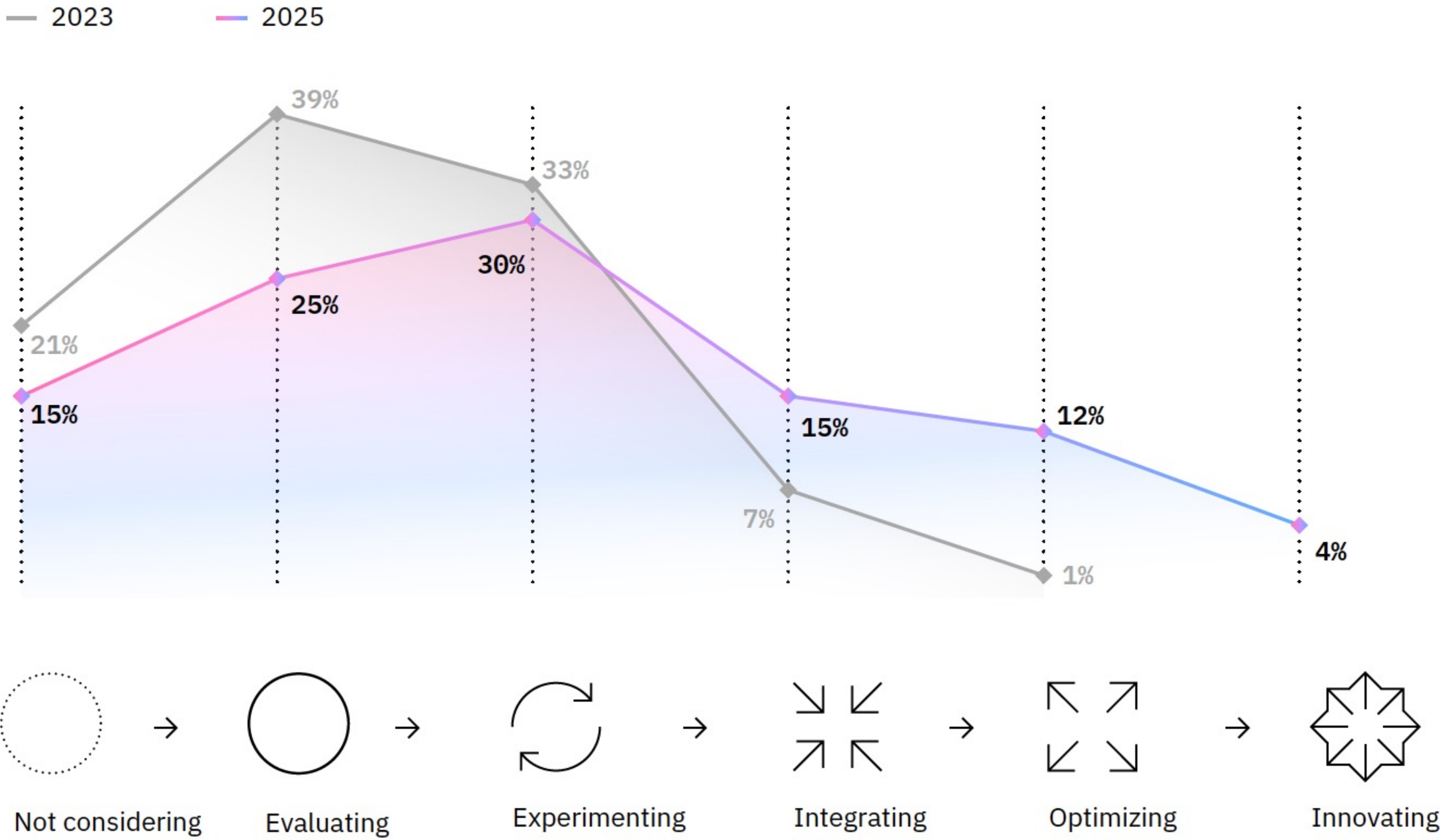
🕒 On target

Advantage → 2026

2029 ↘

Large-scale  
fault-tolerant  
systems

Across all use cases areas, organizations are advancing from quantum exploration to deployment



Source: IBM Institute for Business Value – Quantum is coming

The future of computing will consist of Quantum Computing, AI and classical computing.



Quantum computing has entered its adoption phase.

Get familiar and use learning opportunities



**Courses:**

Basic course on quantum information:

<https://quantum.cloud.ibm.com/learning/en/courses/basics-of-quantum-information>

General formulation of quantum information:

<https://quantum.cloud.ibm.com/learning/en/courses/general-formulation-of-quantum-information>

Quantum business foundations:

<https://quantum.cloud.ibm.com/learning/en/courses/quantum-business-foundations>

**Tutorials:**

Hello world:

<https://quantum.cloud.ibm.com/docs/en/tutorials/hello-world>

# IBM Quantum Platform: getting started

Go to the IBM Quantum Platform

<https://quantum.ibm.com>


and create an IBMid to run your own circuits!






*Everyone can get in, you just need an email account!*



Get started today on  
IBM Quantum Platform

## Sign in to IBM Quantum

Continue with IBMid 

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**New to IBM Quantum?**  
[Create an IBMid](#)

Having trouble signing in?  
Try signing in with an IBMid. If you are still having issues, contact the [IBMid help desk](#).

## Create an IBM Cloud account

Already have an IBM Cloud account? [Log in](#)


**Account information**


Email

Enter an email address.

Password

OR

[Sign up with Google](#) 

[Sign up with Red Hat](#) 

Next ↓

**Verify email**

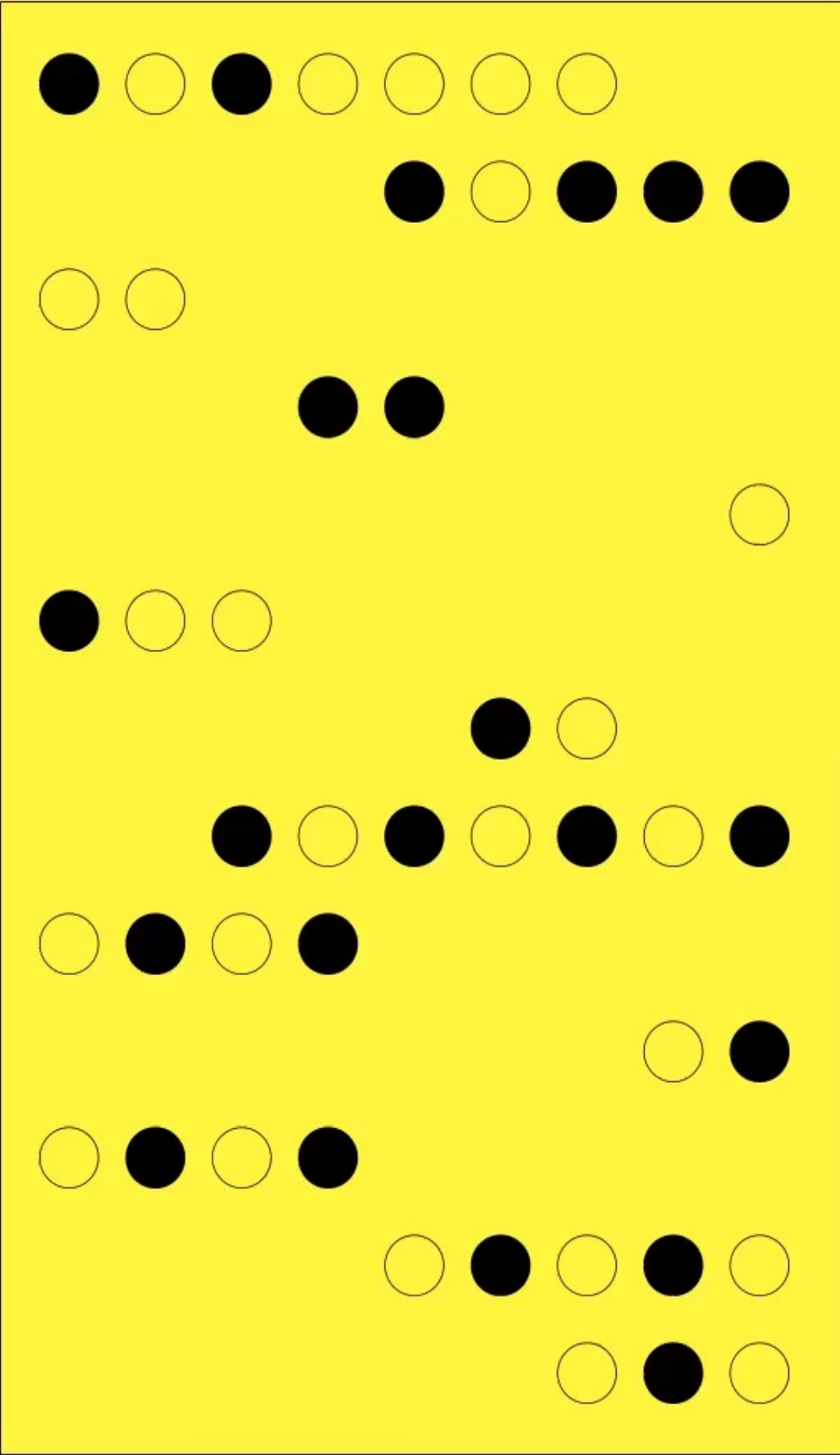
**Personal information**

**Account notice**

Create account →

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# Make the world quantum safe



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# What can a cybercriminal do?

Availability of “cryptographically relevant” quantum computers

Before



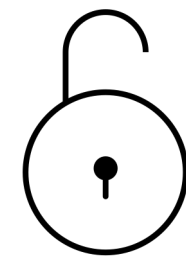
**Harvest** confidential data to decrypt later

“Harvest now, decrypt later”

**Urgency\***

\* for some data and systems

After



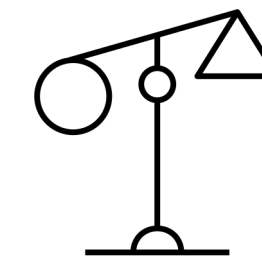
**Decrypt** lost or harvested confidential data by breaking encryption

**Confidentiality**



**Disrupt** business with manipulation through fraudulent authentication

**Integrity**



**Manipulate** digitally signed contracts and legal history by forging digital signatures

**Authenticity**

# The good news

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Quantum Safe  
technologies exists and  
gets standardized

Awareness  
and urgency  
are growing

Regulators issue advisories  
and directives

