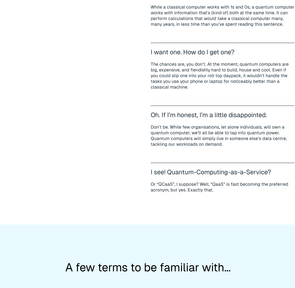


The bluffer's guide to quantum computing

Not again. Just when you thought it was safe to go back in the water, the dorsal fin of another toothy technological innovation has surfaced. With quantum computing racing towards the shores of B2B tech, it's best to get prepared now. Here's what you'll need to know to successfully talk the talk during conferences, business meetings and first dates.



What's so special about *quantum* computers?

While a classical computer works with 1s and 0s, a quantum computer uses quantum bits (qubits) that can be 1, 0, or both at once. It can perform calculations that would take a classical computer many, many years, in less time than you've spent reading this sentence.

I want one. How do I get one?

The chances are, you don't. At the moment, quantum computers are massive machines, fiendishly hard to build, house and cool. Even if you could slip one into your not-top-daypack, it wouldn't handle the tasks you do on your phone or laptop for noticeably better than a classical machine.

Oh. If I'm honest, I'm a little disappointed.

Don't be. While few organisations, let alone individuals, will own a quantum computer, we'll all be able to tap into quantum power. Quantum computers will simply run in someone else's data centre, tackling our workloads on demand.

I see! Quantum-Computing-as-a-Service?

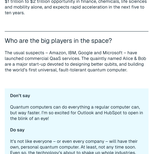
Or "QCaaS", I suppose? Well, "QaaS" is fast becoming the preferred acronym, but yes. Exactly that.

A few terms to be familiar with…

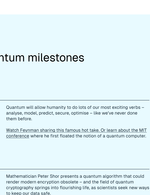
Qubit
The basic unit of quantum information (AKA, what quantum computers use instead of bits.)



Cat qubit
A kind of qubit that enjoys pushing things off tables is less prone to errors.



Superposition
When a qubit is neither a zero nor a one, it's in a state of superposition. If you really want to show off, say, "Of course, mathematically speaking, superposition is a linear combination of zero and one" – then pretend to take an urgent call.



So, how's quantum computing going to change the world?

Quantum will allow humanity to do lots of our most exciting verbs – analyse, model, predict, secure, optimise – like we've never done them before.

Expect

Slicker, more resilient supply chains	Quicker, more accurate financial market predictions
Faster, more efficient drug discovery	A revolution in medical imaging
Hyper personalised marketing and ad content	Super-secure communications (that theoretical quantum-enabled criminals)
Astonishingly capable AI	Optimised financial portfolios
Smoother inner-city traffic flows	And a whole lot more

Sounds amazing… but can I think about this later? My organisation's still busy getting to grips with generative AI etc.

The quantum boom is coming. And sleeping on the tech could lead to a rude awakening. McKinsey & Company sees quantum presenting a $1 trillion to $2 trillion opportunity in finance, chemicals, life sciences and mobility alone, and expects rapid acceleration in the next five to ten years.

Who are the big players in the space?

The usual suspects – Amazon, IBM, Google and Microsoft – have launched commercial QaaS services. The quantity named Alice & Bob are a major start-up devoted to designing better qubits, and building the world's first universal, fault-tolerant quantum computer.

Don't say

Quantum computers can do everything a regular computer can, but way faster. I'm so excited for Outlook and HubSpot to open in the blink of an eye!

Do say

It's not like everyone – or even every company – will have their own quantum computer sitting in the corner of the office. Even so, the technology's about to shake up whole industries, grease the wheels of AI and transform our daily lives, as businesses tap into quantum computing power over the internet, like any other cloud-based service.

Know your quantum milestones

1981

Quantum will allow humanity to do lots of our most exciting verbs – analyse, model, predict, secure, optimise – like we've never done them before.

Watch Feynman sharing this famous hot take Or learn about the MIT conference where he first floated the notion of a quantum computer.

1994

Mathematician Peter Shor presents a quantum algorithm that could render modern encryption obsolete – and the field of quantum cryptography springs into flourishing life, as scientists seek new ways to keep our data safe.

Watch Shor describe the genesis of this pivotal piece of the quantum puzzle.

1998

For the first time ever, a quantum computer solves a quantum algorithm.

Read a (relatively) approachable summary of the research from the Encyclopaedia Britannica.

2016

IBM offers cloud access to a quantum computer – allowing anyone who signs up to start running their own quantum computing experiments.

Read IBM's own proud reflections on this massive step towards quantum accessibility.

2019

2019 Google claims quantum supremacy. (Not, as you might expect, by conquering the Quantum Realm, but by using a quantum computer to solve a problem that would take a classical computer a wildly impractical amount of time.)

Google's CEO described this breakthrough as "a moment of possibility". Read his article here.

You're ready. Go bluff your way through that quantum boom.

Why not share this with colleagues so all of you can bluff like pros? And if you're preparing to seize the quantum opportunity, read our in-depth guide to nailing your positioning.

Read the guide

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