

# breathe in(novation)

UNCOVER INNOVATIONS THAT MATTER

# Insights from the Capgemini Research Institute

## WHAT'S THE BIG IDEA?

Why most innovations fail to scale  
and what to do about it

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How your organization can create  
a quantum advantage

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# WHAT'S THE BIG IDEA?

## WHY MOST INNOVATIONS FAIL TO SCALE AND WHAT TO DO ABOUT IT

For details on the research methodology and to read the full report, please visit:  
<https://www.capgemini.com/insights/research-library/scaling-innovation/>

## In a disrupted, fast-moving world, organizations are betting big on innovation

Organizations understand the criticality of innovation to meeting new customer needs, driving new levels of operational performance, and building long-term value and growth

However, these ambitions run into a major obstacle: the difficulty of achieving scale with innovations in processes, products, or services

Achieving scale is often cited as the number one barrier to realizing commercial goals across sectors and technologies

Organizations are challenged with low rates of scaled implementation across technologies and sectors



### Automotive Smart Factories

10%

Percentage of automotive smart factories that have mastered the core areas of smart factories to be ready to drive them to scale



### Artificial Intelligence

13%

Percentage of organizations across sectors that have successfully deployed AI use cases in production and continue to scale more throughout multiple business teams



### Agile

<20%

Percentage of organizations across sectors that have achieved a high level of competency with agile practices across the organization



### Retail Store Automation

21%

Percentage of stores that retailers, on average, have implemented automation use cases in today

Source: Capgemini Research Institute, "How automotive organizations can maximize the smart factory potential," February 2020; "Smart stores: Rebooting the retail store through in-store automation," January 2020; "Agile at scale: Four ways to gain enterprise-wide agility," November 2019; "The AI-powered enterprise: Unlocking the potential of AI at scale," June 2020.

## Three action points for how organizations can successfully scale innovation

Based on in-depth interviews with 40 senior executives from global organizations with combined revenues of over \$1.7 trillion, as well as academics, and drawing on innovation best practices, we offer three recommendations for successfully scaling innovation.



Treat scaling as its own discipline within the innovation journey



Design innovation governance to include scaling as a key responsibility



Build a culture that is willing to take tough decisions on scaled innovations

### Treat scaling as its own discipline within the innovation journey

1

**Set up specialized roles dedicated to scaling** within the business to ease and accelerate wider business adoption

2

**Cross-train teams** across scaling and generating functions

3

**Place innovation generators into the scaling function** to build awareness of future challenges

4

**Make viability and feasibility analyses** integral aspects of the innovation journey

### Design innovation governance to include scaling as a key responsibility

1

**Give more ownership to business lines** for scaling innovation

2

Consider implementing a **corporate-venture builder model**

3

**Learn from accelerated scaling approaches** driven by the COVID-19 pandemic

### Build a culture that is willing to take tough decisions on scaled innovations

1

**Promote a “learning” culture** while scaling

2

**Kill or scale back** successful innovation when necessary

3

**Introduce flexibility when scaling innovation** to respond to changing market conditions

Source: Capgemini Research Institute and Capgemini Technology, Innovation and Ventures analysis.

# QUANTUM TECHNOLOGIES:

HOW TO PREPARE YOUR ORGANIZATION  
FOR A QUANTUM ADVANTAGE NOW

For details on the research methodology and to read the full report, please visit:  
<https://www.cappgemini.com/insights/research-library/quantum-technologies/>



Quantum technologies



**Quantum computing**  
Use of quantum properties to perform computations.



**Quantum comms and security**  
Transmitting and controlling information using laws of quantum mechanics in the most secured manner



**Quantum sensing**  
Use of quantum properties or phenomena to measure a physical quantity with high precision

Advances in quantum technologies are gathering pace

23%

Nearly one in four organizations are working with, or planning to work with quantum technologies

19%

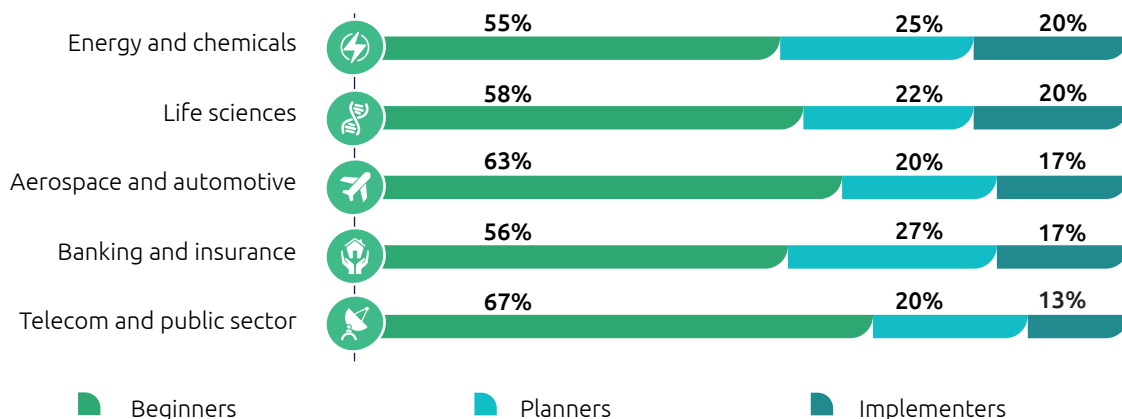
Nearly one in five organizations believe early commercial applications will arrive within five years

85%

of the organizations working/planning to work with quantum expect to increase investments in the technology in the next year

Energy and chemicals, Life Sciences, and Aerospace & Automotive lead in quantum implementation

State of quantum technology implementation by industry  
(for organizations that are working or planning to work on the technology)



Source: Capgemini Research Institute survey, N=200 organizations working or planning to work on quantum technologies  
Note: The data points are directional in nature.

Definitions:

**Implementers:** Organizations which are conducting experiments with quantum technologies

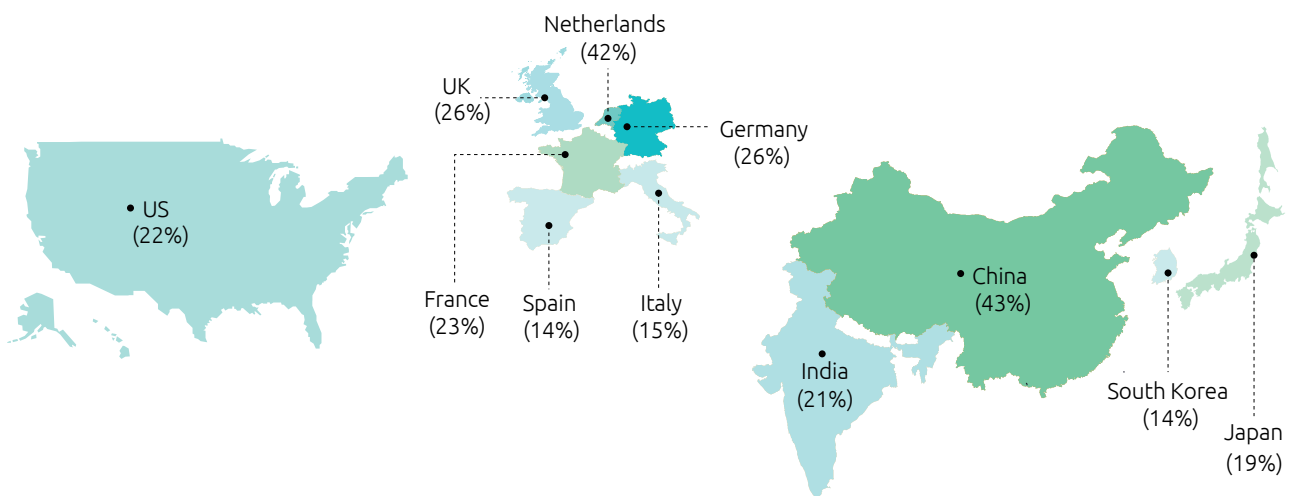
**Planners:** Organization which have identified the right problems and are now integrating quantum technologies in their tech/R&D agenda/roadmap.

**Beginners:** Organizations which are identifying the right problems to solve with quantum technologies or started the research to understand their fundamentals.

## China and the Netherlands have the largest share of companies working on or planning to work on quantum technologies, well ahead of Germany and the UK

### Quantum technology adoption by country

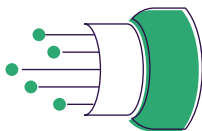
(% share of organizations working or planning to work with quantum technologies)



Color gradient from light to dark indicate weak to strong adoption, respectively.

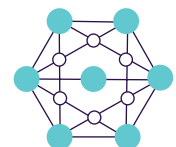
Source: Capgemini Research Institute Quantum Technologies Survey, N=857 organizations, November–December 2021.

## Organizations are already securing their critical infrastructure and information using quantum



**BT** and **Toshiba** have collaborated to deploy a quantum-secure network, based on the QKD system. The system was deployed to generate thousands of quantum-secure cryptographic keys per minute over **6 km of fiber-optic cable, with a range extending up to 120 km.**<sup>1</sup>

Netherlands-based **KPN** ran test traffic between Delft and the Hague using QKD from a central node in Rijswijk. Current range between the nodes is **150 km, but KPN is aiming to upgrade the system to reach 250 km.**<sup>2</sup>



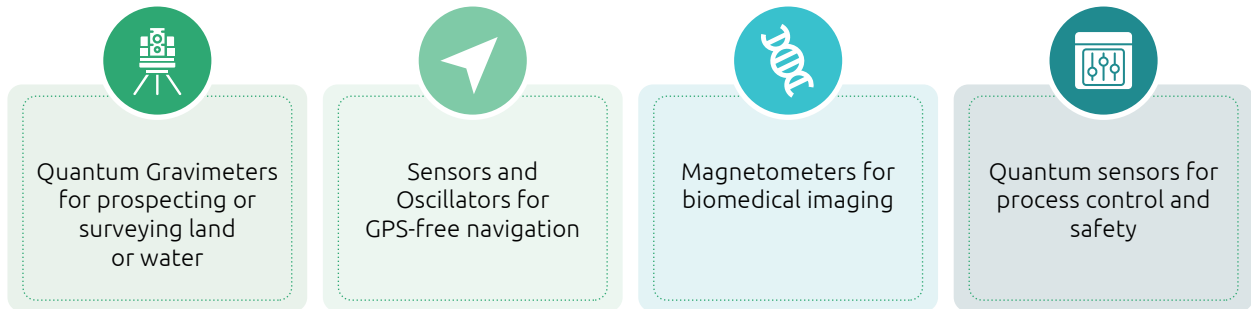
**58%** of organizations are waiting for standards to emerge before prioritizing quantum-safe security, yet solutions are already available

<sup>1</sup>BT press release, October 1, 2020.

<sup>2</sup>Capacity Media, "KPN aims for quantum-secure network across Netherlands on existing fiber," July 6, 2021.

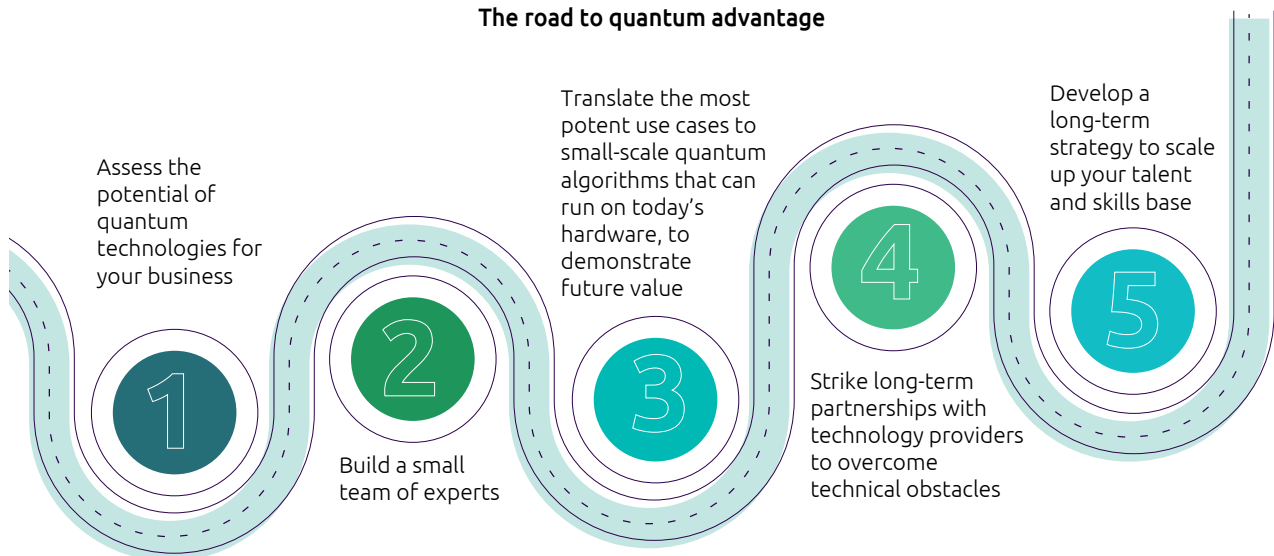


## Several industries stand to be revolutionized with the next generation of quantum sensors



## How can your organization prepare for the quantum advantage now?

### The road to quantum advantage



Source: Capgemini Research Institute analysis.

