EARTH &
BEYOND
VENTURES

Deloitte
CATALYST

DEEPTECH EXPLAINED
MAPPING ISRAEL'S DEEPTECH LANDSCAPE

REPORT #1
QUANTUM COMPUTING

JULY 2025

EXECUTIVE SUMMARY

DeepTech refers to a new wave of science-driven innovation - technologies rooted in advanced research and engineering complexity, with the potential for long-term impact. DeepTech Explained is a joint initiative by Earth & Beyond Ventures and Deloitte Catalyst, aimed at making Israel's DeepTech landscape more accessible through concise, data-rich reports. Each edition examines a specific DeepTech domain, maps key participants, and outlines emerging activities.

This first edition explores Quantum Computing - not the broader quantum technology stack (such as sensing or communication), but computing specifically: a new paradigm that leverages quantum physics to process information in fundamentally different ways. It provides an overview of 9 Israeli startups active in quantum computing, alongside a review of quantum fundamentals, global trends, key applications, and Israel's position within the evolving ecosystem.

Governments, corporations, and research institutions worldwide are increasing investment in quantum computing. Over 20 countries have launched national quantum strategies, while tech companies like Amazon, Google, IBM, and Intel are engaged in development and investment across the technology stack. Startups and university spin-offs, supported by venture capital and public funding, are driving advancements in core technologies and facilitating the transition from academic research to applied development. The Israeli government is also investing heavily in the sector, although in much smaller amounts than investments in the field made by larger economies.

Supported by academic research, national initiatives and a vibrant startup ecosystem, Israel is home to a growing number of quantum startups, infrastructure projects, and collaborations focused on advancing quantum technologies.

DEEPTECH

Science-Backed. Market-Driven. Future-Focused.

"DEEPTECH EXPLAINED"

A strategic initiative designed to spotlight the Israeli DeepTech landscape through clear, data-driven mini-reports. Each report focuses on a specific DeepTech sector, aiming to break down complex technologies and dynamics while highlighting key players, opportunities, and Israel's unique potential as a global DeepTech hub.

WHAT IS DEEPTECH?

DeepTech refers to breakthrough technologies rooted in core scientific research. Unlike other technologies, DeepTech requires longer R&D cycles, capital to be front-loaded, and deep technical expertise - yet it holds the potential to change conventional industries across a variety of sectors and drive significant economic impact.

CORE BUILDING BLOCKS

DeepTech is driven by core technological fields that serve as the foundation for innovation, such as:

ELECTRONICS & RF TECHNOLOGIES

QUANTUM TECHNOLOGIES

OPTICS & PHOTONICS
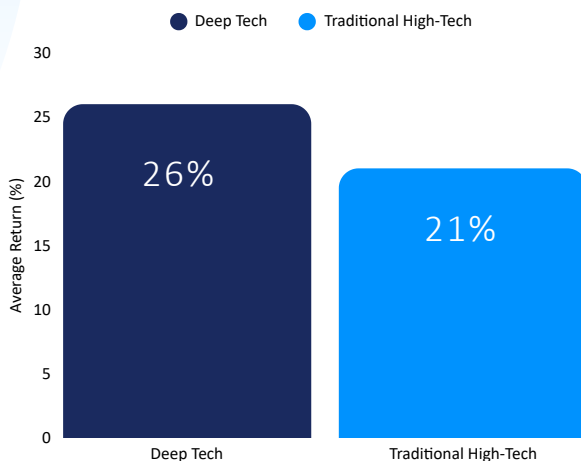
MATERIALS & CHEMISTRY

SEMI-CONDUCTORS

BIOLOGICAL SYSTEMS

ADVANCED ENGINEERING

COMPUTING & PROCESSING

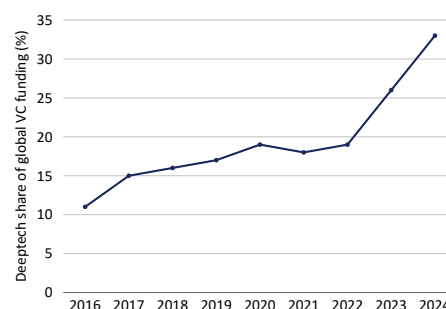## AVERAGE INVESTMENT RETURNS: DEEPTECH VS TRADITIONAL HIGH-TECH

● Deep Tech ● Traditional High-Tech

26%

21%

According to the Israel Innovation Authority

500+
ISRAELI DEEPTECH STARTUPS
According to Tracxn

IN 2024, DEEPTECH STARTUPS CAPTURED 33% OF ALL GLOBAL VC INVESTMENTS

According to Dealroom

QUANTUM COMPUTING

Quantum computing introduces a fundamentally new approach to computing systems. It is based on technology that applies the principles of quantum physics to solve problems beyond the capabilities of today's fastest supercomputers. These are problems that would require classical machines thousands of years to solve. Understanding the differences between quantum and conventional computing begins with the principles at the core of this technology.

BITS VS. QUBITS

Classical computers process information using bits, which can be either 0 or 1.

Quantum computers use qubits, which can be 0, 1, or a combination of both.

Classical Computers	Quantum Computers
BIT	QUBIT
0 or 1	0 or 1 or Both
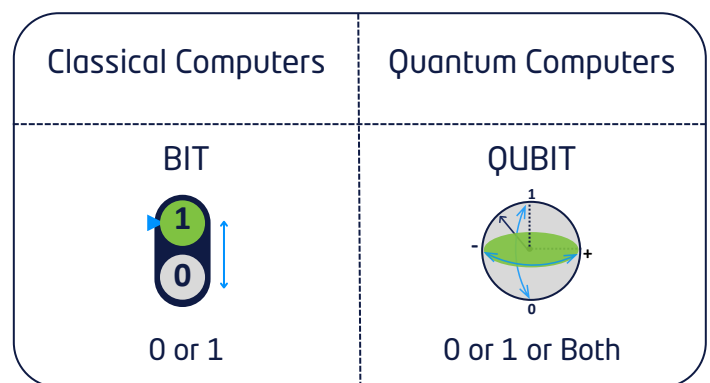
SUPERPOSITION

Superposition allows qubits to exist in multiple states at once, unlike classical bits which hold a single value. This enables quantum computers to explore many outcomes simultaneously

It can be visualized as a spinning coin: quantum computing utilizes all outcomes while the coin remains in motion.

ENTANGLEMENT

Entanglement describes a non-classical correlation - a shared quantum state - between two or more quantum systems, even when they are separated by large distances.

This is like having two dice rolled apart, but when you stop one on six, the other will be six as well.

WHY DOES IT MATTER?

Although commercially viable quantum computers are not expected before the early 2030s, the technology is already being explored as a way to tackle problems that classical systems struggle with, particularly those involving exponential complexity or large-scale parallelism. Two key milestones along this path are **quantum supremacy**, where a quantum computer performs a task no classical machine can feasibly complete, and **quantum advantage**, the point at which quantum computers begin to outperform classical systems on practical, real-world problems.

POTENTIAL APPLICATIONS ACROSS INDUSTRIES

Quantum computing is poised to transform multiple industries by enabling entirely new approaches to solving complex problems. Below are several potential use cases that stand to benefit.

Finance
Optimizes portfolios and risk management and simulates complex financial models with greater precision.

Cybersecurity
Drives the development of encryption methods resistant to quantum-based decryption.

Pharma & Bio
Accelerates drug discovery, biological process modeling, genetic processes and nanoscale innovation.

Chemicals & Materials
Simulates complex molecules and reactions, accelerating new materials and compound discovery.

Energy
Enhances grid management and climate modeling, enabling discovery of advanced energy materials.

Logistics
Improves distribution and supply chain efficiency through advanced optimization algorithms.

Mobility
Optimizes traffic flow, route planning, and autonomous vehicle decision-making in real time.

Defense & Homeland Security
Enables advanced threat detection, secure communication, and enhanced simulation capabilities.

Additional industries may also be affected as quantum technologies evolve, with new applications likely to emerge beyond those outlined above.

THE GLOBAL QUANTUM PUSH

Quantum computing is rapidly emerging as a strategic pillar for national security and strategic technology leadership. Governments and corporations are investing heavily to secure advantages in security, innovation, and economic resilience. Previously limited to research labs, this field is moving to the forefront of national strategy and industrial focus.
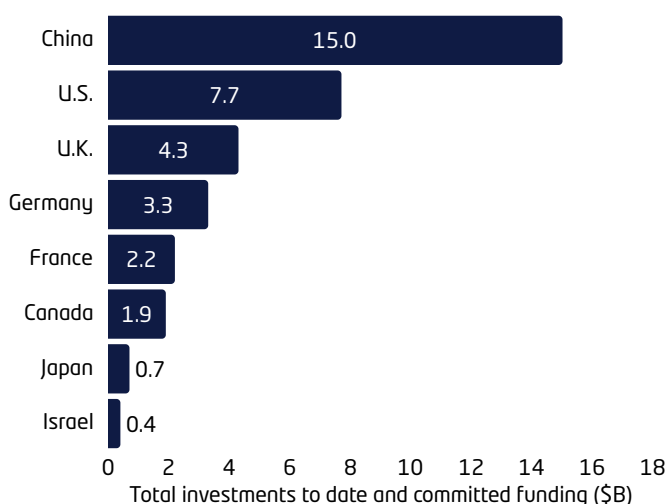
Tech giants such as Amazon, Google, IBM, Intel, and others are significantly accelerating the development of quantum computing through sustained, large-scale investments across the entire quantum stack.

aws · Google · IBM · intel

More than 20 countries, including the U.S., China, Germany, Canada, India, and the UK, have launched formal national quantum strategies, with significant investments in research, talent, and infrastructure. These initiatives underscore the strategic importance nations are placing on quantum as a driver of innovation, competitiveness, and national security in the coming decades.

At the same time, a growing number of startups and university spin-offs are contributing to the development of the quantum ecosystem. Supported by venture capital, government grants, and public funding, these entities are advancing research, enabling commercialization, and addressing gaps across the value chain.

GOVERNMENT INVESTMENTS IN QUANTUM TECHNOLOGIES

Country	Value
China	15.0
U.S.	7.7
U.K.	4.3
Germany	3.3
France	2.2
Canada	1.9
Japan	0.7
Israel	0.4

Total investments to date and committed funding ($B)

According to public investment data recorded in QURECA; actual investment is likely higher.

GLOBAL VC FUNDING RAISED BY QUANTUM COMPUTING STARTUPS

Year	Amount in $B
2020	0.7
2021	2.2
2022	2.4
2023	1.8
2024	2.2

YEAR
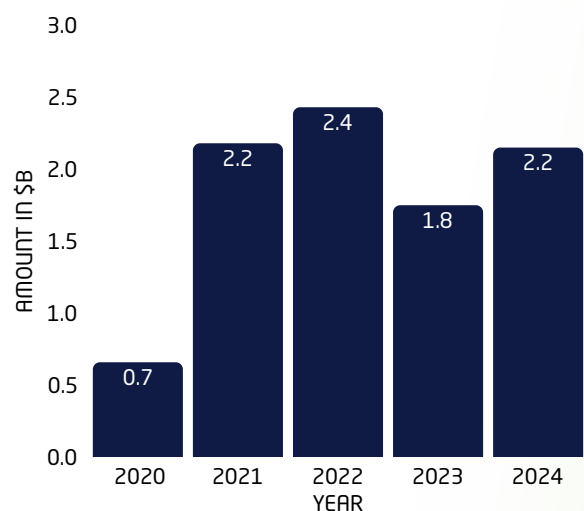
According to public investment data recorded in PitchBook; actual investment is likely higher.

THE ISRAELI EDGE

Israel's quantum computing activity is supported by a developing startup ecosystem, alongside academic research centers and military technology programs. According to SNC, one out of every 300 tech companies in Israel focuses on quantum technologies, compared to approximately one in 2,000 in the U.S. This reflects a concentrated area of activity in quantum technologies within Israel's broader tech landscape.

THRIVING STARTUP NATION

Israel's startup ecosystem is globally recognized for its density, agility, and technological depth. A growing number of quantum startups are emerging - not only in computing, but also in sensing, control systems, and related domains. These startups benefit from a supportive tech ecosystem with access to investors, accelerators, strategic partners, and more.

MILITARY TRAINING AS A TECH ENGINE

Israel's military technology units have long served as key drivers of innovation, developing highly skilled talent across a range of advanced fields. Many individuals with backgrounds in these units are engaged in entrepreneurship, research, and technical leadership across Israel's technology sectors, including quantum computing, helping to drive Israel's quantum ecosystem.

GOVERNMENT SUPPORT AND FUNDING

Government investment plays a role in supporting Israel's quantum ecosystem. In 2019, the government pledged ILS1.25B over six years to support quantum computing and related technologies. In 2024, the Israel Innovation Authority announced the Israeli Quantum Computing Center (IQCC), with ILS100M in funding, intended to accelerate quantum development across multiple modalities and strengthen national capabilities in this field.

LEADING ACADEMIC RESEARCH

Israel's academic institutions are recognized globally for their leadership in quantum research. Several universities host dedicated centers focused on quantum computing and technologies. Israeli researchers regularly publish in top global scientific journals and contribute to foundational advancements in the field. Many also serve as co-founders, advisors, or team members in quantum startups, playing a role in shaping the country's emerging ecosystem.

THE QUANTUM MAP: EXPLANATION

Understanding the Israeli Quantum Computing Map starts with its core classification layers, which categorize companies by their technological focus and position within the broader quantum value chain.

1. Quantum Computing Modalities

The modality of a quantum computer refers to the specific physical system used to implement qubits. Each modality represents a distinct technological pathway, reflecting diverse efforts to solve the same core challenge: how to reliably create, control, and scale quantum systems.

SUPERCONDUCTING

Uses electrical circuits made from superconducting materials, cooled to near absolute zero. Qubits are controlled through electric currents and voltages.

TRAPPED IONS

Uses charged atoms (ions) trapped in a vacuum by electromagnetic fields. Quantum states are manipulated using ion motion induced by lasers.

PHOTONICS

Uses photons to carry quantum data. Relies on optical components like waveguides, beam splitters, and photon counters for control and measurement.

NEUTRAL ATOMS

Uses uncharged atoms trapped and positioned with lasers (optical tweezers). Gates are applied through atomic interactions induced by lasers.

SILICON QUANTUM DOTS

Uses semiconductor quantum dots to trap single electrons in silicon. Electron spin or charge act as the qubit, controlled by electric and magnetic fields.

DIAMONDS

Uses atomic defects in diamond (NV centers) to form qubits. These systems interact with light and magnetic fields for control and readout.

AGNOSTIC

Supports multiple quantum hardware types. Designed to operate flexibly across various systems without relying on one specific modality.

2. Hardware vs. Software

Quantum startups can be broadly categorized by their primary technology focus.
Hardware-focused startups are developing the physical building blocks of quantum systems, ranging from full quantum computers to enabling components.

Software-focused startups are creating the algorithms, languages, platforms, and development tools that operate on quantum hardware, often designed to work across different modalities.

ISRAEL'S QUANTUM COMPUTING STARTUPS: 2025 SNAPSHOT

SOFTWARE

AGNOSTIC
CLASSIQ

AGNOSTIC
QEDMA

AGNOSTIC
QuantyMize
Quantum advance

HARDWARE

PHOTONICS
QUANTUM SOURCE

TRAPPED IONS
Quantum Art

SUPERCONDUCTING
QuamCore

SUPERCONDUCTING
QARAKAL
QUANTUM COMPUTING APPLIED

AGNOSTIC
QM QUANTUM MACHINES

DIAMONDS
Quantum Transistors

EARTH & BEYOND VENTURES

Deloitte CATALYST

THE MAP IN NUMBERS

This analysis covers only Israeli startups focused on Quantum Computing. An additional ~15 Israeli startups operating in broader quantum technologies (e.g., sensing, communications, materials) are not included in these figures.
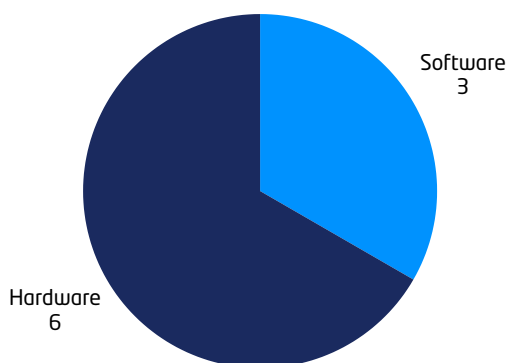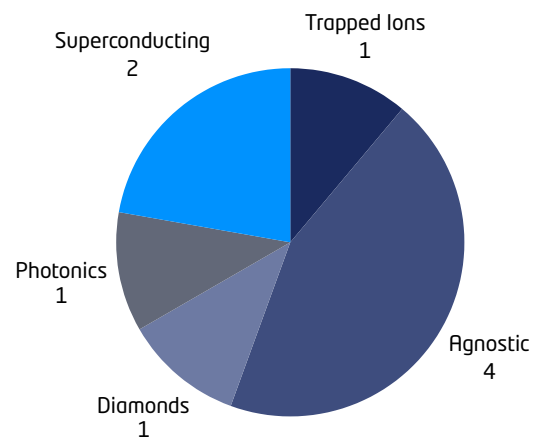
9
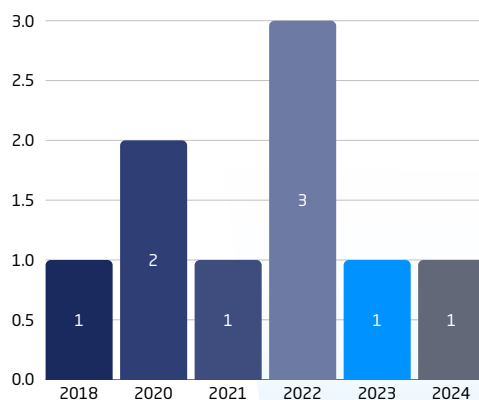Israeli Quantum
Computing Startups

$650M
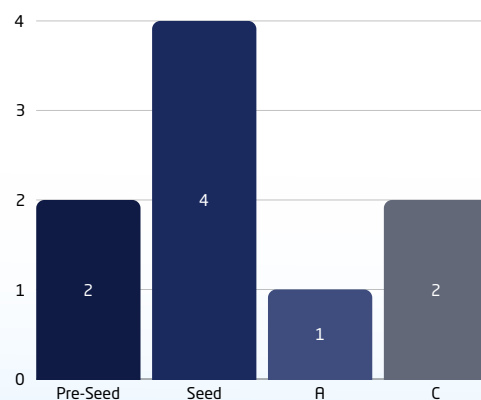Total Funding
Raised

Hardware vs. Software Focus

Software 3
Hardware 6

Startups by Quantum Modality

Superconducting 2
Trapped Ions 1
Photonics 1
Diamonds 1
Agnostic 4

Startups by Year Founded

2018	2020	2021	2022	2023	2024
1	2	1	3	1	1

Startups by Funding Stage

Pre-Seed	Seed	A	C
2	4	1	2

*The data presented is based on proprietary research and information shared directly by the startups.

ISRAEL: WHAT'S NEXT

THE GLOBAL RACE FOR QUANTUM COMPUTING

Global efforts to build scalable, fault-tolerant quantum computing systems are accelerating. Governments, research institutions, and technology companies are expanding investments in infrastructure, workforce development, and early-stage applications. Advancements in research and collaboration across sectors are anticipated to influence industries such as optimization, cryptography, logistics, and materials science.

EMERGING STARTUPS ACROSS THE QUANTUM STACK

Startup activity is positioned to expand across the broader quantum technology value chain, with new quantum computing startups developing components, software, platforms, and algorithms from core hardware to end-user applications. Additional startups are also emerging in areas such as quantum security, communication, sensing, and related fields.

INCREASED VENTURE CAPITAL ENGAGEMENT

The local venture capital activity is diversifying, with investment interest spanning various stages and verticals of the quantum sector. This includes participation from both specialized DeepTech investors and generalist funds entering the quantum space.

DEVELOPING TALENT AND BUILDING INFRASTRUCTURE

Talent development, infrastructure initiatives, and research collaborations remain areas of ongoing engagement, supported by national programs such as the Israeli Quantum Computing Center, contributing to Israel's continued participation in the evolving global quantum ecosystem.

While the timeline for scalable quantum computing remains uncertain, national and international initiatives are anticipated to influence the next phases of technological development. While the Israeli government has committed notable funding relative to the size of its economy, this remains modest compared to the larger economies leading the global race. With a foundation in technological innovation and participation across multiple layers of quantum technologies, Israel is positioned to contribute to ongoing global advancements as the quantum ecosystem continues to evolve.

EARTH & BEYOND VENTURES

Deloitte CATALYST

Earth & Beyond Ventures is a VC fund focused on early-stage investments in Israeli DeepTech startups driven by cutting-edge scientific and technological advancements, in fields such as quantum computing, semiconductors, optics & photonics, energy, material science, new space, robotics, engineering, and more. The fund operates an incubator in strategic partnership with the Israel Innovation Authority and also collaborates with corporations and academic institutions to build new startups, commercialize academic research, and develop innovative technologies, with the goal of fostering the next generation of DeepTech startups.

www.earthandbeyond.ventures

Deloitte Catalyst helps enterprises, governments, and startups – from early stage to high growth – to innovate, scale and deliver transformative value faster. We take the isolation out of innovation by connecting you – and co-developing solutions – with a worldwide community of catalysts that accelerate how innovation transforms your business to lead how our world is changing. With presence in Israel, the United States, and expanding geographies, we have the leading network, relationships and capabilities that help make a global ecosystem of technologies and innovators locally accessible to deliver the unmet needs of your business and its customers.

https://solutionsmap.deloitte.co.il/en/catalyst/

CONTACT US

Doron Zauer

General Partner
Earth & Beyond Ventures

Amit Harel

Partner
Deloitte Catalyst Leader

Noga Yaari

VP Business Development
Earth & Beyond Ventures

Idan Adler

Head of R&D and Innovation Center
Deloitte Catalyst

Yishai Freedman

Associate
Earth & Beyond Ventures

Or Nehushtan

Senior Consultant, DeepTech
Deloitte Catalyst