Big Tech & Digital Health

September 2022

About HealthXL

At HealthXL, our focus is to combine our digital health expertise with the intelligence and experience of our community to get real-world insights for your digital health challenges.

Previous HealthXL reports:

- Digital Therapeutics: Routes to Market
- Prescription Digital Therapeutics
- Clinical Trials Innovation Community Insights
- Digital Therapeutics Community Insights
- Evaluating (US) Digital Payer Adoption of Digital Health Solutions
- Clinical Trials Optimisation with Digital Health
- Measuring Digital Health Maturity

and much more...

Our market ready tools can help you

1. **Understand** the evolving market landscape
2. **Discover** the right strategic fit for your brand
3. **Validate** your digital health model with experts

Our members

Abbott, AKILI, Otsuka, Johnson & Johnson, happify health, Humana, Roche, Bayer, digital health crc, Merck, Bristol Myers Squibb, Mass General Brigham, Novartis, Philips Respironics

Contents

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About this Report

WHY NOW?

There is no question that Big Tech has the capability to disrupt healthcare, though the complexity of healthcare ecosystems is not making it easy for these companies. However, their ability to innovate with technology and their expertise with customer experience makes them a formidable player in this industry.

As digital tools become increasingly embedded into the healthcare journey for all stakeholders, Big Tech will play a major role in influencing the innovation and adoption of digital health.

Understanding how Big Tech is getting into healthcare is more important than ever as companies shape their digital health strategies.

THE CHALLENGE

Big Tech companies look set to disrupt the digital health market and become significant players in this evolving space. While there are lofty ambitions on the table, and success has been limited, Big Tech's activity in healthcare has only increased. Their interest in healthcare reaches far and wide from infrastructure to clinical research and beyond. With such a variety of activity, it can be challenging to keep up with new moves and understand their overall healthcare play.

OUR GOAL

In this report we have broken down the latest activity to explore* how Big Tech is pursuing healthcare. Where it is focusing, how it is ramping up investments and collaborations, and where it is seeing traction were all investigated.

The companies analyzed in this report include: Microsoft, Apple, Alphabet and Amazon.

*Methodology detailed in Appendix (Pg. 39)

SECTION 1:

Introduction

What's the attraction? Healthcare is a $11+ trillion market that is haunted by disorganization and difficulties in resource allocation. It's easy to see why Big Tech would be drawn to the industry when it has had immense success in addressing similar issues in broader consumer and business markets. Many companies are confident they can apply similar principles to fix these inefficiencies in healthcare.

What does Big Tech bring to the table ?

- ➔ **Colossal consumer base, data and analytics**, and the know-how to leverage these to understand consumers.
- ➔ **Champions of user experience (UX)**, a critical element for the adoption of consumer technologies. Traditionally healthcare stakeholders are more focused on efficacy than UX.
- ➔ **Versed in complementary technologies**, like wearables, that are driving the consumerization of healthcare.
- ➔ **Expertise in cloud computing and supply chain / delivery optimisation** to improve interoperability and enable better decision making and more transparency.

Is the healthcare industry ready for Big Tech?

Given the complexity of healthcare, any meaningful change will take time. First attempts to disrupt this industry may have humbled these tech giants, but tech firms are accustomed to big failures. They have the cash, the resources and the ambition to learn from their failures, and find a different approach to succeed in healthcare. To continue to grow their market cap, it makes sense that these companies would venture into an industry that is ripe with innovation opportunities and is big enough to impact their revenues. Given the recent pandemic, there are two major headwinds that are making the healthcare industry more than ready to be disrupted.

Consumerization of healthcare

Pace of consumer awareness, and demand for control and influence over medical and wellness care has accelerated post-pandemic. Millennials are twice as likely to use telemedicine and thrice as likely to use wearables compared to boomers and this shift has only increased the pressure to consumerize healthcare. With best-in-class experiences across retail, e-commerce etc, consumers today are demanding a better user experience and more empowerment in healthcare. Business models centered on providing patients with a better customer experience along with better information and access to personal data (health records, claims, lab reports etc) are shaping the future of healthcare delivery.

Rising healthcare costs

Patients are increasingly burdened with higher healthcare costs, rising deductibles, and out-of-pocket expenses. The growing cost of care has forced patients to demand transparency, find more affordable options for their families, and place a greater emphasis on prevention over treatment. A huge contributor to rising healthcare costs is lack of consistency in treatment plans across payment models. The demand for more transparency and cost-effective care is driving the need to address prevalent issues with healthcare data and interoperability challenges across all stakeholders in the care continuum.

The possible future of healthcare

Better preventative care

Wearables for early detection

Searchable personal health information

In-home diagnostics

Telemedicine

Medical supplies delivery

Remote patient monitoring

Better decision making

Integrated and interoperable health systems

Voice enabled assistants

Precision medicine

Intelligent medical devices

Cost-effective health plans

Population health management

Advanced clinical research

Enhanced drug discovery

SECTION 2:

Routes into Healthcare

Strategic partnerships with focused healthcare players are allowing Big Tech firms to complement their vast capabilities with niche healthcare expertise.

Strategic Partnerships

To navigate the complexity of the healthcare industry, Big Tech players are focusing on the pursuit of partnerships with digital health players who are already making strides in the space, allowing them quicker access to their areas of interest. Strategic partnerships with niche healthcare players are the most popular and most significant route into healthcare for these tech giants.

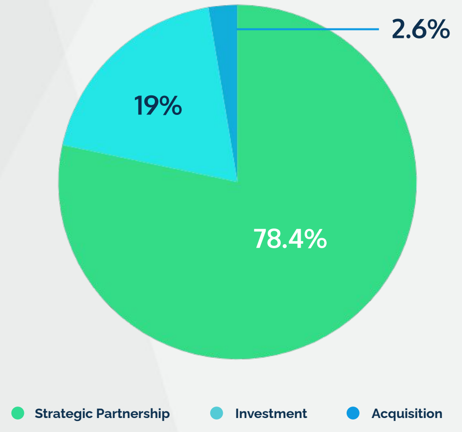
Investments

Investments into digital health companies by Big Tech are less common. Due to the dominance of partnerships, it seems that the preferred approach is a more hands on partnership and active involvement in the solution's design and implementation, rather than funding from the sidelines.

Acquisitions

There have only been a handful of acquisitions in the digital health space since 2019 which strengthens the theory that so far, Big Tech is still learning to navigate healthcare. As the tech giants get a better understanding of the healthcare industry, they may seek to acquire assets and solutions that can be combined with their own expertise to address pressing problems in healthcare.

Most Common Deal Type



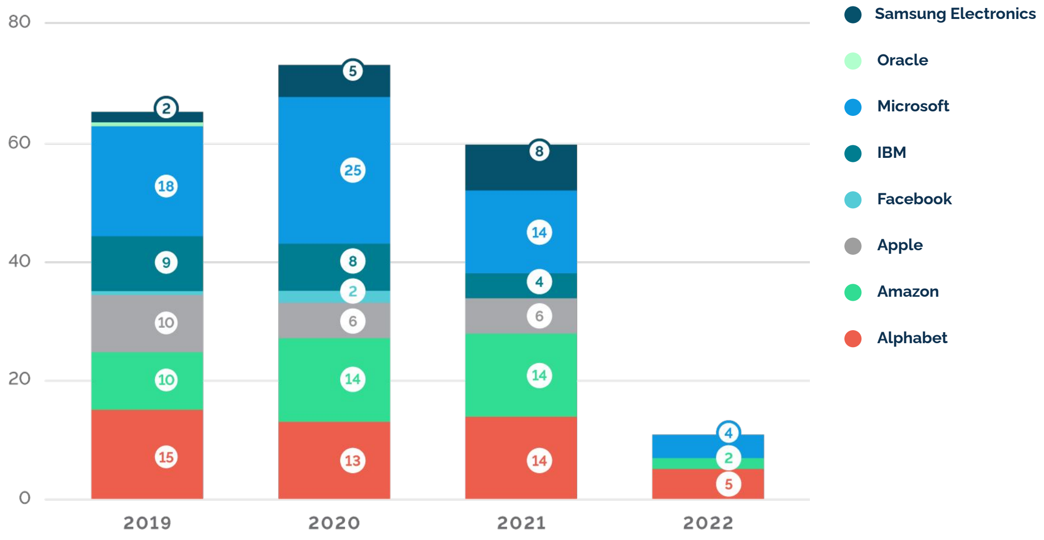
Sample Size = 268

Graph 1. Most common engagement type amongst 8 Big Tech companies

HealthXL Database | Timeframe Jan 2019 - March 2022

With more than 200 strategic partnerships between Jan 2019 – Mar 2022, there is no denying that Big Tech has a significant presence in the digital health ecosystem.

Strategic Partnerships by Year



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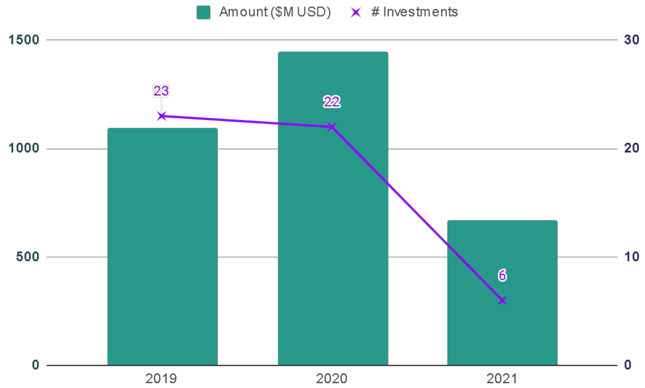
Graph 2. Strategic Partnerships by Year

HealthXL Database | Timeframe Jan 2019 - March 2022

- Microsoft is leading the charge with over 61 partnerships formed over the period analyzed.
- Behind Microsoft, Amazon and Alphabet are also strong on the partnership front with 40 and 47 partnerships each respectively.
- The rest of the Big Tech players displayed varying levels of activity, with Facebook notably quiet in comparison.

Investment by Big Tech into digital health took a downturn in 2021, both in terms of number of deals and total spend.

 # Investments Per Year



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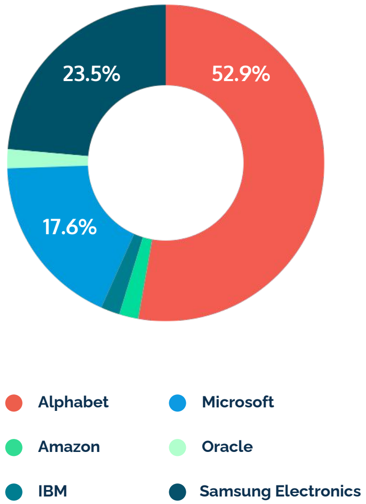
Graph 3. Investment Number and Financial Total

HealthXL Database | Timeframe Jan 2019 - March 2022

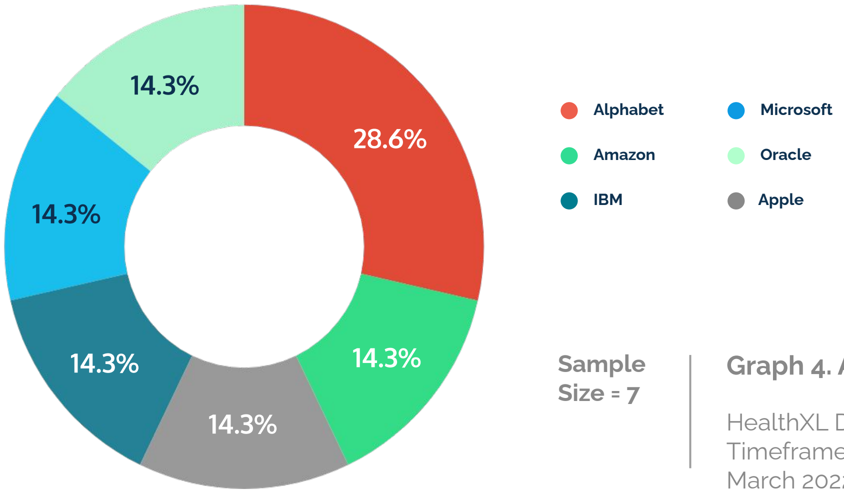
Investments by Company



- After two steady years of investment in 2019 and 2020, Big Tech companies appeared to cool their financial injections into the digital health space.
- This may have been due to the initial rush spurred by Covid calming down and the promises of what digital health could do for healthcare reformation not being fully realised (as seen with the telemedicine slump).
- Another factor may be that Big Tech companies are focusing more on the end products and fruition of these initial investments, waiting to see how they pan out before injecting more revenue into the space.

Just seven acquisitions were recorded over the last three years by the companies of interest, indicating that this is not their preferred method of play in digital health.

Acquisitions Per Company



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Graph 4. Acquisitions

HealthXL Database | Timeframe Jan 2019 - March 2022

Though less of a focus in comparison to strategic partnerships and investments, it is worth noting that all of the Big Tech companies profiled have been involved in at least one digital health related acquisition in recent years.

Alphabet were the most active here with two acquisitions recorded. This includes the 2020 acquisition of Fitbit, valued at $2.1B and a 2021 acquisition of clinical trial management system SignalPath.

Several notable acquisitions, partnerships and investments were noted in recent years, highlighting Big Tech's commitment to digital health.

		DATE	DESCRIPTION
ORACLE	Cerner	DEC 2021	Specifically, the two companies see big opportunities to expand cloud, AI and machine learning applications for Cerner's healthcare clients. With its acquisition of Cerner, Oracle says its goal is to deliver "zero unplanned downtime in the medical environment."
Alphabet verily	SIGNALPATH RESEARCH • REWIRED	AUG 2021	Alphabet's health and life sciences spinout Verily has strengthened its clinical research arm by acquiring the Raleigh, N.C.-based clinical trial management system developer SignalPath.
Apple	Cerner	JUN 2021	Apple partnered with Cerner for health data from Apple Health Records to be shared directly to the EHR.
amazon	one medical	JUL 2022	Amazon acquired One Medical in mid-2022 for $3.9B. The company leverages in-person, digital and virtual interactions in its primary care services, signalling a deeper move for the tech giant into the patient-facing healthcare space.
Alphabet	insitro	MAR 2021	GV, the venture capital arm of Alphabet, recently participated in a massive $400M Series C funding round for Insitro, an AI-powered drug discovery company.
Microsoft	NUANCE	MAR 2022	Microsoft made a significant leap into the digital healthcare space in March of this year with it's $19.7B acquisition of AI speech recognition company Nuance, a company who made a significant contribution to Apple's Siri technology.

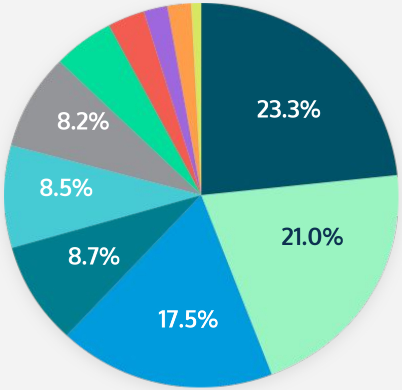
Virtual care, health systems and clinical research are the most popular digital health areas in focus for Big Tech.

 # Most Common Digital Health Area

Graph 5. Common digital areas amongst 8 companies based on activities noted in dataset

HealthXL Database | Timeframe Jan 2019 - March 2022

Sample Size = 345



For category definitions, please see Appendix (Pg. 39)

The digital health space is constantly evolving. To help facilitate improved discussion and understanding on Big Tech, here's how we categorized their interest areas in digital health:

Virtual Care

- Telemedicine
- Remote Patient Monitoring
- Wearables/Sensors
- ePROs/Symptom Trackers
- Hospital-At-Home
- Health Coaching
- Virtual Health Assistant/Chatbots
- Voice Technology Solutions

Healthcare Provider (HCP)/Health Systems

- Clinical Decision Support Systems
- HCP Networks
- EHR-Integrated Data Analysis Solutions
- Digital Front Door
- Voice Transcription
- Digital Pathology
- HCP Education
- Advanced Imaging
- Digital Diagnostics
- Internal Workflow Efficiency

Patient Care

- Symptom Checkers
- Patient Support Programs/Networks
- Medication Adherence
- Patient Engagement Solutions
- Enhanced Recovery After Surgery
- Connected Drug Delivery Solutions
- Disease/Risk Prediction Solutions

Patient Services

- Home Diagnostic Kits
- ePharmacy
- D2C Drug Delivery Solutions
- Patient-Owned Health Record Solutions

Clinical Research

- Data Capture (Digital Biomarkers/Digital Endpoints)
- Digital Twins
- AI Drug Discovery
- Decentralised Clinical Trials
- Real World Data

Digital Therapeutics

- Over-The-Counter
- Prescription Digital Therapeutics
- Standalone
- Combination
- Companion

Payer

- Data Analytics for Patients
- Call center Workflows
- Billing Workflows

Population Health Management

- Social Determinants of Health
- Health Equity
- Health Analytics

General Wellness

- Wellness Apps
- Health Optimization Solutions

IT Infrastructure

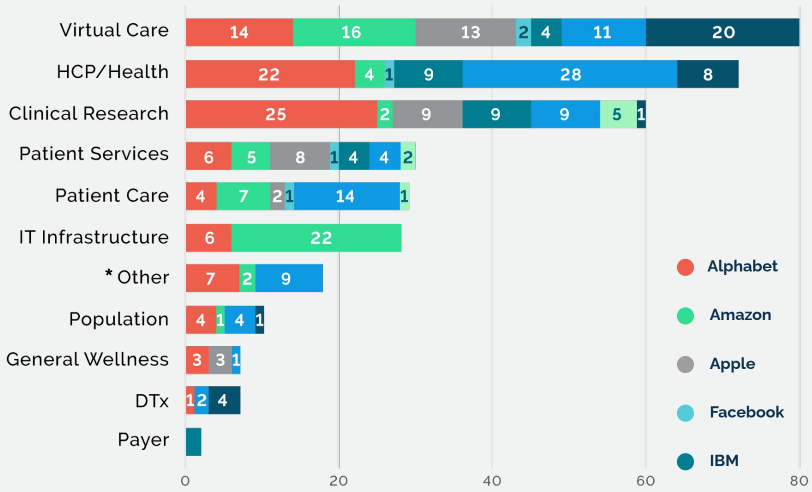
- Cloud Support
- Cloud Computing

Big Tech's approach to healthcare seems to vary across the big four. While Apple and Microsoft have more niche focus areas, Alphabet and Amazon are spreading their bets across a range of digital health areas.

- **Alphabet**: Presence across all categories with significantly higher activity in virtual care, HCP/health systems and clinical research.
- **Amazon**: Cloud infrastructure is undoubtedly a key priority for Amazon followed by virtual care. Amazon is also increasingly active in patient facing services and patient care.
- **Apple**: With its health strategy focused on Apple watch, Apple's activity is unsurprisingly higher in virtual care followed by clinical research and patient services.
- **Microsoft**: In the past 3 years, Microsoft has increased focus on HCP/health systems which include EHR, clinical decision support, integrated data analytics, voice transcription etc.
- **Samsung**: Notably it is the most active in virtual care with a focus on wearable devices.

Digital Health Area Per Company

For category definitions, please see Appendix (Pg. 39)



Sample Size = 345

Graph 6. Digital health areas by 8 companies

HealthXL Database | Timeframe Jan 2019 - March 2022

*Other = Research Consortiums, AI Health Initiatives, Accelerator/Incubators

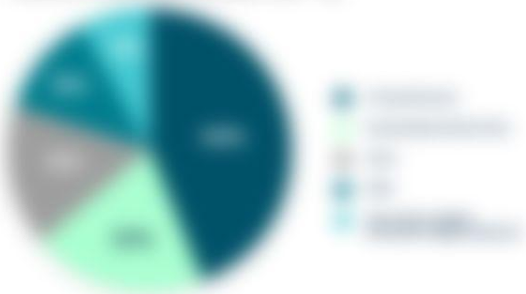
SECTION 3:

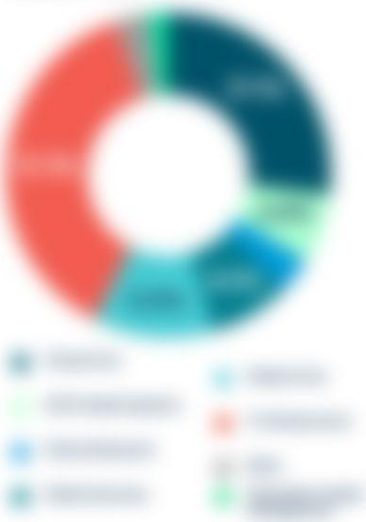
Understanding How Major Big Tech Players are Venturing into Healthcare

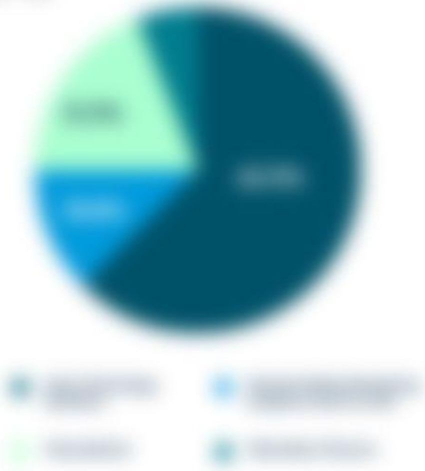
The full report is available only for HealthXL Community Members

Don't miss out.

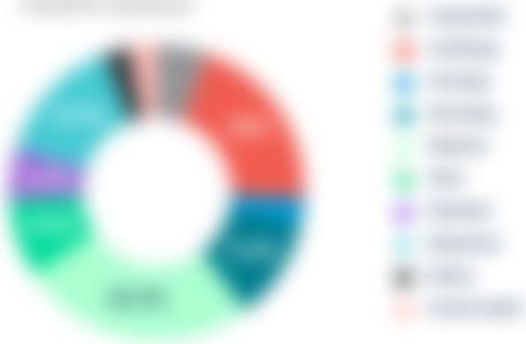
To read the full report, log in to HealthXL Platform or contact our team here.







The Approach



SECTION 4:

Key Challenges and Considerations

How Successful Can Big Tech be in the Healthcare Space?

Appendix

Appendix: Digital Health Definitions

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- Health Equity
- Health Analytics

IT Infrastructure

- Cloud Support
- Cloud Computing

*Other: Research consortiums, AI health initiatives, Accelerator/incubators | *Citation for use: HealthXL Classification of Digital Health Solutions
As the digital health landscape evolves so too will our taxonomy

Our Research Methodology

STEP 1: DATA DOWNLOAD

Our proprietary HealthXL platform pulls in data from hundreds of news sources on a daily basis, collecting a comprehensive overview of the latest trends and developments in the digital health space. We extracted digital health data points between the period of **January 2019 - March 2022** from our platform on the following 8 Big Tech companies: Apple, Alphabet, Microsoft, Amazon, Meta, Samsung, Oracle and IBM.

STEP 2: DATA ANALYSIS

Big Tech's digital health activity was then curated into the type of deals they were engaging in within this space, such as strategic partnerships, investments, product launches or acquisitions. We manually analyzed the data points and categorized these news stories according to our digital health taxonomy. Our team's digital health expertise was then leveraged to draw insight from this proprietary dataset. This analysis was coupled with desk research to ensure a comprehensive understanding of the current landscape in terms of Big Tech and digital health. For a full list of sources used aside from the HealthXL data download, please contact us directly.

INCLUSION CRITERIA

- → Our proprietary HealthXL platform pulls in data from hundreds of news sources on a daily basis, Any digital health related activity that was captured by our platform was included in this report between the timeframe of **Jan 2019 - March 2022**
- → Activity relating to these 8 Big Tech companies Apple, Alphabet, Microsoft, Amazon, Meta, Samsung, Oracle and IBM and their subsidiaries.
- → Future examples of where Big Tech may further disrupt the digital health market were also conducted by desk research

EXCLUSION CRITERIA

- → Biotechnology related activity was not included in this report.
- → Robotics related activity was not included in this report.
- → Healthcare activity that was not digital health related was excluded from this report.
- → Private company information or information not captured on our proprietary platform

Abbreviations

- ePROs - Electronic Patient Reported Outcomes
- AI - Artificial Intelligence
- ML - Machine Learning
- IT - Information Technology
- IoT - Internet of Things
- HCP - Health Care Practitioner
- EHR - Electronic Health Record
- D2C - Direct to Consumer
- CDSS - Clinical Decision Support System
- UX - User Experience
- NFT - Non-Fungible Tokens
- XR - Extended Reality
- FHIR - Fast Healthcare Interoperability Resources
- UI - User Interface
- VR - Virtual Reality

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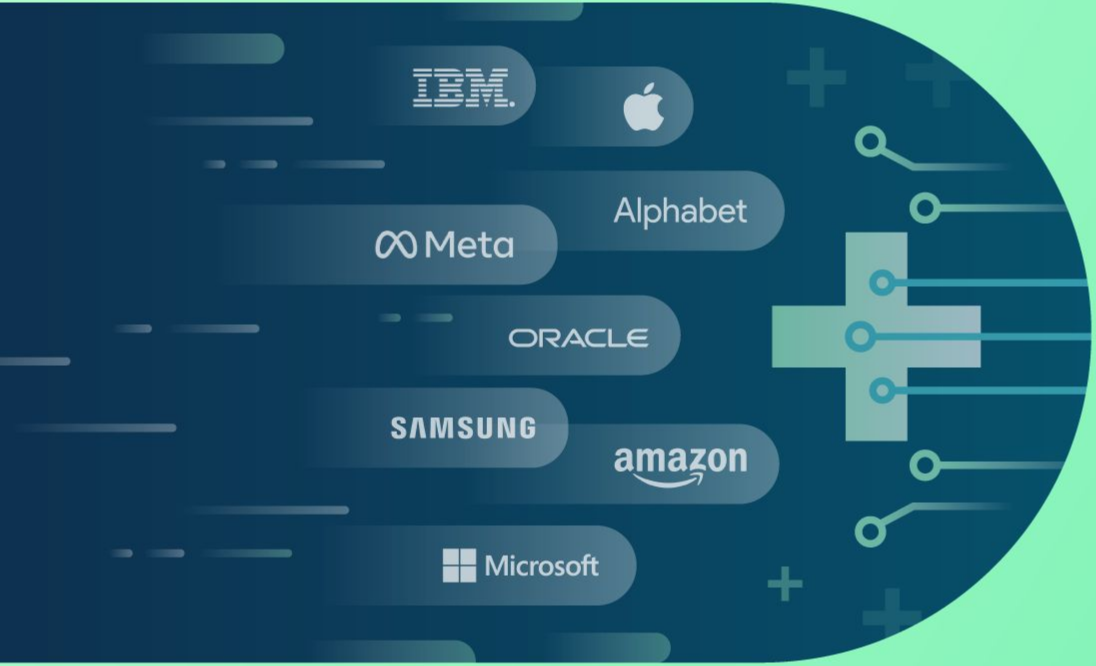

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