

healthxl

Big Tech & Digital Health

September 2022

IBM.



Alphabet

Meta

ORACLE

SAMSUNG

amazon

Microsoft

About HealthXL

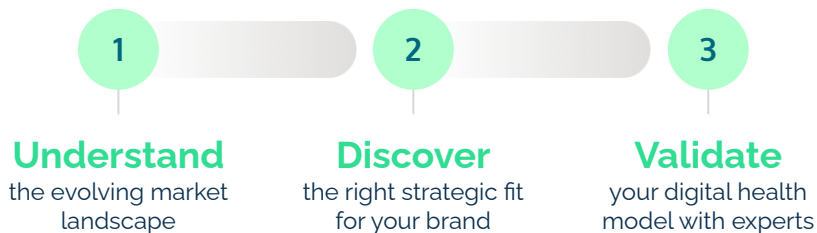
At HealthXL, our focus is to combine our digital health expertise with the intelligence and experience of our community to get real-world insights for your digital health challenges.

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



Our members



Contents

SECTION 1 : Introduction [Pg. 5](#)

Where Does Big Tech Have the Edge in Healthcare? [Pg. 6](#)

Is the Healthcare Industry Ready for Big Tech?..... [Pg. 7](#)

What Can the Future of Healthcare Look Like? [Pg. 8](#)

SECTION 2 : Routes into Healthcare [Pg. 9](#)

Partnerships, Investments and Acquisitions Overview .. [Pg. 10](#)

Strategic Partnerships [Pg. 11](#)

Investments..... [Pg. 12](#)

Acquisitions..... [Pg. 13](#)

Key Highlights [Pg. 14](#)

Digital Health Focus Areas for Big Tech [Pg. 15 - 16](#)

SECTION 3 : How the Big Four are Venturing into Healthcare [Pg. 17](#)

Alphabet [Pg. 18 - 21](#)

Amazon [Pg. 22 - 25](#)

Apple [Pg. 26 - 29](#)

Microsoft [Pg. 30 - 33](#)

Other Players of Interest [Pg. 34 - 35](#)

SECTION 4 : Key Considerations and Challenges [Pg. 36](#)

How Successful Can Big Tech Be in the Healthcare Space? [Pg. 37](#)

Key Challenges for Big Tech in Digital Health [Pg. 38](#)

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.



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

Cost-effective health plans

Population health management

Remote patient monitoring

Better decision making

*Integrated and interoperable
health systems*

Voice enabled assistants

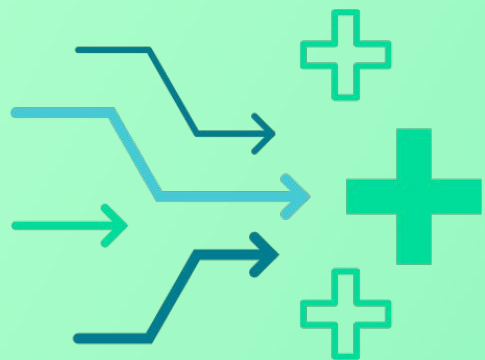
Precision medicine

Intelligent medical devices

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.

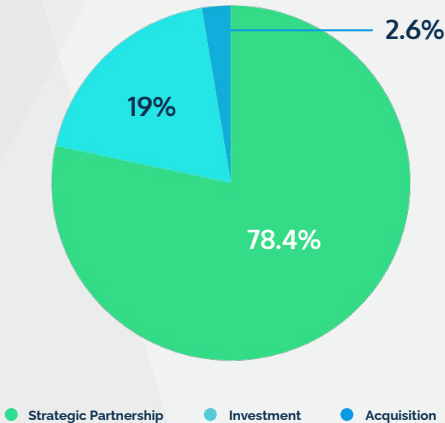
Investments

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



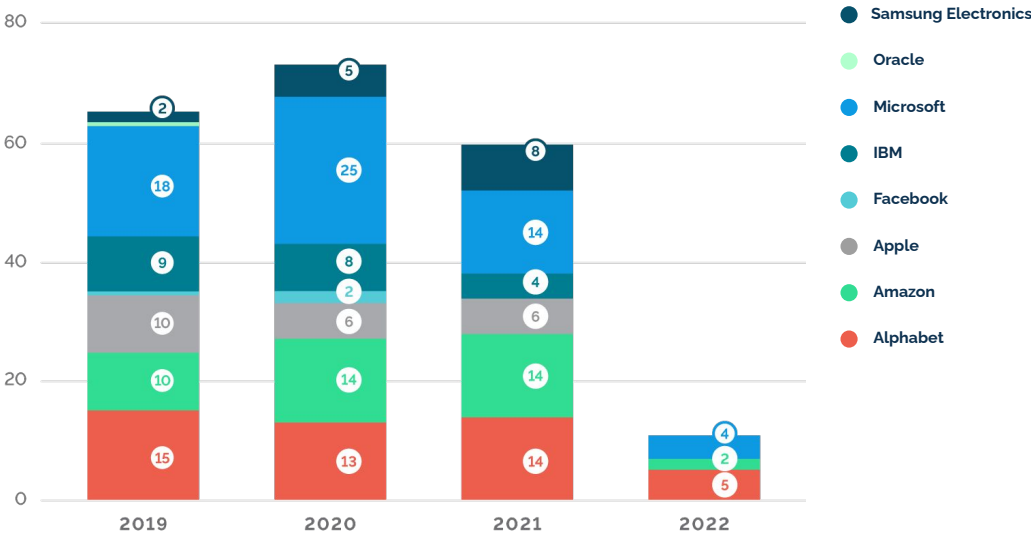
Sample Size =
268

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



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.

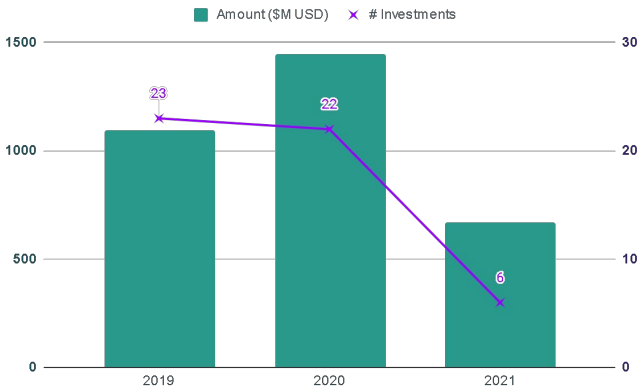
Sample Size = 210

Graph 2. Strategic Partnerships by Year

HealthXL Database | Timeframe Jan 2019 - March 2022

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

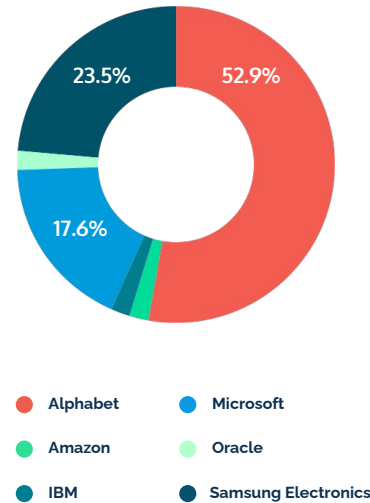


Sample Size = 51

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.



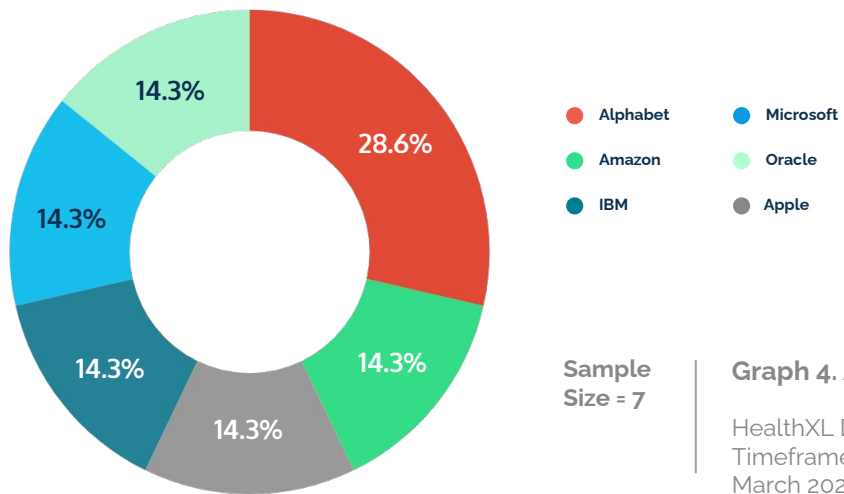
This may have been due to the initial rush spurred by Covid calming down and the promises of what digital health could do for healthcare reformation not being fully realised (as seen with the telemedicine slump).



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



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			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			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.
			JUN 2021	Apple partnered with Cerner for health data from Apple Health Records to be shared directly to the EHR.
amazon			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			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			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.



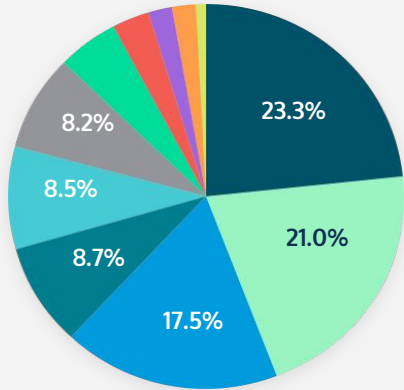
Virtual care, health systems and clinical research are the most popular digital health areas in focus for Big Tech.

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



- Virtual Care
- HCP/Health Systems
- Clinical Research
- Patient Services
- Patient Care
- IT Infrastructure
- Other
- Population Health Management
- General Wellness
- DTx
- Payer

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

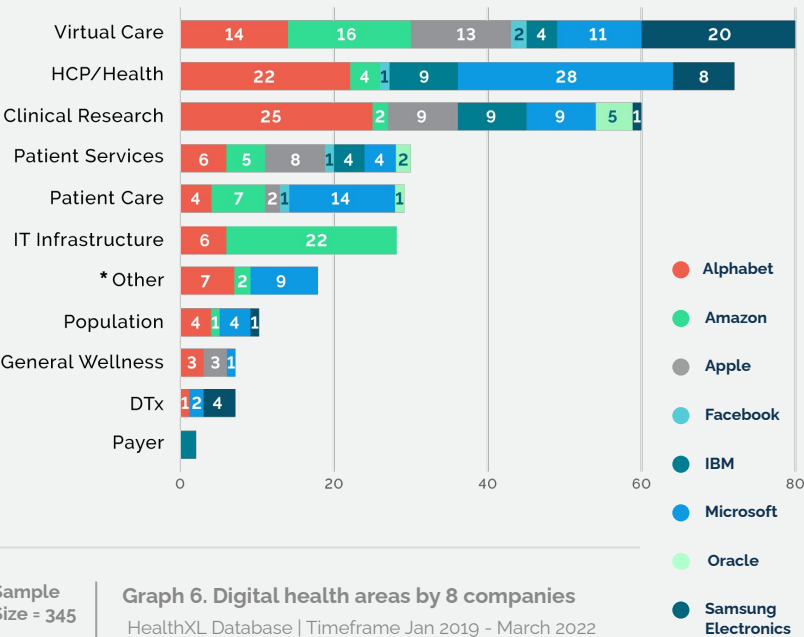
- Cloud Support
- Cloud Computing

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](#).



This document is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes. It is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes.

1

2

3

4

5

1

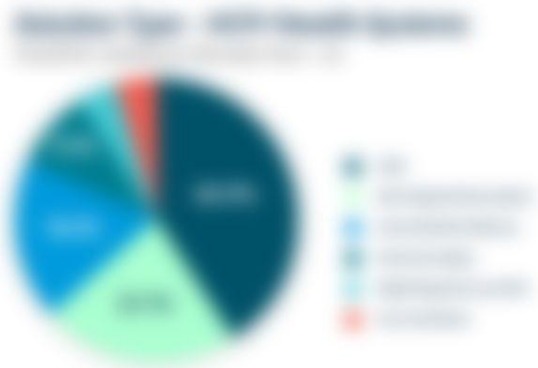
This document is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes. It is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes.

This document is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes. It is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes.

2

This document is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes. It is a copy of a document that has been scanned from a PDF file. It is not a legal document and should not be used for legal purposes.

Google is continuing to expand its leading position in the digital health space with a focus on increasing its proportion of health spend in the coming years.



- Google is continuing to expand its leading position in the digital health space with a focus on increasing its proportion of health spend in the coming years.
- Google is continuing to expand its leading position in the digital health space with a focus on increasing its proportion of health spend in the coming years.
- Google is continuing to expand its leading position in the digital health space with a focus on increasing its proportion of health spend in the coming years.

Google is continuing to expand its leading position in the digital health space with a focus on increasing its proportion of health spend in the coming years.



Google's mission is to organize the world's information and make it universally accessible and useful. Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google's Mission

Google's mission is to organize the world's information and make it universally accessible and useful. Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google is committed to privacy and security, and to providing a safe and secure environment for its users. Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others.

Google's Products

Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google is committed to privacy and security, and to providing a safe and secure environment for its users. Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others.

Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google's Services

Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.

Google is committed to privacy and security, and to providing a safe and secure environment for its users. Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others.

Google's products and services are designed to help people find what they're looking for, and to make it easier to share information with others. Google is committed to privacy and security, and to providing a safe and secure environment for its users.



Amazon.com

The Amazon website is a key part of the company's business strategy. It is a platform where customers can browse and purchase a wide range of products, from books and music to electronics and home goods. The website is designed to be user-friendly and easy to navigate, with a search bar and filters that help customers find what they are looking for. Amazon also offers a variety of services, such as Amazon Prime, which provides fast shipping and access to streaming video and music. The company's success is largely due to its focus on customer service and its ability to offer a wide selection of products at competitive prices.

Amazon.com is a leading e-commerce platform.

Amazon

Amazon is a leading e-commerce platform. It is a platform where customers can browse and purchase a wide range of products, from books and music to electronics and home goods. The website is designed to be user-friendly and easy to navigate, with a search bar and filters that help customers find what they are looking for. Amazon also offers a variety of services, such as Amazon Prime, which provides fast shipping and access to streaming video and music. The company's success is largely due to its focus on customer service and its ability to offer a wide selection of products at competitive prices.

Amazon.com is a leading e-commerce platform.

Amazon has always been known as the customer-centric, fast-growing company. It's reputation is built on its ability to provide the best customer experience. Amazon's success is due to its focus on customer satisfaction and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.

Amazon's success is due to its focus on customer satisfaction and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.

Amazon's success is due to its focus on customer satisfaction and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.



Amazon

Amazon is a multinational technology company that specializes in online retail, digital streaming, and artificial intelligence. It was founded by Jeff Bezos in 1994 and is headquartered in Seattle, Washington. Amazon is known for its customer-centric approach and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.

Amazon's success is due to its focus on customer satisfaction and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services. Amazon's success is due to its focus on customer satisfaction and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.

Amazon

Amazon is a multinational technology company that specializes in online retail, digital streaming, and artificial intelligence. It was founded by Jeff Bezos in 1994 and is headquartered in Seattle, Washington. Amazon is known for its customer-centric approach and its ability to adapt to changing market conditions. It has a strong focus on innovation and is always looking for ways to improve its products and services.

During 2022, Amazon's investment in the healthcare market continued to grow, with the company announcing several new acquisitions and partnerships. This section provides an overview of Amazon's healthcare investments and their impact on the industry.

Amazon's Healthcare Investments
2022-2023



Amazon's Healthcare Investments
2022-2023



Amazon's investment in digital health has been a major focus, with the company acquiring several startups in this space. These acquisitions have helped Amazon expand its digital health offerings, including telemedicine, remote patient monitoring, and digital therapeutics. Amazon's digital health investments have also helped to drive innovation in the healthcare industry, as the company's resources and expertise are applied to solving complex healthcare challenges.

Amazon's investment in pharmaceuticals has also been a significant part of its healthcare strategy. The company has acquired several pharmaceutical startups, including those focused on developing new drugs and improving drug delivery. Amazon's pharmaceutical investments have helped to accelerate the development of new drugs and improve patient outcomes. Additionally, Amazon's investments in pharmaceuticals have helped to drive innovation in the pharmaceutical industry, as the company's resources and expertise are applied to solving complex healthcare challenges.

Amazon's investment in biotechnology has also been a key part of its healthcare strategy. The company has acquired several biotechnology startups, including those focused on developing new drugs and improving drug delivery. Amazon's biotechnology investments have helped to accelerate the development of new drugs and improve patient outcomes. Additionally, Amazon's investments in biotechnology have helped to drive innovation in the biotechnology industry, as the company's resources and expertise are applied to solving complex healthcare challenges.



© 2020 Apple Inc.

The Apple logo is a symbol of the company's commitment to innovation and quality. It is a simple, yet iconic, design that has become a global brand.

The logo is a symbol of the company's commitment to innovation and quality.

Apple

Apple is a leading technology company that has revolutionized the way we live and work. The company's products, including the iPhone, iPad, and Mac, are known for their design, performance, and reliability.

Apple's success is a testament to the power of innovation and the importance of user experience. The company's focus on research and development has led to the creation of some of the most influential products in the world.



Apple's approach to privacy is a key differentiator, setting the company apart from its competitors. By prioritizing user privacy, Apple has built a strong reputation for being a trustworthy company. This approach is a key factor in the company's success and its ability to maintain a competitive edge.



Apple's approach to privacy is a key differentiator, setting the company apart from its competitors. By prioritizing user privacy, Apple has built a strong reputation for being a trustworthy company. This approach is a key factor in the company's success and its ability to maintain a competitive edge.

Privacy

Apple's approach to privacy is a key differentiator, setting the company apart from its competitors. By prioritizing user privacy, Apple has built a strong reputation for being a trustworthy company. This approach is a key factor in the company's success and its ability to maintain a competitive edge.

Security

Apple's approach to security is a key differentiator, setting the company apart from its competitors. By prioritizing user security, Apple has built a strong reputation for being a trustworthy company. This approach is a key factor in the company's success and its ability to maintain a competitive edge.





By understanding the Apple Watch as a highly desirable consumer item, with increasingly strong evidence of its role in a number of research studies, Apple is turning the spotlight on its hardware products, with a focus on the health and fitness ecosystem. This is a key part of the company's strategy to move beyond its core iPhone and iPad business, and to establish a reputation as the provider of the most advanced and innovative consumer technology.

Apple Watch

Apple Watch Series 7
The latest Apple Watch Series 7 features a new design with a flat edge and a more comfortable fit. It also includes a new display technology that provides a more vibrant and clear view of the watch face.

The Apple Watch Series 7 is available in a variety of colors and finishes, including the new 'Alpine' and 'Forest' dials. It is also compatible with the new Apple Watch app, which allows users to customize their watch face and settings.

The Apple Watch Series 7 is a great choice for anyone looking for a smartwatch that is both stylish and functional. It offers a range of features that make it a valuable addition to any lifestyle.

Apple Watch

Apple Watch Series 7
The latest Apple Watch Series 7 features a new design with a flat edge and a more comfortable fit. It also includes a new display technology that provides a more vibrant and clear view of the watch face.

The Apple Watch Series 7 is available in a variety of colors and finishes, including the new 'Alpine' and 'Forest' dials. It is also compatible with the new Apple Watch app, which allows users to customize their watch face and settings.

The Apple Watch Series 7 is a great choice for anyone looking for a smartwatch that is both stylish and functional. It offers a range of features that make it a valuable addition to any lifestyle.

Apple Watch

Apple Watch Series 7
The latest Apple Watch Series 7 features a new design with a flat edge and a more comfortable fit. It also includes a new display technology that provides a more vibrant and clear view of the watch face.

The Apple Watch Series 7 is available in a variety of colors and finishes, including the new 'Alpine' and 'Forest' dials. It is also compatible with the new Apple Watch app, which allows users to customize their watch face and settings.

The Apple Watch Series 7 is a great choice for anyone looking for a smartwatch that is both stylish and functional. It offers a range of features that make it a valuable addition to any lifestyle.



Microsoft

Microsoft is a leading provider of software and services for businesses and consumers.

Microsoft is a leading provider of software and services for businesses and consumers. The company's products and services are used by millions of people around the world. Microsoft is a public company and its stock is traded on the New York Stock Exchange. The company's headquarters are located in Redmond, Washington. Microsoft is a member of the S&P 500 and the Dow Jones Industrial Average.

Why?

Microsoft is a leading provider of software and services for businesses and consumers. The company's products and services are used by millions of people around the world. Microsoft is a public company and its stock is traded on the New York Stock Exchange. The company's headquarters are located in Redmond, Washington. Microsoft is a member of the S&P 500 and the Dow Jones Industrial Average.

What?

Microsoft is a leading provider of software and services for businesses and consumers. The company's products and services are used by millions of people around the world. Microsoft is a public company and its stock is traded on the New York Stock Exchange. The company's headquarters are located in Redmond, Washington. Microsoft is a member of the S&P 500 and the Dow Jones Industrial Average.

Microsoft is a leading provider of software and services for businesses and consumers. The company's products and services are used by millions of people around the world. Microsoft is a public company and its stock is traded on the New York Stock Exchange. The company's headquarters are located in Redmond, Washington. Microsoft is a member of the S&P 500 and the Dow Jones Industrial Average.

Microsoft supports leaders in Microsoft cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.



Overview

The capacity of the healthcare system to deliver Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.

- Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.
- Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.
- Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.
- Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.
- Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.

Conclusion

Microsoft's cloud computing solutions that can help solve healthcare's biggest challenges through data interoperability to advance patient outcomes and clinical research.

Microsoft's new operating system, Windows 11, is designed to be more secure, faster, and more efficient. It's a major update to the company's flagship OS, and it's expected to be released in the fall of 2021. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Introduction

Overview

Microsoft's new operating system, Windows 11, is designed to be more secure, faster, and more efficient. It's a major update to the company's flagship OS, and it's expected to be released in the fall of 2021. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Key Features

Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Introduction

Overview

Microsoft's new operating system, Windows 11, is designed to be more secure, faster, and more efficient. It's a major update to the company's flagship OS, and it's expected to be released in the fall of 2021. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Key Features

Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Introduction

Overview

Microsoft's new operating system, Windows 11, is designed to be more secure, faster, and more efficient. It's a major update to the company's flagship OS, and it's expected to be released in the fall of 2021. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Key Features

Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come. The new OS will bring a host of new features, including a new start menu, a new taskbar, and a new interface. It will also be more secure, with built-in security features and a new security architecture. Windows 11 is expected to be a major success for Microsoft, and it will likely be the company's most popular operating system for years to come.

Other global tech companies are focusing on areas such as AI, automation, advanced imaging and decentralized virtual trade among others.



When it comes to artificial intelligence, IBM is a leader in the industry. The company has been investing heavily in AI research and development for many years, and has a strong track record of commercial success. IBM's AI capabilities are being used in a wide range of industries, from healthcare to manufacturing, and are helping to drive innovation and growth.




The company is heavily investing in AI research and development, and has a strong track record of commercial success. Samsung's AI capabilities are being used in a wide range of industries, from healthcare to manufacturing, and are helping to drive innovation and growth. The company is also investing in other areas of technology, such as quantum computing and autonomous vehicles, and is working to develop a comprehensive ecosystem of AI-powered products and services.



Oracle is a leading provider of cloud-based software solutions, and is also a major player in the AI market. The company has a strong track record of commercial success, and is investing heavily in AI research and development. Oracle's AI capabilities are being used in a wide range of industries, from healthcare to manufacturing, and are helping to drive innovation and growth. The company is also investing in other areas of technology, such as quantum computing and autonomous vehicles, and is working to develop a comprehensive ecosystem of AI-powered products and services.

Some of the most globally well-recognized tech innovators are also making significant moves in the healthcare space

-  **Meta** is investing heavily in healthcare, with a focus on digital health and virtual reality. The company has acquired several healthcare startups and is developing a range of products, including a VR headset for medical training and a digital health platform for chronic disease management.
-  **TESLA** is investing heavily in healthcare, with a focus on artificial intelligence and autonomous driving. The company has acquired several healthcare startups and is developing a range of products, including a self-driving car for medical transport and a digital health platform for chronic disease management.
-  **Amazon** is investing heavily in healthcare, with a focus on artificial intelligence and digital health. The company has acquired several healthcare startups and is developing a range of products, including a digital health platform for chronic disease management and a self-driving car for medical transport.



SECTION 4:

Key Challenges and Considerations



Big Tech and healthcare have a long history. In the early 2000s, the two industries began to merge. This was largely due to the fact that both industries were looking for ways to improve efficiency and reduce costs. Big Tech saw healthcare as a natural fit for its expertise in data and technology. Healthcare, on the other hand, saw Big Tech as a source of innovation and investment.

Overview

Big Tech and healthcare have a long history. In the early 2000s, the two industries began to merge. This was largely due to the fact that both industries were looking for ways to improve efficiency and reduce costs. Big Tech saw healthcare as a natural fit for its expertise in data and technology. Healthcare, on the other hand, saw Big Tech as a source of innovation and investment.

Challenges

Big Tech and healthcare have a long history. In the early 2000s, the two industries began to merge. This was largely due to the fact that both industries were looking for ways to improve efficiency and reduce costs. Big Tech saw healthcare as a natural fit for its expertise in data and technology. Healthcare, on the other hand, saw Big Tech as a source of innovation and investment.

Opportunities

Big Tech and healthcare have a long history. In the early 2000s, the two industries began to merge. This was largely due to the fact that both industries were looking for ways to improve efficiency and reduce costs. Big Tech saw healthcare as a natural fit for its expertise in data and technology. Healthcare, on the other hand, saw Big Tech as a source of innovation and investment.

Conclusion

Big Tech and healthcare have a long history. In the early 2000s, the two industries began to merge. This was largely due to the fact that both industries were looking for ways to improve efficiency and reduce costs. Big Tech saw healthcare as a natural fit for its expertise in data and technology. Healthcare, on the other hand, saw Big Tech as a source of innovation and investment.



WHAT'S THE CHALLENGE?

- 1. **Integration of data from multiple sources**
The challenge is to integrate data from multiple sources, including electronic health records (EHRs), patient-generated health data (PGHD), and data from wearable devices, to create a comprehensive view of a patient's health.
- 2. **Interoperability of systems**
The challenge is to ensure that different systems and devices can communicate and share data effectively.
- 3. **Standardization of data formats**
The challenge is to establish common standards for data formats and protocols to facilitate data exchange and interoperability.
- 4. **Privacy and security of data**
The challenge is to ensure that patient data is protected and secure, and that it is used in a way that respects patient privacy.
- 5. **Regulatory compliance**
The challenge is to ensure that digital health solutions comply with relevant regulations, such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States.
- 6. **Integration of clinical and non-clinical data**
The challenge is to integrate clinical data with non-clinical data, such as social media, lifestyle factors, and environmental data, to provide a more holistic view of a patient's health.
- 7. **Integration of patient and provider data**
The challenge is to integrate data from both patients and providers to create a more coordinated and patient-centered care experience.

WHAT'S THE SOLUTION?

- 1. **Use of APIs and cloud-based platforms**
The solution is to use APIs and cloud-based platforms to facilitate data exchange and interoperability between different systems and devices.
- 2. **Adoption of common standards**
The solution is to adopt common standards for data formats and protocols to facilitate data exchange and interoperability.
- 3. **Implementation of robust security measures**
The solution is to implement robust security measures, such as encryption and access controls, to protect patient data and ensure its security.
- 4. **Compliance with regulations**
The solution is to ensure that digital health solutions comply with relevant regulations, such as HIPAA, to protect patient privacy and ensure regulatory compliance.
- 5. **Integration of clinical and non-clinical data**
The solution is to integrate clinical data with non-clinical data, such as social media, lifestyle factors, and environmental data, to provide a more holistic view of a patient's health.
- 6. **Integration of patient and provider data**
The solution is to integrate data from both patients and providers to create a more coordinated and patient-centered care experience.
- 7. **Use of artificial intelligence and machine learning**
The solution is to use artificial intelligence and machine learning to analyze large volumes of data and identify patterns and insights that can improve patient care and outcomes.

Appendix

Appendix: Digital Health Definitions

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



Payer

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



Clinical Research

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



General Wellness

- Wellness Apps
- Health Optimization Solutions



Digital Therapeutics

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



Population Health Management

- Social Determinants of Health
- Health Equity
- Health Analytics



IT Infrastructure

- Cloud Support
- Cloud Computing

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.



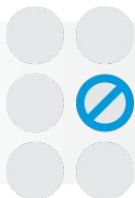
STEP 2: DATA ANALYSIS

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

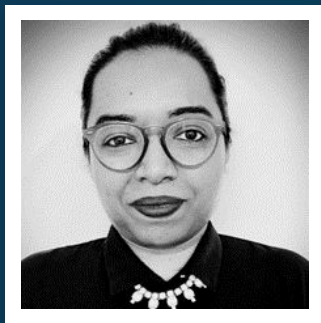
★ XR - Extended Reality

★ FHIR - Fast Healthcare Interoperability Resources

★ UI - User Interface

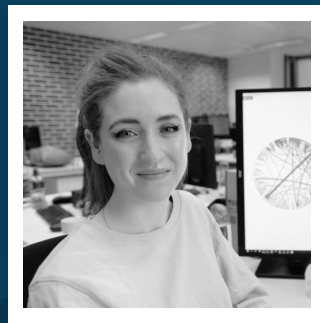
★ VR - Virtual Reality

Authors



Jo Peddhinti

Director, Digital Health
Advisory



Laura Ardill

Senior Digital Health
Consultant

Contributors



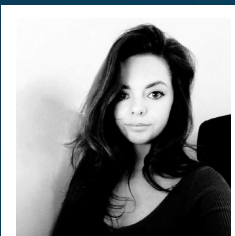
Sarah Ann Kikers

Digital Health
Consultant



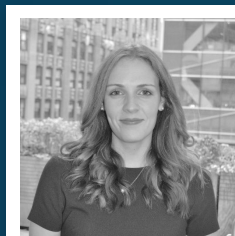
Nadia Worgan

Digital Health
Consultant



Sarah Cronin

Senior Digital
Health Consultant



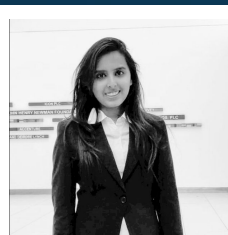
Meaghan Schedel

Senior Digital
Health Consultant



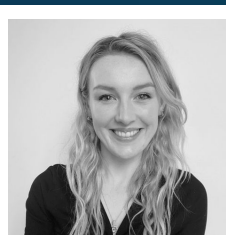
**Maggie
O'Donovan**

Digital Health
Consultant



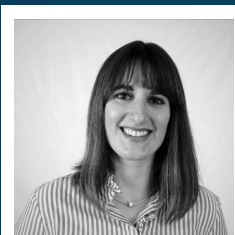
Jinsy Raichanna

Senior Digital
Health Analyst



Rebecca Coyle

Digital Health
Analyst



Sabrina Mendes

Digital Health
Analyst



Frank Kenny

Senior Digital
Health Consultant



Tessy Huss

Head of Market
Research

Reviewers

Dr. Goran Martinovic

Head of Medical Affairs
Innovation Hub,
Boehringer Ingelheim
International GmbH



Dr. Amrita Sarkar

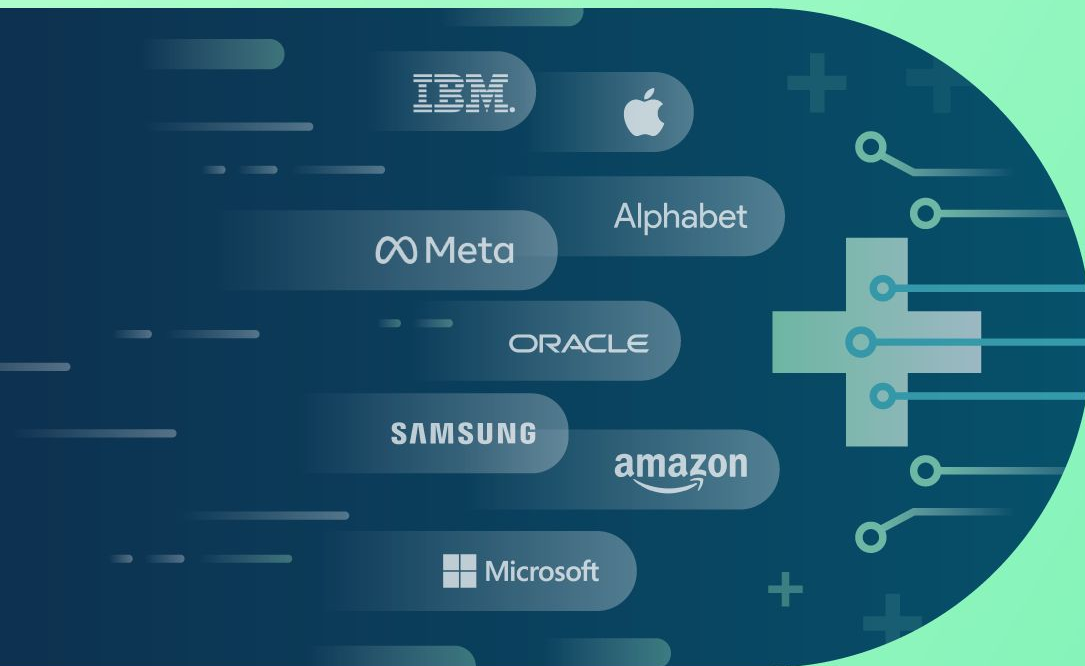
Principal Business
Development Manager
Healthcare & Life
Sciences, Amazon Web
Services (AWS)



Amanda Goltz

US Healthcare Lead for
Worldwide Public Sector
Healthcare Venture Capital
and Startups, Amazon Web
Services (AWS)





healthxl

Big Tech and Digital Health

September 2022