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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2023

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number: 001-38993

HEALTH CATALYST, INC.

(Exact name of registrant as specified in its charter)

Delaware	**45-3337483**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

10897 South River Front Parkway #300
South Jordan, UT 84095
(801) 708-6800
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, par value $0.001 per share	**HCAT**	**The Nasdaq Global Select Market**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated Filer	☐	Emerging growth company	☐
Non-accelerated Filer	☐	Smaller reporting company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the common stock held by non-affiliates of the registrant as of June 30, 2023, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $688.2 million based on the closing price of a share of common stock on June 30, 2023 as reported by the Nasdaq Global Select Market, or Nasdaq, for such date.

As of February 15, 2024, the Registrant had 58,563,005 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates information by reference from the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A, not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, in connection with the registrant's 2024 Annual Meeting of Stockholders.

HEALTH CATALYST, INC.
Annual Report on Form 10-K
For the Year Ended December 31, 2023

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In this Annual Report on Form 10-K, unless expressly indicated or the context otherwise requires, references to "we," "our," "us," "Health Catalyst," "the Company," and similar references refer to Health Catalyst, Inc. and its consolidated subsidiaries.

PART I

Special Note Regarding Forward-Looking Statements

As used in this Annual Report on Form 10-K, unless expressly indicated or the context otherwise requires, references to "Health Catalyst," "we," "us," "our," "the Company," and similar references refer to Health Catalyst, Inc. and its consolidated subsidiaries. This Annual Report on Form 10-K, including the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations," includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), and Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). Forward-looking statements are only predictions based on our management's beliefs and assumptions and on information currently available to our management. All statements other than statements of historical facts are "forward-looking statements" for purposes of these provisions. These forward-looking statements, which are subject to a number of risks, uncertainties, and assumptions, generally relate to future events or our future financial or operating performance. In some cases, you can identify these statements by forward-looking words such as "believe," "may," "will," "estimate," "continue," "anticipate," "design," "intend," "expect," "could," "plan," "potential," "predict," "seek," "should," "would," "target," "project," or "contemplate," the negative of terms like these or other comparable terminology, and other words or terms of similar meaning in connection with any discussion of expectations, projections, plans, strategy, intentions, or future results of operations or financial performance. Forward-looking statements contained in this Annual Report on Form 10-K include, but are not limited to, statements about our:

- ability to attract new clients and retain and expand our relationships with existing clients;
- ability to expand our service offerings and develop new platform features;
- future financial performance, including trends in revenue, costs of revenue, gross margin, and operating expenses;
- ability to compete successfully in competitive markets;
- ability to respond to rapid technological changes;
- expectations and management of future growth;
- ability to enter new markets and manage our expansion efforts, particularly internationally;
- ability to attract and retain highly-qualified employees, whom we refer to as team members;
- ability to effectively and efficiently protect our brand;
- ability to timely scale and adapt our infrastructure;
- ability to maintain, protect, and enhance our intellectual property and not infringe upon others' intellectual property;
- ability to successfully identify, acquire, and integrate companies and assets;
- expectations regarding our gross bookings; and
- expectations regarding the impact of any macroeconomic challenges (including high inflationary and/or high interest rate environments, or market volatility caused by bank failures and measures taken in response thereto), natural disasters, or public health emergencies, such as the COVID-19 pandemic, on our business and results of operations.

All forward-looking statements included in this Annual Report on Form 10-K are based on information available to us on the date hereof. We assume no obligation to update forward-looking statements made in this Annual Report on Form 10-K, including, without limitation, to reflect events or circumstances after the date of this Annual Report on Form 10-K or new information or the occurrence of any unanticipated events, except as required by law. Any or all of our forward-looking statements in this document may turn out to be wrong. Actual events or results may differ materially. Our forward-looking statements can be affected by inaccurate assumptions we might make or by known or unknown risks, uncertainties and other factors. We discuss many of these risks, uncertainties and other factors in this Annual Report on Form 10-K in greater detail under the subheading below "Summary of Risk Factors" as well as heading "Item 1A—Risk Factors." We caution investors that our business and financial performance are subject to substantial risks and uncertainties.

Summary of Risk Factors

- We operate in a highly competitive industry, and if we are not able to compete effectively, our business and results of operations will be harmed.
- We may be unable to successfully execute on our growth initiatives, business strategies, or operating plans, as well as cost reduction and restructuring initiatives.
- If we fail to effectively manage our growth and organizational change, our business and results of operations could be harmed.
- Macroeconomic challenges (including high inflationary and/or high interest rate environments, or market volatility caused by bank failures and measures taken in response thereto) and any new public health crisis could harm our business, results of operations, and financial condition.Failure by our clients to obtain proper permissions and waivers may result in claims against us or may limit or prevent our use of data, which could harm our business.
- If we do not continue to innovate and provide services that are useful to clients and users, we may not remain competitive, and our revenue and results of operations could suffer.
- Our business could be adversely affected if our clients are not satisfied with our cloud-based data platform, software analytics applications, and professional services expertise (our Solution).
- If our existing clients do not continue or renew their contracts with us, renew at lower fee levels or decline to purchase additional technology and services from us, it could have a material adverse effect on our business, financial condition, and results of operations.
- Our business and operations may suffer in the event of information technology system failures, cyberattacks, or deficiencies in our cybersecurity.
- Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements could adversely affect our business, results of operations, and financial condition.
- Our Solution is dependent on our ability to source data from third parties, and such third parties could take steps to block our access to data, or increase fees or impose fees for such access, which could impair our ability to provide our Solution, limit the effectiveness of our Solution, or adversely affect our financial condition and results of operations.
- Our results of operations have in the past fluctuated and may continue to fluctuate significantly, and if we fail to meet the expectations of securities analysts or investors, our stock price and the value of an investment in our common stock could decline substantially.
- Our pricing may change over time and our ability to efficiently price our Solution will affect our results of operations and our ability to attract or retain clients.
- If our Solution fails to provide accurate and timely information, or if our content or any other element of our Solution is associated with faulty clinical decisions or treatment, we could have liability to clients, clinicians, patients, or others, which could adversely affect our results of operations.
- We rely on third-party providers, including Microsoft Azure, for computing infrastructure, network connectivity, and other technology-related services needed to deliver our Solution. Any disruption in the services provided by such third-party providers could adversely affect our business and subject us to liability.
- We rely on Internet infrastructure, bandwidth providers, data center providers, other third parties, and our own systems for providing our Solution to our users, and any failure or interruption in the services provided by these third parties or our own systems could expose us to litigation, potentially require us to issue credits to our clients, and negatively impact our relationships with users or clients, adversely affecting our brand and our business.

Item 1. Business

Overview

We are a leading provider of data and analytics technology and services to healthcare organizations. Our Solution comprises our cloud-based data and analytics platform, software applications, and professional services expertise. Our clients, which are primarily healthcare providers, use our Solution to manage their data, derive analytical insights to operate their organization, and produce measurable clinical, financial, and operational improvements. We envision a future where all healthcare decisions are data-informed.

The Health Catalyst Way

Our Mission

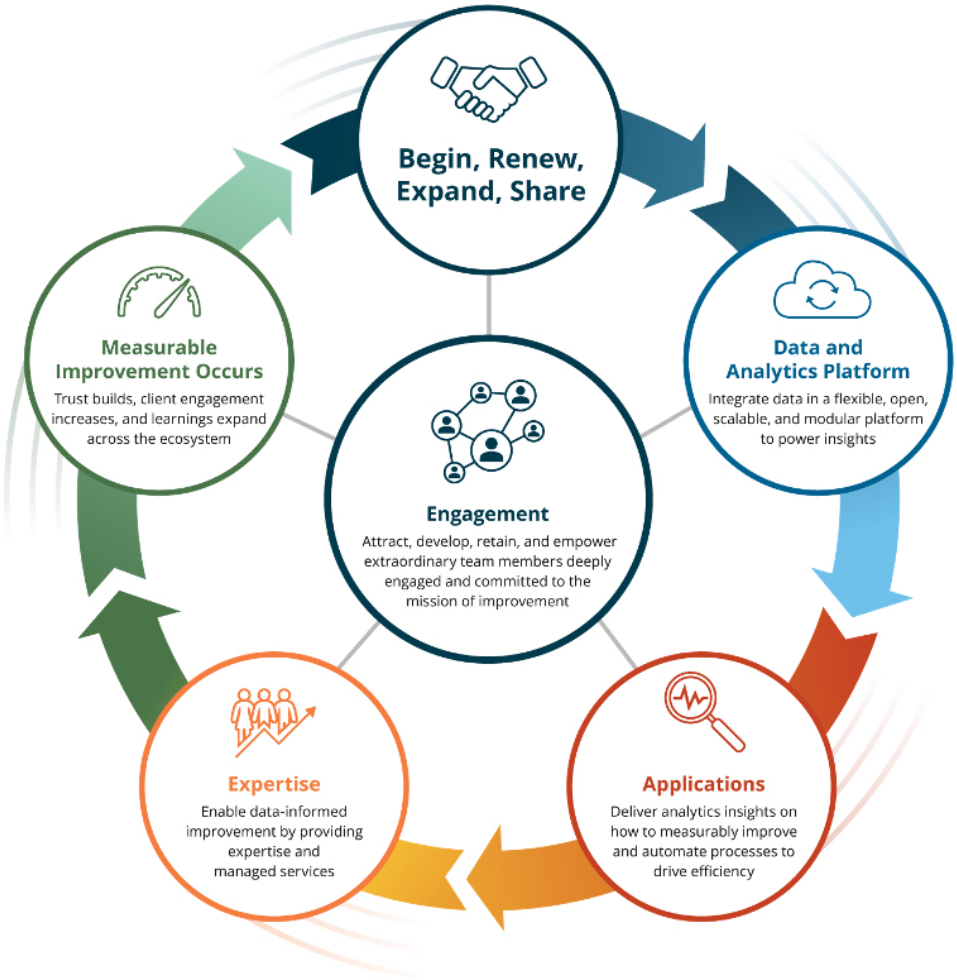
Our **mission** is to be the *catalyst* for massive, measurable, data-informed healthcare improvement. We fulfill our mission through a confluence of the following elements:

- ***Data and Analytics Platform*:** integrate data in a flexible, open, scalable, and modular platform to power insights;
- ***Applications*:** deliver analytics insights on how to measurably improve and automate processes to drive efficiency;
- ***Expertise*:** enable data-informed improvement by providing expertise and managed services;
- ***Measurable Improvement:*** Trust builds, client engagement increases, and learnings expand across the ecosystem; and
- ***Engagement*:** attract, develop, retain, and empower extraordinary team members deeply engaged and committed to the mission of improvement.

The Health Catalyst Flywheel

We accomplish our mission with each of our clients by following a process and strategy we call the Health Catalyst Flywheel (the Flywheel). This process includes delivering on the three components of our Solution: data and analytics platform, applications, and expertise, which together drive measurable improvements. At the center of the Flywheel is the engagement of our team members. Team member engagement is foundational to everything we do and is the #1 priority of our CEO and broader leadership team. When team members feel connected to our mission and are listened to, cared for, and respected at an extraordinary level, they produce outstanding work, which enables our clients to measurably improve. As clients realize improvements, their trust in Health Catalyst builds, their engagement in our shared work increases, and they choose to renew and expand their relationship with us, while also referring Health Catalyst to key decision-makers at other potential clients. Client renewal, expansion, and referral produce growing, scalable, and predictable financial performance.

The cycle described above creates momentum for our business and is encapsulated in the following diagram:



Given the central importance of team member engagement to our company's long-term success, we have been purposeful in defining and emphasizing operating principles and cultural attributes that reinforce the commitment to our mission and to team member engagement. We consistently focus on our operating principles and cultural attributes, as well as our mission and Flywheel (collectively, the Health Catalyst Way), which we review in all new hire orientations, company-wide meetings, and board of directors' meetings. Furthermore, we regularly measure our team member engagement and adjust our practices based on team member feedback. We have demonstrated an elite, consistent level of team member engagement over time as demonstrated by a 94th to 99th percentile ranking, as measured by Gallup.

We will continue to emphasize the Health Catalyst Way, including our operating principles and cultural attributes, which we believe will be central to our long-term success.

Our Operating Principles

The principles that govern our daily interactions include:

Improvement

- We are deeply committed to enabling our clients to achieve and sustain measurable clinical, financial, and operational improvements
- We nurture deep, long-term client partnerships because achieving and sustaining improvement is a transformational journey (not a quick trip)
- We pragmatically prioritize innovations that accelerate improvement
- We attract, develop, and retain experts who know best practices in their domain, leverage analytics for insight, and accelerate adoption for sustained improvement

Accountability

- We are all accountable to ourselves and to one another to proactively show up every day in support of our company's mission
- We make decisions that balance and optimize the interests of our teammates, clients, patients, and owners
- We avoid an entitlement mentality and are good stewards of our assets
- We don't micro-manage and we show trust while also having high expectations of ourselves and of one another

Respect

- We recognize the immeasurable value of every individual
- We listen carefully to one another and learn from each of our colleagues
- We care deeply about our colleagues, including teammates, clients, patients, and owners
- We benefit from one another's diverse backgrounds and experiences, and are unified by our company's mission

Transparency

- We are honest and compassionate in our interactions with others and with ourselves, even if the truth is hard
- We strive to live up to the Health Catalyst Way in all settings
- We treat confidential information appropriately, and we protect the private data of our clients' patients
- We recommend the best solutions for our clients, whether or not those solutions come from Health Catalyst

Our Cultural Attributes

The attributes we prioritize in hiring, retention, and promotion include:

Continuous learning

- I can share with and learn from others
- I love to learn, and I am a lifelong student
- I recognize my mistakes and correct them quickly

- I seek and respond favorably to feedback and coaching
- I value my autonomy and use it to gain new knowledge and skills
- I recognize that diversity of perspectives leads to better decisions
- I am self-aware and seek improvement, personally and professionally
- I watch, listen, and learn from others; thank them for their teachings; and apply the teachings to the mastery of my profession; and I do the same for others

Commitment

- I have a deep, long-term commitment to healthcare improvement
- I stick to the task until the job is completed
- I lead a balanced, healthy life that enables me to sustain my pace
- I am willing to contribute more than my fair share to a project
- I make personal sacrifices, as needed, to get the work done
- I recognize that not every part of my job will be fun

Humility

- I listen first
- I serve others without looking for recognition
- My first assumption with others is positive intent
- I am secure in my own abilities (quiet self-confidence)
- I seek to improve myself before trying to improve others
- I am excited when others succeed, and I offer sincere praise
- I often acknowledge others for their contributions
- I frequently express gratitude and appreciation to those around me
- I empower others to do their best and give proper credit to others

Excellence

- I strive for excellence and quality in all aspects of my work; I show up to fulfill my role in the company's mission to the bets of my ability
- I recognize the importance of excellence in pursuit of our mission
- I strive to be well informed about events and trends in healthcare, data and analytics, and improvement
- I actively contribute to the company’s pursuit of excellence - in the technology we build, in the services we provide, and in the functions that support this important work
- I recognize and ask for help when I need it

Our Governing Principle: The Golden Rule

Treat others as we would wish to be treated—with kindness, humility, and respect.

Business Overview

Healthcare organizations operate in an environment that is characterized by waste, changing economics, and data complexity. Organizations that leverage analytics to make data-informed decisions will be better positioned to succeed in this environment. Our clients, which are primarily healthcare providers, use our Solution to manage their data, derive analytical insights to operate their organizations, and produce measurable clinical, financial, and operational improvements.

The core elements of our Solution include:

- ***DOS data platform.*** The Data Operating System (DOS) is a healthcare-specific, cloud-based, open, flexible, scalable and self-service platform for analytics, app development and interoperability that provides clients a single comprehensive environment to integrate and organize data from their disparate software systems. Our DOS platform has been built with modern technology and is deeply embedded with healthcare domain knowledge, enabling a broad range of analytics. The DOS platform has amassed one of the largest and most comprehensive data assets of its kind, which enables us to deliver differentiated insights to our clients.

- ***Analytics applications.*** Our software analytics applications are generally built on top of our data platform and are designed to analyze the most common problems our clients face across Clinical & Quality, Population Health, and Financial & Operational use cases. These analytics applications allow our clients to pinpoint opportunities for measurable improvement across their entire enterprise and are employed by a broad range of users from healthcare executives to front-line clinicians providing care. We developed this suite of analytics applications over the last several years based on thoughtful measurement of the most critical analytics needs faced by our clients. Our analytics applications are further enhanced by a broad range of analytics accelerators, which are pre-built, configurable data models with customizable visualizations that can be tailored to specific client needs.

- ***Services expertise.*** Our world-class team consists of both analytics experts, such as data analysts, data engineers, and data scientists, and domain experts, such as healthcare administrators, physicians, and nurses. Our services are comprised of data and analytics services, domain expertise and education services, Tech-enabled Managed Services (TEMS), and implementation services. Our services team members leverage our technology to help our clients shorten time-to-value and achieve sustainable measurable improvements. Examples of the services expertise we provide include opportunity analysis and prioritization, data governance, data modeling and analysis, quality and process improvement strategy, cost accounting, data abstraction, and population health strategies. Our approach to integrate data, analytics, and expertise into a holistic Solution is differentiated and parts of our Solution have historically been recognized as among the best in the industry by multiple third parties, including KLAS, Chilmark Research, and others.

We have generated over 1,600 documented, client-verified improvements across clinical, financial, and operational domains. Each of these documented improvements is highly valuable to our clients, enabling them to realize substantial clinical improvements, financial savings, or operational efficiencies. As we deliver measurable improvements, trust builds, and our clients engage with us more broadly and refer new business. This is evidenced by a continued increase in improvements achieved by our clients over time. Clients who have recently contracted with us have already started achieving measurable improvements, while longer-standing clients have seen the number of annual improvements meaningfully grow.

We serve the majority of our clients through a subscription-based contract model. As of December 31, 2023, we served 109 DOS Subscription Clients and over 525 other clients. The majority of our clients who are not DOS Subscription Clients are technology clients resulting from our business acquisitions and are also generally on subscription contracts. Our clients include academic medical centers, integrated delivery networks, community hospitals, large physician practices, Accountable Care Organizations (ACOs), health information exchanges, health insurers, and other risk-bearing entities. Example clients include Allina Health, AlohaCare, Carle Health, Children’s Hospital of Orange County, Community Health Network, INTEGRIS Health, Lifepoint Health, Mass General Brigham, Queen's Health System, Steward Health Care, Temple University Health System, UnityPoint Health, and UPMC.

Our Strengths

Our operational and financial success is based on the following key strengths:

Healthcare-specific, flexible, open, and scalable data platform. DOS was purpose-built to handle healthcare-specific data management and analytics use cases, including the ingestion of disparate healthcare data sources. By linking healthcare-specific vocabularies and rules with a flexible and adaptable framework, we enable faster and more repeatable analytics. As an open and self-service platform, we support the development of analytics applications on top of DOS, which can accelerate the adoption and integration of our DOS platform by our clients. The majority of analytics applications that are run on top of DOS are client-generated as opposed to outputs of our applications. The scalable, cloud-based infrastructure enables quicker product iteration and deployment.

Integrated and comprehensive nature of our Solution creates measurable improvements. Through the delivery of our comprehensive and integrated Solution of data, analytics, and services expertise, we enable measurable improvements for our clients. Our Solution has generated over 1,600 documented, client-verified improvements across clinical, financial, and operational domains.

Attractive operating model. We have an attractive operating model due to the recurring nature of the vast majority of our revenue and the scalability of our DOS platform and analytics applications. Our recurring revenue subscription model provides a high degree of revenue visibility. The open and flexible nature of DOS makes it highly scalable, which allows us to deliver additional analytics applications on top of DOS with limited incremental costs. We expect the benefits of our operating model and cost structure to generate operating leverage in our business.

Unique and differentiated culture focused on team member engagement. Our leadership team's commitment to the team member is central to our long-term success. Our commitment to building and maintaining a culture where team members are highly engaged in our mission directly benefits not only team members, but also our clients and other stakeholders.

The team member experience is the #1 priority of our CEO and other members of our leadership team. On a daily basis, our leadership focuses on the team member experience, by listening carefully to team member feedback and making changes based on this feedback, by erring in favor of the team member, and by working as an advocate for each team member. This focus enables team members to become highly engaged in fulfilling our mission to be the catalyst for massive, measurable, data-informed improvement in healthcare.

This deep team member engagement in our mission leads team members to build world-class data and analytics technology and to provide industry-leading expertise. The care that the leadership team shows to team members becomes the same care that team members show to our clients, and through this care and commitment, our clients experience accelerating and measurable improvement, which leads them to renew, expand, and refer. By focusing on the team member experience, our clients realize greater improvements, which leads to a high-growth, predictable business model.

Recognized industry leader by multiple third parties. The strength of our Solution has been recognized by multiple third-parties as among the best in the industry. These include KLAS Overall Customer Satisfaction Scores that have historically been among the highest in the peer group, as well as Chilmark Research and others. We recognized early on that healthcare organizations need purpose-built technology products and services to support data-driven insights, and have spent more than a decade building and commercializing our healthcare-specific Solution. We invested meaningful time and resources over the last decade to build a comprehensive and differentiated set of products and services for our clients, which is not easily replicated by other healthcare and/or technology companies. Our clients benefit from our technology innovation and expertise which allows them to avoid the significant time, financial resources, and technical proficiency they would need to invest to build related capabilities in-house. Similarly, the overall complexity and dynamic nature of healthcare require purpose-built products and services to address the challenges our clients face, preventing traditional technology companies from easily leveraging and deploying existing platforms.

Tenured management team with healthcare technology experience. Health Catalyst is led by a team of healthcare and data veterans with many years of combined experience leading digital transformation at health systems. Our founders collaborated for nearly a decade to pioneer and develop a new data warehousing architecture that resolves many of the problems encountered using traditional data warehousing methodologies. The unique combination of talent and experience across healthcare and technology, as well as our management team's commitment to the Health Catalyst Way, underpin everything we do.

Our Growth Strategies

Our growth strategies reflect our mission to be the catalyst for massive, measurable, data-informed healthcare improvement. Our focus on multiple channels, as well as our collaborative company culture, results in high levels of sustainable growth. Our strategic levers to drive growth include:

- ***Grow our overall client base.*** We have a substantial opportunity to continue growing our client base through our active sales and marketing strategy and significant word-of-mouth references. We currently estimate our total core addressable market to include more than 1,200 healthcare organizations, including health systems and risk-bearing entities. We believe there is ample room to win new business and deepen market penetration in our core market. Further, healthcare providers outside of the United States face similar challenges to those in the United States and can implement our Solution to address them. We plan to opportunistically pursue entry into and expansion within international markets.

- ***Expand within our current client base.*** We intend to deepen and expand the relationships we have with our existing client base. Our relationship with a new client oftentimes starts through the use of targeted software analytics applications and services to pinpoint and achieve a single measurable clinical, financial, or operational improvement. As we deliver measurable improvements, trust builds, and our clients engage with us more broadly and purchase additional applications and services. We have achieved DOS Subscription Client growth in part due to strong client retention and client referrals. This is evidenced by our positive Dollar-based Retention Rates for DOS Subscription Clients of 100%, 100%, and 112% for the years ended December 31, 2023, 2022, and 2021, respectively. We will continue to invest in helping clients identify additional uses for our Solution, ensuring they achieve measurable improvements throughout our relationship with them, including through our Tech-Enabled Managed Services (TEMS) offering. See "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this Annual Report on Form 10-K for more information regarding the definitions of Dollar-based Retention Rate and DOS Subscription Clients.

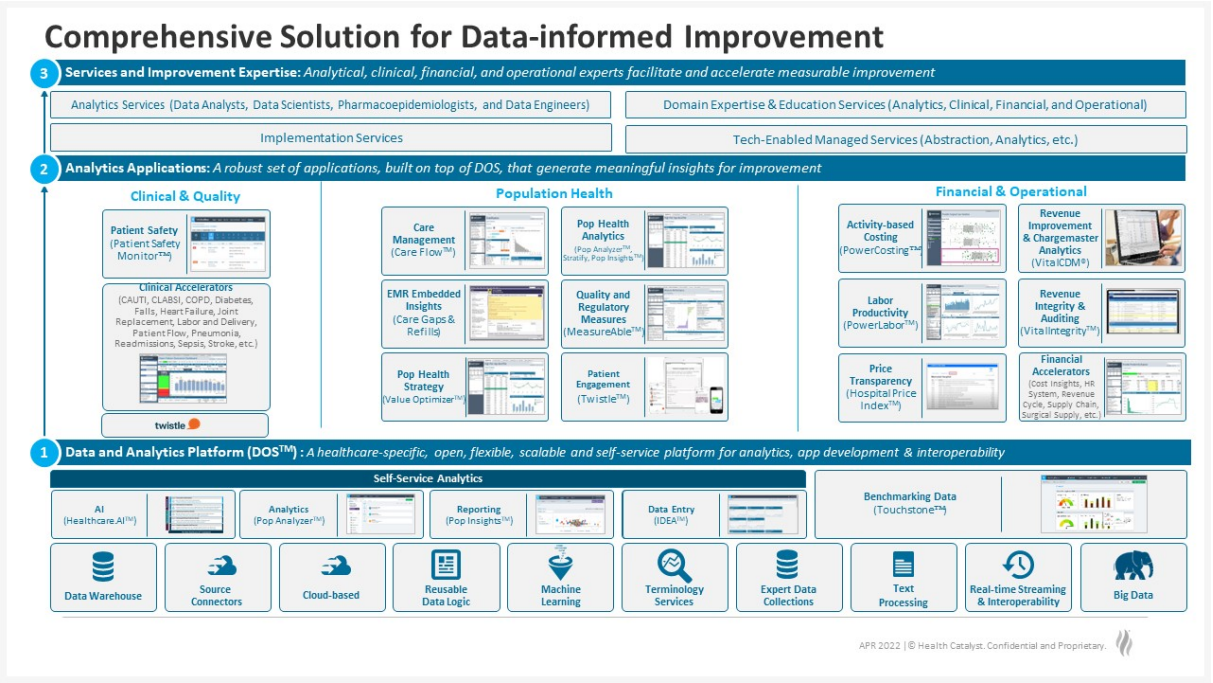
- ***Add new analytics applications and services offerings.*** The expansion of our Solution and enhancement of our applications library will accelerate as we deepen our client relationships and add to our dataset. Because our DOS platform is open and we partner with our clients, we are able to identify new opportunities for further improvements and leverage that insight with other clients across our core market to develop new analytics applications and services offerings. We have used this process to build several new software applications through our history, and we will continue to invest in product development, particularly at the analytics applications layer of our technology stack.

- ***Grow our addressable market through additional healthcare business segment adjacencies.*** We believe there are significant applications for our Solution outside of our core market, as evidenced by our early efforts to expand into certain international markets. While we believe there are significant opportunities in our core market, these business segment adjacencies have the potential to significantly grow our addressable market and business over time.

- ***Selectively pursue acquisitions and partnerships.*** While we expect this will be less of a focal area in the near term, we plan to continue evaluating and identifying opportunities where we can leverage our DOS platform to scale and consolidate both data assets and best-of-breed applications. We believe that competing point solutions vendors will have difficulty in growing their offerings into sustainable businesses, which we believe translates into a robust mergers and acquisitions pipeline for us. We have a track record of identifying and integrating new and complementary capabilities, including our acquisitions of Medicity, Able Health, Healthfinch, Vitalware, Twistle, KPI Ninja, ARMUS, and ERS. Moreover, we believe the companies we partner with and acquire choose us because of our collaborative, best-in-class culture which we view as a differentiating factor in sourcing acquisitions and partnerships.

Our Solution

Our Solution empowers our clients to run a data-informed business. Our healthcare-specific, open, flexible, scalable, and self-service DOS platform, advanced analytics applications, and services expertise guide our clients to greater levels of digital maturity, enabling clinical, financial, and operational improvements. The diagram below illustrates the three layers of our comprehensive Solution.



Data and analytics platform - the Data Operating System (DOS)

The DOS platform is a healthcare-specific, open, flexible, scalable, and self-service data and analytics platform that allows our clients to integrate and organize their disparate data sources to enable insights across clinical, financial, and operational objectives. It serves as a digital backbone, allowing clients to extract data from transactional source systems, combine disparate data sets into a unified source of truth, and query the dataset directly. DOS is a cloud-based technology that we primarily provide through Microsoft Azure. In order to enable more advanced feature development and functionality, we are in the process of migrating the small number of remaining on-premise DOS clients to Microsoft Azure. Additionally, we are investing in our DOS platform's development of single-instance, multi-tenant architecture, as well as enhanced elastic compute capabilities supported by Snowflake and Databricks database technologies.

DOS has been uniquely designed and purpose-built to handle the complex, ever-evolving nature of healthcare-specific data and analytics. This includes healthcare-specific terminology, data governance, meta-data management, and analytics. By creating healthcare-specific data models to organize industry-specific data, we enable faster and more repeatable analytics and insights. We have developed the capabilities to turn these insights into actions by connecting our analytics into the workflow systems, such as an electronic health record (EHR). Clients may directly access our DOS platform or may indirectly access DOS through use of modular components of DOS or other parts of our Solution that leverage DOS. Certain components of DOS may be sold on a standalone basis, including Healthcare.AI, Pop Analyzer, IDEA, and other DOS platform components. The vast majority of our DOS Subscription Clients' contracts include access to all attributes and components of DOS.

Differentiating attributes of DOS include:

- *Data Warehouse.* We believe our innovative architecture has a proven track record of agility and adaptability to new rules, vocabularies, and data content. Our open and self-service platform enables database-level querying and custom analytics use-cases.

- *Source Connectors.* Our DOS platform is designed to quickly ingest data from the numerous systems and siloed data sources our clients possess. We have prebuilt connectors to the most common transactional software systems used by healthcare organizations. The DOS data management console enables clients to manage robust Extract Transform Load (ETL) processes and scheduling.

- *Cloud-based.* Modern cloud-based architecture is secure and scalable. Being cloud-based enables quicker product iteration and innovation.

- *Reusable data logic.* Registries, value sets, and other data logic sit on top of the raw data and can be accessed, reused, and updated through open application programming interfaces (APIs), enabling client and third-party application development. We update hundreds of registries, value sets, and measure logic regularly. We believe this reusable healthcare data content enables clients to achieve analytic value more quickly than leveraging homegrown or cross-industry products and services.

- *Machine learning*. Embedded within DOS are machine learning algorithms that our clients can leverage for predictive analytics. Clients can also build their own machine learning data pipelines within DOS.

- *Terminology services.* By standardizing the complex language used to code entries in various health records and clinical systems, DOS facilitates decision support, consistent reporting, and analytics and interoperability.

- *Expert data collections.* A combination of our expert healthcare data model and suite of curated data collections tuned to general and specific healthcare solutions helps our clients build a sustainable data management system for the future needs of healthcare.

- *Text processing.* Enables the extraction of additional data currently trapped in various unstructured text. We believe the ability to gather insight from clinical notes remains an area of untapped healthcare intelligence with tremendous potential.

- *Real-time streaming and interoperability.* Near or real-time data streaming from the source all the way to the expression of that data through DOS, supporting both transaction-level exchange of data and analytic processing.

- *Big data.* Ability to access, organize, and analyze massive and unique, structured and unstructured, data sets allows us to drive differentiated analytic insights for our clients.

- *Reporting (Pop Insights).* Enables users to add clinical, financial, and operational measures in an executive dashboard format. Measures are trended over time and updated on a near real-time basis from DOS. Users can customize information, share it with others, and set their own alerts and notifications. As a result, executives and their teams are empowered to take control of the data deluge to plan, prioritize improvement projects, create alignment among groups, strategize the best products and services, and communicate decisions more effectively.

- *Benchmarking (Touchstone).* Uses artificial intelligence to proactively identify where a client is performing relative to benchmark sets composed of proprietary and publicly-available data, and subsequently recommends and prioritizes opportunities for improvement.

- *AI (Healthcare.AI).* Transformational suite of healthcare-specific, self-service AI products distinguished by capabilities in analytics integration, predictive modeling, retrospective comparisons, and prescriptive optimization.

- *Analytics (Pop Analyzer).* Enables non-SQL writers like clinicians and administrators to dynamically author, manage, view, and publish pre-built and custom population ruleset definitions using a drag-and-drop interface. Rulesets can be published as a registry, leveraged across the DOS platform, and augmented with summary metrics using our tools. These registries can be used for internal quality improvement and research efforts or for reporting to external organizational registries.

- *Data entry (IDEA).* Collects custom sets of data for instant entry into DOS.

Analytics applications

We have thoughtfully developed and acquired several scalable analytics applications that allow us to deliver the right data to the right place at the right time. Combining this pioneering technique with our data asset of more than one hundred million patient records, our clients systematically uncover opportunities for actionable interventions. We have organized our analytics applications into robust sets of applications that generate meaningful insights for improvement in key areas: Clinical & Quality, Population Health Management, and Financial & Operational.

Clinical & Quality

- *Patient safety (Patient Safety Monitor).* Trigger-based surveillance system enabled by DOS. This application monitors patient-level data and applies machine learning algorithms to help clinicians predict whether a patient is currently at risk for a safety event so that the patient's clinicians can intervene as they deem necessary to prevent harm events.

- *Clinical accelerators.* Pre-built clinical data models and customizable visualizations that leverage the broad set of integrated data stored within our DOS platform for a specific analytic use-case. We believe these help clients achieve a much faster time-to-value solution compared to building an analytic model from the ground up.

Population Health Management

- *Care management (Care Flow).* Patient-centric population health service that utilizes data integration, patient stratification and intake, care coordination, patient engagement, and performance measurement to optimize care delivery for high-risk patients.

- *Pop health analytics (Pop Analyzer, Stratify, Pop Insights).* A suite of population-health specific analytics modules, enabling population-level analytics and reporting to support value-based care arrangements.

- *EMR embedded insights (Care Gaps and Refills).* Cloud-based product suite that provides a workflow integration engine delivering insights and analytics into electronic medical record (EMR) workflows to automate physicians' ability to close patient care gaps in real-time.

- *Quality and regulatory measures (MeasureAble).* Foundational product for integrating hundreds of measures across financial, regulatory, and quality departments and reporting those measures to third-party entities like the Centers for Medicare & Medicaid Services (CMS). Enables proactive measures surveillance to enhance outcomes and facilitates monitoring behaviors, interventions, and activities needed to influence, manage, or change outcomes.

- *Pop health strategy (Value Optimizer).* Allows for a comprehensive, quantified view of potential financial improvement opportunities within a value-based care arrangement. These insights help population health leaders optimize their value-based care strategy and make population health efforts profitable.

- *Patient engagement (Twistle).* Healthcare patient engagement SaaS technology that, among other uses, helps automate patient-centered, personalized, multi-channel communication between care teams and patients that aims to transform the patient experience, drive better care outcomes, and reduce healthcare costs.

Financial & Operational

- *Activity-based costing (PowerCosting).* Activity-based costing software application that leverages clinical and operational data from DOS to calculate a true cost of clinical processes and patients on the most granular level. Enables CFOs, physicians, service line leaders, and clinical and financial analysts to understand the true cost of providing care and relate those costs to patient outcomes.

- *Revenue improvement and chargemaster analytics (VitalCDM).* Revenue workflow optimization and analytics solution that organizes, displays, and manages all chargemaster data within one connected solution, enabling hospital billing departments to operate more transparently, price strategically, and present an accurate bill or claim with consistency. We believe this technology is proven to create more accurate reimbursement, increase operational efficiency, and minimize compliance risk.

- *Labor productivity (PowerLabor).* A labor management solution that allows healthcare decision makers to predict labor needs, plan for changes in staffing, and optimize staff-to-patient ratios.

- *Revenue integrity and auditing (VitalIntegrity).* Comprehensive charge capture solution that efficiently manages hospital charge capture processes, detects compliance issues, and minimizes revenue leakage resulting from under- and over-charging, late or missing coding, mismatched charges and supplies, and a wide range of chargemaster-related issues.

- *Price transparency (Hospital Price Index).* Enables hospitals to address pricing transparency, including complex requirements of the price transparency mandate.

- *Financial accelerators.* Pre-built financial data models and customizable visualizations that leverage the broad set of integrated data stored within our DOS platform for a specific analytic use-case. We believe these help clients achieve a much faster time-to-value solution compared to building an analytic model from the ground up.

Services and improvement expertise

We provide a range of high-value-add professional services to help our clients implement and maximize the value of our Solution. Our professional services experts combine industry-leading talent across multiple domain areas with a deep working knowledge of our technology to help our clients achieve a faster time-to-value and drive more meaningful and sustainable measurable improvements. Our services expertise can be provided as a supplement to our clients' existing teams or as an outsourced function for our clients. Our team is comprised of over 1,000 analytics experts and domain experts, including several nationally-recognized healthcare and analytics leaders.

Our domain experts provide services across a range of specialties, including:

Infrastructure, data, and analytics services expertise:

- *Data engineering services.* Help clients ingest data sources and provide consulting around DOS best practice and strategy around leveraging new DOS features.

- *Analytics engineering services.* Partner with clients to generate meaningful insights produced from Health Catalyst technology that lead improvement efforts. Guides best practice and training.

- *Implementation services.* Implement and configure DOS and analytics applications.

- *Data science services.* Work with client teams to apply scientific methods, processes, algorithms, and systems to ask and answer questions using data. In addition, build software tools to enable self-service capabilities for clients.

- *Analytics strategy services.* Provide agile development workshops, continued data architecture and ETL support, documentation and training, measure reporting efficiency, and prioritization and staff augmentation.

- *Data governance services.* Offer advisory services related to leveraging clients' unique, strategic data assets, managing data access and security, and establishing cross-functional governance structures.

- *Tech-enabled Managed Services*. Managed services solution that enables healthcare organizations to boost efficiencies, capabilities, and savings—and optimize employee experience—through outsourcing specific functions, such as data abstraction or analytics, to Health Catalyst. In many cases, this solution includes re-badging existing health system team members within the applicable functional area as Health Catalyst team members.

Healthcare domain expertise:

- *Quality and process improvement strategy.* Organizational readiness assessments and opportunity analysis. Clinical pathways, best practices, and protocol implementation. Lean methodology and clinical variation reduction recommendations.
- *Patient safety services.* Transition from voluntary under-reporting to proactive prevention using data-driven triggers.
- *Cost accounting services.* Expert analysis of fine-grain activity-based costing methods and cost-saving improvement opportunities.
- *Population health and value-based care services.* Organizational transformation services to enhance abilities to take on cost risk for patient populations.
- *Abstraction data submission services.* Support in collecting quality and regulatory information and submitting it to various associations.
- *Health Catalyst University - educational services.* Hands-on courses, programs, and customizable training opportunities to provide our clients with knowledge, practical skills, and take-home tools needed to drive improvement efforts.

Our Clients

Our clients comprise academic medical centers, integrated delivery networks, community hospitals, large physician practices, ACOs, health information exchanges, health insurers, and other risk-bearing entities. Today, we help executives, administrators, clinicians, and technicians in hundreds of hospitals and thousands of clinics. We work closely in collaboration with many key stakeholders including chief executive officers, chief financial officers, chief information officers, chief technology officers, population health teams, and IT teams among others. From our perspective, discussions regarding data and analytics strategy have oftentimes transitioned from a discussion with members of the IT department to an enterprise-wide, strategic discussion with the C-suite and other leadership members. No client represented more than 10% of our total revenue for the years ended December 31, 2023, 2022, and 2021.

Team Members and Culture

We currently employ more than 1,300 team members. We believe that we have good relationships with our team members. None of our team members are subject to collective bargaining agreements or are represented by a union.

Our corporate culture is a critical component of our success. We believe that building and maintaining a remarkable culture benefits our clients, team members, and our other stakeholders. Our culture promotes an environment where team members trust each other, strive to continually learn, are motivated to lead hard-working yet balanced lives, make decisions with integrity and humility in mind, communicate openly and honestly, embrace teamwork and collaboration, and enjoy their days at work.

Our team members, who strive to uphold our values and live our mission every day, are at the forefront of cultivating and spreading this culture across the healthcare organizations that we serve. This continuous interaction across the entire Health Catalyst community creates a cycle that further reinforces our culture and fuels our growth.

Our team member engagement scores, as measured by Gallup, have consistently ranked in the 94th to 99th percentile and our KLAS Customer Satisfaction Score for Relationship is above the Data and Analytics Platform average. We engage compensation consultants to enable us to make data-informed decisions with respect to our compensation and benefit packages so we continue to attract and retain top talent. Moreover, we have received numerous awards and recognition for our culture and service to our clients. In total, we have been recognized 87 times as a “best place to work” by Glassdoor, Gallup, and Modern Healthcare, among others. Additionally, we have received multiple awards for client satisfaction and excellence from KLAS, Chilmark Research, and others. For example, our Chargemaster Management product, a revenue analytics product addition through the Vitalware acquisition, was ranked Best in KLAS for 2019, 2020, 2021, 2022, and 2023. We believe that these honors demonstrate the loyalty of our team members and our clients and that our culture is driving the behaviors that will help fuel our future growth.

Sales and Marketing

We market and sell our services to healthcare organizations primarily in the United States and we opportunistically market and sell in other countries and regions. Our dedicated sales team identifies healthcare organizations that would benefit from our Solution. Our sales team works closely with our subject matter experts to foster long-term relationships with our clients' and sales prospects' leadership teams. In February 2024 we will hold our annual Healthcare Analytics Summit (HAS), an event showcasing data-informed improvements in healthcare.

Research and Development

Our ability to compete depends in large part on our continuous commitment to research and development and our ability to rapidly introduce and refine new applications, technologies, features, and functionality. Our research and development organization is responsible for the design, development, and testing of the technology portion of our Solution. Based on client feedback and needs, we focus our efforts on developing new products, functionality, applications, and core technologies and further enhancing the usability, functionality, reliability, performance, and flexibility of our Solution.

Intellectual Property

We rely on a combination of patent, trademark, and copyright laws in the United States as well as confidentiality procedures and contractual provisions to protect our intellectual property and trade secrets, including proprietary technology, databases, and our brand. As of December 31, 2023, we had fourteen issued U.S. patents, four issued Canadian patents, one issued Great Britain patent, and one issued European patent, which expire between 2026 and 2037, as well as one utility patent application pending in the United States. These patents and patent applications seek to protect proprietary inventions relevant to our business. We intend to pursue additional patent protection to the extent we believe it would be beneficial to our business and cost-effective.

We have registered "Health Catalyst" and our flame design logo as trademarks in the United States and certain other jurisdictions. We also have filed other trademark applications that are meaningful to our business in the United States and certain other jurisdictions and will pursue additional trademark registrations to the extent we believe it would be beneficial and cost-effective. We are the registered holder of a variety of domain names that include "Health Catalyst" and similar variations.

We maintain our intellectual property and confidential business information in a number of ways. For instance, we have a policy of requiring all employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting relationship with us. Our employee agreements also require relevant employees to assign to us all rights to any inventions made or conceived during their employment with us in accordance with applicable law. In addition, we have a policy of requiring individuals and entities with which we discuss potential business relationships to sign non-disclosure agreements. Lastly, our agreements with clients include confidentiality and non-disclosure provisions.

Competition

We have experienced, and expect to continue to experience, intense competition from a number of companies. Our primary competitors are industry-agnostic analytics companies, EHR companies, point solution vendors, and healthcare organizations that perform their own analytics using homegrown solutions. Industry-agnostic analytics companies that help healthcare organizations develop homegrown solutions include IBM, Snowflake, Microsoft, Tableau CRM, and Qlik. EHR companies include Cerner Systems and Epic Systems. Point solution companies include Optum Analytics, Premier, Arcadia.io, Strata Decision Technology, Craneware, Innovaccer, and Intersystems.

The principal competitive factors in our industry include:

- level of client satisfaction;
- ease of deployment and use of solutions and applications;
- breadth and depth of solution and application functionality;
- access to, and ability to glean insights from, large data sets;
- brand awareness and reputation;
- modern and adaptive technology platform;

- capability for customization, configurability, integration, security, scalability, and reliability of applications;
- total cost of ownership;
- ability to innovate and respond to client needs rapidly;
- size of client base and level of user adoption;
- regulatory compliance verification and functionality;
- domain expertise with respect to healthcare; and
- ability to integrate with legacy enterprise infrastructures and third-party applications.

We believe that we compete favorably with our competitors on the basis of these factors. However, many of our competitors and potential competitors have significantly greater financial, technological, and other resources and name recognition than we do and more established distribution networks and relationships with healthcare providers. As a result, many of these companies may respond more quickly to new or emerging technologies and standards and changes in client requirements. These companies may be able to invest more resources in research and development, strategic acquisitions, sales and marketing, patent prosecution, litigation, and financing capital equipment acquisitions for their clients.

Government Regulation

Our business is subject to extensive, complex, and rapidly changing federal and state laws and regulations, as well as international laws with respect to our international clients. Various federal and state agencies have discretion to issue regulations and interpret and enforce healthcare laws. While we believe we comply in all material respects with applicable healthcare laws and regulations, these regulations can vary significantly from jurisdiction to jurisdiction, and interpretation of existing laws and regulations may change periodically. Federal and state legislatures also may enact various legislative proposals that could materially impact certain aspects of our business. The following are summaries of key federal and state laws and regulations that impact our operations:

Data Privacy and Security Laws

Numerous state, federal, and foreign laws, regulations, and standards govern the collection, use, access to, confidentiality, and security of health-related and other personal information, and could apply now or in the future to our operations or the operations of our partners. In the United States, numerous state and federal laws and regulations, including data breach notification laws, health information privacy laws, and consumer protection laws and regulations, govern the collection, use, disclosure, and protection of health-related and other personal information and could apply to our operations or the operations of our clients. In addition, certain foreign laws govern the privacy and security of personal data, including health-related data. Privacy and security laws, regulations, and other obligations are constantly evolving, may conflict with each other to complicate compliance efforts, and can result in investigations, proceedings, or actions that lead to significant civil and/or criminal penalties and restrictions on data processing.

Fraud, waste, and abuse

Even though we do not directly order or provide healthcare services that are reimbursable by Medicare, Medicaid or other third-party payors or submit claims or receive reimbursement from any such payor, certain federal and state healthcare laws and regulations pertaining to fraud, abuse, and waste apply or may apply to our business and to the financial arrangements through which we market, sell, and provide our services to our healthcare provider clients. These laws and regulations include or may include the following:

- The federal Anti-Kickback Statute makes it illegal for any person to knowingly and willfully solicit, receive, offer, or pay any remuneration (including any kickback, bribe, or rebate), directly or indirectly, overtly or covertly, in cash or in kind, in exchange for, or intended to induce or reward, including arranging for or recommending, either the referral of an individual, or the purchase, lease, order, prescription, or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid program. A person or entity does not need to have actual knowledge of the federal Anti-Kickback Statute or specific intent to violate it to have committed a violation.

- The federal civil and criminal false claims laws, such as the federal False Claims Act, and civil monetary penalties laws impose criminal and civil penalties and authorize civil whistleblower or qui tam actions, against individuals or entities for, among other things: knowingly presenting, or causing to be presented, to a federal government healthcare program, claims for payment that are false or fraudulent; making, using or causing to be made or used, a false statement or record material to payment of a false or fraudulent claim or obligation to pay or transmit money or property to the federal government; or knowingly concealing or knowingly and improperly avoiding or decreasing an obligation to pay money to the federal government. The government has prosecuted revenue cycle management service providers for causing the submission of false or fraudulent claims in violation of the False Claims Act. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act. Moreover, private individuals have the ability to bring actions on behalf of the U.S. government under the federal False Claims Act as well as under the false claims laws of several states.

- HIPAA also contains a provision that imposes criminal and civil liability for knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program (including private payors) or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items, or services. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. Similarly, the federal false statements statute prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items, or services.

In addition, many states have similar fraud and abuse statutes and regulations that apply regardless of the payor, including commercial payors and self-pay patients. Violations of federal and state fraud and abuse laws may be punishable by criminal and/or civil sanctions, including significant penalties, fines, disgorgement, additional reporting requirements and oversight under a corporate integrity agreement or similar agreement to resolve allegations of noncompliance with these laws, imprisonment and/or exclusion or suspension from federal and state healthcare programs such as Medicare and Medicaid, and debarment from contracting with the U.S. government.

Corporate practice of medicine and fee-splitting laws

In many states, there are laws that that prohibit business entities, such as us, from providing professional medical services or directly employing or otherwise exercising control over professional judgment or medical decisions by physicians or other licensed healthcare professionals (such activities generally referred to as the "corporate practice of medicine"). Corporate practice of medicine regulations and other similar laws may also prevent fee-splitting, or the sharing of professional service income with non-professional or business interests. Overseeing care coordination, care management, or ambulatory operations teams could be alleged in some cases to involve treatment or diagnosis of patients which requires a clinic license or other state license or permission. Any determination that we are acting in the capacity of a healthcare provider and acting improperly as a healthcare provider, exercising undue influence or control over a healthcare provider or impermissibly sharing fees with a healthcare provider, may result in additional compliance requirements, expense, and liability to us, and require us to change or terminate some portions of our contractual arrangements or business.

Patient safety organization certification and other certification requirements

Our patient safety organization (PSO) is certified by the Agency for Healthcare Research and Quality (AHRQ), an agency of the Department of Health and Human Services (HHS). We must meet certain requirements to maintain this certification. In addition, there may be other federal and state certification requirements that we may be required to meet from time to time in connection with our Solution. We cannot be certain that our Solution will continue to meet these standards. The failure to comply with these certification requirements could result in the loss of certification.

Interoperability Standards. The Office of National Coordinator for Health Information Technology (ONC) is charged under the 21st Century Cures Act with developing a Trusted Exchange Framework that establishes governance requirements for trusted health information exchange in the United States. ONC has developed the U.S. Common Data Set for Interoperability which may lay the groundwork for future data exchange requirements for trusted exchange. ONC continues to modify and refine these standards.

We may incur increased software development and administrative expense and delays in delivering technology and services if we need to update our services to conform to these varying and evolving requirements. In addition, delays in interpreting these standards may result in postponement or cancellation of our clients' decisions to purchase our services. If our services are not compliant with these evolving standards, our market position and sales could be impaired, and we may have to invest significantly in changes to our technology and services.

The 21st Century Cures Act includes provisions related to data interoperability, information blocking, and patient access. CMS and the ONC recently issued final rules related to these provisions, which include, among other things, requirements surrounding information blocking, changes to ONC's Health IT Certification Program, and requirements that CMS-regulated payors make relevant claims/care data and provider directory information available through standardized patient access and provider directory APIs that connect to provider EHRs. Any failure to adequately comply with these rules may adversely impact our business and our ability to compete.

In a regulatory climate that is uncertain, our operations may be subject to direct and indirect adoption, expansion or reinterpretation of various federal and state laws and regulations. Compliance with these amended and/or future laws and regulations may require us to change our practices at an undeterminable and possibly significant initial monetary and annual expense. There could be laws and regulations applicable to our business that we have not identified or that, if changed, may apply to our business operations. Additionally, the introduction of new services may require us to comply with additional, yet undetermined, laws and regulations.

U.S. Food and Drug Administration (FDA)

The FDA regulates certain medical or health-related software, including machine learning functionality and predictive algorithms, if such software falls within the definition of a "medical device" under the Federal Food, Drug, and Cosmetic Act (FDCA). Medical devices are subject to extensive and rigorous regulation by the FDA and by other federal, state, and local authorities. The FDCA and related regulations govern the conditions of safety, efficacy, clearance, approval, manufacturing, quality system requirements, labeling, packaging, distribution, storage, recordkeeping, reporting, marketing, advertising, and promotion of medical devices.

However, historically, the FDA has exercised enforcement discretion for certain low-risk software functions, and has issued several guidance documents outlining its approach to the regulation of software as a medical device. In addition, FDCA excludes certain types of software from the definition of a medical device, including certain medical-related software functions used for administrative support at a healthcare facility, software intended for maintaining or encouraging a healthy lifestyle, software designed to store electronic health records, software for transferring, storing, or displaying medical device data or in vitro diagnostic data, and certain clinical decision support software. We believe our currently marketed products are not currently regulated by the FDA as medical devices, or are otherwise subject to FDA's current enforcement discretion policies.

FDA premarket clearance and approval requirements - Unless an exemption applies, each medical device commercially distributed in the United States requires either FDA clearance of a 510(k) premarket notification, or approval of a premarket approval application (PMA). Under the FDCA, medical devices are classified into one of three classes—Class I, Class II, or Class III—depending on the degree of risk associated with each medical device and the extent of manufacturer and regulatory control needed to ensure its safety and effectiveness. Class I includes devices with the lowest risk to the patient and are those for which safety and effectiveness can be assured by adherence to the FDA's General Controls for medical devices, which include compliance with the applicable portions of the Quality System Regulation (QSR), facility registration and product listing, reporting of adverse medical events, and truthful and non-misleading labeling, advertising, and promotional materials. Class II devices are subject to the FDA's General Controls, and special controls as deemed necessary by the FDA to ensure the safety and effectiveness of the device. These special controls can include performance standards, post-market surveillance, patient registries, and FDA guidance documents.

While most Class I devices are exempt from the 510(k) premarket notification requirement, manufacturers of most Class II devices are required to submit to the FDA a premarket notification under Section 510(k) of the FDCA requesting permission to commercially distribute the device. The FDA's permission to commercially distribute a device subject to a 510(k) premarket notification is generally known as 510(k) clearance. Devices deemed by the FDA to pose the greatest risks, such as life-sustaining, life-supporting or some implantable devices, or devices that have a new intended use, or use advanced technology that is not substantially equivalent to that of a legally marketed device, are placed in Class III, requiring approval of a PMA. Some pre-amendment devices are unclassified, but are subject to the FDA's premarket notification and clearance process in order to be commercially distributed.

Post-market regulation - After a device is cleared or approved for marketing, numerous and pervasive regulatory requirements continue to apply. These include:

- establishment registration and device listing with the FDA;
- QSR requirements, which require manufacturers, including third-party manufacturers, to follow stringent design, testing, control, documentation, and other quality assurance procedures during all aspects of the design and manufacturing process;
- labeling and marketing regulations, which require that promotion is truthful, not misleading, fairly balanced, and provides adequate directions for use and that all claims are substantiated, and also prohibit the promotion of products for unapproved or "off-label" uses and impose other restrictions on labeling;
- clearance or approval of product modifications to 510(k)-cleared devices that could significantly affect safety or effectiveness or that would constitute a major change in intended use of one of our cleared devices;
- medical device reporting regulations, which require that a manufacturer report to the FDA if a device it markets may have caused or contributed to a death or serious injury, or has malfunctioned and the device or a similar device that it markets would be likely to cause or contribute to a death or serious injury, if the malfunction were to recur;
- correction, removal, and recall reporting regulations, which require that manufacturers report to the FDA field corrections and product recalls or removals if undertaken to reduce a risk to health posed by the device or to remedy a violation of the FDCA that may present a risk to health;
- complying with requirements governing Unique Device Identifiers on devices and also requiring the submission of certain information about each device to the FDA's Global Unique Device Identification Database;
- the FDA's recall authority, whereby the agency can order device manufacturers to recall from the market a product that is in violation of governing laws and regulations; and
- post-market surveillance activities and regulations, which apply when deemed by the FDA to be necessary to protect the public health or to provide additional safety and effectiveness data for the device.

Manufacturers of medical device products marketed in the United States are required to comply with the applicable portions of the QSR, which cover the methods and the facilities and controls for the design, manufacture, testing, production, processes, controls, quality assurance, labeling, packaging, distribution, installation, and servicing of finished devices intended for human use. The QSR also requires, among other things, maintenance of a device master file, device history file, and complaint files. Device manufacturers are also subject to periodic scheduled or unscheduled inspections by the FDA. The FDA has broad regulatory compliance and enforcement powers.

If the FDA determines that a company has failed to comply with applicable regulatory requirements, including a determination that medical software products require prior FDA clearance or approval to be legally marketed in the United States, it can take a variety of compliance or enforcement actions, which may result in any of the following sanctions: warning letters, untitled letters, fines, injunctions, consent decrees, and civil penalties; recalls, withdrawals, or administrative detentions or seizure of products; operating restrictions or partial suspension or total shutdown of production; refusing or delaying requests for 510(k) marketing clearance or PMA approvals of new products or modified products; withdrawing 510(k) clearances or PMA approvals that have already been granted; refusal to grant export or import approvals; or criminal prosecution.

Foreign regulations

Our subsidiaries in the United Kingdom, India, Singapore, the United Arab Emirates, and Australia are subject to additional regulations by the Governments of the United Kingdom, India, Singapore, the United Arab Emirates, and Australia, respectively, as well as their respective subdivisions. These include federal and local corporation requirements, restrictions on exchange of funds, employment-related laws, and qualification for tax status.

Foreign Corrupt Practices Act (FCPA) and foreign anti-bribery laws. The FCPA makes it illegal for U.S. persons, including U.S. companies, and their subsidiaries, directors, officers, employees, and agents, to promise, authorize or make any corrupt payment, or otherwise provide any item of value, directly or indirectly, to any foreign official or any foreign political party or party official to obtain or retain business. Violations of the FCPA can also result in violations of other U.S. laws, including anti-money laundering, mail and wire fraud, and conspiracy laws. There are severe penalties for violating the FCPA. In addition, the Company may also be subject to other non-U.S. anti-corruption or anti-bribery laws, such as the U.K. Bribery Act 2010.

Export controls. Economic and trade sanctions programs that are administered by OFAC prohibit or restrict transactions to or from, and dealings with specified countries, their governments, and in certain circumstances, with individuals and entities that are specially designated nationals of those countries, and other sanctioned persons, including narcotics traffickers and terrorists or terrorist organizations. Further, federal regulations impose authorization, reporting, and/or licensing requirements prior to the export of certain software that incorporates encryption technology. These requirements may apply to our Solution to the extent that our software with encryption functionality is implemented abroad or is hosted on servers in a foreign country to provide services to clients outside the United States. In addition, various countries also regulate the import of certain encryption technology, including through import permitting and licensing requirements, and have enacted laws that could limit our clients' ability to import our technology into those countries.

Corporate Information

Health Catalyst, Inc. (Health Catalyst) was incorporated under the laws of Delaware in September 2011. We were formerly known as HQC Holdings, Inc. In March 2017, we changed our name to Health Catalyst, Inc. Our principal executive offices are located at 10897 South River Front Parkway #300, South Jordan, Utah 84095, and our telephone number is (801) 708-6800. We completed our initial public offering of shares of our common stock, also referred to as our IPO, in July 2019, and our common stock is listed on Nasdaq under the symbol "HCAT." Our corporate website address is www.healthcatalyst.com. Information contained on or accessible through our website is not part of this Annual Report on Form 10-K.

Human Capital Management

At the center of the Flywheel is the engagement of our team members. Team member engagement is foundational to everything we do and is the #1 priority of our CEO and broader leadership team. When team members feel connected to our mission and are listened to, cared for, and respected at an extraordinary level, they produce outstanding work, which enables our clients to measurably improve. As clients realize improvements, their trust in Health Catalyst builds, their engagement in our shared work increases, and they choose to renew and expand their relationship with us, while also referring Health Catalyst to key decision-makers at other potential clients. Client renewal, expansion, and referral produce growing, scalable, and predictable financial performance.

Our key human capital management objectives include, among others: (i) attracting, developing, and retaining a diverse and talented workforce; (ii) providing opportunities for learning, development, career growth, and movement within Health Catalyst; (iii) evaluating compensation and benefits, and rewarding performance; (iv) investing in physical, emotional, and financial health of team members; (v) obtaining team member feedback; (vi) maintaining and enhancing our culture and mission; and (vii) communicating with our board of directors on a routine basis on key topics. We have implemented and continue to develop many programs designed to achieve these priorities, some of which are further described below.

As of December 31, 2023, we had more than 1,300 team members, almost all of whom are located in the United States. We have not experienced any work stoppages, and we consider our team member relations to be good. We encourage you to review the Environmental, Social and Governance scorecard found on our website at https://ir.healthcatalyst.com/esg/overview (ESG Website) for more detailed information regarding our human capital programs and initiatives. The information on our website is not incorporated by reference into this Annual Report on Form 10-K.

Team member engagement

We regularly engage with our team members to assess their job satisfaction, including conducting regular team member surveys and hosting monthly all team member meetings in which leadership answers questions from team members. We use information from these sources, among others, to improve our ability to attract, develop, and retain talented team members who will help advance our mission.

Compensation, benefits, and wellness

In addition to market-competitive base pay, short-term bonus incentives, and long-term equity incentives, we provide comprehensive team member benefits and a variety of other health and wellness resources. We are committed to fair compensation and opportunity in our workplace.

Pay equity

We are committed to ensuring our team members receive equal pay for equal work. We establish components and ranges of compensation based on market and benchmark data. Within this context, we strive to pay all employees equitably within a reasonable range, taking into consideration factors such as role; market data; internal equity; job location; relevant experience; and individual, business unit, and company performance, among others. We regularly review our compensation practices and analyze the equity of compensation decisions. We institute measures, such as communications and trainings, to recognize, interrupt, and prevent bias in hiring, performance management, and compensation decisions and we provide resources to further develop managers and leaders to help them make equitable decisions about pay.

Diversity and inclusion

We are committed to fostering a culture of inclusion and belonging, and to building a diverse workforce to drive innovation and collective growth, which we believe is critical to our success. We continue to formalize and invest in our diversity and inclusion initiatives as further described on the ESG website listed above. These diversity and inclusion efforts spearheaded by our Chief People Officer and our six affinity groups in partnership with hundreds of our team members focus on diversity and inclusion in our workforce, in our workplace and in healthcare. We continue to focus upon inclusive recruitment and hiring practices to source diverse talent and mitigate potential bias throughout the hiring process, including expanding our internship program to include remote workplace options, and attendance diversity conferences and job fairs. Our Shades affinity group for team members of color contributes to the marketing and design of our AI-driven Health Equity Assessment and Guidance Solution to overcome disparities in care in the healthcare ecosystem. Over the past year, we continued our diversity training for our team members, including through our Diversity Dialogue Series, which included outside speakers.

Growth and development

We invest significant resources to develop talent and actively foster a learning culture where team members are empowered to drive their personal and professional growth. We offer extensive onboarding and regular training programs to prepare our team members at all levels for career progression and individual development. We also offer annual continuing education reimbursement to allow team members to be continuous learners and seek new challenges.

Flexible work environment

We help our team members succeed by providing flexibility in where and how they work. For many years, we have enabled team members to have flexible work arrangements, including a large percentage of remote team members. We believe these arrangements can increase team member's ownership, satisfaction and productivity, as well as enable us to hire from a broader, more diverse pool of talent. Since the COVID-19 pandemic, we have allowed all team members to work remotely to protect their health, safety, and wellness, and we continue to support our workforce with the technology and infrastructure necessary to work from a remote location, including a work equipment and utilities reimbursement program to help our team members improve their dynamic workspaces.

Available Information

Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statement, and all amendments to these filings are available free of charge from our investor relations website (https://ir.healthcatalyst.com/financial-information/sec-filings) as soon as reasonably practicable following our filing with or furnishing to the Securities and Exchange Commission, or the SEC, of any of these reports. The SEC's website (https://www.sec.gov) contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

Our investors and others should note that we announce material information to the public about our company, products and services, and other matters related to our company through a variety of means, including our website (https://www.healthcatalyst.com/), our investor relations website (https://ir.healthcatalyst.com/), press releases, SEC filings, public conference calls, and social media, including our and our CEO's social media accounts, in order to achieve broad, non-exclusionary distribution of information to the public and to comply with our disclosure obligations under Regulation FD.

We encourage our investors and others to review the information we make public in these locations as such information could be deemed to be material information. Please note that this list may be updated from time to time. The contents of any website referred to in this Annual Report on Form 10-K are not intended to be incorporated into this Annual Report on Form 10-K or in any other report or document we file.

Item 1A. Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this Annual Report on Form 10-K, including the section of this report titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, our business, operating results and financial condition could be seriously harmed. This Annual Report on Form 10-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Related to Our Business and Industry

We operate in a highly competitive industry, and if we are not able to compete effectively, our business and results of operations will be harmed.

The market for healthcare solutions is intensely competitive. We compete across various segments within the healthcare market, including with respect to data analytics and technology platforms, healthcare consulting, care management and coordination, population health management, and health information exchange. Competition in our market involves rapidly changing technologies, evolving regulatory requirements and industry expectations, frequent new product introductions, and changes in client requirements. If we are unable to keep pace with the evolving needs of our clients and continue to develop and introduce new applications and services in a timely and efficient manner, demand for our Solution may be reduced and our business and results of operations will be adversely affected.

We face competition from industry-agnostic analytics companies, EHR companies, such as Epic Systems and Cerner, point solution vendors, and healthcare organizations that perform their own analytics. These competitors include large, well-financed, and technologically sophisticated entities. Some of our current large competitors, such as Optum Analytics and IBM, have greater name recognition, longer operating histories, significantly greater resources than we do, and/or more established distribution networks and relationships with healthcare providers. As a result, our current and potential competitors may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards, or client requirements. In addition, current and potential competitors have established, and may in the future establish, cooperative relationships with vendors of complementary products or services to increase the availability of their products or services to the marketplace. Current or future competitors may consolidate to improve the breadth of their products, directly competing with our Solution. Accordingly, new competitors may emerge that have greater market share, larger client bases, greater breadth and volume of data, more widely adopted proprietary technologies, broader offerings, greater marketing expertise, greater financial resources, and larger sales forces than we have, which could put us at a competitive disadvantage.

Further, in light of these advantages, even if our Solution is more effective than the product or service offerings of our competitors, current or potential clients might select competitive products and services in lieu of purchasing our Solution. We face competition from niche vendors, who offer stand-alone products and services, and from existing enterprise vendors, including those currently focused on software products, which have information systems in place with clients in our target markets. These existing enterprise vendors may now, or in the future, offer or promise products or services with less functionality than our Solution, but offer ease of integration with existing systems and that leverage existing vendor relationships. Increased competition is likely to result in pricing pressures, which could negatively impact our sales, profitability, or market share.

Our patient engagement, population health, and care coordination services face competition from a wide variety of market participants. For example, certain health systems have developed their own population health and care coordination systems. If we fail to distinguish our offerings from the other options available to healthcare providers, the demand for and market share of those offerings may decrease.

Changes in the healthcare industry could affect the demand for our Solution, cause our existing contracts to be terminated, and negatively impact the process of negotiating future contracts.

As the healthcare industry evolves, changes in our client and vendor bases may reduce the demand for our Solution, result in the termination of existing contracts or certain services provided under existing contracts, and make it more difficult to negotiate new contracts on terms that are acceptable to us. For example, the increasing market share of EHR companies in data analytic services at hospital systems may cause our existing clients to terminate contracts with us in order to engage EHR companies to provide these services. Similarly, client and vendor consolidation results in fewer, larger entities with increased bargaining power and the ability to demand terms that are unfavorable to us. If these trends continue, we cannot assure you that we will be able to continue to maintain or expand our client base, negotiate contracts with acceptable terms, or maintain our current pricing structure, and our revenue may decrease.

General reductions in expenditures by healthcare organizations, or reductions in such expenditures within market segments that we serve, could have similar impacts with regard to our Solution. Such reductions may result from, among other things, reduced governmental funding for healthcare; a decrease in the number of, or the market exclusivity available to, new drugs coming to market; or adverse changes in business or economic conditions affecting healthcare payors or providers, the pharmaceutical industry, or other healthcare companies that purchase our services (e.g., changes in the design of health plans). In addition, changes in government regulation of the healthcare industry could potentially negatively impact our existing and future contracts. Any of these changes could reduce the purchase of our Solution by such clients, reducing our revenue and possibly requiring us to materially revise our offerings. In addition, our clients' expectations regarding pending or potential industry developments may also affect their budgeting processes and spending plans with respect to our Solution.

Macroeconomic challenges (including high inflationary and/or high interest rate environments, or market volatility caused by bank failures and measures taken in response thereto) and any new public health crisis could harm our business, results of operations, and financial condition.

Recent macroeconomic challenges (including the high inflationary and/or high interest rate environments), and the tight labor market continue to adversely affect workforces, organizations, governments, clients, economies, and financial markets globally and have disrupted the normal operations of many businesses, including our business. These factors have and could further decrease healthcare industry spending, adversely affect demand for our Solution, cause one or more of our clients to file for bankruptcy protection or go out of business, cause one or more of our clients to fail to renew, terminate, or renegotiate their contracts, impact expected spending from new clients, negatively impact collections of accounts receivable, and harm our business, results of operations, and financial condition.

Further, the sales cycle for a new DOS Subscription Client, which we estimate to typically be approximately one year, could lengthen, as we started to experience in 2022, resulting in a potentially longer delay between increasing operating expenses and the generation of corresponding revenue, if any. We cannot predict with any certainty whether and to what degree the disruption caused by any new public health crisis, the high inflationary environment, rising interest rates, market volatility caused by bank failures and measures taken in response thereto, and reactions to any of the foregoing will continue and expect to face difficulty accurately predicting our internal financial forecasts. Further, it is not possible for us to predict the duration or magnitude of the adverse results of public health crises, and macroeconomic challenges (including the high inflationary and/or high interest rate environments), and their effects on our business, results of operations, or financial condition at this time. Further, market volatility as a result of future failures of financial institutions, similar to the failures of Silicon Valley Bank and Signature Bank, could lead to market-wide liquidity shortages, impair the ability of companies to access near-term working capital needs and create additional market and economic uncertainty. In the event of a failure of any of the financial institutions where we maintain our cash and cash equivalents, there can be no assurance that we would be able to access uninsured funds in a timely manner or at all. Any inability to access or delay in accessing these funds could adversely affect our business and financial position.

We may be unable to successfully execute on our growth initiatives, business strategies, or operating plans, as well as cost reduction and restructuring initiatives.

We are continually executing a number of growth initiatives, strategies, and operating plans designed to enhance our business, as well as some cost reduction and restructuring initiatives. We may not be able to successfully complete these growth initiatives, strategies, operating plans, and cost reduction and restructuring initiatives, and realize all of the benefits, including growth targets and cost savings, that we expect to achieve or it may be more costly to do so than we anticipate. A variety of factors could cause us not to realize some or all of the expected benefits. These factors include, among others, delays in the anticipated timing of activities related to such growth initiatives, strategies, operating plans, and cost reduction and restructuring initiatives, increased difficulty and cost in implementing these efforts, including difficulties in complying with new regulatory requirements and the incurrence of other unexpected costs associated with operating the business.

For example, on October 31, 2023, our board of directors authorized a reduction of our global workforce as part of a restructuring plan intended to optimize our cost structure and focus our investment of resources in key priority areas to align with strategic changes (2023 Restructuring Plan). The 2023 Restructuring Plan reduced our global workforce by approximately 10% during the fourth quarter of 2023, along with further reductions in our global workforce that occurred or are anticipated in the first quarter of 2024. We may incur additional expenses not currently contemplated due to events associated with the 2023 Restructuring, such as costs in connection with attrition beyond our intended reduction in force, the loss of institutional knowledge and expertise, other unforeseen difficulties, delays, or other impacts on other areas of our liabilities and obligations, in each case which could result in losses in future periods or which could otherwise prevent us from realizing, in full or in part, the anticipated benefits and savings from the 2023 Restructuring Plan.

Our continued implementation of the 2023 Restructuring Plan or any other programs may disrupt our operations and performance. As a result, we cannot assure you that we will realize these benefits. If, for any reason, the benefits we realize are less than our estimates or the implementation of these growth initiatives, strategies, operating plans, and cost reduction and restructuring initiatives adversely affect our operations or cost more or take longer to effectuate than we expect, or if our assumptions prove inaccurate, our business, financial condition, and results of operations may be materially adversely affected.

If we fail to provide effective professional services and high-quality client support, our business and reputation would suffer.

Our professional services and high-quality, ongoing client support are important to the successful marketing and sale of our products and services and for the renewal of existing client agreements. Providing these services and support requires that our professional services and support personnel have healthcare, technical, and other knowledge and expertise, making it difficult for us to hire qualified personnel and scale our professional services and support operations. The demand on our client support organization will increase as we expand our business and pursue new clients, and such increased support could require us to devote significant development services and support personnel, which could strain our team and infrastructure and reduce our profit margins.

If we do not help our clients quickly resolve any post-implementation issues and provide effective ongoing client support, our ability to sell additional products and services to existing and future clients could suffer and our reputation would be harmed.

Our sales cycles can be long and unpredictable, and our sales efforts require a considerable investment of time and expense. If our sales cycle lengthens or we invest substantial resources pursuing unsuccessful sales opportunities, our results of operations and growth would be harmed.

Our sales process entails planning discussions with prospective clients, analyzing their existing solutions, and identifying how these potential clients can use and benefit from our Solution. The sales cycle for a new DOS Subscription Client, from the time of prospect qualification to the completion of the first sale, we estimate to typically be approximately one year and in some cases has exceeded two years. We spend substantial time, effort, and money in our sales efforts without any assurance that our efforts will result in the sale of our Solution.

In addition, our sales cycle and timing of sales can vary substantially from client to client because of various factors, including the discretionary nature of potential clients' purchasing and budget decisions, the announcement or planned introduction of new analytics applications or services by us or our competitors, and the purchasing approval processes of potential clients. Further, the sales cycle of certain Solutions with a more limited operating history, such as TEMS, can be more difficult to predict and, at times, longer than our typical sales cycle. If our sales cycle lengthens, as we started to experience in 2022, or we invest substantial resources pursuing unsuccessful sales opportunities, our results of operations and growth would be harmed.

Our Solution may not operate properly, which could damage our reputation, give rise to claims against us, or divert application of our resources from other purposes, any of which could harm our business and results of operations.

Proprietary software development is time-consuming, expensive, and complex. Unforeseen difficulties can arise. We may encounter technical obstacles, and it is possible that we will discover additional problems that prevent our applications from operating properly. If our systems do not function reliably or fail to meet user or client expectations in terms of performance, clients could assert liability claims against us or attempt to cancel their contracts with us, and users of our software could choose to cease their use of our Solution. This could damage our reputation and impair our ability to attract or retain clients.

Information services as complex as those we offer have, in the past, contained, and may in the future develop or contain, undetected defects, vulnerabilities, or errors. We cannot be assured that material performance problems or defects in our software or software provided by our vendors will not arise in the future. Errors may result from sources beyond our control, including the receipt, entry, or interpretation of patient information; the interface of our software with legacy systems or vendor systems that we did not develop; or errors in data provided by third parties. Despite testing, defects or errors may arise in our existing or new software or service processes following introduction to the market.

Clients rely on our Solution to collect, manage, and report clinical, financial, and operational data, and to provide timely and accurate information regarding medical treatment and care delivery patterns. They may have a greater sensitivity to service errors and security vulnerabilities than clients of software products in general. Clinicians may also refer to our predictive models for care delivery prioritization, and to inform treatment protocols. Limitations of liability and disclaimers that purport to limit our liability for damages related to defects in our software or content which we may include in our subscription and services agreements may not be enforced by a court or other tribunal or otherwise effectively protect us from related claims.

In most cases, we maintain liability insurance coverage, including coverage for errors and omissions. However, it is possible that claims could exceed the amount of our applicable insurance coverage or that this coverage may not continue to be available on acceptable terms or in sufficient amounts.

In light of this, defects, vulnerabilities, and errors and any failure by us to identify and address them could result in loss of revenue or market share; liability to clients, clinicians, their patients, or others; failure to achieve market acceptance or expansion; diversion of development and management resources; delays in the introduction of new services; injury to our reputation; and increased service and maintenance costs.

Defects, vulnerabilities, or errors in our software and service processes might discourage existing or potential clients from purchasing services from us. Correction of defects, vulnerabilities, or errors could prove to be impossible or impractical. The costs incurred in correcting any defects, vulnerabilities, or errors or in responding to resulting claims or liability may be substantial and could adversely affect our results of operations.

If we are not able to maintain and enhance our reputation and brand recognition, our business and results of operations will be harmed.

We believe that maintaining and enhancing our reputation and brand recognition is critical to our relationships with existing clients and to our ability to attract new clients. The promotion of our brands may require us to make substantial investments and we anticipate that, as our market becomes increasingly competitive, these marketing initiatives may become increasingly difficult and expensive. Our marketing activities may not be successful or yield increased revenue, and to the extent that these activities yield increased revenue, the increased revenue may not offset the expenses we incur and our results of operations could be harmed.

In addition, any factor that diminishes our reputation or that of our management, including failing to meet the expectations of our clients, or any adverse publicity surrounding one of our investors or clients, could make it substantially more difficult for us to attract new clients. If we do not successfully maintain and enhance our reputation and brand recognition, our business may not grow and we could lose our relationships with clients, which would harm our business, results of operations, and financial condition.

If we do not continue to innovate and provide services that are useful to clients and users, we may not remain competitive, and our revenue and results of operations could suffer.

The market for healthcare in the United States is in the early stages of structural change and is rapidly evolving, including towards a more value-based care model. Our success depends on our ability to keep pace with technological developments, satisfy increasingly sophisticated client and user requirements, and sustain market acceptance. Our future financial performance will depend in part on growth in this market and on our ability to adapt to emerging demands of this market, including adapting to the ways our clients or users access and use our Solution. Although we have built several new software analytics applications in the last few years, we may not be able to sustain this rate of innovation and/or the new software analytics applications may not meet the evolving needs of our clients. Our competitors are constantly developing products and services that may become more efficient or appealing to our clients or users. As a result, we must continue to invest significant resources in research and development in order to enhance our existing services and applications, and introduce new high-quality services and applications that clients will want, while offering our Solution at competitive prices. If we are unable to predict user preferences or industry changes, or if we are unable to maintain and improve our Solution on a timely or cost-effective basis, we may lose clients and users. Our results of operations would also suffer if our innovations are not responsive to the needs of our clients, are not appropriately timed with market opportunity, or are not effectively brought to market, including as the result of delayed releases or releases that are ineffective or have errors or defects. As technology continues to develop, our competitors may be able to offer results that are, or that are perceived to be, substantially similar to, or better than, those generated by our Solution. This may force us to compete on additional service attributes and to expend significant resources in order to remain competitive.

Our business could be adversely affected if our clients are not satisfied with our Solution.

We depend on client satisfaction to succeed with respect to our Solution. Our sales organization is dependent on the quality of our offerings, our business reputation, and the strong recommendations from existing clients. If our Solution does not function reliably or fails to meet client expectations in terms of performance and availability, clients could assert claims against us, terminate their contracts with us or publish negative feedback. This could damage our reputation and impair our ability to attract or retain clients. Furthermore, we provide professional services to clients to support their use of our Solution and to achieve measurable clinical, financial, and operational improvements.

Any failure to maintain high-quality professional services, or a market perception that we do not maintain high-quality professional services, could harm our reputation, adversely affect our ability to sell our Solution to existing and prospective clients, and harm our business, results of operations, and financial condition.

If our existing clients do not continue or renew their contracts with us, renew at lower fee levels, or decline to purchase additional technology and services from us, it could have a material adverse effect on our business, financial condition, and results of operations.

We expect to derive a significant portion of our revenue from the renewal of existing client contracts and sales of additional technology and services to existing clients. As part of our growth strategy, for instance, we have recently focused on expanding our Solution among current clients, including Solutions with a more limited operating history such as TEMS. As a result, selling additional technology and services is critical to our future business, revenue growth, and results of operations. Factors that may affect our ability to sell additional technology and services include, but are not limited to, the following:

- the price, performance, and functionality of our Solution;
- the availability, price, performance, and functionality of competing solutions;
- our ability to develop and sell complementary technology and services;
- the stability, performance, and security of our hosting infrastructure and hosting services;
- our ability to continuously deliver measurable improvements;
- health systems' demand for professional services to augment their internal data analytics function;
- changes in healthcare laws, regulations, or trends;
- the business environment of our clients and, in particular, our clients' financial performance and headcount reductions by our clients; and
- the impact of macroeconomic challenges, including the impact of the high inflationary and/or high interest rate environments, market volatility caused by bank failures and measures taken in response thereto, and the impact of any natural disasters or public health emergencies, such as the COVID-19 pandemic, upon our clients.

We generally enter into subscription contracts with our clients for access to our Solution. Many of these contracts have initial terms of one to three years. Most of our clients have no obligation to renew their subscriptions for our Solution after the initial term expires. Although we have long-term contracts with many clients, these contracts may be terminated by the client (generally, subject to providing us with prior notice) before their term expires for convenience or for certain specified reasons, including changes in the regulatory landscape, loss of certain third-party licenses, or breach of our contractual obligations, including poor performance by us in areas that include repeated failures by us to provide specified levels of service over certain performance periods. We expect that future contracts will contain similar provisions. If any of our contracts with our clients are terminated, we may not be able to recover all fees due under the terminated contract and we will lose future revenue from that client, which may adversely affect our results of operations.

In addition, our clients may negotiate terms less advantageous to us upon renewal, which may reduce our revenue from these clients. Our future results of operations also depend, in part, on our ability to upgrade and enhance our Solution. If our clients fail to renew their contracts, renew their contracts upon less favorable terms, or at lower fee levels or fail to purchase new technology and services from us, our revenue may decline or our future revenue growth may be constrained.

Our results of operations have in the past fluctuated and may continue to fluctuate significantly, and if we fail to meet the expectations of securities analysts or investors, our stock price and the value of an investment in our common stock could decline substantially.

Our results of operations are likely to fluctuate, and if we fail to meet or exceed the expectations of securities analysts or investors, the trading price of our common stock could decline. Moreover, our stock price may be based on expectations of our future performance that may be unrealistic or that may not be met.

Some of the factors that could cause our financial performance and results of operations to fluctuate from quarter to quarter include:

- the extent to which our Solution achieves or maintains market acceptance;
- our ability to introduce new applications, updates, and enhancements to our existing applications on a timely basis;
- new competitors and the introduction of enhanced products and services from new or existing competitors;
- the length of our contracting and implementation cycles and our fulfillment periods for our Solution;
- the mix of revenue generated from professional services as compared to technology subscriptions;
- clients reducing or eliminating their spend with us in response to macroeconomic factors or otherwise;
- the financial condition of our current and future clients;
- changes in client budgets and procurement policies;
- changes in regulations or marketing strategies;
- the impact of macroeconomic challenges, including the high inflationary and/or high interest rate environments, market volatility caused by bank failures and measures taken in response thereto, and public health crises, such as the COVID-19 pandemic, on our clients, partners, and business;
- the amount and timing of our investment in research and development activities;
- the amount and timing of our investment in sales and marketing activities;
- technical difficulties or interruptions to our Solution, including related to updates to our technology or technology migrations;
- our ability to hire and retain qualified personnel;
- changes in the regulatory environment related to healthcare;
- regulatory compliance costs;
- the timing, size, and integration success of potential future acquisitions;
- unforeseen legal expenses, including litigation and settlement costs; and
- buying patterns of our clients and the related seasonality impacts on our business.

Many of these factors are not within our control, and the occurrence of one or more of them might cause our results of operations to vary widely.

For example, we have experienced, and expect that we will continue to experience, seasonality in the number of new clients that subscribe to our Solution; specifically, new clients (DOS Subscription Clients in particular) tend to subscribe to our Solution at higher rates in the second and fourth quarters of the year. Seasonality in our business may cause period-to-period fluctuations in certain of our operating results and financial metrics, and thus limit our ability to predict our future results. As such, we believe that quarter-to-quarter comparisons of our revenue and results of operations may not be meaningful and should not be relied upon as an indication of future performance.

A significant portion of our operating expense is relatively fixed in nature in the short term, and planned expenditures are based in part on expectations regarding future revenue and profitability. Accordingly, unexpected revenue shortfalls, lower-than-expected revenue increases as a result of planned expenditures, and longer-than-expected impact on profitability and margins as a result of planned expenditures may decrease our gross margins and profitability and could cause significant changes in our results of operations from quarter to quarter. In addition, our future quarterly results of operations may fluctuate and may not meet the expectations of securities analysts or investors. If this occurs, the trading price of our common stock could fall substantially, either suddenly or over time.

Our pricing may change over time and our ability to efficiently price our Solution will affect our results of operations and our ability to attract or retain clients.

In the past, we have adjusted our prices as a result of offering new applications and services and client demand. For example, in the fourth quarter of 2018, we began to introduce new pricing for our Solution to new clients and, in 2015, we introduced our subscription model, in each case, the full effect of which we expected would be realized in future years. While we determine our prices based on prior experience, feedback from clients, and other factors and information, our assessments may not be accurate and we could be underpricing or overpricing our Solution, which may require us to continue to adjust our pricing model. Furthermore, as our applications and services change, then we may need to, or choose to, revise our pricing as our prior experience in those areas will be limited. Such changes to our pricing model or our inability to efficiently price our Solution could harm our business, results of operations, and financial condition and impact our ability to predict our future performance.

If our Solution fails to provide accurate and timely information, or if our content or any other element of our Solution is associated with faulty clinical decisions or treatment, we could have liability to clients, clinicians, patients, or others, which could adversely affect our results of operations.

Our Solution may be used by clients to support clinical decision-making by providers and interpret information about patient medical histories, treatment plans, medical conditions, and the use of particular medications. If our Solution is associated with faulty clinical decisions or treatment, then clients or their patients could assert claims against us that could result in substantial costs to us, harm our reputation in the industry, and cause demand for our Solution to decline.

In addition, our analytics services may be used by our clients to inform clinical decision-making, provide access to patient medical histories, and assist in creating patient treatment plans. Therefore, if data analyses are presented incorrectly in our Solution or they are incomplete, or if we make mistakes in the capture or input of these data, adverse consequences, including death, may occur and give rise to product liability, medical malpractice liability, and other claims against us by clients, clinicians, patients, or others. We often have little control over data accuracy, yet a court or government agency may take the position that our storage and display of health information exposes us to personal injury liability or other liability for wrongful delivery or handling of healthcare services or erroneous health information.

Our clinical guidelines, algorithms, and protocols may be viewed as providing healthcare professionals with guidance on care management, care coordination, or treatment decisions. If our content, or content we obtain from third parties, contains inaccuracies, or we introduce inaccuracies in the process of implementing third-party content, it is possible that patients, clinicians, consumers, the providers of the third-party content, or others may sue us if they are harmed as a result of such inaccuracies. We cannot assure you that our software development, editorial, and other quality control procedures will be sufficient to ensure that there are no errors or omissions in any particular content or our software or algorithms.

The assertion of such claims and ensuing litigation, regardless of its outcome, could result in substantial cost to us, divert management's attention from operations, damage our reputation, and decrease market acceptance of our Solution. We attempt to limit by contract our liability for damages, have our clients assume responsibility for clinical treatment, diagnoses, medical oversight, and dosing decisions, and require that our clients assume responsibility for medical care and approve key algorithms, clinical guidelines, clinical protocols, content, and data. Despite these precautions, the allocations of responsibility and limitations of liability set forth in our contracts may not be enforceable, be binding upon patients, or otherwise protect us from liability for damages. Furthermore, general liability and errors and omissions insurance coverage and medical malpractice liability coverage may not continue to be available on acceptable terms or may not be available in sufficient amounts to cover one or more large claims against us. In addition, the insurer might disclaim coverage as to any future claim. One or more large claims could exceed our available insurance coverage. If any of these events occur, they could materially adversely affect our business, financial condition, or results of operations.

Although we carry insurance covering medical malpractice claims in amounts that we believe are appropriate in light of the risks attendant to our business, successful medical liability claims could result in substantial damage awards that exceed the limits of our insurance coverage. In addition, professional liability insurance is expensive and insurance premiums may increase significantly in the future, particularly as we expand our Solution. As a result, adequate professional liability insurance may not be available to our providers or to us in the future at acceptable costs or at all.

Any claims made against us that are not fully covered by insurance could be costly to defend against, result in substantial damage awards against us, and divert the attention of our management and our providers from our operations, which could have a material adverse effect on our business, financial condition, and results of operations. In addition, any claims may adversely affect our business or reputation.

Future litigation against us could be costly and time-consuming to defend and could result in additional liabilities.

We may from time to time be subject to legal proceedings and claims that arise in the ordinary course of business, such as claims brought by our clients or vendors in connection with commercial disputes, litigation related to intellectual property, and employment claims made by our current or former employees. Claims may also be asserted by or on behalf of a variety of other parties, including government agencies, patients or vendors of our clients, or stockholders. Any litigation involving us may result in substantial costs, operationally restrict our business, and may divert management's attention and resources, which may seriously harm our business, overall financial condition, and results of operations.

Insurance may not cover existing or future claims, be sufficient to fully compensate us for one or more of such claims, or continue to be available on terms acceptable to us. A claim brought against us that is uninsured or underinsured could result in unanticipated costs, thereby reducing our results of operations and resulting in a reduction in the trading price of our stock.

We derive a significant portion of our revenue from our largest clients. The loss, termination, or renegotiation of any contract could negatively impact our results.

Historically, we have relied on a limited number of clients for a significant portion of our total revenue and accounts receivable. Our three largest clients during 2023 comprised 5.5%, 3.6%, and 3.5% of our revenue, or 12.6% in the aggregate. Our three largest clients during 2022 comprised 4.1%, 3.7%, and 3.4% of our revenue, or 11.2% in the aggregate. The sudden loss of any of our largest clients or the renegotiation of any of our largest client contracts could adversely affect our results of operations. In the ordinary course of business, we engage in active discussions and renegotiations with our clients in respect of our Solution and the terms of our client agreements, including our fees.

As our clients' businesses respond to market dynamics and financial pressures, and as our clients make strategic business decisions in respect of the lines of business they pursue and programs in which they participate, we expect that certain of our clients will, from time to time, seek to restructure their agreements with us. In the ordinary course, we renegotiate the terms of our agreements with our clients in connection with renewals or extensions of these agreements. These discussions and future discussions could result in reductions to the fees and changes to the scope of services contemplated by our original client contracts and consequently could negatively impact our revenue, business, and prospects.

Because we rely on a limited number of clients for a significant portion of our revenue, we depend on the creditworthiness of these clients. Our clients are subject to a number of risks including reductions in payment rates from governmental payors, higher than expected healthcare costs, and lack of predictability of financial results when entering new lines of business. If the financial condition of our clients declines, our credit risk could increase. Should one or more of our significant clients declare bankruptcy, be declared insolvent, or otherwise be restricted by state or federal laws or regulation from continuing in some or all of their operations, this could adversely affect our ongoing revenue, the collectability of our accounts receivable, our bad debt reserves and net income.

Because we generally recognize technology and professional services revenue ratably over the term of the contract for our services, a significant downturn in our business may not be reflected immediately in our results of operations, which increases the difficulty of evaluating our future financial performance.

We generally recognize technology and professional services revenue ratably over the term of a contract. As a result, a substantial portion of our revenue is generated from contracts entered into during prior periods. Consequently, a decline in new contracts in any quarter may not affect our results of operations in that quarter but could reduce our revenue in future quarters. Additionally, the timing of renewals or non-renewals of a contract during any quarter may only affect our financial performance in future quarters. For example, the non-renewal of a subscription agreement late in a quarter will have minimal impact on revenue for that quarter but will reduce our revenue in future quarters.

Accordingly, the effect of significant declines in sales may not be reflected in our short-term results of operations, which would make these reported results less indicative of our future financial results. By contrast, a non-renewal occurring early in a quarter may have a significant negative impact on revenue for that quarter and we may not be able to offset a decline in revenue due to non-renewal with revenue from new contracts entered into in the same quarter. In addition, we may be unable to quickly adjust our costs in response to reduced revenue.

If we are unable to implement and maintain effective internal controls over financial reporting, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could be adversely affected.

As a public company, we are required to maintain internal controls over financial reporting and to report any material weaknesses in such internal controls. Section 404 of the Sarbanes-Oxley Act requires that we evaluate and determine the effectiveness of our internal controls over financial reporting. We are also required to provide an annual management report on the effectiveness of our internal control over financial reporting. Many of the internal controls we have implemented pursuant to the Sarbanes-Oxley Act are process controls with respect to which a material weakness may be found whether or not any error has been identified in our reported financial statements. This may be confusing to investors and result in damage to our reputation, which may harm our business.

Additionally, the proper design and assessment of internal controls over financial reporting are subject to varying interpretations, and, as a result, application in practice may evolve over time as new guidance is provided by regulatory and governing bodies and as common practices evolve. This could result in continuing uncertainty regarding the proper design and assessment of internal controls over financial reporting and higher costs necessitated by ongoing revisions to internal controls. We must continue to monitor and assess our internal control over financial reporting. If in the future we have any material weaknesses, we may not detect errors on a timely basis and our financial statements may be materially misstated. Additionally, if we are unable to comply with the requirements of Section 404 of the Sarbanes-Oxley Act, are unable to assert that our internal controls over financial reporting are effective, identify material weaknesses in our internal controls over financial reporting, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal controls over financial reporting, investors may lose confidence in the accuracy and completeness of our financial reports, and the market price of our common stock could be adversely affected, and we could become subject to investigations by the stock exchange on which our securities are listed, the SEC, or other regulatory authorities, which could require additional financial and management resources.

We may acquire other companies or technologies, which could divert our management's attention, result in dilution to our stockholders, and otherwise disrupt our operations and we may have difficulty integrating any such acquisitions successfully or realizing the anticipated benefits therefrom, any of which could have an adverse effect on our business, financial condition, and results of operations.

We may seek to acquire or invest in businesses, applications, services, or technologies that we believe could complement or expand our Solution, enhance our technical capabilities, or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various expenses in identifying, investigating, and pursuing suitable acquisitions, whether or not they are consummated. We have in the past and may in the future have difficulty integrating acquired businesses. During 2020 we acquired Able Health, Healthfinch, and Vitalware, during 2021 we acquired Twistle, during 2022 we acquired ARMUS and KPI Ninja, and during 2023 we acquired ERS. We may have difficulty cross-selling our Solution to acquired clients, and we may have difficulty integrating, or incur integration-related costs associated with, newly acquired team members.

We have limited experience in acquiring other businesses. If we acquire additional businesses, we may not be able to integrate the acquired personnel, operations, and technologies successfully, or effectively manage the combined business following the acquisition. We also may not achieve the anticipated benefits from the acquired business due to a number of factors, including, but not limited to:

- inability to integrate or benefit from acquired technologies or services in a profitable manner;
- unanticipated costs or liabilities associated with the acquisition;
- difficulty integrating the accounting systems, operations, and personnel of the acquired business;
- difficulties and additional expenses associated with supporting legacy products and hosting infrastructure of the acquired business;

- difficulty converting the clients of the acquired business onto our DOS platform and contract terms, including disparities in the revenue, licensing, support, or professional services model of the acquired business;
- diversion of management's attention from other business concerns;
- adverse effects on our existing business relationships with business partners and clients as a result of the acquisition;
- the potential loss of key employees;
- use of resources that are needed in other parts of our business; and
- use of substantial portions of our available cash to consummate the acquisition.

In addition, a significant portion of the purchase price of companies we acquire may be allocated to acquired goodwill and other intangible assets, which must be assessed for impairment at least annually. If our acquisitions do not yield expected returns or fair value estimates deteriorate, we may be required to take charges to our results of operations based on this impairment assessment process, which could adversely affect our results of operations. Acquisitions could also result in dilutive issuances of equity securities or the incurrence of debt, which could adversely affect our results of operations. In addition, if an acquired business fails to meet our expectations, our business, financial condition, and results of operations may suffer.

Also, the anticipated benefit of any acquisition may not materialize or may be prohibited by contractual obligations we may enter into in the future with lenders or other third parties. Additionally, future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities, or amortization expenses or write-offs of goodwill, any of which could harm our financial condition. We cannot predict the number, timing, or size of future acquisitions, or the effect that any such transactions might have on our results of operations.

Because competition for our target employees is intense, we may not be able to attract and retain the highly skilled employees we need to support our continued growth.

To continue to execute on our growth and operating plan, we must attract and retain highly qualified personnel, and we may modify our compensation program and practices for our team members. Competition for such personnel is intense, especially for senior sales executives and software engineers with high levels of experience in designing and developing applications and consulting and analytics services. We may not be successful in attracting and retaining qualified personnel, including due to changes to our compensation program or practices. We have from time to time in the past experienced, and we expect to continue to experience in the future, difficulty in hiring and retaining highly skilled employees with appropriate qualifications. For example, the 2023 Restructuring Plan and other restructurings may result in attrition beyond our intended reduction in force or may adversely impact our ability to recruit and hire qualified personnel in the future. In addition, our search for replacements for departed employees may cause uncertainty regarding the future of our business, impact employee hiring and retention, and adversely impact our revenue, results of operations, and financial condition. Many of the companies with which we compete for experienced personnel have greater resources than we have. In addition, in making employment decisions, particularly in the Internet and high-technology industries, job candidates often consider the value of the equity awards they may receive in connection with their employment. Volatility in the price of our stock or failure to obtain stockholder approval for increases in the number of shares available for grant under our equity plans may, therefore, adversely affect our ability to attract or retain key employees. If we fail to attract new personnel or fail to retain and motivate our current personnel, our business and future growth prospects could be severely harmed.

We depend on our senior management team, and the loss of one or more of our executive officers or key employees or an inability to attract and retain highly skilled employees could adversely affect our business.

Our success depends largely upon the continued services of our key executive officers and recruitment of additional highly skilled employees. From time to time, there may be changes in our senior management team resulting from the hiring or departure of executives, which could disrupt our business. Several of our senior leaders are active members of the Church of Jesus Christ of Latter-Day Saints. There is a risk that in the future, one or more of these individuals could receive a call to serve in a full-time capacity for the church, which has already occurred, including with our former Chief Operating Officer, Paul Horstmeier, stepping down from his role effective March 31, 2023. Hiring executives with needed skills or the replacement of one or more of our executive officers or other key employees would likely involve significant time and costs and may significantly delay or prevent the achievement of our business objectives. In addition, competition for qualified management in our industry is intense. Many of the companies with which we compete for management personnel have greater financial and other resources than we do. We have not entered into term-based employment agreements with our executive officers.

All of our employees are "at-will" employees, and their employment can be terminated by us or them at any time, for any reason. The departure of key personnel could adversely affect the conduct of our business. In such event, we would be required to hire other personnel to manage and operate our business, and there can be no assurance that we would be able to employ a suitable replacement for the departing individual, or that a replacement could be hired on terms that are favorable to us. In addition, volatility or lack of performance in our stock price may affect our ability to attract replacements should key personnel depart. If we are not able to retain any of our key management personnel, our business could be harmed.

Our corporate culture has contributed to our success, and if we cannot maintain this culture as we grow, we could lose the innovation, creativity, and teamwork fostered by our culture, which could harm our business.

We believe that our corporate culture has been an important contributor to our success, which we believe fosters innovation, teamwork, and passion for providing high levels of client satisfaction. As we continue to grow, we must effectively integrate, develop, and motivate a growing number of new employees. As a result, we may find it difficult to maintain our corporate culture, which could limit our ability to innovate and operate effectively. Any failure to preserve our culture could also negatively affect our ability to retain and recruit personnel, maintain our performance, or execute on our business strategy.

If we fail to effectively manage our growth and organizational change, our business and results of operations could be harmed.

We have experienced, and may continue to experience, rapid growth and organizational change, which has placed, and may continue to place, significant demands on our management, operational, and financial resources. In addition, if we fail to successfully integrate new team members or fail to effectively manage organizational changes, it could harm our culture, business, financial condition and results of operations. For example, the expense reduction measures taken in connection with the 2023 Restructuring Plan may result in unintended consequences and costs, including costs associated with attrition beyond our intended reduction in force, a decrease in morale among team members following the completion of the 2023 Restructuring Plan, adverse impacts in our ability to recruit and hire qualified personnel in the future, and the loss of institutional knowledge and expertise, which could result in losses in future periods or otherwise prevent us from realizing, in full or in part, the anticipated benefits and savings from the 2023 Restructuring Plan. In addition, we must continue to maintain, and may need to enhance, our information technology infrastructure and financial and accounting systems and controls, as well as manage expanded operations in geographically distributed locations, which may include offshore and near shore, which will place additional demands on our resources and operations. We also must attract, train, and retain a significant number of qualified sales and marketing personnel, professional services personnel, software engineers, technical personnel, service offering personnel, and management personnel. At times, this will require us to invest in and commit significant financial, operational, and management resources to grow and change in these areas without undermining the corporate culture that has been critical to our growth so far. If we do not achieve the benefits anticipated from these investments or organizational changes, or if the realization of these benefits is delayed, our results of operations may be adversely affected. If we fail to provide effective client training on our Solution and high-quality client support, our business and reputation could suffer.

Failure to effectively manage our growth or organizational changes could lead us to over-invest or under-invest in technology and operations; result in weaknesses in our infrastructure, systems, or controls; give rise to operational mistakes, losses, or loss of productivity or business opportunities; reduce client or user satisfaction; limit our ability to respond to competitive pressures; and result in loss of team members and reduced productivity of remaining team members. Our growth or organizational changes could require significant capital expenditures and may divert financial resources and management attention from other projects, such as the development of new or enhanced services or the acquisition of suitable businesses or technologies. If our management is unable to effectively manage our growth or organizational changes, our expenses may increase more than expected, cost savings may not be realized, our revenue could decline or may grow more slowly than expected, and we may be unable to implement our business strategy, and may adversely affect our business, financial condition and results of operations.

We may not grow at the rates we historically have achieved or at all, even if our key metrics may indicate growth.

We have experienced periods of significant growth, including in the last five years. At times, our growth has moderated. Future revenue may not grow at the same rates experienced during times of significant growth or may decline. Further, larger revenue opportunities that include portions of our Solution with less operating history could cause our growth to become less predictable and/or choppier relative to prior periods. Our future growth will depend, in part, on our ability to grow our revenue from existing clients, to complete sales to potential future clients, to expand our client and member bases, to prevent churn of existing clients, and to develop new solutions. Our future growth may also be driven by expansion into adjacent markets and/or international expansion. We can provide no assurances that we will be successful in executing on these growth strategies or that we will continue to grow our revenue or to generate net income. Our historical results may not be indicative of future performance.

Our ability to execute on our existing sales pipeline, create additional sales pipelines, and expand our client base depends on, among other things, the attractiveness of our Solution relative to those offered by our competitors, our ability to demonstrate the value of our existing and future services, and our ability to attract and retain a sufficient number of qualified sales and marketing leadership and support personnel. In addition, our existing clients may be slower to adopt our Solution than we currently anticipate, which could adversely affect our results of operations and growth prospects.

Our estimates of market opportunity and forecasts of market growth may prove to be inaccurate, and even if the markets in which we compete achieve the forecasted growth, our business may not grow at similar rates, or at all.

Our market opportunity estimates and growth forecasts are subject to significant uncertainty and are based on assumptions and estimates which may not prove to be accurate. The estimates and forecasts relating to the size and expected growth of our target market may prove to be inaccurate. Even if the markets in which we compete meet the size estimates and growth forecasts, our business may not grow at similar rates, or at all. Our growth is subject to many factors, including our success in implementing our business strategy, which is subject to many risks and uncertainties.

Risks Related to Data and Intellectual Property

Failure by our clients to obtain proper permissions and waivers may result in claims against us or may limit or prevent our use of data, which could harm our business.

We require our clients to provide necessary notices and to obtain necessary permissions and waivers for use and disclosure of the information that we receive, and we require contractual assurances from them that they have done so and will do so. If they do not obtain necessary permissions and waivers, then our use and disclosure of information that we receive from them or on their behalf may be restricted or prohibited by state, federal, or international privacy or data protection laws, or other related privacy and data protection laws. This could impair our functions, processes, and databases that reflect, contain, or are based upon such data and may prevent the use of such data, including our ability to provide such data to third parties that are incorporated into our service offerings.

Furthermore, this may cause us to breach obligations to third parties to whom we may provide such data, such as third-party service or technology providers that are incorporated into our service offerings. In addition, this could interfere with or prevent data sourcing, data analyses, or limit other data-driven activities that benefit us. Moreover, we may be subject to claims, civil and/or criminal liability or government or state attorneys general investigations for use or disclosure of information by reason of lack of valid notice, permission, or waiver. These claims, liabilities or government or state attorneys general investigations could subject us to unexpected costs and adversely affect our financial condition and results of operations.

Our business and operations may suffer in the event of information technology system failures, cyberattacks, or deficiencies in our cybersecurity.

Our Solution involves the storage and transmission of our clients' proprietary information, including personal or identifying information regarding patients and their protected health information (PHI). Despite the implementation of security measures, our information technology systems and those of our clients, contractors, consultants, and collaborators are vulnerable to attack, damage and interruption from cyberattacks, "phishing" attacks, computer viruses and malware (e.g., ransomware), natural disasters, terrorism, war, telecommunication and electrical failures, employee theft or misuse, human error, fraud, denial or degradation of service attacks, sophisticated nation-state and nation-state-supported actors or unauthorized access or use by persons inside our organization, or persons with access to systems inside our organization. Attacks upon information technology systems are increasing in their frequency, levels of persistence, sophistication, and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives and expertise.

We may also face increased cybersecurity risks due to our reliance on internet technology and the number of our employees who are working remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. Further, political and international uncertainty, competition and disputes, including the war involving Russia and Ukraine, could create tension that results in cyber-attacks or cybersecurity incidents that could either directly or indirectly impact our operations. Because the techniques used to obtain unauthorized access or sabotage systems change frequently and generally are not identified until they are launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. We may also experience security breaches that may remain undetected for an extended period.

Moreover, the detection, prevention, and remediation of known or unknown security vulnerabilities, including those arising from third-party hardware or software, may result in additional direct or indirect costs and management time. Even if identified, we may be unable to adequately investigate or remediate incidents or breaches due to attackers increasingly using tools and techniques that are designed to circumvent controls, to avoid detection, and to remove or obfuscate forensic evidence.

As a result, unauthorized access or security breaches as a result of third-party action, employee error, malfeasance, or otherwise could result in the loss or inappropriate use of information, litigation, indemnity obligations, damage to our reputation, and other liability such as government or state Attorney General investigations.

We and certain of our service providers are from time to time subject to cyberattacks and security incidents. While we do not believe that we have experienced any significant system failure, accident, or security breach to date, if such an event were to occur and cause interruptions in our operations, it could adversely affect our ability to attract new clients, cause existing clients to elect to not renew their subscriptions, result in reputational damage, or subject us to third-party lawsuits, regulatory fines, mandatory disclosures, or other action or liability, which could adversely affect our results of operations.

Our general liability insurance may not be adequate to cover all potential claims to which we are exposed and may not be adequate to indemnify us for liability that may be imposed or the losses associated with such events, and in any case, such insurance may not cover all of the specific costs, expenses, and losses we could incur in responding to and remediating a security breach. A security breach of another significant provider of cloud-based solutions may also negatively impact the demand for our Solution.

Our Solution is dependent on our ability to source data from third parties, and such third parties could take steps to block our access to data, or increase fees or impose fees for such access, which could impair our ability to provide our Solution, limit the effectiveness of our Solution, or adversely affect our financial condition and results of operations.

Our data platform requires us to source data from multiple clinical, financial, and operational data sources, which sources are also typically third-party vendors of our clients. The functioning of our analytics applications and our ability to perform analytics services is predicated on our ability to establish interfaces that download the relevant data from these source systems on a repeated basis and in a reliable manner. We may encounter vendors that engage in information blocking practices that may inhibit our ability to access the relevant data on behalf of clients or impose new or additional costs. In 2020, the U.S. Department of Health and Human Services' ONC and the Centers for Medicare and Medicaid Services promulgated final rules to support access, exchange, and use of electronic health information (EHI), referred to as the Final Rule. The Final Rule is intended to clarify provisions of the 21st Century Cures Act regarding interoperability and information blocking, and, subject to the interpretations of the Final Rule, and exceptions to what constitutes information blocking, may create significant new requirements for healthcare industry participants. The Final Rule requires certain electronic health record technology to incorporate standardized application programming interfaces to allow individuals to securely and easily access structured EHI using smartphone applications, provides patients with certain rights to electronic access to their EHI (structured and/or unstructured) at no cost and implements the information blocking provisions of the 21st Century Cures Act, subject to eight exceptions that will not be considered information blocking as long as specific conditions are met. In April 2023, the ONC issued a notice of proposed rulemaking that would modify certain components of the Final Rule, including modifying and expanding certain exceptions to the information blocking regulations, which are intended to support information sharing. The impact of the Final Rule on our business is unclear at this time, due to, among other things, uncertainty regarding the interpretation of safe harbors and exceptions to the Final Rule by industry participants and regulators.

The Final Rule focuses on health plans, payors, and healthcare providers and proposes measures to enable patients to move from health plan to health plan, provider to provider, and have both their clinical and administrative information travel with them. It is unclear whether the Final Rule may benefit us in that certain EHR vendors will no longer be permitted to interfere with our attempts at integration, but the rules may also make it easier for other similar companies to enter the market, creating increased competition, and reducing our market share. It is unclear at this time what the costs of compliance with the proposed rules, if adopted, would be, and what additional risks there may be to our business. If we face limitations on the development of data interfaces and other information blocking practices, including the imposition of increased fees, our data access and ability to download relevant data may be limited, which could adversely affect our ability to provide our Solution as effectively as possible. Any steps we take to enforce the anti-information blocking provisions of the 21st Century Cures Act could be costly, could distract management attention from the business, and could have uncertain results.

We rely on third-party providers, including Microsoft Azure, for computing infrastructure, network connectivity, and other technology-related services needed to deliver our Solution. Any disruption in the services provided by such third-party providers could adversely affect our business and subject us to liability.

Our Solution is generally hosted from and use computing infrastructure provided by third parties, including Microsoft Azure and other computing infrastructure service providers. We have migrated and expect to continue to migrate a significant portion of our DOS and analytics application computing infrastructure needs to Microsoft Azure. We have made and expect to continue to make substantial investments in transitioning DOS clients from our own managed data center to Microsoft Azure and the migration of clients to the next iteration of our DOS platform. We anticipate that this transition will increase the cost of hosting our technology and negatively impact our technology gross margin.

Such migrations are risky and may cause disruptions to our Solution, service outages, downtime, or other problems and may increase our costs. Despite precautions taken during such transitions, any unsuccessful transition of technology may impair clients' use of our technology which may cause greater costs or downtime and which may lead to, among other things, client dissatisfaction and non-renewals.

Our computing infrastructure service providers have no obligation to renew their agreements with us on commercially reasonable terms or at all. If we are unable to renew these agreements on commercially reasonable terms, or if one of our computing infrastructure service providers is acquired, we may be required to transition to a new provider and we may incur significant costs and possible service interruption in connection with doing so. Problems faced by our computing infrastructure service providers, including those operated by Microsoft, could adversely affect the experience of our clients. Microsoft Azure and other infrastructure vendors have had and may in the future experience significant service outages. Additionally, if our computing infrastructure service providers are unable to keep up with our growing needs for capacity, this could have an adverse effect on our business. For example, a rapid expansion of our business could affect our service levels or cause our third-party hosted systems to fail. Our agreements with third-party computing infrastructure service providers may not entitle us to service level credits that correspond with those we offer to our clients.

Any changes in third-party service levels at our computing infrastructure service providers, or any related disruptions or performance problems with our Solution, could adversely affect our reputation and may damage our clients' data, information and/or stored files, result in lengthy interruptions in our services, or result in potential losses of client data. Interruptions in our services might reduce our revenue, cause us to issue refunds to clients for prepaid and unused subscriptions, subject us to service level credit claims and potential liability, allow our clients to terminate their contracts with us, or adversely affect our renewal rates.

We rely on Internet infrastructure, bandwidth providers, data center providers, other third parties, and our own systems for providing our Solution to our users, and any failure or interruption in the services provided by these third parties or our own systems could expose us to litigation, potentially require us to issue credits to our clients, and negatively impact our relationships with users or clients, adversely affecting our brand and our business.

In addition to the services we provide from our offices, we serve our clients primarily from third-party data-hosting facilities. These facilities are vulnerable to damage or interruption from earthquakes, floods, fires, power loss, telecommunications failures, and similar events. They are also subject to break-ins, sabotage, intentional acts of vandalism, and similar misconduct.

Their systems and servers could also be subject to hacking, spamming, ransomware, computer viruses or other malicious software, denial of service attacks, service disruptions, including the inability to process certain transactions, phishing attacks, and unauthorized access attempts, including third parties gaining access to users' accounts using stolen or inferred credentials or other means, and may use such access to prevent use of users' accounts.

Despite precautions taken at these facilities, the occurrence of a natural disaster or an act of terrorism, a decision to close the facilities without adequate notice, or other unanticipated problems at two or more of the facilities could result in lengthy interruptions in our services. Even with our disaster recovery arrangements, our Solution could be interrupted.

Our ability to deliver our Internet- and telecommunications-based services is dependent on the development and maintenance of the infrastructure of the Internet and other telecommunications services by third parties. This includes maintenance of a reliable network backbone with the necessary speed, data capacity, and security for providing reliable Internet access and services and reliable mobile device, telephone, facsimile, and pager systems, all at a predictable and reasonable cost. We have experienced and expect that we will experience interruptions and delays in services and availability of our Solution from time to time.

We rely on internal systems as well as third-party vendors, including data center, bandwidth, and telecommunications equipment or service providers, to provide our Solution. We do not maintain redundant systems or facilities for portions of our Solution. In the event of a catastrophic event with respect to one or more of these systems or facilities, we may experience an extended period of system unavailability, which could negatively impact our relationship with users or clients. To operate without interruption, both we and our service providers must guard against:

- damage from fire, power loss, and other natural disasters;
- communications failures;
- software and hardware errors, failures, and crashes;

- security breaches, computer viruses, ransomware, and similar disruptive problems; and
- other potential interruptions.

Any disruption in the network access, telecommunications, or co-location services provided by these third-party providers or any failure of or by these third-party providers or our own systems to handle the current or higher volume of use could significantly harm our ability to deliver our Solution and our business. We exercise limited control over these third-party vendors, which increases our vulnerability to problems with the services they provide.

Any errors, failures, interruptions, or delays experienced in connection with these third-party technologies and information services or our own systems could negatively impact our relationships with users and clients, adversely affect our brands and business, and expose us to third-party liabilities. The insurance coverage under our policies may not be adequate to compensate us for all losses that may occur. In addition, we cannot provide assurance that we will continue to be able to obtain adequate insurance coverage at an acceptable cost.

The reliability and performance of the Internet may be harmed by increased usage or by denial-of-service attacks. The Internet has experienced a variety of outages and other delays as a result of damages to portions of its infrastructure, and it could face outages and delays in the future. These outages and delays could reduce the level of Internet usage as well as the availability of the Internet to us for delivery of our Internet-based services.

We typically provide service level commitments under our client contracts. If we fail to meet these contractual commitments, we could be obligated to provide credits or refunds for prepaid amounts related to unused subscription services or face contract terminations, which could adversely affect our results of operations.

Finally, recent changes in law could impact the cost and availability of necessary Internet infrastructure. Increased costs and/or decreased availability would negatively affect our results of operations.

Our business could be adversely impacted by changes in laws and regulations related to the Internet or changes in access to the Internet generally.

The future success of our business depends upon the continued use of the Internet as a primary medium for communication, business applications, and commerce. Federal or state government bodies or agencies have in the past adopted, and may in the future adopt, laws or regulations affecting the use of the Internet as a commercial medium. Legislators, regulators, or government bodies or agencies may also make legal or regulatory changes or interpret or apply existing laws or regulations that relate to the use of the Internet in new and materially different ways. Changes in these laws, regulations, or interpretations could require us to modify our Solution in order to comply with these changes, to incur substantial additional costs or divert resources that could otherwise be deployed to grow our business, or expose us to unanticipated civil or criminal liability, among other things.

In addition, government agencies and private organizations have imposed, and may in the future impose, additional taxes, fees, or other charges for accessing the Internet or commerce conducted via the Internet. Internet access is frequently provided by companies that have significant market power and could take actions that degrade, disrupt, or increase the cost of our clients' use of our Solution, which could negatively impact our business. Net neutrality rules, which were designed to ensure that all online content is treated the same by Internet service providers and other companies that provide broadband services were repealed by the Federal Communications Commission effective June 2018. The repeal of the net neutrality rules could force us to incur greater operating expenses or our clients' use of our Solution could be adversely affected, either of which could harm our business and results of operations.

These developments could limit the growth of Internet-related commerce or communications generally or result in reductions in the demand for Internet-based platforms and services such as ours, increased costs to us or the disruption of our business. In addition, as the Internet continues to experience growth in the numbers of users, frequency of use, and amount of data transmitted, the use of the Internet as a business tool could be adversely affected due to delays in the development or adoption of new standards and protocols to handle increased demands of Internet activity, security, reliability, cost, ease-of-use, accessibility, and quality of service. The performance of the Internet and its acceptance as a business tool has been adversely affected by "viruses," "worms," and similar malicious programs and the Internet has experienced a variety of outages and other delays as a result of damage to portions of its infrastructure. If the use of the Internet generally, or our Solution specifically, is adversely affected by these or other issues, we could be forced to incur substantial costs, demand for our Solution could decline, and our results of operations and financial condition could be harmed.

Our Solution utilizes open-source software, and any failure to comply with the terms of one or more of these open-source licenses could adversely affect our business.

We use software modules licensed to us by third-party authors under "open-source" licenses in our Solution. Some open-source licenses contain affirmative obligations or restrictive terms that could adversely impact our business, such as restrictions on commercialization or obligations to make available modified or derivative works of certain open-source code. If we were to combine our proprietary software with certain open-source software subject to these licenses in a certain manner, we could, under certain open-source licenses, be required to release or otherwise make available the source code to our proprietary software to the public. This would allow our competitors to create similar products with lower development effort and time and ultimately could result in a loss of product sales for us.

Although we employ practices designed to manage our compliance with open-source licenses and protect our proprietary source code, we may inadvertently use open-source software in a manner we do not intend and that could expose us to claims for breach of contract and intellectual property infringement. If we are held to have breached the terms of an open-source software license, we could be required to, among other things, seek licenses from third parties to continue offering our products on terms that are not economically feasible, pay damages to third parties, to re-engineer our products, to discontinue the sale of our products if re-engineering cannot be accomplished on a timely basis, or to make generally available, in source code form, a portion of our proprietary code, any of which could adversely affect our business, results of operations, and financial condition. The terms of many open-source licenses have not been interpreted by U.S. courts, and, as a result, there is a risk that such licenses could be construed in a manner that imposes unanticipated conditions or restrictions on our ability to commercialize our Solution.

We employ third-party licensed software and software components for use in or with our Solution, and the inability to maintain these licenses or the presence of errors in the software we license could limit the functionality of our Solution and result in increased costs or reduced service levels, which would adversely affect our business.

Our software applications might incorporate or interact with certain third-party software and software components (other than open-source software), such as data visualization software, obtained under licenses from other companies. We pay these third parties a license fee or royalty payment. We anticipate that we will continue to use such third-party software in the future. Although we believe that there are commercially reasonable alternatives to the third-party software we currently make available, this may not always be the case, or it may be difficult or costly to replace. Furthermore, these third parties may increase the price for licensing their software, which could negatively impact our results of operations. Our use of additional or alternative third-party software could require clients to enter into license agreements with third parties. In addition, if the third-party software we make available has errors or otherwise malfunctions, or if the third-party terminates its agreement with us, the functionality of our Solution may be negatively impacted and our business may suffer.

Any failure to protect our intellectual property rights could impair our ability to protect our proprietary technology and our brand.

Our success and ability to compete depend in part upon our intellectual property. As of December 31, 2023, we had filed applications for a number of patents, and we have fourteen issued U.S. patents, four issued Canadian patents, one issued Great Britain patent, and one issued European patent, as well as one utility patent application pending in the United States. We also had twenty-eight registered trademarks in the United States, Singapore, United Arab Emirates, and China. We also rely on copyright and trademark laws, trade secret protection, and confidentiality or license agreements with our employees, clients, partners, and others to protect our intellectual property rights. However, the steps we take to protect our intellectual property rights may be inadequate. For example, other parties, including our competitors, may independently develop similar technology, duplicate our services, or design around our intellectual property and, in such cases, we may not be able to assert our intellectual property rights against such parties.

Further, our contractual arrangements may not effectively prevent disclosure of our confidential information or provide an adequate remedy in the event of unauthorized disclosure of our confidential information, and we may be unable to detect the unauthorized use of, or take appropriate steps to enforce, our intellectual property rights.

We make business decisions about when to seek patent protection for a particular technology and when to rely upon trade secret protection, and the approach we select may ultimately prove to be inadequate. Even in cases where we seek patent protection, there is no assurance that the resulting patents will effectively protect every significant feature of our Solution, technology, or proprietary information, or provide us with any competitive advantages. Moreover, we cannot guarantee that any of our pending patent applications will issue or be approved. The United States Patent and Trademark Office and various foreign governmental patent agencies also require compliance with a number of procedural, documentary, fee payment, and other similar provisions during the patent application process and after a patent has issued.

There are situations in which noncompliance can result in abandonment or lapse of the patent, or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If this occurs, our competitors might be able to enter the market, which would have a material adverse effect on our business. Effective trademark, copyright, patent, and trade secret protection may not be available in every country in which we conduct business. Further, intellectual property law, including statutory and case law, particularly in the United States, is constantly developing, and any changes in the law could make it harder for us to enforce our rights.

In order to protect our intellectual property rights, we may be required to spend significant resources to monitor and protect these rights. Litigation brought to protect and enforce our intellectual property rights could be costly, time-consuming, and distracting to management and could result in the impairment or loss of portions of our intellectual property. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims, and countersuits attacking the validity and enforceability of our intellectual property rights.

An adverse determination of any litigation proceedings could put our intellectual property at risk of being invalidated or interpreted narrowly and could put our related pending patent applications at risk of not issuing. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential or sensitive information could be compromised by disclosure in the event of litigation. In addition, during the course of litigation, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Negative publicity related to a decision by us to initiate such enforcement actions against a client or former client, regardless of its accuracy, may adversely impact our other client relationships or prospective client relationships, harm our brand and business, and could cause the market price of our common stock to decline. Our failure to secure, protect, and enforce our intellectual property rights could adversely affect our brand and our business.

We may be sued by third parties for alleged infringement of their proprietary rights or misappropriation of intellectual property.

There is considerable patent and other intellectual property development activity in our industry. Our future success depends in part on not infringing upon the intellectual property rights of others. Our competitors, as well as a number of other entities and individuals, including so-called non-practicing entities, may own or claim to own intellectual property relating to our Solution. From time to time, third parties have claimed or may claim that we are infringing upon their intellectual property rights or that we have misappropriated their intellectual property.

For example, in some cases, very broad patents are granted that may be interpreted as covering a wide field of healthcare data storage and analytics solutions or machine learning and predictive modeling methods in healthcare. As competition in our market grows, the possibility of patent infringement, trademark infringement, and other intellectual property claims against us increases. In the future, we expect others to claim that our Solution and underlying technology infringe or violate their intellectual property rights. In a patent infringement claim against us, we may assert, as a defense, that we do not infringe the relevant patent claims, that the patent is invalid or both.

The strength of our defenses will depend on the patents asserted, the interpretation of these patents, and our ability to invalidate the asserted patents. However, we could be unsuccessful in advancing non-infringement and/or invalidity arguments in our defense. In the United States, issued patents enjoy a presumption of validity, and the party challenging the validity of a patent claim must present clear and convincing evidence of invalidity, which is a high burden of proof. Conversely, the patent owner need only prove infringement by a preponderance of the evidence, which is a lower burden of proof.

We may be unaware of the intellectual property rights that others may claim cover some or all of our technology or services. Because patent applications can take years to issue and are often afforded confidentiality for some period of time there may currently be pending applications, unknown to us, that later result in issued patents that could cover one or more aspects of our technology and services. Any claims or litigation could cause us to incur significant expenses and, whether or not successfully asserted against us, could require that we pay substantial damages, ongoing royalty or license payments, or settlement fees, prevent us from offering our Solution or using certain technologies, require us to re-engineer all or a portion of our DOS platform, or require that we comply with other unfavorable terms. We may also be obligated to indemnify our clients or business partners or pay substantial settlement costs, including royalty payments, in connection with any such claim or litigation and to obtain licenses, modify applications, or refund fees, which could be costly. Even if we were to prevail in such a dispute, any litigation regarding our intellectual property could be costly and time-consuming and divert the attention of our management and key personnel from our business operations.

Risks Related to Governmental Regulation

Risks Related to Healthcare and Data Privacy and Security Regulation

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements could adversely affect our business, results of operations, and financial condition.

- *Health information privacy and security laws*. There are numerous federal and state laws and regulations that govern the privacy and security of health information. In particular, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and regulations implemented thereunder (collectively, HIPAA) imposes, among other things, certain standards relating to the privacy, security, transmission and breach reporting of PHI, as defined under HIPAA. By processing and maintaining PHI on behalf of our covered entity clients, we are a HIPAA business associate and are required to enter into business associate agreements (BAAs) with our covered entity clients to safeguard PHI, as well as BAAs with our subcontractors that access or otherwise process PHI on our behalf.

  We may not be able to adequately address the business risks created by HIPAA implementation. Furthermore, we are unable to predict what changes to HIPAA or other laws or regulations might be made in the future or how those changes could affect our business or the costs of compliance. We are unable to predict what, if any, impact the changes in such standards will have on our compliance costs or our Solution. Penalties for failure to comply with a requirement of HIPAA vary significantly depending on the nature of violation and could include civil monetary or criminal penalties. HIPAA also authorizes state attorneys general to file suit under HIPAA on behalf of state residents. Courts can award damages, costs and attorneys' fees related to violations of HIPAA in such cases.

  While HIPAA does not create a private right of action allowing individuals to sue us in civil court for HIPAA violations, its standards have been used as the basis for a duty of care claim in state civil suits such as those for negligence or recklessness in the misuse or breach of PHI. Certain states have also adopted privacy and security laws and regulations, some of which may be more stringent than HIPAA. Such laws and regulations will be subject to interpretation by various courts and other governmental authorities, thus creating potentially complex compliance issues for us and our future clients and strategic partners.

  Some of our analytics applications, including, for example, one of our benchmarking applications, require that we obtain permissions consistent with HIPAA to provide "data aggregation services" and the right to create de-identified information and to use and disclose such de-identified information. We may require large sets of de-identified information to enable us to continue to develop machine learning algorithms that enhance our Solution. If we are unable to secure these rights in client BAAs or as a result of any future changes to HIPAA or other applicable laws, we may face limitations on the use of PHI and our ability to use de-identified information that could negatively affect the scope of our Solution as well as impair our ability to provide upgrades and enhancements to our Solution.

  We outsource important aspects of the storage and transmission of client information and PHI, and thus rely on third parties to manage functions that have material cybersecurity risks. We attempt to address these risks by requiring outsourcing subcontractors who handle client information to sign BAAs contractually requiring those subcontractors to adequately safeguard PHI in a similar manner that applies to us and in some cases by requiring such outsourcing subcontractors to undergo third-party security examinations as well as to protect the confidentiality of other sensitive client information. In addition, we periodically hire third-party security experts to assess and test our security measures. However, we cannot be assured that these contractual measures and other safeguards will adequately protect us from the risks associated with the storage and transmission of our clients' confidential and proprietary information and PHI.

- *Consumer protection laws.* Furthermore, the Federal Trade Commission (FTC) also has authority to initiate enforcement actions against entities that mislead customers about HIPAA compliance, make deceptive statements about privacy and data sharing in privacy policies, fail to limit third-party use of personal health information, fail to implement policies to protect personal health information or engage in other unfair practices that harm customers or that may violate Section 5(a) of the FTC Act. According to the FTC, failing to take appropriate steps to keep consumers' personal information secure can also constitute unfair acts or practices in or affecting commerce in violation of Section 5(a) of the FTC Act. The FTC expects a company's data security measures to be reasonable and appropriate in light of the sensitivity and volume of consumer information it holds, the size and complexity of its business, and the cost of available tools to improve security and reduce vulnerabilities. Additionally, federal and state consumer protection laws are increasingly being applied by FTC and states' attorneys general to regulate the collection, use, storage, and disclosure of personal or personally identifiable information, through websites or otherwise, and to regulate the presentation of website content.

- *State data protection laws*. Certain states have also adopted privacy and security laws and regulations, which govern the privacy, processing, and protection of health-related and other personal information. Such laws and regulations will be subject to interpretation by various courts and other governmental authorities, thus creating potentially complex compliance issues for us and our future clients and strategic partners. For example, California adopted the CCPA, which went into effect on January 1, 2020. The CCPA establishes a privacy framework for covered businesses by creating an expanded definition of personal information, establishing new data privacy rights for consumers in the state of California, imposing special rules on the collection of consumer data from minors, and creating a new and potentially severe statutory damages framework for violations of the CCPA and for businesses that fail to implement reasonable security procedures and practices to prevent data breaches. Additionally, the CPRA generally went into effect on January 1, 2023 and significantly amends the CCPA. It imposed additional data protection obligations on companies doing business in California, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It also created a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. Additional compliance investment and potential business process changes may be required. Similar laws have passed in other states, and are continuing to be proposed at the state and federal level, reflecting a trend toward more stringent privacy legislation in the United States. If we fail to comply with any of these privacy laws that apply to us, and are subject to the aforementioned penalties, our business and financial results could be adversely affected.

- *GDPR and foreign data privacy protection laws*. In addition, many foreign governments have established or are in the process of establishing privacy and data security legal frameworks governing the collection, use and disclosure of personal information obtained from their residents. For example, in Europe, the GDPR went into effect on May 25, 2018. The GDPR imposes data protection requirements for processing the personal data of individuals within the European Economic Area (EEA) relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the documentation we must retain, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. Companies that must comply with the GDPR face increased compliance obligations and risk, including more robust regulatory enforcement of data protection requirements and potential fines for noncompliance of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The GDPR has increased our responsibility and potential liability in relation to personal data that we process, and we may be required to put in place mechanisms to ensure compliance with GDPR. In addition, the GDPR increases the scrutiny of transfers of personal data from the EEA to the United States and other jurisdictions that the European Commission does not recognize as having “adequate” data protection laws and the efficacy and longevity of current transfer mechanisms between the EEA, and the United States remain uncertain. Case law from the Court of Justice of the European Union (CJEU) states that reliance on the standard contractual clauses - a standard form of contract approved by the European Commission as an adequate personal data transfer mechanism - alone may not necessarily be sufficient in all circumstances and that transfers must be assessed on a case-by-case basis. On October 7, 2022, President Biden signed an Executive Order on ‘Enhancing Safeguards for United States Intelligence Activities’ which introduced new redress mechanisms and binding safeguards to address the concerns raised by the CJEU in relation to data transfers from the EEA to the United States and which formed the basis of the new EU-US Data Privacy Framework (DPF), as released on December 13, 2022. The European Commission adopted its Adequacy Decision in relation to the DPF on July 10, 2023, rendering the DPF effective as a GDPR transfer mechanism to U.S. entities self-certified under the DPF. The DPF also introduced a new redress mechanism for EU citizens which addresses a key concern in the previous CJEU judgments and may mean transfers under standard contractual clauses are less likely to be challenged in future. We currently maintain localized infrastructure and third-party relationships to limit the risk of data transfer of personal data outside of the EEA and the UK. In addition, we rely on the EU standard contractual clauses and the UK Addendum to the EU standard contractual clauses as relevant to address any potential transfer of personal data outside the EEA and the UK, including to the United States, with respect to both intragroup and third-party transfers. We expect the existing legal complexity and uncertainty regarding international personal data transfers to continue. In particular, we expect the DPF Adequacy Decision to be challenged and international transfers to the United States and to other jurisdictions more generally to continue to be subject to enhanced scrutiny by regulators. As a result, we may have to make certain operational changes and we will have to implement revised standard contractual clauses. Data protection authorities of the different EEA member states may also interpret GDPR differently, and guidance on implementation and compliance practices are often updated or otherwise revised, which adds to the complexity of processing personal data in the EEA. Any failure by us to comply with GDPR could result in proceedings or actions against us by governmental entities or others, which may subject us to significant penalties and negative publicity, require us to change our business practices, and increase our costs and severely disrupt our business. Further, from January 1, 2021, companies have had to comply with the GDPR and also the UK GDPR, which, together with the amended UK Data Protection Act 2018, retains the GDPR in UK national law.

The UK GDPR mirrors the fines under the GDPR, e.g., fines up to the greater of €20 million (£17.5 million) or 4% of global turnover. On October 12, 2023, the UK Extension to the DPF came into effect (as approved by the UK Government), as a UK GDPR data transfer mechanism to U.S. entities self-certified under the UK Extension to the DPF. As we continue to expand into other foreign countries and jurisdictions, we may be subject to additional laws and regulations that may affect how we conduct business.

- *Canadian data privacy protection laws*. Similarly, Canada's Personal Information Protection and Electronic Documents Act provides Canadian residents with privacy protections in regard to transactions with businesses and organizations in the private sector and sets out ground rules for how private-sector organizations may collect, use, and disclose personal information in the course of commercial activities. Foreign governments may attempt to apply such laws extraterritorially or through treaties or other arrangements with U.S. governmental entities. Other jurisdictions besides the EU and Canada are similarly introducing or enhancing laws and regulations relating to privacy and data security, which enhances risks relating to compliance with such laws. Furthermore, as we enter into business arrangements in countries outside of the United States, we will need to be prepared to comply with applicable local privacy laws. The GDPR and other changes in laws or regulations associated with the enhanced protection of certain types of personal data, such as health-related data or other sensitive information, could greatly increase our cost of providing our products and services or even prevent us from offering certain services in jurisdictions that we operate.

We cannot be certain that the privacy policies and other statements regarding our practices will be found sufficient to protect us from liability or adverse publicity relating to the privacy and security of personal information. There is ongoing concern from privacy advocates, regulators, and others regarding data protection and privacy issues, and the number of jurisdictions with data protection and privacy laws has been increasing. Also, there are ongoing public policy discussions regarding whether the standards for de-identified, anonymous, or pseudonymized health information are sufficient, and the risk of re-identification sufficiently small, to adequately protect patient privacy. We expect that there will continue to be new proposed laws, regulations, and industry standards concerning privacy, data protection, and information security in the United States, including the CCPA and CPRA, and we cannot yet determine the impact such laws, regulations, and standards may have on our business. Future laws, regulations, standards, and other obligations, and changes in the interpretation of existing laws, regulations, standards, and other obligations could impair our or our clients' ability to collect, use, or disclose information relating to consumers, which could decrease demand for our Solution, increase our costs, and impair our ability to maintain and grow our client base and increase our revenue. Any failure or perceived failure by us to comply with international, federal or state laws or regulations, industry standards, or other legal obligations, or any actual or suspected security incident, whether or not resulting in unauthorized access to, or acquisition, release, or transfer of personally identifiable information or other data, may result in governmental enforcement actions and prosecutions, private litigation, fines, and penalties or adverse publicity and could cause our clients to lose trust in us, which could have an adverse effect on our reputation and business.

We may be unable to make such changes and modifications in a commercially reasonable manner or at all, and our ability to develop new products and features could be limited. Any of these developments could harm our business, financial condition, and results of operations. Privacy and data security concerns, whether valid or not valid, may inhibit market adoption of our Solution.

Government regulation of healthcare creates risks and challenges with respect to our compliance efforts and our business strategies.

Many healthcare laws are complex, and their application to specific services and relationships may not be clear. In particular, many existing healthcare laws and regulations, when enacted, did not anticipate the data analytics and improvement services that we provide, and these laws and regulations may be applied to our Solution in ways that we do not anticipate, particularly as we develop and release new and more sophisticated solutions. Our failure to accurately anticipate the application of these laws and regulations, or our other failure to comply with them, could create significant liability for us, result in adverse publicity, and negatively affect our business. Some of the risks we face or may face from healthcare regulation are described below.

The federal Anti-Kickback Statute prohibits, among other things, the offering, paying, soliciting, or receiving anything of value, directly or indirectly, for the referral of patients covered by Medicare, Medicaid, and other federal healthcare programs or the leasing, purchasing, ordering, or arranging for or recommending the lease, purchase, or order of any item, good, facility, or service covered by these programs. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. Some enforcement activities focus on below or above market payments for federally reimbursable healthcare items or services as evidence of the intent to provide a kickback. Many states also have similar anti-kickback laws that are not necessarily limited to items or services for which payment is made by a federal healthcare program. Moreover, both federal and state laws prohibit bribery and similar behavior. We do not believe we directly order or provide healthcare services that are reimbursable by Medicare, Medicaid or other third-party payors or submit claims or receive reimbursement from any such payor.

However, nonetheless, in addition to direct enforcement action against us, if our advisory services or our Solution offered to clients are associated with action by clients that is determined or alleged to be in violation of these laws and regulations, it is possible that an enforcement agency would also try to hold us liable and, as a result of such attempt to hold us liable, our results of operations and financial condition may be negatively impacted, even if we are ultimately found not liable.

There are also numerous federal and state laws that prohibit the submission of false information, or the failure to disclose information, in connection with submission and payment of claims for healthcare items and services by healthcare providers. For example, the federal civil False Claims Act prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, or knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim. The government has prosecuted revenue cycle management service providers for causing the submission of false or fraudulent claims in violation of the False Claims Act. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act.

HIPAA also created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud or to obtain, by means of false or fraudulent pretenses, representations or promises, any money or property owned by, or under the control or custody of, any healthcare benefit program, including private third-party payors, and knowingly and willfully falsifying, concealing or covering up by trick, scheme or device, a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. Any determination by a court or regulatory agency that we or any of our clients, vendors, or partners have violated these laws could subject us to significant civil or criminal penalties, invalidate all or portions of some of our client contracts, require us to change or terminate some portions of our business, require us to refund portions of our services fees, subject us to additional reporting requirements and oversight under a corporate integrity agreement or similar agreement to resolve allegations of noncompliance with these laws, cause us to be disqualified from serving clients doing business with government payors, and have an adverse effect on our business.

Our clients' failure to comply with these laws and regulations in connection with our services could result in substantial liability (including, but not limited to, criminal liability), adversely affect demand for our Solution, and force us to expend significant capital, research and development, and other resources to address the failure. Even an unsuccessful challenge by regulatory authorities of our activities could result in adverse publicity, distract management attention from our business, require a costly response from us, and negatively impact the price of our common stock.

If our arrangements with clinicians and other healthcare professionals are found to constitute the improper rendering of professional medical services or fee splitting under applicable state laws, our business, financial condition, and our ability to operate in those states could be adversely impacted.

We employ and contract with physicians and other licensed healthcare professionals who assist our clients with the clients' care coordination, care management, population health management, and patient safety activities. Although we do not intend to provide medical care, treatment, or advice, our relationships with such healthcare professionals may implicate certain state laws in the United States in which we operate that generally prohibit non-professional entities from providing licensed medical services, exercising control over licensed physicians or other licensed healthcare professionals, or engaging in certain practices such as fee-splitting with such licensed professionals. There can be no assurance that these laws will be interpreted in a manner consistent with our practices or that other laws or regulations will not be enacted in the future that could have a material and adverse effect on our business, financial condition, and results of operations.

Regulatory authorities, state boards of medicine, state attorneys general, and other parties may assert that we are engaged in the provision of professional medical services, and/or that our arrangements with our affiliated physicians and other licensed healthcare professionals constitute unlawful fee-splitting. If a jurisdiction's prohibition on the corporate practice of medicine or fee-splitting is interpreted in a manner that is inconsistent with our practices, we may be required to restructure or terminate some portions of our business, which may in turn require us to refund portions of our services fees, which would have an adverse effect on our business. Even an unsuccessful challenge by regulatory authorities of our activities could result in adverse publicity, distraction of management attention from our business, a costly response from us, and a substantial negative impact upon the price of our common stock.

The FDA may modify its enforcement policies with respect to medical software products, and our software products may become subject to extensive regulatory requirements, which may increase the cost of conducting, or otherwise harm, our business.

We develop and offer certain analytical software applications in connection with our business. For its part, the FDA may regulate medical or health-related software, including machine learning functionality and predictive algorithms, if such software falls within the definition of a "medical device" under the Federal Food, Drug, and Cosmetic Act (FDCA). Medical devices are subject to extensive and rigorous regulation by the FDA and by other federal, state, and local authorities.

The FDCA and related regulations govern the conditions of safety, efficacy, clearance, approval, manufacturing, quality system requirements, labeling, packaging, distribution, storage, recordkeeping, reporting, marketing, advertising, and promotion of medical devices. However, historically, the FDA has exercised enforcement discretion for certain low-risk software functions, and has issued several guidance documents outlining its approach to the regulation of software as a medical device. In addition, the 21st Century Cures Act amended the FDCA to exclude from the definition of "medical device" certain medical-related software, including software used for administrative support functions at a healthcare facility, software intended for maintaining or encouraging a healthy lifestyle, software designed to store electronic health records, software for transferring, storing, or displaying medical device data or in vitro diagnostic data, and certain clinical decision support software. We believe our currently marketed products provide functionality that is exempt from the FDCA's definition of a "medical device," and therefore that our software products are not currently regulated by the FDA as medical devices, or that our products are otherwise subject to FDA's current enforcement discretion policies applicable to software products. However, there is a risk that the FDA could disagree with our determination, or that the FDA could alter its enforcement discretion policies, and in either case, subject our software to more stringent medical device regulations.

If the FDA determines that any of our current or future analytics applications are regulated as medical devices and not otherwise subject to enforcement discretion, we would become subject to various requirements under the FDCA and the FDA's implementing regulations. If this occurs, we may be required to cease marketing or to recall our product until we obtain the requisite clearances or approvals, which would entail significant cost and could harm our reputation, business, financial condition, and results of operations.

Our failure to comply with applicable regulatory requirements could result in enforcement action by the FDA, or comparable state or foreign regulatory authorities, including: untitled letters, warning letters, fines, injunctions, consent decrees and civil penalties, recalls, termination of distribution, administrative detentions, seizure of our products, operating restrictions, partial suspension or total shutdown of production, delays in or refusal to grant clearances or approvals, prohibitions on sales of our products, and criminal prosecution. Any of these sanctions could result in higher than anticipated costs or lower than anticipated sales and have a material adverse effect on our reputation, business, financial condition, and results of operations.

The healthcare regulatory and political framework is uncertain and evolving.

Existing and new laws and regulations affecting the healthcare industry, or changes to existing laws and regulations could create unexpected liabilities for us, cause us to incur additional costs, and/or restrict our operations. Reforming the healthcare industry has been a priority for U.S. politicians, and key members of the legislative and executive branches have proposed a wide variety of potential changes and policy goals. Certain changes to laws impacting our industry, or perceived intentions to do so, could affect our business and results of operations. By way of example, in March 2010, the Affordable Care Act (ACA), was enacted, which substantially changed the way healthcare is financed by both governmental and private insurers and has significantly impacted our industry and, to some degree, our business. Since its enactment, there have been judicial, executive, and Congressional challenges to certain aspects of the ACA. On June 17, 2021, the U.S. Supreme Court dismissed the most recent judicial challenge to the ACA brought by several states without specifically ruling on the constitutionality of the ACA. Thus, the ACA will remain in effect in its current form. We anticipate that new cost containment measures or other healthcare reforms will continue to be implemented at both the federal and state level, any of which could harm our business, financial condition, and results of operations.

Due to the particular nature of certain services we provide or the manner in which we provide them, we may be subject to additional government regulation and foreign government regulation.

While our Solution is primarily subject to government regulations pertaining to healthcare, certain aspects of our Solution may require us to comply with regulatory schema from other areas. Examples of such regulatory schema include:

- *Antitrust laws*. Our national cloud-based network allows us access to cost and pricing data for a large number of providers in most regional markets, as well as to the contracted rates for third-party payors. To the extent that our Solution enables providers to compare their cost and pricing data with those of their competitors, those providers could collude to increase the pricing for their services, to reduce the compensation they pay their employees, or to collectively negotiate agreements with third parties. Similarly, if payors are able to compare their contracted rates of payment to providers, those payors may seek to reduce the amounts they might otherwise pay. Such actions may be deemed to be anti-competitive and a violation of federal antitrust laws. To the extent that we are deemed to have enabled such activities, we could be subject to fines and penalties imposed by the U.S. Department of Justice or the FTC and be required to curtail or terminate the services that permitted such collusion.

- *FCPA and foreign anti-bribery laws*. The FCPA makes it illegal for U.S. persons, including U.S. companies, and their subsidiaries, directors, officers, employees, and agents, to promise, authorize or make any corrupt payment, or otherwise provide anything of value, directly or indirectly, to any foreign official, any foreign political party or party official, or candidate for foreign political office to obtain or retain business. Violations of the FCPA can also result in violations of other U.S. laws, including anti-money laundering, mail and wire fraud, and conspiracy laws. There are severe penalties for violating the FCPA. In addition, the Company may also be subject to other non-U.S. anti-corruption or anti-bribery laws, such as the U.K. Bribery Act 2010. If our employees, contractors, vendors, or partners fail to comply with the FCPA and/or foreign anti-bribery laws, we may be subject to penalties or sanctions, and our ability to develop new prospects and retain existing clients could be adversely affected.

- *Economic sanctions and export controls*. Economic and trade sanctions programs that are administered by the U.S. Treasury Department's Office of Foreign Assets Control prohibit or restrict transactions to or from, and dealings with specified countries and territories, their governments, and in certain circumstances, with individuals and entities that are specially designated nationals of those countries, and other sanctioned persons, including narcotics traffickers and terrorists or terrorist organizations. As federal, state and foreign legislative regulatory scrutiny and enforcement actions in these areas increase, we expect our costs to comply with these requirements will increase as well. Failure to comply with any of these requirements could result in the limitation, suspension or termination of our services, imposition of significant civil and criminal penalties, including fines, and/or the seizure and/or forfeiture of our assets. Further, our Solution incorporates encryption technology. This encryption technology may be exported from the United States only with the required export authorizations, including by a license, a license exception, or other appropriate government authorizations. Such solutions may also be subject to certain regulatory reporting requirements. Various countries also regulate the import of certain encryption technology, including through import permitting and licensing requirements, and have enacted laws that could limit our clients' ability to import our Solution into those countries. Governmental regulation of encryption technology and of exports and imports of encryption products, or our failure to obtain required approval for our Solution, when applicable, could harm our international sales and adversely affect our revenue. Compliance with applicable regulatory requirements regarding the provision of our Solution, including with respect to new applications, may delay the introduction of our Solution in various markets or, in some cases, prevent the provision of our Solution to some countries altogether.

- *Regulatory certification*. We must obtain certification from governmental agencies, such as the Agency for Healthcare Research and Quality (AHRQ) to sell certain of our analytics applications and services in the United States. We cannot be certain that our Solution will continue to meet these standards. The failure to comply with these certification requirements could result in the loss of certification, which could restrict our Solution offerings and cause us to lose clients.

Risks Related to Tax Regulation

Taxing authorities may successfully assert that we should have collected or in the future should collect sales and use, value-added or similar transactional taxes, and we could be subject to liability with respect to past or future sales, which could adversely affect our results of operations.

We do not collect sales and use, value-added, and similar transactional taxes in all jurisdictions in which we have sales, based on our belief that such taxes are not applicable or that we are not required to collect such taxes with respect to the jurisdiction. Sales and use, value-added, and similar tax laws and rates vary greatly by jurisdiction. Certain jurisdictions in which we do not collect such taxes may assert that such taxes are applicable, which could result in tax assessments, penalties, and interest, and we may be required to collect such taxes in the future. Such tax assessments, penalties, interest or future requirements, increase in tax rates, or a combination of the foregoing may result in an increase in our sales and similar transactional taxes, increase administrative burdens or costs, or otherwise adversely affect our business, results of operations, or financial condition.

Unanticipated changes in our effective tax rate and additional tax liabilities, including as a result of our international operations or implementation of new tax rules, could harm our future results.

We are subject to income taxes in the United States and are expanding into various foreign jurisdictions that are subject to income tax. Our domestic and international tax liabilities are subject to the allocation of expenses in differing jurisdictions and complex transfer pricing regulations administered by taxing authorities in various jurisdictions. Tax rates in the jurisdictions in which we operate may change as a result of factors outside of our control or relevant taxing authorities may disagree with our determinations as to the income and expenses attributable to specific jurisdictions. In addition, changes in tax and trade laws, treaties or regulations, or their interpretation or enforcement, have become more unpredictable and may become more stringent, which could materially adversely affect our tax position.

Forecasting our estimated annual effective tax rate is complex and subject to uncertainty, and there may be material differences between our forecasted and actual effective tax rate. Our effective tax rate could be adversely affected by changes in the mix of earnings and losses in countries with differing statutory tax rates, certain non-deductible expenses, the valuation of deferred tax assets and liabilities, adjustments to income taxes upon finalization of tax returns, changes in available tax attributes, decision to repatriate non-U.S. earnings for which we have not previously provided for U.S. taxes, and changes in federal, state, or international tax laws and accounting principles. Finally, we may be subject to income tax audits throughout the world. An adverse resolution of one or more uncertain tax positions in any period could have a material impact on our results of operations or financial condition for that period.

Our ability to use our net operating losses to offset future taxable income may be subject to certain limitations.

As of December 31, 2023, we had net operating loss (NOL) carryforwards for federal and state income tax purposes of approximately $602.6 million and $505.5 million, respectively, which may be available to offset taxable income in the future, and which expire in various years beginning in 2032 for federal purposes if not utilized. The state NOLs will expire depending upon the various rules in the states in which we operate.

A lack of future taxable income would adversely affect our ability to utilize these NOLs before they expire. In general, under Section 382 of the Internal Revenue Code of 1986, as amended (the Code), a corporation that undergoes an “ownership change” (as defined under Section 382 of the Code and applicable Treasury Regulations) is subject to limitations on its ability to utilize its pre-change NOLs to offset its future taxable income.

We may experience a future ownership change under Section 382 of the Code that could affect our ability to utilize the NOLs to offset our income. Furthermore, our ability to utilize NOLs of companies that we have acquired or may acquire in the future may be subject to limitations. There is also a risk that due to regulatory changes, such as suspensions on the use of NOLs or other unforeseen reasons, our existing NOLs could expire or otherwise be unavailable to reduce future income tax liabilities, including for state income tax purposes. Certain provisions of the Tax Act (as defined below), as amended by the CARES Act, also limit the use of NOLs, as discussed further below. For these reasons, we may not be able to utilize a material portion of our NOLs, even if we attain profitability, which could potentially result in increased future tax liability to us and could adversely affect our results of operations and financial condition.

Comprehensive tax reform legislation could adversely affect our business and financial condition.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the Tax Act) was signed into law. The Tax Act contains, among other things, significant changes to corporate taxation, including (i) a reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, (ii) a limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses) (increased to 50% by the CARES Act for taxable years beginning in 2019 and 2020), (iii) a limitation of the deduction for NOLs in taxable years beginning after December 31, 2020 to 80% of current year taxable income in respect of NOLs generated during or after 2018 and elimination of net operating loss carrybacks for NOLs arising in tax years ending after December 31, 2020, (iv) a one-time tax on offshore earnings at reduced rates regardless of whether they are repatriated, (v) immediate deductions for certain new investments instead of deductions for depreciation expense over time, and (vi) a modification or repeal of many business deductions and credits. For federal NOLs arising in tax years beginning after December 31, 2017, the Tax Act (as modified by the CARES Act) limits a taxpayer's ability to utilize federal NOL carryforwards in taxable years beginning after December 31, 2020 to 80% of taxable income. In addition, federal NOLs arising in tax years ending after December 31, 2017 can be carried forward indefinitely, but carryback of federal NOLs arising in tax years ending after December 31, 2020 is generally prohibited. It is uncertain if and to what extent various states will conform to the newly enacted federal tax law.

Beginning in 2022, the Tax Act eliminated the option to currently deduct research and development expenditures in the period incurred and requires taxpayers to capitalize and amortize such domestic and foreign expenditures over five or fifteen years, respectively, pursuant to Section 174 of the Code. We will continue to examine the impact the Tax Act and CARES Act may have on our results of operations and financial condition.

Risks Related to Our Outstanding Convertible Notes

Servicing our Notes may require a significant amount of cash, and we may not have sufficient cash or the ability to raise the funds necessary to settle conversions of the Notes in cash, repay the Notes at maturity, or repurchase the Notes as required.

On April 14, 2020, we issued $230.0 million in aggregate principal amount of 2.50% Convertible Senior Notes due 2025, pursuant to an Indenture dated April 14, 2020, with U.S. Bank National Association, as trustee, in a private offering to qualified institutional buyers (the Notes). We received net proceeds from the Notes of $222.5 million, after deducting the initial purchasers' discounts and offering expenses payable by us. The Notes are governed by an indenture (Indenture) between us, as the issuer, and U.S. Bank National Association, as trustee. The Notes are our senior, unsecured obligations and accrue interest payable semiannually in arrears on April 15 and October 15 of each year, beginning on October 15, 2020, at a rate of 2.50% per year. The Notes will mature on April 15, 2025, unless earlier converted, redeemed, or repurchased. The Indenture does not contain any financial covenants or restrictions on the payments of dividends, the incurrence of indebtedness, or the issuance or repurchase of securities by us or any of our subsidiaries.

We may repurchase the Notes from time to time prior to the maturity date. A holder may convert all or any portion of its Notes, at its option, subject to certain conditions and during certain periods, into cash, shares of our common stock or a combination of cash and shares of our common stock, with the form of consideration determined at our election. Noteholders will have the right to require us to repurchase all or a portion of their notes at 100% of the principal amount of Notes to be repurchased, plus accrued and unpaid interest to, but excluding, the repurchase date, upon the occurrence of certain events. The conversion rate is initially 32.6797 shares of our common stock per $1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately $30.60 per share of our common stock). If the Notes have not previously been converted, redeemed or repurchased, we will be required to repay the Notes in cash at maturity.

Our ability to make required cash payments in connection with redemptions or conversions of the Notes, repurchase the Notes upon the occurrence of certain events, or to repay or refinance the Notes at maturity will depend on market conditions and our future performance, which is subject to economic, financial, competitive, and other factors beyond our control. For example, we maintain cash balances with financial institutions in excess of insured limits, and there can be no assurance that we will be able to access uninsured funds in a timely manner or at all in the event of a failure of these financial institutions. We also may not use the cash proceeds we raised through the issuance of the Notes in an optimally productive and profitable manner. Since inception, our business has generated net losses, and we may continue to incur significant losses. As a result, we may not have enough available cash or be able to obtain financing at the time we are required to repurchase or repay the Notes or pay cash with respect to Notes being converted.

In addition, our ability to repurchase or to pay cash upon conversion or at maturity of the Notes may be limited by law or regulatory authority or by other agreements governing our future indebtedness. Our failure to repurchase Notes upon the occurrence of certain events or to pay cash upon conversion or at maturity of the Notes as required by the Indenture would constitute a default under the Indenture.

A default under the Indenture or the occurrence of certain events that allow Noteholders to require repurchase could also lead to a default under agreements governing our future indebtedness and could have a material adverse effect on our business, results of operations, and financial condition. If the payment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness and repurchase the Notes or to pay cash upon conversion or at maturity of the Notes.

Our Capped Calls may affect the value of our common stock and subject us to counterparty risk.

On April 8, 2020, concurrently with the pricing of our $230.0 million in aggregate principal amount Convertible Senior Notes due 2025 (Notes), in a private placement to qualified institutional buyers exempt from registration under the Securities Act (Note Offering), we entered into privately negotiated capped call transactions (Base Capped Calls) with certain financial institutions (the option counterparties). In addition, in connection with the initial purchasers' exercise in full of their option to purchase additional Notes, on April 9, 2020, we entered into additional capped call transactions (Additional Capped Calls, and, together with the Base Capped Calls, the Capped Calls) with each of the option counterparties. We used approximately $21.6 million of the net proceeds from the Note Offering to pay the option premium cost of the Capped Calls. We used approximately $21.6 million of the net proceeds from the Note Offering to pay the cost of the Capped Calls and allocated issuance costs. The Capped Calls have initial cap prices of $42.00 per share, subject to certain adjustments. The Capped Calls are expected generally to reduce the potential dilution to our common stock upon any conversion of Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted Notes, as the case may be, with such reduction and/or offset subject to the cap price. The Capped Calls are separate transactions that we entered into with the option counterparties, and are not part of the terms of the Notes. The option counterparties are financial institutions or affiliates of financial institutions, and we will be subject to the risk that one or more of such option counterparties may default under the Capped Calls.

From time to time, the option counterparties or their respective affiliates may modify their hedge positions by entering into or unwinding various derivative transactions with respect to our common stock and/or purchasing or selling our common stock or other securities of ours in secondary market transactions prior to the maturity of the Notes. This activity could cause or avoid an increase or a decrease in the market price of our common stock. In addition, our exposure to the credit risk of the option counterparties will not be secured by any collateral. If any option counterparty becomes subject to insolvency proceedings, we will become an unsecured creditor in those proceedings with a claim equal to our exposure at that time under the Capped Calls. Our exposure will depend on many factors but, generally, the increase in our exposure will be correlated to the increase in our common stock market price and in the volatility of the market price of our common stock. In addition, upon a default by any option counterparty, we may suffer adverse tax consequences and dilution with respect to our common stock. We can provide no assurance as to the financial stability or viability of any option counterparty.

If we raise additional capital through debt financing, the terms of any new debt could further restrict our ability to operate our business.

If we raise any additional debt financing, the terms of such additional debt could further restrict our operating and financial flexibility by subjecting us to customary affirmative and negative covenants, indemnification provisions, and events of default. Further, if we are liquidated, the lender's rights to repayment would be senior to the rights of the holders of our common stock to receive any proceeds from the liquidation. Any declaration by a lender of an event of default could significantly harm our business and prospects and could cause the price of our common shares to decline.

Risks Related to Ownership of Our Common Stock

Risks Related to an Investment in Our Securities

We have a limited operating history in an evolving industry which makes it difficult to evaluate our current business future prospects and increases the risk of your investment.

We launched operations in 2008 and we acquired Able Health, Healthfinch, Vitalware, Twistle, ARMUS, KPI Ninja, and ERS between February 2020 and October 2023. Our limited operating history, in particular with respect to the businesses we have recently acquired, makes it difficult to effectively assess or forecast our future prospects. You should consider our business and prospects in light of the risks and difficulties we encounter or may encounter. These risks and difficulties include our ability to cost-effectively acquire new clients and retain existing clients, maintain the quality of our technology infrastructure that can efficiently and reliably handle the requirements of our clients and deploy new features and solutions, and successfully compete with other companies that are currently in, or may enter, the healthcare solution space.

Additional risks include our ability to effectively manage growth, achieve synergies, responsibly use the data that clients share with us, process, store, protect, and use personal data, including PHI, in compliance with governmental regulation, contractual obligations, and other legal obligations related to privacy and security and avoid interruptions or disruptions in our service or slower than expected load times for our Solution. If we fail to address the risks and difficulties that we face, including those associated with the challenges listed above, our business and our results of operations will be adversely affected.

We have experienced significant net losses since inception, we expect to incur losses in the future, and we may not be able to generate sufficient revenue to achieve and maintain profitability.

We have incurred significant net losses in the past, including net losses of $118.1 million and $137.4 million in the years ended December 31, 2023 and 2022, respectively. We had an accumulated deficit of $1,117.2 million as of December 31, 2023. We expect our costs will increase over time as we continue to invest to grow our business and build relationships with clients, develop our Solution, develop new solutions, and operate as a public company. These efforts may prove to be more expensive than we currently anticipate and external factors, such as macroeconomic challenges, including the high inflationary environment and rising interest rates, could cause an increase in our expenses, and we may not succeed in increasing our revenue sufficiently to offset these higher expenses.

As a result, we may need to raise additional capital through equity and debt financings in order to fund our operations. To date, we have financed our operations principally from the proceeds we received through private sales of equity securities, payments received from sales of our Solution, borrowings under our loan and security agreements, our IPO in July 2019, the Note Offering in April 2020, and an underwritten public offering of 4,882,075 shares (inclusive of the underwriters' over-allotment option to purchase 636,792 shares) of our common stock at $53.00 per share in August 2021, from which we received net proceeds of $245.2 million, after deducting the underwriting discounts and commissions and other offering costs (the Secondary Public Equity Offering).

We may also fail to improve the gross margins of our business. If we are unable to effectively manage these risks and difficulties as we encounter them, our business, financial condition, and results of operations would be adversely affected. Our failure to achieve or maintain profitability could negatively impact the value of our common stock.

The market price of our common stock may be volatile and may decline regardless of our operating performance, and you may lose all or part of your investments.

The market price of our common stock may fluctuate significantly in response to numerous factors, many of which are beyond our control, including:

- overall performance of the equity markets and/or publicly-listed technology companies;
- actual or anticipated fluctuations in our net revenue or other operating metrics;
- changes in the financial projections we provide to the public or our failure to meet these projections;
- failure of securities analysts to initiate or maintain coverage of us, changes in financial estimates by any securities analysts who follow our company, or our failure to meet the estimates or the expectations of investors;
- the economy as a whole and market conditions in our industry;
- rumors and market speculation involving us or other companies in our industry;
- announcements by us or our competitors of significant innovations, acquisitions, strategic partnerships, joint ventures, or capital commitments;
- new laws or regulations or new interpretations of existing laws or regulations applicable to our business;
- lawsuits or investigations threatened or filed against us;
- recruitment or departure of key personnel; and
- other events or factors, including those resulting from macroeconomic challenges (including high inflationary and/or high interest rate environments), war, bank or financial institution failures, incidents of terrorism, public health crises, or responses to these events.

In addition, extreme price and volume fluctuations in the stock markets have affected and continue to affect many technology companies' stock prices. Often, their stock prices have fluctuated in ways unrelated or disproportionate to the companies' operating performance. In the past, stockholders have filed securities class action litigation following periods of market volatility. If we were to become involved in securities litigation, it could subject us to substantial costs, divert resources and the attention of management from our business, and harm our business. Moreover, because of these fluctuations, comparing our results of operations on a period-to-period basis may not be meaningful. You should not rely on our past results as an indication of our future performance. This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our net revenue or results of operations fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated net revenue or earnings forecasts that we may provide.

If securities or industry analysts do not continue to publish research, or publish inaccurate or unfavorable research, about our business, the price of our common stock and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. If industry analysts cease coverage of us, the trading price for our common stock could be negatively affected. If one or more of the analysts who cover us downgrade our common stock or publish inaccurate or unfavorable research about our business, our common stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us on a regular basis, demand for our common stock could decrease, which might cause our common stock price and trading volume to decline.

We cannot guarantee that the Share Repurchase Plan will be fully consummated or will enhance stockholder value, and share repurchases could affect the price of our common stock.

On August 2, 2022, our board of directors authorized and approved the Share Repurchase Plan, pursuant to which we may repurchase up to $40.0 million of our outstanding shares of common stock. We began repurchasing shares of common stock under this program during the third quarter of 2022 and had $29.8 million available to purchase under the Share Repurchase Plan as of December 31, 2023. During the year ended December 31, 2023, we repurchased and retired 145,027 shares of our common stock for $1.8 million at an average purchase price of $12.45 per share. Repurchases of shares of common stock under the Share Repurchase Plan may be made from time to time, in the open market, in privately negotiated transactions or otherwise, with the amount and timing of repurchases to be determined at the discretion of our management, depending on market conditions and corporate needs.

Open market repurchases will be structured to occur in accordance with applicable federal securities laws, including within the pricing and volume requirements of Rule 10b-18 under the Exchange Act. We may also, from time to time, enter into Rule 10b5-1 plans to facilitate repurchases of our shares of common stock under this authorization. The timing, pricing, and sizes of these repurchases will depend on a number of factors, including the market price of our common stock and general market and economic conditions. The Share Repurchase Plan could affect the price of our common stock, increase volatility, and diminish our cash reserves.

Our management has broad discretion in the use of proceeds from our IPO, the Note Offering, and the Secondary Public Equity Offering and our use may not produce a positive rate of return.

The principal purposes of our IPO were to increase our capitalization and financial flexibility, create a public market for our stock and thereby enable access to the public equity markets by our employees and stockholders, obtain additional capital, and strengthen our position in the healthcare data analytics applications and services market. We used a portion of the Note Offering proceeds to pay the cost of the Capped Call transactions and to prepay in full all outstanding indebtedness under our credit agreement with OrbiMed. We cannot specify with certainty our plans for the use of the net proceeds we received from these offerings. However, we intend to use the net proceeds we received from our IPO, the Note Offering, and our Secondary Public Equity Offering for working capital and other general corporate purposes. We may also use a portion of the net proceeds from these offerings for the acquisition of, or investment in, technologies, solutions or businesses that complement our business. Our management has broad discretion over the specific use of the net proceeds we received in these offerings and might not be able to obtain a significant return, if any, on investment of these net proceeds. Investors will need to rely upon the judgment of our management with respect to the use of proceeds. If we do not use the net proceeds that we received in our IPO, the Note Offering, and our Secondary Public Equity Offering effectively, our business, results of operations, and financial condition could be harmed.

Our issuance of additional capital stock in connection with financings, acquisitions, investments, our stock incentive plans, or otherwise will dilute all other stockholders.

We expect to issue additional capital stock in the future that will result in dilution to all other stockholders. We expect to grant equity awards to employees, directors, and consultants under our stock incentive plans. We may also raise capital through equity financings in the future, including through offerings similar to our Secondary Public Equity Offering during the third quarter of 2021.

As part of our business strategy, we may acquire or make investments in complementary companies, products, or technologies and issue equity securities to pay for any such acquisition or investment, such as our issuance of equity securities in connection with our acquisitions. Any such issuances of additional capital stock may cause stockholders to experience significant dilution of their ownership interests and the per-share value of our common stock to decline.

The requirements of being a public company may strain our resources, divert management's attention, and affect our ability to attract and retain executive management and qualified board members.

As a public company, we are subject to the reporting requirements of the Exchange Act, the listing standards of Nasdaq, and other applicable securities rules and regulations. We expect that the requirements of these rules and regulations will continue to increase our legal, accounting, and financial compliance costs, make some activities more difficult, time-consuming, and costly, and place significant strain on our personnel, systems, and resources. For example, the Exchange Act requires, among other things, that we file annual, quarterly, and current reports with respect to our business and results of operations. As a result of the complexity involved in complying with the rules and regulations applicable to public companies, our management's attention may be diverted from other business concerns, which could harm our business, results of operations, and financial condition.

Although we have already hired additional employees to assist us in complying with these requirements, we may need to hire more employees in the future or engage outside consultants, which will increase our operating expenses. In addition, changing laws, regulations, and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs, and making some activities more time-consuming. These laws, regulations, and standards are subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest substantial resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from business operations to compliance activities. If our efforts to comply with new laws, regulations, and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be harmed.

We also expect that being a public company and these new rules and regulations will make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

As a result of disclosure of information in filings required of a public company, our business and financial condition is more visible, which may result in an increased risk of threatened or actual litigation, including by competitors and other third parties. If such claims are successful, our business and results of operations could be harmed, and even if the claims do not result in litigation or are resolved in our favor, these claims, and the time and resources necessary to resolve them, could divert the resources of our management and harm our business, results of operations, and financial condition.

The individuals who now constitute our senior management team have limited experience managing a publicly-traded company and limited experience complying with the increasingly complex laws pertaining to public companies. Our senior management team may not successfully or efficiently manage our transition to a public company that is subject to significant regulatory oversight and reporting obligations.

We do not intend to pay dividends on our common stock and, consequently, the ability of common stockholders to achieve a return on investment will depend on appreciation, if any, in the price of our common stock.

You should not rely on an investment in our common stock to provide dividend income. We have never declared or paid any dividends on our capital stock. We intend to retain any earnings to finance the operation and expansion of our business, and we do not anticipate paying any cash dividends in the foreseeable future. In addition, the terms of any future credit facility or financing we obtain may contain, terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. As a result, common stockholders may only receive a ROI if the market price of our common stock increases.

We could be subject to securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because technology and healthcare technology companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

Risks Related to Our Charter and Bylaws

Provisions in our charter documents and under Delaware law could make an acquisition of our company more difficult, limit attempts by our stockholders to replace or remove our current board of directors, and limit the market price of our common stock.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our amended and restated certificate of incorporation and amended and restated bylaws, include provisions that:

- provide that our board of directors is classified into three classes of directors with staggered three-year terms;
- permit the board of directors to establish the number of directors and fill any vacancies and newly-created directorships;
- require super-majority voting to amend some provisions in our amended and restated certificate of incorporation and amended and restated bylaws;
- authorize the issuance of "blank check" preferred stock that our board of directors could use to implement a stockholder rights plan;
- provide that only a majority of our board of directors will be authorized to call a special meeting of stockholders;
- prohibit stockholder action by written consent, which requires all stockholder actions to be taken at a meeting of our stockholders;
- provide that the board of directors is expressly authorized to make, alter, or repeal our bylaws; and
- advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at annual stockholder meetings.

Moreover, Section 203 of the Delaware General Corporation Law may discourage, delay, or prevent a change in control of our company. Section 203 imposes certain restrictions on mergers, business combinations, and other transactions between us and holders of 15% or more of our common stock.

Our amended and restated bylaws designate a state or federal court located within the State of Delaware as the exclusive forum for certain litigation that may be initiated by our stockholders, which could limit stockholders' ability to obtain a favorable judicial forum for disputes with us.

Our amended and restated bylaws include an exclusive forum provision that provides that the Court of Chancery of the State of Delaware will be the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law:

- any derivative action or proceeding brought on our behalf;

- any action asserting a breach of fiduciary duty owed to us or our stockholders by any of our current or former directors, officers or other employees;

- any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation, or our amended and restated bylaws; or

- any action that is governed by the internal affairs doctrine and asserts a claim against us or any of our current or former directors, officers or other employees or stockholders.

This exclusive forum provision will not apply to any causes of action arising under the Securities Act. Further, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. Accordingly, both state and federal courts have jurisdiction to entertain such Securities Act claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated bylaws provide that, unless we consent in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States of America shall be the exclusive forum for the resolution of any complaint asserting a cause or causes of action arising under the Securities Act; however, a court may not enforce such provision.

This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, or other employees, which may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provision which will be contained in our amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, results of operations, and financial condition.

General Risks

Changes in accounting principles may cause previously unanticipated fluctuations in our financial results, and the implementation of such changes may impact our ability to meet our financial reporting obligations.

We prepare our financial statements in accordance with U.S. GAAP which are subject to interpretation or changes by the Financial Accounting Standards Board (FASB), the SEC, and other various bodies formed to promulgate and interpret appropriate accounting principles. New accounting pronouncements and changes in accounting principles have occurred in the past and are expected to occur in the future which may have a significant effect on our financial results. Furthermore, any difficulties in implementation of changes in accounting principles, including the ability to modify our accounting systems, could cause us to fail to meet our financial reporting obligations, which could result in regulatory discipline and harm investors' confidence in us.

Economic uncertainties or downturns in the general economy or the industries in which our clients operate could disproportionately affect the demand for our Solution and negatively impact our results of operations.

General worldwide economic conditions have experienced significant downturns during the last ten or more years, and market volatility and uncertainty remain widespread, making it potentially very difficult for our clients and us to accurately forecast and plan future business activities.

During challenging economic times, our clients may have difficulty gaining timely access to sufficient credit or obtaining credit on reasonable terms, increased costs, and/or other negative financial impacts, each of which could impair their ability to make timely payments to us, reduce client expansion and new client acquisition, increase client churn, and adversely affect our revenue.
If that were to occur, our financial results could be harmed. Further, challenging economic conditions may impair the ability of our clients to pay for the applications and services they already have purchased from us and, as a result, our write-offs of accounts receivable could increase. We cannot predict the timing, strength, or duration of any economic slowdown or recovery. If the condition of the general economy or markets in which we operate worsens, our business could be harmed.

Investors' expectations of our performance relating to environmental, social, and governance factors may impose additional costs and expose us to new risks.

There is an increasing focus from certain investors, employees, and other stakeholders concerning corporate responsibility, specifically related to environmental, social, and governance factors. Some investors may use these factors to guide their investment strategies and, in some cases, may choose not to invest in us if they believe our policies relating to corporate responsibility are inadequate. Third-party providers of corporate responsibility ratings and reports on companies have increased to meet growing investor demand for measurement of corporate responsibility performance.

The criteria by which companies' corporate responsibility practices are assessed may change, which could result in greater expectations of us and cause us to undertake costly initiatives to satisfy such new criteria. If we elect not to or are unable to satisfy such new criteria, investors may conclude that our policies with respect to corporate responsibility are inadequate. We may face reputational damage in the event that our corporate responsibility procedures or standards do not meet the standards set by various constituencies.

Furthermore, if our competitors' corporate responsibility performance is perceived to be greater than ours, potential or current investors may elect to invest with our competitors instead. In addition, in the event that we communicate certain initiatives and goals regarding environmental, social and governance matters, we could fail, or be perceived to fail, in our achievement of such initiatives or goals, or we could be criticized for the scope of such initiatives or goals. If we fail to satisfy the expectations of investors, employees, and other stakeholders, or, if our initiatives are not executed as planned, our reputation and business, operating results, and financial condition could be adversely impacted.

Item 1B. Unresolved Staff Comments

None.

Item 1C. Cybersecurity

Cybersecurity Risk Management and Strategy

We believe cybersecurity is critical to advancing our company's mission to be the *catalyst* for massive, measurable, data-informed healthcare improvement. We face a multitude of cybersecurity threats that range from attacks common to most industries, such as ransomware and denial-of-service, to attacks from more advanced and persistent, highly organized groups and challenges specific to the healthcare industry. Our clients and suppliers face similar cybersecurity threats, and a cybersecurity incident impacting us or any of these entities could materially adversely affect our operations, performance, and results of operations.

We have developed and implemented a cybersecurity risk management program intended to protect the confidentiality, integrity, and availability of our critical systems and information. Our cybersecurity risk management program includes a cybersecurity incident response plan, which outlines the steps to be followed from incident detection to mitigation, recovery, and notification, including notifying functional areas (e.g., legal and compliance), as well as senior leadership and the board of directors, as appropriate.

Our cybersecurity program incorporates industry-standard frameworks (including third-party certification), policies, and practices designed to protect the privacy and security of our sensitive information. Our third-party certifications for certain Solutions include a HITRUST Common Security Framework certification (which includes standards from frameworks such as HIPAA, ISO, EU, GDPR, NIST, and PCI to provide risk-based certification for companies in the healthcare supply chain) and a Statement on Standards for Attestation Engagements 18 (SSAE 18) System and Organization Control (SOC) 2 report that evaluates our security program.

Assessing, identifying and managing cybersecurity related risks are integrated into our overall enterprise risk management process. Cybersecurity related risks are included in the risk universe that the enterprise risk management function evaluates to assess top risks to the enterprise on an annual basis. To the extent the enterprise risk management process identifies a heightened cybersecurity related risk, risk owners are assigned to develop risk mitigation plans, which are then tracked to completion. The enterprise risk management’s annual risk assessment is presented to the board of directors.

Our cybersecurity risk management program is integrated into our overall enterprise risk management program, and shares common methodologies, reporting channels and governance processes that apply across the enterprise risk management program to other legal, compliance, strategic, operational, and financial risk areas. Our cybersecurity risk management program includes:

- risk assessments designed to help identify material cybersecurity risks to our critical systems, information, products, services, and our broader enterprise information technology environment;
- an information security team principally responsible for managing (i) our cybersecurity risk assessment processes, (ii) our security controls, and (iii) our response to cybersecurity incidents;
- the use of external service providers, where appropriate, to assess, test or otherwise assist with aspects of our security controls;
- cybersecurity awareness training of our employees, incident response personnel, and senior management;
- a cybersecurity incident response plan that includes procedures for responding to cybersecurity incidents; and
- a third-party risk management process for service providers, suppliers, and vendors that have access to our critical systems and information.

We have not identified risks from known cybersecurity threats, including as a result of any prior cybersecurity incidents, that have materially affected or are reasonably likely to materially affect us, including our operations, business strategy, results of operations, or financial condition. Despite the implementation of our cybersecurity program, our security measures cannot guarantee that a significant cyberattack will not occur. A successful attack on our information technology systems could have significant consequences to the business. While we devote resources to our security measures to protect our systems and information, these measures cannot provide absolute security. See “Risk Factors—Risks Related to Data and Intellectual Property” for additional information about the risks to our business associated with a breach or compromise to our information technology systems.

Cybersecurity Governance

Our board of directors oversees management's processes for identifying and mitigating risks, including cybersecurity risks, to help align our risk exposure with our strategic objectives. Our cybersecurity program is led by our Chief Information Security Officer and includes a team of cybersecurity and security compliance professionals. The cybersecurity program is further strengthened through support of our General Counsel and Chief Compliance and Data Privacy Officer. Our legal and cybersecurity teams work closely together to support and bolster our cybersecurity program. Our cybersecurity team reports to our Audit Committee quarterly on information security and cybersecurity matters, or as needed. Our Audit Committee has oversight responsibility for our data security practices and we believe the committee has the requisite skills and visibility into the design and operation of our data security practices to fulfill this responsibility effectively. The Audit Committee reports to the full Board regarding its activities, including those related to cybersecurity, as appropriate. The full Board also receives briefings from management on our cyber risk management program. From time to time, Board members receive presentations on cybersecurity topics from our Chief Information Security Officer (CISO), internal cybersecurity team or external experts as part of the Board's continuing education on topics that impact public companies.

Our management team, including our Chief Information Security Officer and Chief Compliance and Data Privacy Officer, is responsible for assessing and managing our material risks from cybersecurity threats. The team has primary responsibility for our overall cybersecurity risk management program and supervises both our internal cybersecurity personnel and our retained external cybersecurity consultants. Our management team's experience includes more than 75 years of combined IT experience, 35 of which are focused specifically on Information Security. The broader Information Security team's accredited industry certifications include Certified Information Systems Security Professional (CISSP), Certified Information Security Manager (CISM), Certified Information Systems Auditor (CISA), Certificate of Cloud Security Knowledge (CCSK), Certified Cloud Security Professional (CCSP), and Blue Team Level II. The company's current CISO has more than two decades of IT leadership experience and holds several relevant IT and healthcare specific certifications including CISSP, CISM, CCSK and CCSP, and has a Bachelor of Science in Computer Information Systems and a Master of Science in Medical Informatics.

Our management team supervises efforts to prevent, detect, mitigate, and remediate cybersecurity risks and incidents through various means, which may include briefings from internal security personnel; threat intelligence and other information obtained from governmental, public or private sources, including external consultants engaged by us; and alerts and reports produced by security tools deployed in the information technology environment.

Item 2. Properties

Our principal executive offices are located in South Jordan, Utah where we lease facilities totaling approximately 128,037 square feet under a lease agreement that expires on December 31, 2031, of which 54,399 square feet is currently subleased. We use this facility for administration, sales and marketing, technology and development, and professional services. We also lease offices elsewhere for sales, research and development, professional services, and other personnel, including offices in Minneapolis, Minnesota and Hyderabad, India.

We believe that our facilities are adequate to meet our needs for the immediate future, and that, should it be needed, suitable additional space will be available to accommodate any such expansion of our operations.

Item 3. Legal Proceedings

We are, and from time to time may be, party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of these matters could materially affect our future results of operations, cash flows, or financial position. We are not presently party to any other legal proceedings that in the opinion of management, if determined to adversely affect us, may individually or taken together have a material adverse effect on our business, operating results, financial condition, or cash flows.

For information regarding a recent legal proceeding that was dismissed with prejudice on June 20, 2023, refer to Note 16, "Contingencies" to the Consolidated Financial Statements in Item 8, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities

Market information for our common stock

Our common stock began trading on the Nasdaq Global Select Market under the symbol "HCAT" on July 25, 2019. Prior to that date, there was no public trading market for our common stock.

Holders of record

As of December 31, 2023, there were 128 holders of record of our common stock. The actual number of stockholders is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

Dividend policy

We do not intend to pay cash dividends in the foreseeable future.

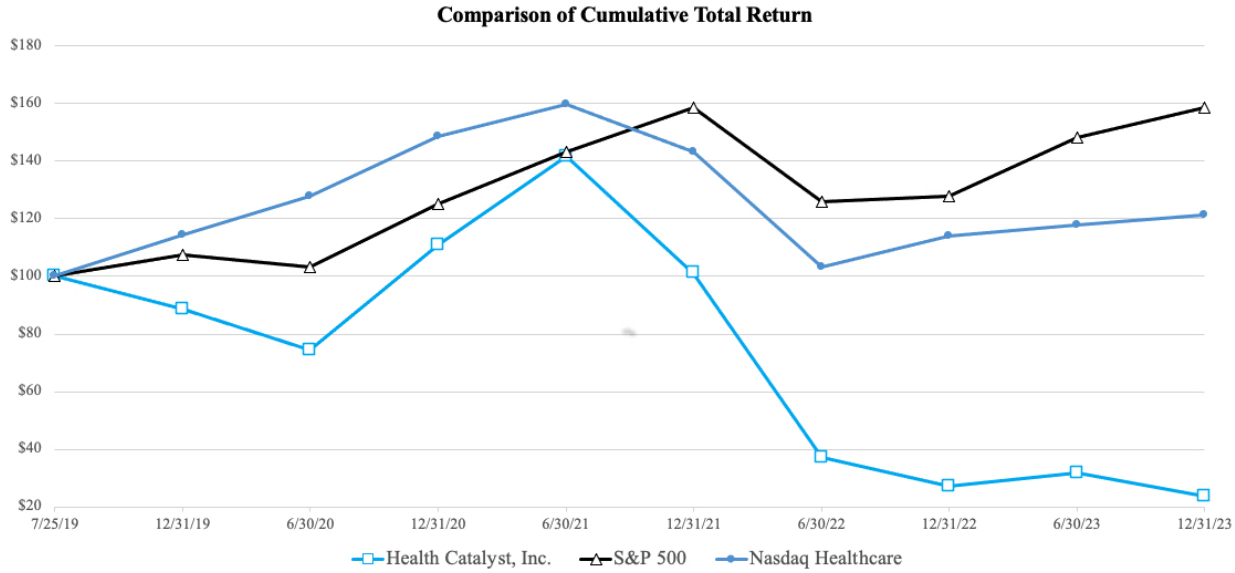
Securities authorized for issuance under equity compensation plans

The information required by this item with respect to our equity compensation plans is incorporated by reference in our proxy statement for the 2024 Annual Meeting of Stockholders to be filed with the SEC within 120 days of the year ended December 31, 2023.

Stock performance graph

The following performance graph and related information is "furnished" and shall not be deemed to be "soliciting material" or "filed" for purposes of Section 18 of the Exchange Act and Regulation 14A under the Exchange Act nor shall such information be incorporated by reference into any filing of Health Catalyst, Inc. under the Exchange Act or the Securities Act, except to the extent we specifically incorporate it by reference in such filing.

The graph set forth below compares the cumulative total return to stockholders on our common stock relative to the cumulative total returns of the S&P 500 Index and Nasdaq Healthcare Index between July 25, 2019 (the date our common stock commenced trading) through December 31, 2023. All values assume a $100 initial investment at market close on July 25, 2019. The initial public offering price of our common stock, which had a closing stock price of $39.17 on July 25, 2019, was $26.00 per share. Data for the S&P 500 and Nasdaq Healthcare indices assume reinvestment of dividends. The comparisons are based on historical data and are not indicative of, nor intended to forecast, the future performance of our common stock.



Company/Index	Jul 25, 2019[1]	Dec 31, 2019	Dec 31, 2020	Dec 31, 2021	Dec 31, 2022	Dec 31, 2023
Health Catalyst, Inc.	$ 100	$ 89	$ 111	$ 101	$ 27	$ 24
S&P 500	$ 100	$ 108	$ 125	$ 159	$ 128	$ 159
Nasdaq Healthcare	$ 100	$ 114	$ 149	$ 143	$ 114	$ 122

(1) Base period

Unregistered Sales of Equity Securities and Use of Proceeds

Unregistered sales of equity securities

During the year ended December 31, 2023, we did not issue or sell any unregistered securities not previously disclosed in a Quarterly Report on Form 10-Q or in a Current Report on Form 8-K.

Issuer purchases of equity securities

None.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements, the accompanying notes, and other financial information included elsewhere in this Annual Report on Form 10-K. This discussion contains forward-looking statements that involve risks, uncertainties, and assumptions. Our actual results could differ materially from those forward-looking statements below. Factors that could cause or contribute to those differences include, but are not limited to, those identified below and those discussed in the sections titled "Risk Factors" and "Special Note Regarding Forward-Looking Statements" included elsewhere in this Annual Report on Form 10-K.

A discussion regarding our financial condition and results of operations for the year ended December 31, 2023 compared to the year ended December 31, 2022 is presented below. A discussion regarding our financial condition and results of operations for the year ended December 31, 2022 compared to the year ended December 31, 2021 is included under "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our prior year Form 10-K filed on February 28, 2023.

Overview

We are a leading provider of data and analytics technology and services to healthcare organizations. Our Solution comprises our cloud-based data platform, software analytics applications, and professional services expertise. Our clients, which are primarily healthcare providers, use our Solution to manage their data, derive analytical insights to operate their organization, and produce measurable clinical, financial, and operational improvements. We envision a future where all healthcare decisions are data-informed.

Health Catalyst was founded in 2008 by healthcare analytics industry pioneers. Our founders and team developed the initial version of our Solution, consisting of an early version of our data platform, select analytics accelerators, and professional services expertise. From the beginning, our Solution has been focused on enabling our mission: to be the catalyst for massive, measurable, data-informed healthcare improvement. We currently employ more than 1,300 team members.

Highlights from the years ended December 31, 2023, 2022, and 2021 include:

- For the years ended December 31, 2023, 2022, and 2021, our total revenue was $295.9 million, $276.2 million, and $241.9 million, respectively. The growth in revenue was primarily due to revenue from new clients, including clients of our recent acquired entities, and existing clients paying higher technology access fees from contractual, annual escalators.

- For the years ended December 31, 2023, 2022, and 2021, we incurred net losses of $118.1 million, $137.4 million, and $153.2 million, respectively.

- For the years ended December 31, 2023, 2022, and 2021, our Adjusted EBITDA was $11.0 million, $(2.5) million, and $(11.2) million, respectively.

See "Reconciliation of Non-GAAP Financial Measures" below for more information about Adjusted EBITDA, including the limitations of Adjusted EBITDA and a reconciliation to the most directly comparable measure calculated in accordance with GAAP. See "Key Factors Affecting Our Performance" for more information about important opportunities and challenges related to our business.

Challenging Macroeconomic Environment

Recent macroeconomic challenges (including high levels of inflation and high interest rates) and the tight labor market continue to adversely affect workforces, organizations, governments, clients, economies, and financial markets globally. These factors have disrupted the normal operations of many businesses, including our business. These factors have also placed the national healthcare system under significant operational and budgetary strain, and will likely continue to do so in the near term.

The health system end market, in particular, is experiencing meaningful financial strain, in which it has realized significant increases in labor and supply costs without a commensurate increase in revenue, leading to a deterioration in operating margins across many of our clients and prospective clients. We anticipate this dynamic to persist for at least the next few quarters, although we have seen incremental improvements in recent months. We have seen a decrease in pipeline demand relative to the period prior to the onset of these macroeconomic factors in 2022, as well as some elevated realized and anticipated down-sell and churn levels, primarily for the parts of our Solution that do not offer near-term, financial ROI, such as our clinically-focused technology offerings and our more traditional consulting Professional Services.

While we have seen that this financial strain has continued to pressure health system budgets, we have continued to hear a strong acknowledgement that our offering includes solutions that directly reduce health systems' current financial pressure, especially related to the segments of our offering that have a clear, near-term financial ROI, such as our TEMS offering, our Financial Empowerment technology suite, and some components of our Population Health technology suite.

With respect to other near-term implications of the challenging macroeconomic environment, we continue to anticipate that a higher proportion of our gross bookings will come from our existing client base as compared to historical levels, inclusive of upsells to both our DOS client base, as well as upsells to our over 525 other more modular non-DOS clients. This expectation is driven by our belief that many existing clients that have already realized a strong ROI, and are aligned on a long-term partnership framework, will be more receptive to expansion conversations, as compared to discussions with prospective clients. Additionally, the elevated technology down-sell and churn levels for DOS Subscription Clients, primarily for the parts of our Solution that do not offer near-term, financial ROI, inclusive of some smaller, more modular DOS relationships, and our aggregate churn levels in 2023 were more heavily weighted toward the first half of 2023.

Our 2023 net new DOS Subscription Clients had a lower average starting annual recurring revenue (ARR) as compared to historical levels. Our average subscription revenue for net new DOS Subscription Clients signed in the year ended December 31, 2023 (new 2023 DOS Subscription Clients), was toward the low end of the average expected range of $500,000 to $1,500,000, driven primarily by greater demand of stand-alone DOS module components, such as Healthcare.AI, which resulted in subscription revenue that is significantly lower than subscription revenue derived from a contract that includes access to all of the DOS platform components and analytic applications. This average ARR range is comprised of new 2023 DOS Subscription Clients with (i) subscription revenue in the expected average range or significantly above the expected average range driven by the size of the client organization and the bundle of technology and services included in their subscription and (ii) subscription revenue meaningfully below the low-end of the expected range driven by sales of stand-alone DOS module components, which provided greater deal certainty in a more challenging macroeconomic environment, and which we believe will provide an opportunity to expand our relationship with these DOS Subscription Clients in the future.

We benefit from a highly recurring revenue model, in which greater than 90% of our revenue is recurring in nature, and a high level of technology revenue predictability, especially within our DOS Subscription Clients whose contracts, when sold as a bundle with our analytics applications, often have built-in, contractual technology revenue escalators.

As previously described, within our professional services segment, a subset of clients have reduced the number of FTEs engaged in their initiatives, while in the technology segment, a subset of modular clients and smaller DOS platform clients have lowered their application and analytics spend. Given the improved bookings performance of our TEMS offering beginning in the second half of 2022 and extending through 2023, a higher proportion of our bookings in 2023 came from our professional services offering relative to 2022, as health systems looked for solutions to effectively address their near-term expense challenges. While this change in bookings mix will lead to lower Adjusted Professional Services Gross Margin and Total Adjusted Gross Margin in future years, we expect that we will achieve improvements in Adjusted EBITDA as a result of the minimal incremental operating expense required to support our TEMS growth. We continue to anticipate that our adjusted operating expenses as a percentage of revenue will trend lower, largely due to our restructuring efforts and meaningful continued operating leverage.

We continue to proactively respond to the challenging macroeconomic environment with a strategic operating plan that emphasizes our offerings and go-to-market approach in the areas where we have the most competitive differentiation and where clients are most likely to achieve measurable financial and operational ROI both in the near term and over time.

We believe this focus will enable us to move forward in a position of continued competitive and financial strength. We will continue to refine this strategic operating plan and are continuing to make several investments in research and development, primarily in enhancing the capabilities within our DOS platform, in order to maintain our position as a market-leading data platform over the long term.

Our Business Model

We offer our Solution to a variety of healthcare organizations, primarily in the United States, including academic medical centers, integrated delivery networks, community hospitals, large physician practices, ACOs, health information exchanges, health insurers, and other risk-bearing entities. We categorize our client count into two primary categories: DOS Subscription Clients and Other Clients. DOS Subscription Clients are defined as clients who directly or indirectly access our DOS platform via a technology subscription contract. Indirect access to the DOS platform may include DOS module components such as Healthcare.AI, Pop Analyzer, IDEA, and other DOS platform components. See "Key Business Metrics and Non-GAAP Financial Measures" below for more information about our DOS Subscription Clients. Other Clients generally include DOS non-subscription clients and other clients from historical acquisitions. As of December 31, 2023, 2022, and 2021, we had 109, 98, and 90 DOS Subscription Clients with active subscriptions, respectively. As of December 31, 2023, we served over 525 Other Clients compared to over 425 as of December 31, 2022. The increase in Other Clients from 2022 to 2023 was primarily due to our acquisition of ERS.

We derive substantially all of our revenue through subscriptions for use of our technology and professional services on a recurring basis. In 2023, greater than 90% of our total revenue was recurring in nature. Clients pay for our technology primarily on a subscription basis for our entire technology suite or for pieces of our technology (e.g., DOS-only or modular portions of DOS, which we have sometimes referred to as DOS Lite). We generally provide access to our technology and deliver professional services to clients on a recurring basis, with our technology invoiced upfront annually or quarterly and our professional services invoiced monthly. Most of our technology and professional services contracts with DOS Subscription Clients have a three or five-year term, of which many are terminable after one year upon 90 days' notice. As we increase the use cases we address at a given client, we have the opportunity to upsell incremental technology and services. We have demonstrated an ability to upsell technology and services to our client base over time as evidenced by a Dollar-based Retention Rate of 100%, 100%, and 112% for the years ended December 31, 2023, 2022, and 2021, respectively.

The primary costs incurred to deliver our technology are hosting fees and headcount-related costs associated with our cloud services and support teams. Hosting fees are related to providing our technology through a cloud-based environment hosted primarily by Microsoft Azure. However, we also have deployed DOS on-premise to a small number of clients. Over time, we plan to continue to migrate our on-premise clients to Azure-hosted environments, increasing our technology cost of revenue. We have experienced and expect to continue to experience operational inefficiencies associated with managing multiple hosting providers, resulting in a headwind against Adjusted Technology Gross Margin. Additionally, we are in the early phases of migrating our DOS platform client base to a single-instance, multi-tenant data platform architecture that includes enhanced elastic compute capabilities supported by Snowflake and Databricks database technologies. We expect that these investments in our DOS platform will provide additional capabilities for our clients as well as improve our ability to drive cost efficiencies in our hosting and support costs per client over time. However, in the medium-term, we will incur some migration costs associated with deploying the updated architecture across DOS platform clients, resulting in a headwind for our Technology Gross Margin. The primary costs incurred to deliver our professional services are the salaries, benefits, and other headcount-related costs of our team members.

We delineate our sales organization by new client acquisition and existing client retention and expansion. Selling efforts to new clients vary. Many of our new clients engage with us broadly for multiple use cases, requiring buy-in during the sales cycle across the C-suite. Alternatively, in some instances, we engage with a client in a single-use case. After we demonstrate measurable improvements, we work with our clients to expand the utilization of our Solution to other use cases or enterprise-wide. The average sales cycle for a new DOS Subscription Client is estimated to be approximately one year, but that timeline can vary materially. Because of our vertical focus on the healthcare industry, we believe our sales and marketing resources can be deployed more efficiently than at horizontally-focused companies that provide technology and services to multiple industries. Additionally, with our increased focus on driving expansion within our existing client base through our TEMS offering, we believe that our sales and marketing infrastructure is positioned well to generate meaningful leverage and growth within our services offerings without the need for the same level of incremental investment as in prior years. This operating leverage primarily stems from the fact that we already have an existing relationship with the client, inclusive of having invested in client success initiatives and having provided account management services to the client since the beginning of our contractual relationship. Over the past few years, we have invested in growth infrastructure by adding to our sales operations and marketing teams, which are built to help us scale over the long term.

We have demonstrated a consistent track record of innovation through research and development over time as evidenced by our new product features and new product offerings. This innovation is driven by feedback we glean from our clients, professional services teams, and the market generally. Our investments in product development have been focused on increasing the capabilities of our Solution and expanding the number of use cases we address for our clients.

Financial Measures and Key Business Metrics

We regularly review a number of metrics, including the following key financial measures, to manage our business and evaluate our operating performance compared to that of other companies in our industry:

	Year Ended December 31,		
	2023	2022	2021
GAAP Financial Measures:	(in thousands, except percentages)		
Technology revenue	$ 187,583	$ 176,288	$ 147,718
Professional services revenue	$ 108,355	$ 99,948	$ 94,208
Total revenue	$ 295,938	$ 276,236	$ 241,926
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Non-GAAP Financial Measures:			
Adjusted Technology Gross Profit	$ 127,744	$ 122,284	$ 102,326
Adjusted Technology Gross Margin	68 %	69 %	69 %
Adjusted Professional Services Gross Profit	$ 16,316	$ 23,565	$ 25,544
Adjusted Professional Services Gross Margin	15 %	24 %	27 %
Total Adjusted Gross Profit	$ 144,060	$ 145,849	$ 127,870
Total Adjusted Gross Margin	49 %	53 %	53 %
Adjusted EBITDA	$ 11,021	$ (2,487)	$ (11,248)

We monitor the key financial measures set forth in the preceding table to help us evaluate trends, establish budgets, measure the effectiveness and efficiency of our operations, and determine team member incentives. We discuss Adjusted Gross Profit, Adjusted Gross Margin, and Adjusted EBITDA in more detail below.

Adjusted gross profit and adjusted gross margin

Adjusted Gross Profit is a non-GAAP financial measure that we define as revenue less cost of revenue, excluding depreciation and amortization, adding back stock-based compensation, acquisition-related costs, net, and restructuring costs as applicable. We define Adjusted Gross Margin as our Adjusted Gross Profit divided by our revenue. We believe Adjusted Gross Profit and Adjusted Gross Margin are useful to investors as they eliminate the impact of certain non-cash expenses, as well as certain other non-recurring operating expenses, and allow a direct comparison of these measures between periods without the impact of non-cash expenses and certain other non-recurring operating expenses. We present both of these measures for our technology and professional services business. We believe these non-GAAP measures are useful in evaluating our operating performance compared to that of other companies in our industry, as these metrics generally eliminate the effects of certain items that may vary from company to company for reasons unrelated to overall profitability.

See “Reconciliation of Non-GAAP Financial Measures” below for information regarding the limitations of using our Adjusted Gross Profit and Adjusted Gross Margin as financial measures and for a reconciliation of revenue to our Adjusted Gross Profit, the most directly comparable financial measure calculated in accordance with GAAP.

Adjusted EBITDA

Adjusted EBITDA is a non-GAAP financial measure that we define as net loss adjusted for (i) interest and other (income) expense, net, (ii) income tax provision (benefit), (iii) depreciation and amortization, (iv) stock-based compensation, (v) acquisition-related costs, net, (vi) litigation costs, (vii) restructuring costs, and (viii) non-recurring lease-related charges. We view acquisition-related expenses when applicable, such as transaction costs and changes in the fair value of contingent consideration liabilities that are directly related to business combinations, as costs that are unpredictable, dependent upon factors outside of our control, and are not necessarily reflective of operational performance during a period. We believe that excluding restructuring costs, litigation costs, and non-recurring lease-related charges allows for more meaningful comparisons between operating results from period to period as these are separate from the core activities that arise in the ordinary course of our business and are not part of our ongoing operations.

We believe Adjusted EBITDA provides investors with useful information on period-to-period performance as evaluated by management and comparison with our past financial performance. We believe Adjusted EBITDA is useful in evaluating our operating performance compared to that of other companies in our industry, as this metric generally eliminates the effects of certain items that may vary from company to company for reasons unrelated to overall operating performance.

See "Reconciliation of Non-GAAP Financial Measures" below for information regarding the limitations of using our Adjusted EBITDA as a financial measure and for a reconciliation of our net loss to Adjusted EBITDA, the most directly comparable financial measure calculated in accordance with GAAP.

Other Key Metrics

We also regularly monitor and review the number of DOS Subscription Clients and Dollar-based Retention Rate as shown in the following tables:

DOS Subscription Clients

	As of December 31,		
	2023	2022	2021
DOS Subscription Clients	109	98	90

Since 2016, our primary contracting model is a subscription-based contract to our DOS platform, analytics applications, and professional services. Given how fundamental DOS is to our Solution and because the vast majority of our total revenue is derived from DOS Subscription Clients, we believe our DOS Subscription Client count is a representation of our market penetration and the growth of our business. We have updated the name of this key metric to DOS Subscription Clients from DOS Subscription Customers used in prior filings as we feel that the client reference more fully depicts the deep, long-standing, multi-faceted relationships we strive to build with the entities we serve.

DOS Subscription Clients are defined as clients who directly or indirectly access our DOS platform via a technology subscription contract. Indirect access to the DOS platform may include DOS module components such as Healthcare.AI, Pop Analyzer, IDEA, and other DOS platform components. Given the variety of ways to access DOS and the mix of specific components of DOS available to be included in a subscription contract, average subscription revenue for new DOS Subscription Clients in a given calendar year can vary. Although subscription revenue from individual DOS Subscription Client arrangements may vary dramatically based on the type and number of DOS modules and applications included in new contracts, we generally expect average subscription revenue for new DOS Subscription Clients in a calendar year will range between $500,000 and $1,500,000.

The average subscription revenue for DOS Subscription Clients signed in the twelve-month period ended December 31, 2023 (2023 DOS Subscription Clients), for instance, was below the midpoint of the average expected range noted in the preceding paragraph, driven primarily by greater growth opportunity through stand-alone DOS module components, such as Healthcare.AI, which resulted in subscription revenue that is significantly lower than subscription revenue derived from a contract that includes enterprise access to all of the DOS platform components and analytic applications. This average ARR range is comprised of new 2023 DOS Subscription Clients with (i) subscription revenue in the expected average range or significantly above the expected average range driven by the size of the client organization and the bundle of technology and services included in their subscription and (ii) subscription revenue meaningfully below the low-end of the expected range driven by sales of stand-alone DOS module components, which provided greater deal certainty in a more challenging macroeconomic environment, and which we believe will provide an opportunity to expand our relationship with these DOS Subscription Clients in the future.

Our net new DOS Subscription Client additions were lower in 2023 and 2022 as compared to 2021 due to the continued financial strain and budget constraints in our end-market. While health system operating margins continue to be challenged relative to longer-term historical levels, we are encouraged to see these operating margins steadily improving in recent quarters. Supported by the continued improvement in the operating environment of our end market, we anticipate improvement in both the net new DOS Subscription Clients added as well as the average subscription revenue per new DOS Subscription Client in 2024 compared to 2023.

Dollar-based Retention Rate

	Year Ended December 31,		
	2023	2022	2021
Dollar-based Retention Rate	100 %	100 %	112 %

We calculate our Dollar-based Retention Rate as of a period end by starting with the sum of the technology and professional services ARR from our DOS Subscription Clients as of the date 12 months prior to such period end (prior period ARR). We then calculate the sum of the ARR from these same clients as of the current period end (current period ARR).

Current period ARR includes any upsells and also reflects contraction or attrition over the trailing twelve months but excludes revenue from new DOS Subscription Clients added in the current period. We then divide the current period ARR by the prior period ARR to arrive at our Dollar-based Retention Rate. We calculate ARR for each DOS Subscription Client as the expected monthly recurring revenue of our clients as of the last day of a period multiplied by 12. Because our primary business model is to contract for our DOS platform, analytics applications, and professional services, our Dollar-Based Retention Rate calculated above only includes our DOS Subscription Clients. Other Clients that do not meet the definition of a DOS Subscription Client, which are primarily legacy Medicity, Able Health, Healthfinch, Vitalware, Twistle, KPI Ninja, ARMUS, and ERS clients, are not included in the Dollar-based Retention Rate metrics.

Given the nature of our technology contracts, which, for many DOS Subscription Clients, are generally priced for multi-year periods and have built-in, contractual escalators, we would generally anticipate less variation within our Dollar-based Retention Rate for technology fees as a result of current challenging macroeconomic factors. However, our technology Dollar-based Retention Rate decreased as of December 31, 2023 and 2022 compared to December 31, 2021 primarily due to the loss of a large enterprise DOS platform client, a decline in our sales pipeline with respect to parts of our Solution that do not offer near-term ROI, such as our clinically-focused technology offerings, and some clients reducing their near-term DOS and analytics application spend with us in an effort to meet their short-term budget requirements. As noted, our Dollar-based Retention Rate Key Metric excludes Other Clients who are not DOS Subscription Clients, including clients added through acquisition, as the go-forward technology revenue growth profiles of these businesses may vary from our core DOS Subscription Clients. For example, Medicity clients have generated a lower Dollar-based Retention Rate than DOS Subscription Clients and we expect flat to declining revenue from Medicity clients in the foreseeable future.

The financial strain imposed by COVID-19 on a number of our clients led to a meaningfully lower professional services dollar-based retention in 2020 compared to prior years due to discounts provided to support our clients through the financial strain related to the initial outbreak. We did not provide similar discounts during 2021 and saw improvement in our Dollar-based Retention Rate for professional services fees compared to 2020. However, 2022 and 2023 proved to be more challenging years than anticipated as a result of the inflationary macroeconomic environment and the meaningful financial strain that our health system end market faced, which contributed to a lower Dollar-based Retention Rate compared to 2021. We anticipate that there will continue to be variation in our professional services Dollar-based Retention Rate in the near term, however, we expect it to improve in 2024 relative to 2023, primarily driven by incremental improvements in the financial health of our end market and continued opportunities to upsell existing DOS Subscription Clients with additional access to technology and to our TEMS offering. While the vast majority of our professional services revenue are recurring in nature, we also provide clients with an option to engage with us for non-recurring, project-based professional services fees. These non-recurring, project-based fees are less predictable than our recurring services and can drive fluctuations in quarterly professional services revenues and in prior period comparisons.

Reconciliation of Non-GAAP Financial Measures

In addition to our results determined in accordance with GAAP, we believe the following non-GAAP measures are useful in evaluating our operating performance. We use the following non-GAAP financial information to evaluate our ongoing operations, as a component in determining employee bonus compensation, and for internal planning and forecasting purposes. We believe that non-GAAP financial information, when taken collectively, may be helpful to investors because it provides consistency and comparability with past financial performance. However, non-GAAP financial information is presented for supplemental informational purposes only, has limitations as an analytical tool, and should not be considered in isolation or as a substitute for financial information presented in accordance with GAAP. In addition, other companies, including companies in our industry, may calculate similarly-titled non-GAAP measures differently or may use other measures to evaluate their performance, all of which could reduce the usefulness of our non-GAAP financial measures as tools for comparison. A reconciliation is provided below for each non-GAAP financial measure to the most directly comparable financial measure stated in accordance with GAAP. Investors are encouraged to review the related GAAP financial measures and the reconciliation of these non-GAAP financial measures to their most directly comparable GAAP financial measures, and not to rely on any single financial measure to evaluate our business.

Adjusted gross profit and adjusted gross margin

Adjusted Gross Profit is a non-GAAP financial measure that we define as revenue less cost of revenue, excluding depreciation and amortization, adding back stock-based compensation, acquisition-related costs, net, and restructuring costs, as applicable. We define Adjusted Gross Margin as our Adjusted Gross Profit divided by our revenue. We believe Adjusted Gross Profit and Adjusted Gross Margin are useful to investors as they eliminate the impact of certain non-cash expenses and allow a direct comparison of these measures between periods without the impact of non-cash expenses and certain other non-recurring operating expenses.

We present both of these measures for our technology and professional services business. We believe these non-GAAP measures are useful in evaluating our operating performance compared to that of other companies in our industry, as these metrics generally eliminate the effects of certain items that may vary from company to company for reasons unrelated to overall profitability.

The following is a reconciliation of revenue to our Adjusted Gross Profit and Adjusted Gross Margin in total and for technology and professional services for the years ended December 31, 2023, 2022, and 2021:

	Year Ended December 31, 2023 (in thousands, except percentages)		
	Technology	Professional Services	Total
Revenue	$ 187,583	$ 108,355	$ 295,938
Cost of revenue, excluding depreciation and amortization	(62,474)	(101,631)	(164,105)
Gross profit, excluding depreciation and amortization	125,109	6,724	131,833
Add:			
Stock-based compensation	1,866	7,369	9,235
Acquisition-related costs, net[1]	273	391	664
Restructuring costs[2]	496	1,832	2,328
Adjusted Gross Profit	$ 127,744	$ 16,316	$ 144,060
Gross margin, excluding depreciation and amortization	67 %	6 %	45 %
Adjusted Gross Margin	68 %	15 %	49 %

(1) Acquisition-related costs, net include deferred retention expenses following the ARMUS, KPI Ninja, and Twistle acquisitions.
(2) Restructuring costs include severance and other team member costs from workforce reductions.

	Year Ended December 31, 2022 (in thousands, except percentages)		
	Technology	Professional Services	Total
Revenue	$ 176,288	$ 99,948	$ 276,236
Cost of revenue, excluding depreciation and amortization	(56,642)	(86,407)	(143,049)
Gross profit, excluding depreciation and amortization	119,646	13,541	133,187
Add:			
Stock-based compensation	2,058	8,230	10,288
Acquisition-related costs, net[1]	351	655	1,006
Restructuring costs[2]	229	1,139	1,368
Adjusted Gross Profit	$ 122,284	$ 23,565	$ 145,849
Gross margin, excluding depreciation and amortization	68 %	14 %	48 %
Adjusted Gross Margin	69 %	24 %	53 %

(1) Acquisition-related costs, net includes deferred retention expenses following the ARMUS, KPI Ninja, and Twistle acquisitions.
(2) Restructuring costs include severance and other team member costs from workforce reductions.

	Year Ended December 31, 2021 (in thousands, except percentages)		
	Technology	Professional Services	Total
Revenue	$ 147,718	$ 94,208	$ 241,926
Cost of revenue, excluding depreciation and amortization	(47,516)	(76,838)	(124,354)
Gross profit, excluding depreciation and amortization	100,202	17,370	117,572
Add:			
Stock-based compensation	2,063	8,047	10,110
Acquisition-related costs, net[(1)]	61	127	188
Adjusted Gross Profit	$ 102,326	$ 25,544	$ 127,870
Gross margin, excluding depreciation and amortization	68 %	18 %	49 %
Adjusted Gross Margin	69 %	27 %	53 %

(1) Acquisition-related costs, net includes deferred retention expenses following the Twistle acquisition.

Adjusted Technology Gross Margin decreased slightly from 69% for the year ended December 31, 2022 to 68% for the year ended December 31, 2023. The year-over-year result was mainly driven by continued costs associated with transitioning a portion of our client base to Azure-hosted environments, as well as from costs associated with migrating a subset of our client base to our multi-tenant, Snowflake and Databricks-enabled data platform environment, partially offset by existing clients paying higher technology access fees from contractual, built-in escalators, without a corresponding increase in hosting costs.

We expect Adjusted Technology Gross Margin to fluctuate and potentially decline in the near term, primarily due to additional costs associated with the ongoing transition of a small number of clients from our managed data centers or on-premise to third-party hosted data centers with Microsoft Azure as well as the migration of a subset of clients to our multi-tenant, Snowflake and Databricks-enabled data platform environment. The potential decline is also attributable to a small subset of modular clients reducing their software analytics application costs, which tend to be higher margin offerings.

Adjusted Professional Services Gross Margin decreased from 24% for the year ended December 31, 2022 to 15% for the year ended December 31, 2023, primarily due to growth in TEMS, which start at a lower gross margin than many of our other professional service offerings, and lower utilization rates.

We expect that the workforce reductions that are part of the 2023 Restructuring Plan will have a positive impact on Adjusted Professional Services Gross Margin; however, we still expect Adjusted Professional Services Gross Margin to fluctuate on a quarterly basis due to changes in the mix of services we provide, the amount of operational overhead required to deliver our services, and clients delaying or reducing services due to the uncertain and challenging macroeconomic environment. Specifically, in the near term, we expect our mix of services to include more TEMS which have minimal initial services gross margins that gradually increase over time as we drive efficiencies in service delivery through the use of our technology. As part of our TEMS contracts, we often re-badge existing health system team members within the applicable functional area as Health Catalyst team members. We often provide a client with a near-term discount relative to their existing costs for the scope of the TEMS opportunity, and we drive incremental gross margin over time by leveraging our technology and know-how to make processes more efficient and reduce the client's labor costs. While there will be a headwind to gross margin from these TEMS in the near term, we believe this model will benefit our mid and long-term Adjusted EBITDA and profitability targets due to improved direct margin on these services over time, our ability to drive operating leverage with lower relative incremental operating expense investment required, and the fact that these contracts typically result in long-term technology subscription contract renewals or expansions.

Adjusted EBITDA

Adjusted EBITDA is a non-GAAP financial measure that we define as net loss adjusted for (i) interest and other (income) expense, net, (ii) income tax provision (benefit), (iii) depreciation and amortization, (iv) stock-based compensation, (v) acquisition-related costs, net, (vi) litigation costs, (vii) restructuring costs, and (viii) non-recurring lease-related charges. We view acquisition-related expenses when applicable, such as transaction costs and changes in the fair value of contingent consideration liabilities that are directly related to business combinations, as costs that are unpredictable, dependent upon factors outside of our control, and are not necessarily reflective of operational performance during a period.

We believe that excluding restructuring costs, litigation costs, and non-recurring lease-related charges allows for more meaningful comparisons between operating results from period to period as this is separate from the core activities that arise in the ordinary course of our business and are not part of our ongoing operations. We believe Adjusted EBITDA provides investors with useful information on period-to-period performance as evaluated by management and a comparison with our past financial performance, and is useful in evaluating our operating performance compared to that of other companies in our industry, as this metric generally eliminates the effects of certain items that may vary from company to company for reasons unrelated to overall operating performance.

Our Adjusted EBITDA improved year-over-year as a result of our revenue growth and cost reduction initiatives as well as the timing of some non-headcount expenses, including the change in timing of our HAS event. We expect Adjusted EBITDA to continue to improve going forward, although it may fluctuate from quarter to quarter as a result of the timing of non-recurring revenue and the seasonality of certain operating costs, including costs related to our HAS event, which we plan to hold next during the first quarter of 2024.

The following is a reconciliation of our Adjusted EBITDA to net loss, the most directly comparable financial measure calculated in accordance with GAAP, for the years ended December 31, 2023, 2022, and 2021:

	Year Ended December 31,		
	2023	2022	2021
	(in thousands)		
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Add:			
Interest and other (income) expense, net	(9,106)	1,678	16,458
Income tax provision (benefit)	356	(4,280)	(6,898)
Depreciation and amortization	42,223	48,297	37,528
Stock-based compensation	55,756	72,104	65,145
Acquisition-related costs, net[1]	5,757	4,894	27,929
Litigation costs[2]	21,279	—	—
Restructuring costs[3]	8,822	8,425	—
Non-recurring lease-related charges[4]	4,081	3,798	1,800
Adjusted EBITDA	$ 11,021	$ (2,487)	$ (11,248)

(1) Acquisition-related costs, net includes third-party fees associated with due diligence, deferred retention expenses, post-acquisition restructuring costs incurred as part of business combinations, and changes in fair value of contingent consideration liabilities for potential earn-out payments. For additional details refer to Notes 1, 2, and 7 in our consolidated financial statements.

(2) Litigation costs include costs related to litigation that are outside the ordinary course of our business. For additional details, refer to Note 16 in our consolidated financial statements.

(3) Restructuring costs include severance and other team member costs from workforce reductions, impairment of discontinued capitalized software projects, and other miscellaneous charges. For additional details, refer to Note 11 in our consolidated financial statements.

(4) Non-recurring lease-related charges includes lease-related impairment charges for the subleased portion of our corporate headquarters. For additional details refer to Note 9 in our consolidated financial statements.

Key Factors Affecting Our Performance

We believe that our future growth, success, and performance are dependent on many factors, including those set forth below. While these factors present significant opportunities for us, they also represent the challenges that we must successfully address in order to grow our business and improve our results of operations.

- ***Impact of challenging macroeconomic environment, including high inflation and high interest rates.*** Recent macroeconomic challenges (including the high levels of inflation and high interest rates) and the tight labor market continue to adversely affect workforces, organizations, governments, clients, economies, and financial markets globally, leading to an economic downturn and increased market volatility. They have also disrupted the normal operations of many businesses, including ours. Our health system end market is currently experiencing meaningful financial strain from significant inflation. In particular, they are experiencing increases in labor and supply costs without a commensurate increase in revenue, leading to significant margin pressure. This margin pressure could continue to decrease healthcare industry spending, adversely affect demand for our technology and services, cause one or more of our clients to file for bankruptcy protection or go out of business, cause one or more of our clients to fail to renew, terminate, or renegotiate their contracts, impact expected spending from new clients, negatively impact collections of accounts receivable, and harm our business, results of operations, and financial condition. It is not possible for us to predict the duration or magnitude of the adverse results of the challenging macroeconomic environment and its effects on our business, results of operations, or financial condition at this time.

- ***Add new clients.*** We believe our ability to increase our client base will enable us to drive growth. Our potential client base is generally in the early stages of data and analytics adoption and maturity. We expect to further penetrate the market over time as potential clients invest in commercial data and analytics solutions. As one of the first data platform and analytics vendors focused specifically on healthcare organizations, we have an early-mover advantage and strong brand awareness. Our clients are large, complex organizations who typically have long procurement cycles which may lead to declines in the pace of our new client additions, which also included small clients.

- ***Leverage recent product and services offerings to drive expansion.*** We believe that our ability to expand within our client base will enable us to drive growth. Over the last few years, we have developed and deployed several new analytics applications including PowerCosting (formerly known as CORUS), PowerLabor, Touchstone, Patient Safety Monitor, Pop Analyzer (formerly known as Population Builder), Value Optimizer, and others. Because we are in the early stages of certain of our applications' lifecycles and maturity, we do not have enough information to know the impact on revenue growth by upselling these applications and associated services to current and new clients.

- ***Impact of acquisitions.*** We have acquired multiple companies over the last few years, including Medicity in June 2018, Able Health in February 2020, Healthfinch in July 2020, Vitalware in September 2020, Twistle in July 2021, KPI Ninja in February 2022, ARMUS in April 2022, and ERS in October 2023. The historical and go-forward revenue growth profiles of these businesses may vary from our core DOS Subscription Clients, which can positively or negatively impact our overall growth rate. For example, Medicity clients have generated a lower dollar-based retention rate than DOS Subscription Clients and we expect declining revenue from Medicity clients in the foreseeable future. As we integrate the teams acquired via our recent acquisitions, we have also incurred integration-related costs and duplicative costs that could impact our operating cost profile in the near term.

- ***Changing revenue mix***. Our technology and professional services offerings have materially different gross margin profiles. While our professional services offerings help our clients achieve measurable improvements and make them stickier, they have lower gross margins than our technology revenue. In 2023, our technology revenue and professional services revenue represented 63% and 37% of total revenue, respectively.

  Changes in our percentage of revenue attributable to Technology and Professional Services would impact future Total Adjusted Gross Margin. For example, in 2024, we expect professional services revenue to become a higher percentage of total revenue as a result of increased demand for Tech-enabled Managed Services that tend to provide an immediate ROI for clients, including in the form of cost savings for the client. Furthermore, changes within the types of professional services we offer over time can have a material impact on our Adjusted Professional Services Gross Margin, impacting our future Total Adjusted Gross Margin. See "Reconciliation of Non-GAAP Financial Measures" above for more information.

- ***Transitions to Microsoft Azure and migration to multi-tenant, Snowflake and Databricks enabled data platform environment.*** We incur hosting fees related to providing DOS through a cloud-based environment hosted by Microsoft Azure. We maintain a small number of clients that have deployed DOS on-premise. We are in the process of migrating clients who deployed DOS on-premise to Azure-hosted environments. The Azure cloud provides clients with more advanced DOS product functionality and a more seamless client experience; however, hosting clients in Azure is more costly than on-premise deployments on a per-client basis. We have also started migrating certain clients to our multi-tenant, Snowflake and Databricks-enabled data platform environment. These transitions have and will continue to result in higher cost of technology revenue and a reduced Adjusted Technology Gross Margin.

Recent Acquisitions

Electronic Registry Systems, Inc. (ERS)

On October 2, 2023, we acquired Electronic Registry Systems, Inc. (ERS), a cloud-based provider of clinical registry development and data management software focused on oncology with advanced data analytics expertise. The acquisition consideration transferred was comprised of net cash consideration of $11.4 million. The ERS shareholders also received Health Catalyst common shares subject to revesting that are accounted for as post-acquisition stock-based compensation.

ARMUS Corporation

On April 29, 2022, we acquired ARMUS, a clinical registry development and data management technology company based in Foster City, California. ARMUS provides data abstraction, data validation, data management, data submission, and data reporting services to support participation in clinical quality registries for healthcare institutions around the world, including health systems, payers, medical device companies, and premier medical societies.

The acquisition consideration transferred was $9.4 million and was comprised of net cash consideration of $9.3 million and Health Catalyst common shares with a fair value of $0.1 million, net of shares subject to revesting that are accounted for as post-acquisition stock-based compensation.

KPI Ninja, Inc.

On February 24, 2022, we acquired KPI Ninja, a leading provider of interoperability, enterprise analytics, and value-based care solutions based in Lincoln, Nebraska. KPI Ninja is known for its powerful capabilities, flexible configurations, and comprehensive applications designed to fulfill the promise of data-driven healthcare. The acquisition consideration transferred was $21.4 million and was comprised of net cash consideration of $18.5 million and Health Catalyst common shares with a fair value of $2.9 million, net of shares subject to revesting that are accounted for as post-acquisition stock-based compensation.

Twistle, Inc.

On July 1, 2021, we acquired Twistle, Inc. (Twistle), a healthcare patient engagement SaaS technology company that automates patient-centered communication between care teams and patients to transform the patient experience, drive better care outcomes, and reduce healthcare costs. We anticipate that Twistle's leading clinical workflow and patient engagement platform, paired with the Health Catalyst population health offering, will enable a comprehensive go-to-market solution to address the population health needs of healthcare and life science organizations. The acquisition consideration transferred was $91.9 million, consisting of net cash consideration of $46.7 million, Health Catalyst common shares with a fair value of $43.1 million, and contingent consideration based on certain earn-out performance targets for Twistle during an earn-out period that ended on June 30, 2022, which had an initial estimated fair value of $2.1 million. The earn-out contingent consideration liability was settled during the third quarter of 2022.

Components of Our Results of Operations

Revenue

We derive our revenue from sales of technology and professional services. For the years ended December 31, 2023, 2022, and 2021, technology revenue represented 63%, 64%, and 61% of total revenue, respectively, and professional services revenue represented 37%, 36%, and 39% of total revenue, respectively.

Technology revenue. Technology revenue primarily consists of subscription fees charged to clients for access to use our data platform and analytics applications. We provide clients access to our technology through either an all-access or limited-access, modular subscription. Most of our subscription contracts are cloud-based and generally have a three or five-year term, of which many are terminable after one year upon 90 days' notice. The vast majority of our DOS subscription contracts have built-in annual escalators for technology access fees. Also included in technology revenue is the maintenance and support we provide, which generally includes updates and support services.

Professional services revenue. Professional services revenue primarily includes analytics services, domain expertise services, TEMS, and implementation services. Professional services arrangements typically include a fee for making FTE services available to our clients on a monthly basis. FTE services generally consist of a blend of analytic engineers, analysts, and data scientists based on the domain expertise needed to best serve our clients.

Deferred revenue

Deferred revenue consists of client billings in advance of revenue being recognized from our technology and professional services arrangements. We primarily invoice our clients for technology arrangements annually or quarterly in advance. Amounts anticipated to be recognized within one year of the balance sheet date are recorded as deferred revenue and the remaining portion is recorded as deferred revenue, net of current portion on our consolidated balance sheets.

Cost of revenue, excluding depreciation and amortization

Cost of technology revenue. Cost of technology revenue primarily consists of costs associated with hosting and supporting our technology, including third-party cloud computing and hosting costs, license and revenue share fees, contractor costs, and salary and related personnel costs for our cloud services and support teams.

Although we expect cost of technology revenue to increase in absolute dollars as we increase headcount, cloud computing, and hosting costs to accommodate growth, and as we continue to transition clients to third-party hosted data centers with Microsoft Azure and the migration of clients to the next iteration of our DOS platform, we anticipate cost of technology revenue as a percentage of technology revenue will generally decrease over the long term. We expect cost of technology revenue as a percentage of technology revenue to fluctuate and potentially increase in the near term, primarily due to additional costs associated with transitioning a small number of clients from on-premise to Microsoft Azure and the migration of clients to the next iteration of our DOS platform.

Cost of professional services revenue. Cost of professional services revenue consists primarily of costs related to delivering our team's expertise in analytics, strategic advisory, improvement, and implementation services. These costs primarily include salary and related personnel costs, travel-related costs, and outside contractor costs. The 2023 Restructuring Plan increased the cost of professional services revenue in the fourth quarter of 2023 due to severance costs, but we expect that the reduction in headcount will reduce future, ongoing cost of professional services revenue. We further expect that the future savings from the reduced headcount will be offset by continued growth in our professional services, including TEMS.

Operating expense

Sales and marketing. Sales and marketing expenses primarily include salary and related personnel costs for our sales, marketing, and account management teams, lead generation, marketing events, including our HAS, marketing programs, and outside contractor costs associated with the sale and marketing of our offerings. We plan to continue to invest in sales and marketing to grow our client base, expand in new markets, and increase our brand awareness. The trend and timing of sales and marketing expenses will depend in part on the timing of our expansion into new markets and marketing campaigns. Our sales and marketing expenses may fluctuate as a percentage of our revenue from period to period due to the timing and extent of these expenses, including due to restructuring initiatives.

Research and development. Research and development expenses primarily include salary and related personnel costs for our data platform and analytics applications teams, subscriptions, and outside contractor costs associated with the development of products. We have developed an open, flexible, and scalable data platform. We plan to continue to invest in research and development to develop new solutions and enhance our applications library. The 2023 Restructuring Plan increased our research and development expenses in the fourth quarter of 2023 due to severance costs, but we expect that the reduction in headcount will reduce future, ongoing research and development expenses. Our research and development expenses may fluctuate as a percentage of our revenue from period to period due to the nature, timing, and extent of these expenses.

General and administrative. General and administrative expenses primarily include salary and related personnel costs for our legal, finance, people operations, IT, and other administrative teams, including certain executives. General and administrative expenses also include facilities, subscriptions, corporate insurance, outside legal, accounting, directors' fees, and the change in fair value of contingent consideration liabilities. Our general and administrative expenses may fluctuate as a percentage of our revenue from period to period due to the timing and extent of these expenses, including due to restructuring initiatives.

Depreciation and amortization. Depreciation and amortization expenses are primarily attributable to our capital investment and consist of fixed asset depreciation, amortization of intangibles considered to have definite lives, and amortization of capitalized internal-use software costs.

Interest and other income (expense), net

Interest and other income (expense), net primarily consists of income from our investment holdings offset by interest expense. Interest expense is primarily attributable to the 2.50% Convertible Senior Notes due 2025 (the Notes) and it also includes the amortization of deferred financing costs related to our debt arrangements. The adoption of ASU 2020-06 reduced our reported interest expense as it relates to our convertible senior notes in 2023 and 2022 as compared to 2021.

Income tax benefit

Income tax benefit consists of U.S. federal, state, and foreign income taxes. Because of the uncertainty of the realization of the deferred tax assets, we have a full valuation allowance for our net deferred tax assets, including net operating loss carryforwards (NOLs) and tax credits related primarily to research and development.

As of December 31, 2023, we had federal and state NOLs of $602.6 million and $505.5 million, respectively, which will begin to expire for federal and state tax purposes in 2032 and 2024, respectively.

Our existing NOLs may be subject to limitations arising from ownership changes and, if we undergo an ownership change in the future, our ability to utilize our NOLs and tax credits could be further limited by Sections 382 and 383 of the Code. Future changes in our stock ownership, many of which are outside of our control, could result in an ownership change under Sections 382 and 383 of the Code. Our NOLs and tax credits may also be limited under similar provisions of state law.

On March 27, 2020, the CARES Act was enacted and signed into U.S. law to provide economic relief to individuals and businesses facing economic hardship as a result of the COVID-19 pandemic. On March 11, 2021, the American Rescue Plan Act (ARPA) was enacted and signed into U.S. law to provide additional economic stimulus and tax credits. Changes in tax laws or rates are accounted for in the period of enactment. The income tax provisions of the CARES Act and ARPA do not have a significant impact on our current taxes, deferred taxes, or uncertain tax positions. The CARES Act also provided for the deferral of an employer's portion of social security payroll taxes for the remainder of 2020. We deferred the social security payroll tax match beginning in April 2020 and fully paid all related deferred payroll taxes in December 2021.

On August 16, 2022, the Inflation Reduction Act of 2022 (IRA) was enacted and signed into U.S. law. The IRA includes provisions imposing a 1% excise tax on share repurchases in excess of the fair value of stock issuances, including compensatory stock issuances, that occur after December 31, 2022 and introduces a 15% corporate alternative minimum tax on adjusted financial statement income. We do not expect the tax provisions of the IRA to have a material impact on our consolidated financial statements.

Results of Operations

The following tables set forth our consolidated results of operations data and such data as a percentage of total revenue for each of the periods indicated:

	Year Ended December 31,		
	2023	2022	2021
	(in thousands)		
Revenue:			
Technology	$ 187,583	$ 176,288	$ 147,718
Professional services	108,355	99,948	94,208
Total revenue	295,938	276,236	241,926
Cost of revenue, excluding depreciation and amortization shown below:			
Technology[(1)(2)(3)]	62,474	56,642	47,516
Professional services[(1)(2)(3)]	101,631	86,407	76,838
Total cost of revenue, excluding depreciation and amortization	164,105	143,049	124,354
Operating expenses:			
Sales and marketing[(1)(2)(3)]	67,321	87,514	75,027
Research and development[(1)(2)(3)]	72,627	75,680	62,733
General and administrative[(1)(2)(3)(4)(5)]	76,559	61,701	85,934
Depreciation and amortization	42,223	48,297	37,528
Total operating expenses	258,730	273,192	261,222
Loss from operations	(126,897)	(140,005)	(143,650)
Interest and other income (expense), net	9,106	(1,678)	(16,458)
Loss before income taxes	(117,791)	(141,683)	(160,108)
Income tax provision (benefit)	356	(4,280)	(6,898)
Net loss	$ (118,147)	$ (137,403)	$ (153,210)

(1) Includes stock-based compensation expense, as follows:

	Year Ended December 31,		
	2023	2022	2021
Stock-Based Compensation Expense:		(in thousands)	
Cost of revenue, excluding depreciation and amortization:			
Technology	$ 1,866	$ 2,058	$ 2,063
Professional services	7,369	8,230	8,047
Sales and marketing	20,982	28,082	22,698
Research and development	11,213	12,938	10,213
General and administrative	14,326	20,796	22,124
Total	$ 55,756	$ 72,104	$ 65,145

(2) Includes acquisition-related costs, net, as follows:

	Year Ended December 31,		
	2023	2022	2021
Acquisition-related costs, net:		(in thousands)	
Cost of revenue, excluding depreciation and amortization:			
Technology	$ 273	$ 351	$ 61
Professional services	391	655	127
Sales and marketing	697	1,894	592
Research and development	787	3,045	901
General and administrative	3,609	(1,051)	26,248
Total	$ 5,757	$ 4,894	$ 27,929

(3) Includes restructuring costs, as follows:

	Year Ended December 31,		
	2023	2022	2021
Restructuring costs:		(in thousands)	
Cost of revenue, excluding depreciation and amortization:			
Technology	$ 496	$ 229	$ —
Professional services	1,832	1,139	—
Sales and marketing	2,415	3,023	—
Research and development	3,337	3,410	—
General and administrative	742	624	—
Total	$ 8,822	$ 8,425	$ —

(4) Includes litigation costs, as follows:

	Year Ended December 31,		
	2023	2022	2021
Litigation costs:		(in thousands)	
General and administrative	$ 21,279	$ —	$ —

(5) Includes non-recurring lease-related charges, as follows:

	Year Ended December 31,		
	2023	2022	2021
Non-recurring lease-related charges:		(in thousands)	
General and administrative	$ 4,081	$ 3,798	$ 1,800

	Year Ended December 31,		
	2023	2022	2021
Revenue:			
Technology	63 %	64 %	61 %
Professional services	37	36	39
Total revenue	100	100	100
Cost of revenue, excluding depreciation and amortization shown below:			
Technology	21	21	20
Professional services	34	31	32
Total cost of revenue, excluding depreciation and amortization	55	52	52
Operating expenses:			
Sales and marketing	23	32	31
Research and development	25	27	26
General and administrative	26	22	36
Depreciation and amortization	14	18	16
Total operating expenses	88	99	109
Loss from operations	(43)	(51)	(61)
Interest and other income (expense), net	3	(1)	(7)
Loss before income taxes	(40)	(52)	(68)
Income tax provision (benefit)	—	(2)	(3)
Net loss	(40)%	(50)%	(65)%

Discussion of the Years Ended December 31, 2023 and 2022

Revenue

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Revenue:				
Technology	$ 187,583	$ 176,288	$ 11,295	6 %
Professional services	108,355	99,948	8,407	8 %
Total revenue	$ 295,938	$ 276,236	$ 19,702	7 %
Percentage of revenue:				
Technology	63 %	64 %		
Professional services	37	36		
Total	100 %	100 %		

Total revenue was $295.9 million for the year ended December 31, 2023, compared to $276.2 million for the year ended December 31, 2022, an increase of $19.7 million, or 7%.

Technology revenue was $187.6 million, or 63% of total revenue, for the year ended December 31, 2023, compared to $176.3 million, or 64% of total revenue, for the year ended December 31, 2022. The technology revenue growth was primarily from new DOS Subscription Clients, acquired technology clients, revenue from existing clients paying higher technology access fees from contractual, annual escalators, and new offerings of expanded support services.

Professional services revenue was $108.4 million, or 37% of total revenue, for the year ended December 31, 2023, compared to $99.9 million, or 36% of total revenue, for the year ended December 31, 2022. The professional services revenue growth is primarily due to implementation, analytics, and other improvement services being provided to new DOS Subscription Clients, which includes TEMS, as well as recognition of certain non-recurring, project-related revenue items.

Cost of revenue, excluding depreciation and amortization

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Cost of revenue, excluding depreciation and amortization:				
Technology	$ 62,474	$ 56,642	$ 5,832	10 %
Professional services	101,631	86,407	15,224	18 %
Total cost of revenue, excluding depreciation and amortization	$ 164,105	$ 143,049	$ 21,056	15 %
Percentage of total revenue	55 %	52 %		

Cost of technology revenue, excluding depreciation and amortization, was $62.5 million for the year ended December 31, 2023, compared to $56.6 million for the year ended December 31, 2022, an increase of $5.8 million, or 10%. The increase was primarily due to a $3.8 million increase in cloud computing and hosting costs largely from the expanded use of Microsoft Azure to serve existing and new clients, a $1.7 million increase in license and revenue share fees, a $0.5 million increase in salary and related personnel costs.

Cost of professional services revenue was $101.6 million for the year ended December 31, 2023, compared to $86.4 million for the year ended December 31, 2022, an increase of $15.2 million, or 18%. This increase was primarily due to a $14.2 million increase in salary and related personnel costs from additional professional services headcount, including new TEMS headcount, a $1.4 million increase in contractor and outside service fees, and a $0.7 million increase in restructuring costs, which were partially offset by a $0.9 million decrease in stock-based compensation.

Operating Expenses

Sales and marketing

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Sales and marketing	$ 67,321	$ 87,514	$ (20,193)	(23)%
Percentage of total revenue	23 %	32 %		

Sales and marketing expenses were $67.3 million for the year ended December 31, 2023, compared to $87.5 million for the year ended December 31, 2022, a decrease of $20.2 million, or 23%. The decrease was primarily due to a $8.4 million decrease in salary and related personnel costs from a reduction in headcount in connection with the 2022 Restructuring Plan, a $7.1 million decrease in stock-based compensation, a $3.5 million decrease in HAS event costs related to a change in timing of the event, and a $0.5 million decrease in travel and entertainment expenses. HAS was last held in September 2022 and will be held again in February 2024.

Sales and marketing expense as a percentage of total revenue decreased from 32% in the year ended December 31, 2022 to 23% in the year ended December 31, 2023.

Research and development

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Research and development	$ 72,627	$ 75,680	$ (3,053)	(4)%
Percentage of total revenue	25 %	27 %		

Research and development expenses were $72.6 million for the year ended December 31, 2023, compared to $75.7 million for the year ended December 31, 2022, a decrease of $3.1 million, or 4%. The decrease was primarily due to a $1.7 million decrease in stock-based compensation and a $1.4 million decrease in salary and related personnel costs from a reduction in development team headcount.

Research and development expense as a percentage of revenue decreased from 27% in the year ended December 31, 2022 to 25% in the year ended December 31, 2023.

General and administrative

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
General and administrative	$ 76,559	$ 61,701	$ 14,858	24 %
Percentage of total revenue	26 %	22 %		

General and administrative expenses were $76.6 million for the year ended December 31, 2023, compared to $61.7 million for the year ended December 31, 2022, an increase of $14.9 million, or 24%. The increase was primarily due to a $21.3 million increase in litigation costs that are out of the ordinary course of business and a $5.9 million increase from the prior year change in fair value of contingent consideration. These increases were partially offset by a $6.5 million decrease in stock-based compensation, a $3.3 million decrease in salary and related personnel costs from a reduction in headcount, a $1.7 million decrease in other legal fees, and a $0.8 million decrease in contractors and outside services.

General and administrative expense as a percentage of revenue increased from 22% in the year ended December 31, 2022 to 26% in the year ended December 31, 2023.

Depreciation and amortization

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Depreciation and amortization	$ 42,223	$ 48,297	$ (6,074)	(13)%
Percentage of total revenue	14 %	17 %		

Depreciation and amortization expenses were $42.2 million for the year ended December 31, 2023, compared to $48.3 million for the year ended December 31, 2022, a decrease of $6.1 million, or (13)%. This decrease was primarily due to certain intangible assets from our business combinations becoming fully amortized.

Depreciation and amortization expense as a percentage of revenue decreased from 17% in the year ended December 31, 2022 to 14% in the year ended December 31, 2023.

Interest and other income (expense), net

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Interest income	$ 16,389	$ 5,687	$ 10,702	188 %
Interest expense	(7,287)	(7,239)	(48)	(1)%
Other income (expense)	4	(126)	130	n/m[(1)]
Total interest and other expense, net	$ 9,106	$ (1,678)	$ 10,784	643 %

(1) Not meaningful

Interest and other income (expense), net increased $10.8 million, or 643%, for the year ended December 31, 2023 compared to the year ended December 31, 2022. This change is primarily due to an increase in interest income on our short-term investments of $10.7 million, primarily due to higher market interest rates, without a commensurate increase in interest expense on our Notes.

Income tax provision (benefit)

	Year Ended December 31,			
	2023	2022	$ Change	% Change
	(in thousands, except percentages)			
Income tax provision (benefit)	$ 356	$ (4,280)	$ 4,636	n/m[(1)]

(1) Not meaningful.

Income tax provision (benefit) increased by $4.6 million for the year ended December 31, 2023 compared to the year ended December 31, 2022. Our income tax provision consists of current and deferred taxes for U.S. federal, state, and foreign income taxes. As we have a full valuation allowance on our net deferred tax assets, our income tax provision typically consists primarily of minimal state and foreign income taxes, which is the case for the year ended December 31, 2023. The income tax benefit of $4.3 million recorded for the year ended December 31, 2022 is primarily related to the discrete deferred tax benefits attributable to the release of a portion of the valuation allowance during the period. The release of our valuation allowance is attributable to the acquisitions of ARMUS and KPI Ninja, which resulted in deferred tax liabilities that, upon acquisition, allowed us to recognize certain deferred tax assets that had previously been offset by a valuation allowance.

Liquidity and Capital Resources

As of December 31, 2023, we had cash, cash equivalents, and short-term investments of $317.7 million, which were held for working capital and other general corporate purposes, which may include acquisitions and strategic transactions. Our cash equivalents and short-term investments are comprised primarily of money market funds, U.S. treasury notes, commercial paper, corporate bonds, and U.S. agency securities.

Since inception, we have financed our operations primarily from the proceeds we received through private sales of equity securities, payments received from clients under technology and professional services arrangements, borrowings under our loan and security agreements, our IPO, the Note Offering, and the Secondary Public Equity Offering. Our future capital requirements will depend on many factors, including our pace of new client growth and expanded client relationships, technology and professional services renewal activity, and the timing and extent of spend to support the expansion of sales, marketing, development, share repurchases, and acquisition-related activities. In the event that additional financing is required from outside sources, we may not be able to raise it on terms acceptable to us, or at all. If we are unable to raise additional capital when desired, our business, results of operations, and financial condition would be adversely affected.

We believe our existing cash, cash equivalents and marketable securities will be sufficient to meet our working capital and capital expenditure needs over at least the next 12 months, though we may require additional capital resources in the future.

Share repurchase plan

On August 2, 2022, our Board of Directors authorized a share repurchase program to repurchase up to $40.0 million of our outstanding shares of common stock (Share Repurchase Plan). During the year ended December 31, 2023, we repurchased and retired 145,027 shares of our common stock for $1.8 million at an average purchase price of $12.45 per share. This is in addition to the 709,139 shares of common stock we repurchased and retired for $8.4 million at an average purchase price of $11.81 per share during the third quarter of 2022. The total remaining authorization for future shares of common stock repurchases under our Share Repurchase Plan is $29.8 million as of December 31, 2023.

Secondary Public Equity Offering

In August 2021, we completed an underwritten public offering of 4,882,075 shares (inclusive of the underwriters' over-allotment option to purchase 636,792 shares) of our common stock at $53.00 per share. We received net proceeds of $245.2 million, after deducting the underwriting discounts and commissions and other offering costs.

The offering was made pursuant to an effective shelf registration statement (File No. 333-258625) filed with the Securities and Exchange Commission. We plan to use the proceeds for continuing operations and potential future acquisitions.

Convertible senior notes

On April 14, 2020, we issued $230.0 million in aggregate principal amount of 2.50% Convertible Senior Notes due 2025 (the Notes), pursuant to an Indenture dated April 14, 2020, with U.S. Bank National Association, as trustee, in a private offering to qualified institutional buyers. We received net proceeds from the sale of the Notes of $222.5 million, after deducting the initial purchasers' discounts and offering expenses payable by us. The Notes are senior, unsecured obligations and will accrue interest payable semiannually in arrears on April 15 and October 15 of each year, beginning on October 15, 2020, at a rate of 2.50% per year. The Notes will mature on April 15, 2025, unless earlier converted, redeemed, or repurchased. The Notes are convertible into cash, shares of our common stock, or a combination of cash and shares of our common stock, with the form of consideration determined at our election. The conversion rate is initially 32.6797 shares of our common stock per $1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately $30.60 per share of our common stock).

Capped Calls

On April 8, 2020, concurrently with the pricing of the Notes, we entered into privately negotiated capped call transactions (Base Capped Calls) with certain financial institutions, or option counterparties. In addition, in connection with the initial purchasers' exercise in full of their option to purchase additional Notes, on April 9, 2020, we entered into additional capped call transactions (Additional Capped Calls, and, together with the Base Capped Calls, the Capped Calls) with each of the option counterparties. We used approximately $21.6 million of the net proceeds from the Note Offering to pay the option premium cost of the Capped Calls. The Capped Calls have initial cap prices of $42.00 per share, subject to certain adjustments. The Capped Calls are expected generally to reduce the potential dilution to our common stock upon any conversion of Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted Notes, as the case may be, with such reduction and/or offset subject to the cap price.

Refer to Note 10 of our consolidated financial statements for additional details regarding the private offering of the Notes and the Capped Calls.

Cash Flows

The following table summarizes our cash flows for the years ended December 31, 2023, 2022, and 2021:

	Year Ended December 31,		
	2023	2022	2021
	(in thousands)		
Net cash used in operating activities	$ (33,080)	$ (35,270)	$ (23,123)
Net cash provided by (used in) investing activities	20,293	(39,021)	(139,678)
Net cash provided by (used in) financing activities	2,730	(2,613)	264,084
Effect of exchange rate changes on cash and cash equivalents	21	(11)	(10)
Net (decrease) increase in cash and cash equivalents	$ (10,036)	$ (76,915)	$ 101,273

Operating activities

Our largest source of operating cash flows is cash collections from our clients for technology and professional services arrangements. Our primary uses of cash from operating activities are for employee-related expenses, marketing expenses, and technology costs.

For the year ended December 31, 2023, net cash used in operating activities was $33.1 million, which included a net loss of $118.1 million. Non-cash charges primarily consisted of $55.8 million in stock-based compensation, $42.2 million in depreciation and amortization, and $4.1 million in impairment of long-lived assets, reduced by $9.7 million of investment discount accretion.

For the year ended December 31, 2022, net cash used in operating activities was $35.3 million, which included a net loss of $137.4 million. Non-cash charges primarily consisted of $72.1 million in stock-based compensation, $48.3 million in depreciation and amortization of property, equipment, and intangible assets, $5.0 million in impairment of long-lived assets, reduced by a $4.7 million net decrease in fair value of contingent consideration liabilities, and a $4.5 million deferred tax benefit. The $3.2 million of payments in excess of the acquisition date fair value to settle the cash-based portion of contingent consideration liabilities was included in the net cash used in operating activities.

For the year ended December 31, 2021, net cash used in operating activities was $23.1 million, which included a net loss of $153.2 million. Non-cash charges primarily consisted of $65.1 million in stock-based compensation, $37.5 million in depreciation and amortization of property, equipment, and intangible assets, a $20.0 million net increase in fair value of contingent consideration liabilities, and $11.9 million in amortization of debt discount and issuance costs, reduced by the $7.1 million deferred tax benefit. The $9.1 million of payments in excess of the acquisition date fair value to settle the cash-based portion of contingent consideration liabilities was included in the net cash used in operating activities.

Investing activities

Net cash provided by investing activities for the year ended December 31, 2023 of $20.3 million was primarily due to the sale and maturity of short-term investments of $336.8 million, reduced by the purchases of short-term investments of $290.8 million. The net investing cash inflows provided by our short-term investment activity was partially offset by investing cash outflows of $11.4 million used to acquire ERS, $12.0 million of capitalized internal-use software development costs, and $2.4 million in purchases of property, equipment, and intangible assets.

Net cash used in investing activities for the year ended December 31, 2022 of $39.0 million was primarily due to $27.8 million used to acquire KPI Ninja and ARMUS, $13.0 million of capitalized internal-use software development costs, and $4.4 million in purchases of property, equipment, and intangible assets. These investing cash outflows were partially offset by the sale and maturity of short-term investments of $315.2 million, reduced by the purchases of short-term investments of $309.0 million.

Net cash used in investing activities for the year ended December 31, 2021 of $139.7 million was primarily due to purchases of short-term investments of $261.4 million, reduced by the sale and maturity of short-term investments of $186.9 million. There were also investing cash outflows of $46.8 million to acquire Twistle, $11.8 million in purchases of property, equipment, and intangible assets, including leasehold improvements and furnishings for our new corporate headquarters, and $6.6 million of capitalized internal-use software development costs.

Financing activities

Net cash provided by financing activities for the year ended December 31, 2023 of $2.7 million was primarily the result of $3.6 million in proceeds from our ESPP and $1.0 million in stock option exercise proceeds, partially offset by $1.8 million in repurchases of common stock.

Net cash used in financing activities for the year ended December 31, 2022 of $2.6 million was primarily the result of $8.4 million in repurchases of common stock and $1.3 million in payments of acquisition-related obligations, partially offset by $4.0 million in stock option exercise proceeds and $3.2 million in proceeds from our ESPP.

Net cash provided by financing activities for the year ended December 31, 2021 of $264.1 million was primarily the result of $245.2 million in public offering proceeds, net of underwriters' discounts and commissions, $20.4 million in stock option exercise proceeds, and $4.8 million in proceeds from our ESPP, reduced by the $6.3 million in payments of acquisition-related obligations.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of these consolidated financial statements requires management to make estimates, assumptions, and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the applicable periods. We base our estimates, assumptions, and judgments on our knowledge and experience about past and current events and on various other factors that we believe to be reasonable under the circumstances. Different assumptions and judgments would change the estimates used in the preparation of our consolidated financial statements, which, in turn, could change the results from those reported. We evaluate our estimates, assumptions, and judgments on an ongoing basis.

The critical accounting estimates, assumptions, and judgments that we believe have the most significant impact on our consolidated financial statements are described below.

Revenue recognition

We derive our revenues primarily from technology subscriptions and professional services. We determine revenue recognition by applying the following steps:

- Identification of the contract, or contracts, with a client;
- Identification of the performance obligations in the contract;
- Determination of the transaction price;
- Allocation of the transaction price to the performance obligations in the contract; and
- Recognition of revenue when, or as, we satisfy the performance obligation.

We recognize revenue net of any taxes collected from clients and subsequently remitted to governmental authorities.

Technology revenue

Technology revenue primarily consists of subscription fees charged to clients for access to use our technology. We provide clients access to our technology through either an all-access or limited-access, modular subscription.

The majority of our subscription arrangements are cloud-based and do not provide clients the right to take possession of the technology or contain a significant penalty if the client were to take possession of the technology. Revenue from cloud-based subscriptions is recognized ratably over the contract term beginning on the date that the service is made available to the client. Our subscription contracts generally have a three or five-year term, of which many are terminable after one year upon 90 days' notice. Subscriptions that allow the client to take software on-premise without significant penalty are treated as time-based licenses. These arrangements generally include access to technology, access to unspecified future products, and maintenance and support. Revenue for upfront access to our technology library is recognized at a point in time when the technology is made available to the client. Revenue for access to unspecified future products included in time-based license subscriptions is recognized ratably over the contract term beginning on the date that the access is made available to the client.

Professional services revenue

Professional services revenue primarily includes data and analytics services, domain expertise services, TEMS, and implementation services. Professional services arrangements typically include a fee for making full-time equivalent (FTE) services available to our clients on a monthly basis. FTE services generally consist of a blend of analytic engineers, analysts, and data scientists based on the domain expertise needed to best serve our clients. Professional services are typically considered distinct from the technology offerings and revenue is generally recognized as the service is provided using the "right to invoice" practical expedient.

Contracts with multiple performance obligations

Many of our contracts include multiple performance obligations. We account for performance obligations separately if they are capable of being distinct within the context of the contract. In these circumstances, the transaction price is allocated to separate performance obligations on a relative standalone selling price basis. We determine standalone selling prices based on the observable price a good or service is sold for separately when available. In cases where standalone selling prices are not directly observable, based on information available, we utilize the expected cost plus a margin, adjusted market assessment, or residual estimation method. We consider all information available including our overall pricing objectives, market conditions, and other factors, which may include client demographics and the types of users. Standalone selling prices are not directly observable for our all-access and limited-access technology arrangements, which are composed of cloud-based subscriptions, time-based licenses, and perpetual licenses. For these technology arrangements, we generally use the residual estimation method due to a limited number of standalone transactions and/or prices that are highly variable.

Variable consideration

We have also entered into at-risk and shared savings arrangements with certain clients whereby we receive variable consideration based on the achievement of measurable improvements which may include cost savings or performance against metrics. For these arrangements, we estimate revenue using the most likely amount that we will receive. Estimates are based on our historical experience and best judgment at the time to the extent it is probable that a significant reversal of revenue recognized will not occur. Due to the nature of our arrangements, certain estimates may be constrained until the uncertainty is further resolved.

Business combinations

The results of businesses acquired in a business combination are included in our consolidated financial statements from the date of the acquisition. Purchase accounting results in assets and liabilities of an acquired business generally being recorded at their estimated fair value on the acquisition date. Any excess consideration over the fair value of the identifiable assets acquired and liabilities assumed is recognized as goodwill.

We perform valuations of assets acquired and liabilities assumed on each acquisition accounted for as a business combination in order to record the tangible and intangible assets acquired and liabilities assumed based on our best estimate of fair value. Determining the fair value of assets acquired and liabilities assumed requires management to use significant judgment and estimates including the selection of valuation methodologies, estimates of future revenue and cash flows, discount rates, and selection of comparable companies. Significant estimation is required in determining the fair value of the client-related intangible assets and technology-related intangible assets. The significant estimation is primarily due to the judgmental nature of the inputs to the valuation models used to measure the fair value of these intangible assets, as well as the sensitivity of the respective fair values to the underlying significant assumptions. We typically use the income approach or cost approach to measure the fair value of intangible assets. The significant assumptions used to form the basis of the estimates included the number of engineer hours required to develop technology, expected revenue including revenue growth rates, rate and timing of obsolescence, royalty rates and earnings before interest, taxes, depreciation and amortization (EBITDA) margin used in the estimate for client relationships, and backlog.

Many of these significant assumptions are forward-looking and could be affected by future economic and market conditions. We engage the assistance of valuation specialists in concluding on fair value measurements in connection with determining fair values of material assets acquired and liabilities assumed in a business combination. Transaction costs associated with business combinations are expensed as incurred and are included in general and administrative expense in our consolidated statements of operations and comprehensive loss.

Goodwill

We record goodwill as the difference between the aggregate consideration paid for a business combination and the fair value of the identifiable net tangible and intangible assets acquired. Goodwill includes the know-how of the assembled workforce, the ability of the workforce to further improve technology and product offerings, client relationships, and the expected cash flows resulting from these efforts. Goodwill may also include expected synergies resulting from the complementary strategic fit these businesses bring to existing operations. Goodwill is assessed for impairment annually on October 31 or more frequently if indicators of impairment are present or circumstances suggest that impairment may exist.

Our first step in the goodwill impairment test is a qualitative analysis of factors that could be indicators of potential impairment. Judgment in the assessment of qualitative factors of impairment may include changes in business climate, market conditions, or other events impacting the reporting unit.

Next, if a quantitative analysis is necessary, we compare the fair value of the reporting unit with its carrying amount, including goodwill. Performing a quantitative goodwill impairment test includes the determination of the fair value of a reporting unit, which requires management to use significant judgment and estimation. The significant estimation is primarily due to the judgmental nature of the inputs to the valuation models used to measure the fair value of the reporting units, as well as the sensitivity of the respective fair values to the underlying significant assumptions. We typically use the income or market approach to measure the fair value of reporting units. The significant assumptions used to form the basis of the estimates include, among others, the selection of valuation methodologies, estimates of expected revenue, including revenue growth rates, and operating margins used to calculate projected future cash flows, risk-adjusted discount rates, and the selection of appropriate market comparable companies. Many of these significant assumptions are forward-looking and could be affected by future economic and market conditions. When a quantitative analysis is necessary, we engage the assistance of valuation specialists in concluding on fair value measurements in connection with determining the fair values of our reporting units.

If the fair value of the reporting unit exceeds its carrying amount, the goodwill of the reporting unit is not considered impaired. If the carrying amount of the reporting unit exceeds its fair value, we would recognize a goodwill impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value.

Stock-based compensation

Stock-based awards, including stock options, restricted stock units (RSUs), performance-based restricted stock units (PRSUs), and restricted shares are measured and recognized in the consolidated financial statements based on the fair value of the award on the grant date or, when applicable, the modification date. The grant date fair value of our stock-based awards is typically determined using the market closing price of our common stock on the date of grant; however, we also consider whether any adjustments are required when the market closing price does not reflect certain material non-public information that we know but is unavailable to marketplace participants on the date of grant. The expense is recognized straight-line over the vesting period for awards with a service condition. The accelerated attribution method is used for PRSUs. We record forfeitures of stock-based awards as the actual forfeitures occur.

For awards subject to performance conditions, we record expense when the performance condition becomes probable. Each reporting period, we evaluate the probability of achieving the performance criteria, estimate the number of shares that are expected to vest, and adjust the related compensation expense accordingly. For awards subject to market conditions, we estimate the fair value as of the grant date using a Monte Carlo simulation valuation model which requires the use of various assumptions, including historic stock price volatility and risk-free interest rates as of the valuation date corresponding to the length of time remaining in the performance period. Stock-based compensation expense for awards with market conditions is recognized over the requisite service period using the accelerated attribution method and is not reversed if the market condition is not met.

Stock-based compensation expense related to purchase rights issued under the 2019 Health Catalyst Employee Stock Purchase Plan (ESPP) is based on the Black-Scholes option-pricing model fair value of the estimated number of awards as of the beginning of the offering period. Stock-based compensation expense is recognized using the straight-line method over the offering period. We will continue to use judgment in evaluating the assumptions related to our stock-based compensation on a prospective basis. As we continue to accumulate additional data related to our common stock, we may have refinements to our estimates, which could materially impact our future stock-based compensation expense.

Recent Accounting Pronouncements

See "Description of Business and Summary of Significant Accounting Policies" in Note 1 to our audited consolidated financial statements included within Item 8 in this Annual Report on Form 10-K for more information.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to certain market risks in the ordinary course of our business. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in interest rates but may include foreign currency exchange risk and inflation in the future.

Interest rate risk

We had cash, cash equivalents, and short-term investments of $317.7 million and $363.5 million as of December 31, 2023 and 2022, respectively, which are held for working capital purposes. We do not make investments for trading or speculative purposes. Our cash equivalents and short-term investments are subject to market risk due to changes in interest rates. Fixed-rate securities may have their market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than expected if interest rates fall. Due in part to these factors, our future investment income may fluctuate due to changes in interest rates or we may suffer losses in principal if we are forced to sell securities that decline in market value due to changes in interest rates. However, because we classify our investments as "available for sale," no gains or losses are recognized due to changes in interest rates unless such securities are sold prior to maturity or declines in fair value are determined to be other-than-temporary.

As of December 31, 2023 and 2022, a hypothetical 100 basis point change in interest rates would not have had a material impact on the value of our cash equivalents or investment portfolio. Fluctuations in the value of our cash equivalents and investment portfolio caused by a change in interest rates (gains or losses on the carrying value) are recorded in other comprehensive income and are realized only if we sell the underlying securities prior to maturity.

On April 14, 2020, we issued $230.0 million in aggregate principal amount Convertible Senior Notes due 2025 (Notes), in a private placement to qualified institutional buyers exempt from registration under the Securities Act (Note Offering). The Notes have a fixed annual interest rate of 2.50%, and, therefore, we do not have economic interest rate exposure on the Notes. However, the values of the Notes are exposed to interest rate risk. Generally, the fair value of our fixed interest rate Notes will increase as interest rates fall and decrease as interest rates rise. We carry the Notes as face value less unamortized discount on our Consolidated Balance Sheets, and we present the fair value for required disclosure purposes only.

Foreign currency exchange risk

Our reporting currency is the U.S. dollar, and the functional currency of our international subsidiaries is typically their local currency. Our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates, particularly changes in the Indian Rupee and Singapore Dollar. Due to the relatively small size of our international operations to date, our foreign currency exposure has been fairly limited and not material to our business.

Accordingly, we have not instituted a hedging program. We are considering the costs and benefits of initiating such a program and may in the future hedge balances and transactions denominated in currencies other than the U.S. dollar as we expand international operations. Today, our international sales contracts are generally denominated in U.S. dollars, while our international operating expenses are often denominated in local currencies. In the future, an increasing portion of our international sales contracts may be denominated in local currencies. Additionally, as we expand our international operations a larger portion of our operating expenses will be denominated in local currencies. Therefore, fluctuations in the value of the U.S. dollar and foreign currencies may affect our results of operations when translated into U.S. dollars.

Inflation risk

The recently high inflationary environment has adversely affected workforces, organizations, governments, clients, economies, and financial markets globally, leading to an economic downturn and increased market volatility. It has also disrupted the normal operations of many businesses, including ours.

Our health system end market is currently experiencing meaningful financial strain from significant inflation with increases in labor and supply costs without a commensurate increase in revenue, leading to significant margin pressure. Although we are unable to determine the exact impact of inflation on our clients and on our business, we continue to monitor and assess the impact of inflationary pressures on our business operations. If our costs, including labor costs, were to become subject to significant inflationary pressures on an ongoing basis, we may not be able to fully offset such higher costs by increasing fees for our Solution. Our inability or failure to do so could harm our business, results of operations, or financial condition.

Contractual Obligations and Commitments

The contractual commitment amounts summarized below are associated with agreements that are enforceable and legally binding and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions, and the approximate timing of the transaction. In the ordinary course of business, we enter into agreements of varying scope and terms pursuant to which we agree to indemnify clients or business partners and other parties with respect to certain matters, including, but not limited to, losses arising out of the breach of such agreements, services to be provided by us or from data breaches, or intellectual property infringement claims made by third parties. No demands have been made upon us to provide indemnification under such agreements and there are no claims that we are aware of that could have a material effect on our consolidated financial statements.

Convertible senior notes

On April 14, 2020, we issued $230.0 million in aggregate principal amount of 2.50% Convertible Senior Notes due in 2025. The Notes are senior, unsecured obligations and accrue interest payable semiannually in arrears on April 15 and October 15 of each year, beginning on October 15, 2020, at a rate of 2.50% per year. The Notes will mature on April 15, 2025, unless earlier converted, redeemed, or repurchased. The Notes are convertible into cash, shares of our common stock, or a combination of cash and shares of our common stock, with the form of consideration determined at our election. The conversion rate is initially 32.6797 shares of our common stock per $1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately $30.60 per share of our common stock).

Refer to Note 10 of our audited consolidated financial statements included within Item 8 in this Annual Report on Form 10-K for more information regarding our contractual obligations related to these convertible senior notes.

Operating lease obligations

We lease office space under operating leases that expire between 2024 and 2031. As of December 31, 2023, we had total future operating lease payment obligations of $25.6 million, with $3.4 million payable within the next 12 months.

Refer to Note 9 of our audited consolidated financial statements included within Item 8 in this Annual Report on Form 10-K for more information regarding our operating lease obligations.

Purchase commitments

As of December 31, 2023, we had $41.5 million of remaining non-cancelable contractual commitments related to our third-party cloud infrastructure agreements, under which we committed to spend an aggregate of at least $45.8 million between February 2023 and January 2028. We expect to fully consume these contractual commitments in the ordinary course of operations.

Restructuring liabilities

During the year ended December 31, 2023, we initiated a restructuring plan to optimize our cost structure and focus our investment of resources in key priority areas to align with strategic changes. As of December 31, 2023, we had total restructuring liabilities of $2.4 million payable within the next 12 months.

Refer to Note 11 of our audited consolidated financial statements included within Item 8 in this Annual Report on Form 10-K for more information regarding our restructuring liabilities.

Off-balance sheet arrangements

As of December 31, 2023, we did not have any relationships with unconsolidated organizations or financial partnerships, such as structured finance or special purpose entities that would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Item 8. Financial Statements and Supplementary Data.

HEALTH CATALYST, INC.

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Health Catalyst, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Health Catalyst, Inc. (the Company) as of December 31, 2023 and 2022, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2023, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 22, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue Recognition – identification of and accounting for performance obligations

Description of the Matter

As described in Note 1 and Note 3 to the consolidated financial statements, the Company primarily derives its revenues from recurring technology and professional services subscriptions. When the Company's contracts contain multiple performance obligations that are determined to be distinct, the performance obligations are accounted for separately. In such cases, the transaction price is allocated to the distinct performance obligations on a standalone selling price basis and the timing of revenue recognition is determined separately for each performance obligation.

How We Addressed the Matter in Our Audit

Auditing the Company's determination of distinct performance obligations, the allocation of the transaction price based on a standalone selling price and the timing of revenue recognition can be challenging. Judgment is involved to determine the distinct performance obligations, standalone selling price, and the timing of revenue recognition. For example, there may be nonstandard terms and conditions or changes in management's business practices that can have a material effect on the distinct performance obligations, the appropriate standalone selling price and the timing of revenue recognition.

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's process to determine the distinct performance obligations, standalone selling prices for each performance obligation, allocate the transaction price to the performance obligations and determine the appropriate timing of revenue recognition for each distinct performance obligation.

Our audit procedures included, among others, testing a sample of contracts. For each contract selection, we read the executed contract to assess management's evaluation of significant nonstandard terms and conditions and tested the appropriateness of the determination of distinct performance obligations. We also tested the allocation of the transaction price and management's determination of standalone selling price for performance obligations by assessing the appropriateness of the methodology applied, testing the calculations for mathematical accuracy and testing selections to corroborate the data underlying the Company's calculations. To test the timing of revenue recognition and the appropriateness of the methodology employed for each distinct performance obligation, we tested the amounts recognized as revenue or recorded as deferred revenue. Additionally, we performed substantive analytical procedures, including a correlation analysis between revenue, deferred revenue, accounts receivable and cash. We also tested the accuracy and completeness of relevant underlying data.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2012.

Salt Lake City, Utah
February 22, 2024

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Health Catalyst, Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Health Catalyst, Inc.'s internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Health Catalyst, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of Health Catalyst, Inc. as of December 31, 2023 and 2022, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2023, and the related notes and our report dated February 22, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Salt Lake City, Utah
February 22, 2024

HEALTH CATALYST, INC.

Consolidated Balance Sheets
(in thousands, except share and per share data)

	As of December 31,	
	2023	**2022**
Assets		
Current assets:		
Cash and cash equivalents	$ 106,276	$ 116,312
Short-term investments	211,452	247,178
Accounts receivable, net[(1)]	60,290	47,970
Prepaid expenses and other assets	15,379	16,335
Total current assets	393,397	427,795
Property and equipment, net	25,712	25,928
Operating lease right-of-use assets	13,927	16,658
Intangible assets, net	73,384	92,189
Goodwill	190,652	185,982
Other assets	4,742	3,734
Total assets	$ 701,814	$ 752,286
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 6,641	$ 4,424
Accrued liabilities	23,282	19,691
Deferred revenue[(1)]	55,753	54,961
Operating lease liabilities	3,358	3,434
Total current liabilities	89,034	82,510
Convertible senior notes	228,034	226,523
Deferred revenue, net of current portion	77	105
Operating lease liabilities, net of current portion	17,676	18,017
Other liabilities	74	121
Total liabilities	334,895	327,276
Commitments and contingencies (Notes 9 and 16)		
Stockholders' equity:		
Preferred stock, $0.001 par value per share; 25,000,000 shares authorized and no shares issued and outstanding as of December 31, 2023 and 2022	—	—
Common stock, $0.001 par value per share, and additional paid-in capital; 500,000,000 shares authorized as of December 31, 2023 and 2022; 58,295,491 and 55,261,922 shares issued and outstanding as of December 31, 2023 and 2022, respectively	1,484,056	1,424,681
Accumulated deficit	(1,117,170)	(999,023)
Accumulated other comprehensive income (loss)	33	(648)
Total stockholders' equity	366,919	425,010
Total liabilities and stockholders' equity	$ 701,814	$ 752,286

(1) Includes amounts attributable to related party transactions. See Note 18 for further details.

The accompanying notes are an integral part of these consolidated financial statements.

HEALTH CATALYST, INC.

Consolidated Statements of Operations
(in thousands, except per share data)

	Year Ended December 31,		
	2023	**2022**	**2021**
Revenue[(1)]:			
Technology	$ 187,583	$ 176,288	$ 147,718
Professional services	108,355	99,948	94,208
Total revenue	295,938	276,236	241,926
Cost of revenue, excluding depreciation and amortization[(1)]:			
Technology	62,474	56,642	47,516
Professional services	101,631	86,407	76,838
Total cost of revenue, excluding depreciation and amortization	164,105	143,049	124,354
Operating expenses:			
Sales and marketing	67,321	87,514	75,027
Research and development	72,627	75,680	62,733
General and administrative	76,559	61,701	85,934
Depreciation and amortization	42,223	48,297	37,528
Total operating expenses	258,730	273,192	261,222
Loss from operations	(126,897)	(140,005)	(143,650)
Interest and other income (expense), net	9,106	(1,678)	(16,458)
Loss before income taxes	(117,791)	(141,683)	(160,108)
Income tax provision (benefit)	356	(4,280)	(6,898)
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Net loss per share, basic	$ (2.09)	$ (2.56)	$ (3.23)
Net loss per share, diluted	$ (2.09)	$ (2.63)	$ (3.23)
Weighted-average shares outstanding used in calculating net loss per share, basic	56,418	53,722	47,495
Weighted-average shares outstanding used in calculating net loss per share, diluted	56,418	54,080	47,495

(1) Includes amounts attributable to related party transactions. See Note 18 for further details.

The accompanying notes are an integral part of these consolidated financial statements.

HEALTH CATALYST, INC.

Consolidated Statements of Comprehensive Loss
(in thousands)

	Year Ended December 31,		
	2023	**2022**	**2021**
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Other comprehensive gain (loss):			
Change in net unrealized gains (losses) on available for sale investments	662	(487)	(102)
Change in foreign currency translation adjustment	19	(94)	(26)
Comprehensive loss	$ (117,466)	$ (137,984)	$ (153,338)

The accompanying notes are an integral part of these consolidated financial statements.

HEALTH CATALYST, INC.
Consolidated Statements of Stockholders' Equity
(in thousands, except share data)

	Common Stock and Additional Paid-In Capital		Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
	Shares	Amount			
Balance as of January 1, 2021	43,376,848	$ 1,001,688	$ (725,650)	$ 61	$ 276,099
Public offering, net of underwriters' discounts and commissions and offering costs	4,882,075	245,180	—	—	245,180
Issuance of common stock as acquisition consideration	762,765	43,104	—	—	43,104
Issuance of common stock for settlement of contingent consideration	409,029	20,083	—	—	20,083
Exercise of stock options	1,738,027	20,350	—	—	20,350
Vesting of restricted stock units and restricted shares	1,316,657	2	—	—	2
Issuance of common stock under ESPP	136,679	4,837	—	—	4,837
Stock-based compensation	—	65,781	—	—	65,781
Net loss	—	—	(153,210)	—	(153,210)
Other comprehensive loss	—	—	—	(128)	(128)
Balance as of December 31, 2021	52,622,080	$ 1,401,025	$ (878,860)	$ (67)	$ 522,098
Cumulative effect of adoption of ASU 2020-06	—	(61,213)	17,240	—	(43,973)
Vesting of restricted stock units and restricted shares	2,060,836	—	—	—	—
Issuance of common stock under ESPP	303,685	3,153	—	—	3,153
Exercise of stock options	353,499	3,969	—	—	3,969
Issuance of common stock for settlement of contingent consideration	517,575	10,052	—	—	10,052
Issuance of common stock as acquisition consideration	113,386	3,006	—	—	3,006
Repurchase of common stock	(709,139)	(8,393)	—	—	(8,393)
Stock-based compensation	—	73,082	—	—	73,082
Net loss	—	—	(137,403)	—	(137,403)
Other comprehensive loss	—	—	—	(581)	(581)
Balance as of December 31, 2022	55,261,922	$ 1,424,681	$ (999,023)	$ (648)	$ 425,010
Vesting of restricted stock units and restricted shares	2,628,206	—	—	—	—
Issuance of common stock under ESPP	419,680	3,588	—	—	3,588
Exercise of stock options	130,710	950	—	—	950
Repurchase of common stock	(145,027)	(1,808)	—	—	(1,808)
Stock-based compensation	—	56,645	—	—	56,645
Net loss	—	—	(118,147)	—	(118,147)
Other comprehensive income	—	—	—	681	681
Balance as of December 31, 2023	58,295,491	$ 1,484,056	$ (1,117,170)	$ 33	$ 366,919

The accompanying notes are an integral part of these consolidated financial statements.

HEALTH CATALYST, INC.

Consolidated Statements of Cash Flows

(in thousands)

	Year Ended December 31,		
	2023	**2022**	**2021**
Cash flows from operating activities			
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Adjustments to reconcile net loss to net cash used in operating activities:			
Stock-based compensation expense	55,756	72,104	65,145
Depreciation and amortization	42,223	48,297	37,528
Investment (discount accretion) and premium amortization	(9,720)	(2,236)	1,202
Impairment of long-lived assets	4,081	5,023	1,800
Non-cash operating lease expense	2,990	3,231	3,585
Provision for expected credit losses	1,821	691	499
Amortization of debt discount and issuance costs	1,511	1,500	11,948
Deferred tax provision (benefit)	8	(4,523)	(7,134)
Change in fair value of contingent consideration liabilities	—	(4,668)	20,036
Payment of acquisition-related contingent consideration	—	(3,234)	(9,085)
Other	67	(145)	(53)
Change in operating assets and liabilities:			
Accounts receivable	(13,663)	788	102
Prepaid expenses and other assets	164	(478)	(4,442)
Accounts payable, accrued liabilities, and other liabilities	4,868	(4,702)	5,202
Deferred revenue	(1,487)	(5,997)	7,637
Operating lease liabilities	(3,552)	(3,518)	(3,883)
Net cash used in operating activities	(33,080)	(35,270)	(23,123)
Cash flows from investing activities			
Proceeds from the sale and maturity of short-term investments	336,801	315,171	186,893
Purchase of short-term investments	(290,836)	(308,961)	(261,363)
Capitalization of internal-use software	(11,957)	(12,987)	(6,644)
Acquisition of businesses, net of cash acquired	(11,392)	(27,846)	(46,763)
Purchases of property and equipment	(1,236)	(2,167)	(10,450)
Purchase of intangible assets	(1,118)	(2,260)	(1,373)
Proceeds from the sale of property and equipment	31	29	22
Net cash provided by (used in) investing activities	20,293	(39,021)	(139,678)
Cash flows from financing activities			
Proceeds from employee stock purchase plan	3,588	3,153	4,844
Repurchase of common stock	(1,808)	(8,393)	—
Proceeds from exercise of stock options	950	3,969	20,350
Payments of acquisition-related consideration	—	(1,342)	(6,290)
Proceeds from public offerings, net of discounts, commissions, and offering costs	—	—	245,180
Net cash provided by (used in) financing activities	2,730	(2,613)	264,084
Effect of exchange rate changes on cash and cash equivalents	21	(11)	(10)
Net (decrease) increase in cash and cash equivalents	(10,036)	(76,915)	101,273
Cash and cash equivalents at beginning of period	116,312	193,227	91,954
Cash and cash equivalents at end of period	$ 106,276	$ 116,312	$ 193,227
Supplemental disclosures of cash flow information			
Cash paid for interest	$ 5,750	$ 5,750	$ 6,360
Cash paid for income taxes, net	266	297	138

Supplemental disclosures of non-cash investing and financing information			
Operating lease right-of-use assets obtained in exchange for operating lease obligations	$ 2,033	$ 169	$ —
Purchase of intangible assets included in accounts payable and accrued liabilities	1,310	488	520
Stock-based compensation capitalized as internal-use software	889	976	636
Capitalized internal-use software included in accounts payable and accrued liabilities	169	448	—
Purchase of property and equipment included in accounts payable and accrued liabilities	7	213	983
Common stock issued for settlement of contingent consideration	—	10,052	20,083
Common stock issued in connection with acquisitions	—	3,006	43,104

The accompanying notes are an integral part of these consolidated financial statements.

Notes to the Consolidated Financial Statements

1. Description of Business and Summary of Significant Accounting Policies

Nature of operations

Health Catalyst, Inc. (Health Catalyst) was incorporated under the laws of Delaware in September 2011. We are a leading provider of data and analytics technology and services to healthcare organizations. Our Solution comprises our cloud-based data platform, software analytics applications, and professional services expertise. Our clients, which are primarily healthcare providers, use our Solution to manage their data, derive analytical insights to operate their organization, and produce measurable clinical, financial, and operational improvements.

Basis of presentation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles (GAAP).

Principles of consolidation

The consolidated financial statements include the accounts of Health Catalyst and its wholly-owned subsidiaries. Intercompany balances and transactions have been eliminated.

Use of estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. On an on-going basis, we evaluate our estimates, including those related to revenue recognition, reserve for expected credit losses, useful lives of property and equipment, capitalization and estimated useful life of internal-use software, impairment assessments of goodwill, intangible assets, and other long-lived assets, fair value of financial instruments, deferred tax assets, stock-based compensation, contingent consideration, the period of benefit for deferred contract acquisition costs, the incremental borrowing rate used for operating leases, and tax uncertainties. Actual results could differ significantly from those estimates.

Segment reporting

Operating segments are identified as components of an enterprise about which separate discrete financial information is evaluated by the chief operating decision maker (CODM), who has been identified as our CEO, in assessing performance and making decisions regarding resource allocation. We operate our business in two operating segments that also represent our reportable segments. Our segments are (1) technology and (2) professional services.

The CODM uses Adjusted Gross Profit (defined as revenue less cost of revenue that excludes depreciation, amortization, stock-based compensation expense, and certain other operating expenses) as the measure of our profit.

Net loss per share

Basic net loss per share is calculated by dividing net loss by the weighted average number of shares of common stock outstanding. Diluted net loss per share is calculated by giving effect to all potentially dilutive common stock equivalents outstanding for the period, when dilutive, including the effect of shares issuable as acquisition-related contingent consideration. For purposes of this calculation, stock options, restricted stock units (RSUs), performance-based restricted stock units (PRSUs), convertible senior notes, restricted shares, and purchase rights committed under the employee stock purchase plan are considered to be common stock equivalents but have been excluded from the calculation of diluted net loss per share attributable to common stockholders as the effect is anti-dilutive.

Revenue recognition

We derive our revenue primarily from technology subscriptions and professional services. We determine revenue recognition by applying the following steps:

- Identification of the contract, or contracts, with a client;
- Identification of the performance obligations in the contract;
- Determination of the transaction price;
- Allocation of the transaction price to the performance obligations in the contract; and
- Recognition of revenue when, or as, we satisfy the performance obligation.

We recognize revenue net of any taxes collected from clients and subsequently remitted to governmental authorities.

Technology revenue

Technology revenue primarily consists of subscription fees charged to clients for access to use our technology. We provide clients access to our technology through either an all-access or limited-access, modular subscription.

The majority of our subscription arrangements are cloud-based and do not provide clients the right to take possession of the technology or contain a significant penalty if the client were to take possession of the technology. Revenue from cloud-based subscriptions is recognized ratably over the contract term beginning on the date that the service is made available to the client. Our subscription contracts generally have a three or five-year term, of which many are terminable after one year upon 90 days' notice.

Subscriptions that allow the client to take software on-premise without significant penalty are treated as time-based licenses. These arrangements generally include access to technology, access to unspecified future products, and maintenance and support. Revenue for upfront access to our technology library is recognized at a point in time when the technology is made available to the client. Revenue for access to unspecified future products included in time-based license subscriptions is recognized ratably over the contract term beginning on the date that the access is made available to the client.

Professional services revenue

Professional services revenue primarily includes data and analytics services, domain expertise services, TEMS, and implementation services. Professional services arrangements typically include a fee for making full-time equivalent (FTE) services available to our clients on a monthly basis. FTE services generally consist of a blend of analytic engineers, analysts, and data scientists based on the domain expertise needed to best serve our clients. Professional services are typically considered distinct from the technology offerings and revenue is generally recognized as the service is provided using the "right to invoice" practical expedient.

Contracts with multiple performance obligations

Many of our contracts include multiple performance obligations. We account for performance obligations separately if they are capable of being distinct within the context of the contract. In these circumstances, the transaction price is allocated to separate performance obligations on a relative standalone selling price basis. We determine standalone selling prices based on the observable price a good or service is sold for separately when available. In cases where standalone selling prices are not directly observable, based on information available, we utilize the expected cost plus a margin, adjusted market assessment, or residual estimation methods. We consider all information available including our overall pricing objectives, market conditions, and other factors, which may include client demographics and the types of users.

Standalone selling prices are not directly observable for our all-access and limited-access technology arrangements, which are composed of cloud-based subscriptions, time-based licenses, and perpetual licenses. For these technology arrangements, we generally use the residual estimation method due to a limited number of standalone transactions and/or prices that are highly variable.

Variable consideration

We have also entered into at-risk and shared savings arrangements with certain clients whereby we receive variable consideration based on the achievement of measurable improvements that may include cost savings or performance against metrics. For these arrangements, we estimate revenue using the most likely amount that we will receive. Estimates are based on our historical experience and best judgment at the time to the extent it is probable that a significant reversal of revenue recognized will not occur. Due to the nature of our arrangements, certain estimates may be constrained until the uncertainty is further resolved.

Contract balances

Contract assets resulting from services performed prior to invoicing clients are recorded as unbilled accounts receivable and are presented on the consolidated balance sheets in aggregate with accounts receivable. Unbilled accounts receivable generally become billable at contractually specified dates or upon the attainment of contractually defined milestones. As of December 31, 2023, 2022, and 2021, the unbilled accounts receivable included in accounts receivable on our consolidated balance sheets was $4.7 million, $0.9 million and $0.8 million, respectively.

We record contract liabilities as deferred revenue when cash payments are received or due in advance of performance. Deferred revenue primarily relates to the advance consideration received from the client. As of December 31, 2023, 2022, and 2021, the total of current and non-current deferred revenue on our consolidated balance sheets was $55.8 million, $55.1 million, and $57.6 million, respectively.

Deferred costs

We capitalize sales commissions, and associated fringe costs, such as benefits and payroll taxes, paid to direct sales personnel and other incremental costs of obtaining contracts with clients, provided we expect to recover those costs. We determine that costs should be deferred based on our sales compensation plans when the commissions are incremental and would not have occurred absent the client contract. As of December 31, 2023 and 2022, $2.2 million and $1.5 million, respectively, of deferred contract acquisition costs are expected to be amortized within the next 12 months and are included in prepaid expenses and other assets on the consolidated balance sheets. As of December 31, 2023 and 2022, the remaining $3.3 million and $2.6 million, respectively, of deferred contract acquisition costs are included in non-current other assets.

Commissions paid upon the initial acquisition of a contract are amortized on a straight-line basis over an estimated period of benefit of four years. Amortization is recognized on a straight-line basis commensurate with the pattern of revenue recognition. The period of benefit was estimated by considering factors such as estimated average client life, the rate of technological change in our subscription service, and the impact of competition in our industry. As our average client life significantly exceeded the rate of change in our technology, we concluded that the rate of change in the technology underlying our subscription service was the most significant factor in determining the period of benefit for which the asset relates. In evaluating the rate of change in our technology, we considered the competition in our industry, our commitment to continuous innovation, and the frequency of product, platform, and technology updates. We determined that the impact of competition in our industry is reflected in the period of benefit through the rate of technological change. Amortization of deferred contract acquisition costs was $2.3 million, $2.1 million, and $1.1 million for the years ended December 31, 2023, 2022, and 2021, respectively, which is included within sales and marketing expense in the consolidated statements of operations.

We defer certain costs to fulfill a contract when the costs are expected to be recovered, are directly related to in-process contracts, and enhance resources that will be used in satisfying performance obligations in the future. These deferred fulfillment costs primarily consist of employee compensation incurred as part of the implementation of new contracts. Amortization of deferred fulfillment costs is included within cost of revenue in the consolidated statements of operations.

We periodically review these deferred costs to determine whether events or changes in circumstances have occurred that could impact the period of benefit. There were no impairment losses recorded during the periods presented.

Cost of revenue, excluding depreciation and amortization

Cost of technology revenue primarily consists of costs associated with hosting and supporting our technology, including third-party cloud computing and hosting costs, license and revenue share fees, contractor costs, and salary and related personnel costs for our cloud services and support teams. Cost of professional services revenue primarily consists of salary and related personnel costs, travel-related costs, and independent contractor costs. Cost of revenue excludes costs related to depreciation and amortization.

Cash and cash equivalents

We consider all highly liquid investments purchased with a remaining maturity of three months or less at the time of acquisition to be cash equivalents.

Short-term investments

Our investment policy limits investments to highly-rated instruments. We classify and account for our short-term investments as available for sale securities as we may sell these securities at any time for use in our current operations or for other purposes, even prior to maturity. As a result, we classify our short-term investments, including securities with contractual maturities beyond twelve months, within current assets in the consolidated balance sheets.

Accounts receivable

Accounts receivable are non-interest bearing and are recorded at the original invoiced amount less an allowance for credit losses based on the probability of future collections. Our allowance is based on our estimate of expected credit losses for outstanding trade accounts receivables and unbilled receivables. We determine expected credit losses based on historical write-off experience, an analysis of the aging of outstanding receivables, client payment patterns, the establishment of specific reserves for clients in an adverse financial condition, and our expectations of changes in macroeconomic conditions, including high interest rates and high inflation, that may impact the collectability of outstanding receivables.

We reassess the adequacy of the allowance for credit losses each reporting period. The following table presents a rollforward of the allowance for credit losses (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Balance at beginning of period	$ 2,300	$ 1,600	$ 1,200
Current period provision for expected credit losses	1,821	691	499
Write-offs, net of recoveries	(16)	9	(99)
Balance at end of period	$ 4,105	$ 2,300	$ 1,600

Property and equipment

Property and equipment are stated at historical cost less accumulated depreciation. Repairs and maintenance costs that do not extend the useful life or improve the related assets are expensed as incurred. Depreciation is computed using the straight-line method over the estimated useful lives of the assets. The estimated useful life of each asset category is as follows:

Computer equipment	2-3 years
Furniture and fixtures	3-5 years
Leasehold improvements	Lesser of lease term or estimated useful life
Computer software	2-5 years
Capitalized internal-use software costs	2-3 years

When there are indicators of potential impairment, we evaluate the recoverability of the carrying values by comparing the carrying amount of the applicable asset group to the estimated undiscounted future cash flows expected to be generated by the asset group over the remaining useful life of the primary asset, plus any terminal value, in the asset group. If the carrying amount of the asset group exceeds those estimated future net cash flows, an impairment charge is recognized based on the amount by which the carrying value of the long-lived assets exceeds the fair value of the assets.

Intangible assets

Intangible assets include developed technologies, client relationships, client contracts, and trademarks that were acquired in business combinations and asset acquisitions. Intangible assets also include the purchase of third-party computer software. The intangible assets are amortized using the straight-line method over the assets' estimated useful lives. The estimated useful life of each asset category is as follows:

Developed technologies	3-10 years
Client relationships and contracts	2-7 years
Computer software licenses	1-5 years
Trademarks	1-5 years

Goodwill

We record goodwill as the difference between the aggregate consideration paid for a business combination and the fair value of the identifiable net tangible and intangible assets acquired. Goodwill includes the know-how of the assembled workforce, the ability of the workforce to further improve technology and product offerings, client relationships, and the expected cash flows resulting from these efforts. Goodwill may also include expected synergies resulting from the complementary strategic fit these businesses bring to existing operations. Goodwill is assessed for impairment annually on October 31 or more frequently if indicators of impairment are present or circumstances suggest that impairment may exist.

Our first step in the goodwill impairment test is a qualitative analysis of factors that could be indicators of potential impairment. Judgment in the assessment of qualitative factors of impairment may include changes in business climate, market conditions, or other events impacting the reporting unit.

Next, if a quantitative analysis is necessary, we compare the fair value of the reporting unit with its carrying amount, including goodwill. If the fair value of the reporting unit exceeds its carrying amount, the goodwill of the reporting unit is not considered impaired. Performing a quantitative goodwill impairment test includes the determination of the fair value of a reporting unit, which requires management to use significant judgment and estimation. The significant estimation is primarily due to the judgmental nature of the inputs to the valuation models used to measure the fair value of the reporting units, as well as the sensitivity of the respective fair values to the underlying significant assumptions. Typical methods to estimate the fair value of reporting units include using the income and market approaches.

The significant assumptions used to form the basis of the estimates include, among others, the selection of valuation methodologies, estimates of expected revenue, including revenue growth rates, and operating margins used to calculate projected future cash flows, risk-adjusted discount rates, and the selection of appropriate market comparable companies. Many of these significant assumptions are forward-looking and could be affected by future economic and market conditions. If a quantitative analysis is necessary, we typically engage the assistance of a valuation specialist in concluding on fair value measurements in connection with determining the fair values of our reporting units.

If the carrying amount of the reporting unit exceeds its fair value, we would recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value. There was no impairment of goodwill for the years ended December 31, 2023, 2022, and 2021.

Business combinations

The results of businesses acquired in a business combination are included in our consolidated financial statements from the date of the acquisition. Purchase accounting results in assets and liabilities of an acquired business generally being recorded at their estimated fair value on the acquisition date. Any excess consideration transferred over the fair value of the identifiable assets acquired and liabilities assumed is recognized as goodwill.

We perform valuations of assets acquired and liabilities assumed on each acquisition accounted for as a business combination in order to record the tangible and intangible assets acquired and liabilities assumed based on our best estimate of fair value. Determining the fair value of assets acquired and liabilities assumed requires management to use significant judgment and estimates including the selection of valuation methodologies, estimates of future revenue and cash flows, discount rates, and selection of comparable companies. Significant estimation is required in determining the fair value of the client-related intangible assets and technology-related intangible assets.

The significant estimation is primarily due to the judgmental nature of the inputs to the valuation models used to measure the fair value of these intangible assets, as well as the sensitivity of the respective fair values to the underlying significant assumptions. We typically use the income approach or cost approach to measure the fair value of intangible assets. The significant assumptions used to form the basis of the estimates included the number of engineer hours required to develop technology, expected revenue including revenue growth rates, rate and timing of obsolescence, royalty rates and earnings before interest, taxes, depreciation and amortization (EBITDA) margin used in the estimate for client relationships, and backlog. Many of these significant assumptions were forward-looking and could be affected by future economic and market conditions. We engage the assistance of valuation specialists in concluding on fair value measurements in connection with determining fair values of material assets acquired and liabilities assumed in a business combination.

For the years ended December 31, 2023, 2022, and 2021, we expensed $3.5 million, $2.3 million and $1.4 million, respectively, of transaction costs associated with business combinations. The costs were expensed as incurred and are included in general and administrative expense in our consolidated statements of operations.

Contingent consideration liabilities

Our acquisition consideration in business combinations may include an estimate for contingent consideration that will be paid if certain earn-out performance targets are met. The resulting contingent consideration liabilities are categorized as a Level 3 fair value measurement because we estimate projections during the earn-out period utilizing unobservable inputs, including various potential pay-out scenarios based on billings and revenue-related earn-out targets. Changes to the unobservable inputs could have a material impact on our consolidated financial statements. We generally value the expected contingent consideration and the corresponding liabilities using a probability model such as the Monte Carlo method based on estimates of potential payment scenarios. Probabilities are applied to each potential scenario and the resulting values are discounted using a rate that considers weighted average cost of capital as well as a specific risk premium associated with the riskiness of the earn-out itself, the related projections, projected payment dates, and volatility in the fair value of our common stock. The fair value of the contingent consideration is remeasured each reporting period.

The portion of the contingent consideration liabilities that will be settled in shares of our common stock is classified as a component of non-current liabilities in our consolidated balance sheets, while the portion to be paid in cash is classified as a component of current liabilities. Changes to the contingent consideration liabilities are reflected as part of general and administrative expense in our consolidated statements of operations. There were no contingent consideration liabilities outstanding during the year ended December 31, 2023.

Advertising costs

All advertising costs are expensed as incurred. For the years ended December 31, 2023, 2022, and 2021, we incurred $2.6 million, $5.7 million, and $4.4 million in advertising costs, respectively.

Development costs and internal-use software

For technology products that are developed to be sold externally, we determined that technological feasibility is reached shortly before the products are ready for general release. Any costs associated with software development between the time technological feasibility is reached and general release are inconsequential.

We capitalize certain development costs incurred in connection with our internal-use software. These capitalized costs are primarily related to the software platforms that are hosted by us and accessed by our clients on a subscription basis. Costs incurred in the preliminary stages of development are expensed as incurred as research and development costs. Once an application has reached the development stage, internal and external costs, if direct and incremental, are capitalized until the software is substantially complete and ready for its intended use.

We also capitalize costs related to specific upgrades and enhancements when it is probable the expenditures will result in additional functionality. Capitalized costs are recorded as part of property and equipment. Maintenance and training costs are expensed as incurred. Internal-use software is amortized on a straight-line basis over its estimated useful life with amortization included in depreciation and amortization expense in our consolidated statements of operations.

Stock-based compensation

Stock-based awards, including stock options, restricted stock units, performance-based restricted stock units, and restricted shares are measured and recognized in the consolidated financial statements based on the fair value of the award on the grant date or, when applicable, the modification date. The grant date fair value of our stock-based awards is typically determined using the market closing price of our common stock on the date of grant; however, we also consider whether any adjustments are required when the market closing price does not reflect certain material non-public information that we know but is unavailable to marketplace participants on the date of grant. We record forfeitures of stock-based awards as the actual forfeitures occur.

For awards subject to performance conditions, we record expense when the performance condition becomes probable. Each reporting period, we evaluate the probability of achieving the performance criteria, estimate the number of shares that are expected to vest, and adjust the related compensation expense accordingly. For awards subject to market conditions, we estimate the fair value as of the grant date using a Monte Carlo simulation valuation model which requires the use of various assumptions, including historic stock price volatility and risk-free interest rates as of the valuation date corresponding to the length of time remaining in the performance period. Stock-based compensation expense for awards with market conditions is recognized over the requisite service period using the accelerated attribution method and is not reversed if the market condition is not met.

Stock-based compensation expense related to purchase rights issued under the 2019 Health Catalyst Employee Stock Purchase Plan (ESPP) is based on the Black-Scholes option-pricing model fair value of the estimated number of awards as of the beginning of the offering period. Stock-based compensation expense is recognized using the straight-line method over the offering period.

The measurement date for non-employee awards is the date of grant. The compensation expense for non-employees is recognized, without changes in the fair value of the award, in the same period and in the same manner as though we had paid cash for the services, which is typically the vesting period of the respective award.

Concentrations of credit risk

Financial instruments that potentially subject us to a concentration of credit risk consist principally of cash and cash equivalents, short-term investments, and accounts receivable. We deposit cash with high credit quality financial institutions which at times may exceed federally insured amounts. We have not experienced any losses on our deposits.

We perform ongoing credit evaluations of our clients' financial condition and require no collateral from clients. We review the expected collectability of accounts receivable and record an allowance for credit losses based on the probability of future collections. There were no clients with more than 10% of total outstanding accounts receivable as of December 31, 2023 and one client that had an accounts receivable balance of 10.5% of total outstanding accounts receivable as of December 31, 2022. There were no clients with revenue as a percentage of total revenue greater than 10% for the years ended December 31, 2023, 2022, and 2021.

Restructuring costs

We define restructuring costs as expenses directly associated with restructuring activities. Such costs include severance and related tax and benefit expenses from workforce reductions, impairment of discontinued capitalized software projects, and other miscellaneous charges. We record team member-related severance costs when there is a substantive plan in place and the related costs are probable and estimable. For one-time termination benefits for team members (i.e., no substantive plan or future service requirement), the cost is recorded when the terms of the one-time termination benefits are communicated to the impacted team members and the amount can be reasonably estimated.

Income taxes

Deferred income tax balances are accounted for using the asset and liability method and reflect the effects of temporary differences between the financial reporting and tax bases of our assets and liabilities using enacted tax rates expected to apply when taxes are actually paid or recovered. In addition, deferred tax assets and liabilities are recorded for net operating loss (NOL) and tax credit carryforwards. A valuation allowance is provided against deferred tax assets unless it is more likely than not that they will be realized based on all available positive and negative evidence. Such evidence includes, but is not limited to, recent cumulative earnings or losses, expectations of future taxable income by taxing jurisdiction, and the carry-forward periods available for the utilization of deferred tax assets.

We use a two-step approach to recognize and measure uncertain income tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates it is more likely than not that the position will be sustained upon audit. The second step is to measure the tax benefit as the largest amount, which is more than 50% likely of being realized upon ultimate settlement. We do not currently accrue interest and penalties related to unrecognized tax benefits within the provision for income taxes because the impact would be immaterial due to our net operating losses and tax credit carryforwards. Significant judgment is required to evaluate uncertain tax positions.

Although we believe that we have adequately reserved for our uncertain tax positions, we can provide no assurance that the final tax outcome of these matters will not be materially different. We evaluate our uncertain tax positions on a regular basis and evaluations are based on a number of factors, including changes in facts and circumstances, changes in tax law, correspondence with tax authorities during the course of an audit, and effective settlement of audit issues. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made and could have a material impact on our financial condition and results of operations.

We are subject to an income tax requirement whereby certain income earned by foreign subsidiaries, referred to as Global Intangible Low-Taxed Income (GILTI), must be included in our taxable gross income for U.S. federal income tax reporting purposes. GAAP provides for an accounting policy election of either recognizing deferred taxes for temporary differences expected to reverse as GILTI in future years or recognizing such taxes as a current period expense when incurred. We have elected to treat GILTI as a current period expense when incurred.

Fair value of financial instruments

The carrying amounts reported in the consolidated balance sheets for cash, receivables, accounts payable, and current accrued expenses approximate fair values because of the immediate or short-term maturity of these financial instruments. The carrying value of contingent consideration liabilities, operating lease liabilities, and convertible senior notes approximate fair value based on interest rates available for debt with similar terms at December 31, 2023 and 2022. Money market funds and short-term investments are measured at fair value on a recurring basis. On a quarterly basis we evaluate unrealized losses on our available-for-sale debt securities and the related accrued interest receivables to determine whether a decline in the fair value below the amortized cost basis is due to credit-related factors or noncredit-related factors. Contingent consideration liabilities are measured at fair value on a recurring basis based primarily on significant inputs not observable in the market.

Fair value is estimated by applying the following hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

- Level 1- Quoted prices in active markets for identical assets or liabilities.

- Level 2- Observable inputs other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3- Inputs that are generally unobservable and typically reflect management's estimate of assumptions that market participants would use in pricing the asset or liability.

All of our financial instruments are valued using quoted prices in active markets or based on other observable inputs. For Level 2 securities, we use a third-party pricing service which provides documentation on an ongoing basis that includes, among other things, pricing information with respect to reference data, methodology, inputs summarized by asset class, pricing application, and corroborative information. Our contingent consideration liabilities are categorized as a Level 3 fair value measurement because we estimate projections during the earn out period utilizing various potential pay-out scenarios.

Leases

We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use (ROU) assets, operating lease liabilities, and operating lease liabilities, net of current portion in our consolidated balance sheets. We have adopted the short-term lease recognition exemption policy. All of our leasing commitments are classified either as operating leases or otherwise qualify as short-term leases with lease terms of 12 months or less.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. As our lease contracts do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the commencement date to determine the present value of lease payments. The operating lease ROU asset also includes any lease payments made and excludes lease executory costs. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise the applicable option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. We do not have lease agreements that contain non-lease components, which generally would be accounted for separately.

Foreign currency

The functional currency of our international subsidiaries is generally their local currency. We translate these subsidiaries' financial statements into U.S. dollars using month-end exchange rates for assets and liabilities and average exchange rates for revenue and expenses. We record translation gains and losses in accumulated other comprehensive loss in stockholders' equity. We record foreign exchange gains and losses in interest and other expense, net. Our net foreign exchange gains and losses were not material for the periods presented.

Recent accounting pronouncements not yet adopted

In November 2023, the Financial Accounting Standards Board ("FASB") issued ASU No. 2023-07, *Improvements to Reportable Segment Disclosures (Topic 280)*. This ASU updates reportable segment disclosure requirements by requiring disclosures of significant reportable segment expenses that are regularly provided to the CODM and included within each reported measure of a segment's profit or loss. This ASU also requires disclosure of the title and position of the individual identified as the CODM and an explanation of how the CODM uses the reported measures of a segment's profit or loss in assessing segment performance and deciding how to allocate resources. The ASU is effective for annual periods beginning after December 15, 2023, and interim periods within fiscal years beginning after December 15, 2024. Adoption of the ASU should be applied retrospectively to all prior periods presented in the financial statements. Early adoption is permitted. We are currently evaluating the provisions of this ASU and expect to adopt them for the year ending December 31, 2024.

In December 2023, the FASB issued ASU No. 2023-09, *Improvements to Income Tax Disclosures (Topic 740)*. The ASU requires disaggregated information about a reporting entity's effective tax rate reconciliation as well as additional information on income taxes paid. The ASU is effective on a prospective basis for annual periods beginning after December 15, 2024. Early adoption is permitted. This ASU will result in the required additional disclosures being included in our consolidated financial statements, once adopted. We are currently evaluating the provisions of this ASU and expect to adopt them for the year ending December 31, 2025.

2. Business Combinations

The business acquisitions discussed below are included in our results of operations from their respective dates of acquisition.

2023 acquisition of Electronic Registry Systems, Inc.

On October 2, 2023, we acquired Electronic Registry Systems, Inc. (ERS), a cloud-based provider of clinical registry development and data management software based in Cincinnati, Ohio. We accounted for the acquisition of ERS as a business combination. ERS provides cancer registry compliance and informatics services to enable customers to achieve their cancer center clinical and business objectives with a goal of improving cancer care for every patient, including through its CRStar platform. The acquisition consideration transferred comprised of net cash consideration of $11.4 million. The purchase resulted in Health Catalyst acquiring 100% ownership in ERS.

An additional 175,901 shares of our common stock subject to a restriction agreement (restricted shares) were issued pursuant to the terms of the acquisition agreement. The vesting of these restricted shares was originally subject to eighteen months of continued employment with cliff vesting upon the eighteen-month anniversary of the acquisition close date. The value of these restricted shares is recognized as post-combination stock-based compensation expense on a straight-line basis over the vesting term. Due to workforce reductions made subsequent to December 31, 2023 as part of the 2023 Restructuring Plan (as defined below), the ERS restricted shares will fully vest in February 2024, resulting in an acceleration of the related stock-based compensation expense. Refer to Note 14-Stock-Based Compensation for additional details related to our stock-based compensation.

The following table summarizes the preliminary acquisition-date fair value of consideration transferred and the identifiable assets purchased and liabilities assumed as part of our acquisition of ERS (in thousands):

Assets acquired:		
Accounts receivable	$	478
Prepaid expenses and other assets		73
Client relationships		5,300
Developed technology		3,100
Trademarks		100
Total assets acquired		9,051
Less liabilities assumed:		
Accrued and other current liabilities		78
Deferred revenue		2,251
Total liabilities assumed		2,329
Total assets acquired, net		6,722
Goodwill		4,670
Total consideration transferred, net of cash acquired	$	11,392

The acquired intangible assets were valued utilizing either an income approach or a cost approach as deemed most applicable, and include client relationships, developed technology, and trademarks that will be amortized on a straight-line basis over their estimated useful lives of seven years, four years, and two years, respectively. The resulting goodwill from the ERS acquisition was fully allocated to the technology reporting unit and is deductible for income tax purposes.

The preliminary allocation of the consideration transferred is subject to potential adjustments. Balances subject to adjustment are primarily tax-related matters, including the tax basis of acquired assets and liabilities. During the measurement period, we may record adjustments to the provisional amounts recognized in our initial accounting for the acquisition. We expect the allocation of the consideration transferred to be final within the measurement period (up to one year from the acquisition date). There were no measurement period adjustments recorded during the year ended December 31, 2023. Pro forma financial information has not been presented for the ERS acquisition as the impact to our consolidated financial statements was not material. The amount of revenue attributable to the acquired business of ERS was not material to our consolidated statement of operations for year ended December 31, 2023. Income (loss) information for ERS after the acquisition date through December 31, 2023 is not presented as the ERS business was integrated into our operations immediately following the acquisition and is impracticable to quantify.

2022 acquisitions

ARMUS Corporation

On April 29, 2022, we acquired ARMUS Corporation (ARMUS), a clinical registry development and data management technology company based in Foster City, California. We accounted for the acquisition of ARMUS as a business combination. ARMUS provides data abstraction, data validation, data management, data submission, and data reporting services to support participation in clinical quality registries for healthcare institutions around the world, including health systems, payers, medical device companies, and premier medical societies. The acquisition consideration transferred was $9.4 million and was comprised of net cash consideration of $9.3 million and Health Catalyst common shares with a fair value of $0.1 million. The purchase resulted in Health Catalyst acquiring 100% ownership in ARMUS.

An additional 235,330 shares of our common stock subject to a restriction agreement (restricted shares) were issued pursuant to the terms of the acquisition agreement. The value of these restricted shares is recognized as post-combination stock-based compensation expense on a straight-line basis over the vesting term. Refer to Note 14-Stock-Based Compensation for additional details related to our stock-based compensation.

The following table summarizes the preliminary acquisition-date fair value of consideration transferred and the identifiable assets purchased and liabilities assumed as part of our acquisition of ARMUS (in thousands):

Assets acquired:		
Accounts receivable	$	601
Prepaid expenses and other assets		104
ROU lease asset		169
Developed technologies		4,600
Client relationships		2,200
Trademarks		200
Total assets acquired		7,874
Less liabilities assumed:		
Accounts payable		119
Accrued and other current liabilities		196
Deferred revenue		2,740
Lease liability		157
Net deferred tax liabilities		933
Total liabilities assumed		4,145
Total assets acquired, net		3,729
Goodwill		5,645
Total consideration transferred, net of cash acquired	$	9,374

The acquired intangible assets were valued utilizing either an income approach or a cost approach as deemed most applicable, and include developed technology, client relationships, and trademarks that will be amortized on a straight-line basis over their estimated useful lives of four years, six years, and three years, respectively. The resulting goodwill from the ARMUS acquisition was fully allocated to the technology reporting unit and is not deductible for income tax purposes.

In addition to the purchase price, we agreed to make cash retention payments in an aggregate amount of $5.0 million to continuing ARMUS team members. The retention payments are generally subject to vesting based upon continued employment over a required service period of 3 years. Any forfeited retention payments are reallocated to remaining ARMUS team members until the aggregate amount of $5.0 million is fully paid. Such amounts are recorded as post-combination compensation expense and recognized on a straight-line basis over the relevant vesting terms. During the years ended December 31, 2023 and 2022, we recognized compensation expense of $1.4 million and $1.9 million, respectively, related to these retention payments. As of December 31, 2023, there is an additional $1.6 million of unrecognized compensation expense related to these retention payments expected to be recognized over a weighted-average period of 1.3 years.

KPI Ninja, Inc.

On February 24, 2022, we acquired KPI Ninja, Inc. (KPI Ninja), a leading provider of interoperability, enterprise analytics, and value-based care solutions based in Lincoln, Nebraska. We accounted for the acquisition of KPI Ninja as a business combination. KPI Ninja is known for its powerful capabilities, flexible configurations, and comprehensive applications designed to fulfill the promise of data-driven healthcare. The acquisition consideration transferred was $21.4 million and was comprised of net cash consideration of $18.5 million and Health Catalyst common shares with a fair value of $2.9 million. The purchase resulted in Health Catalyst acquiring 100% ownership in KPI Ninja.

An additional 356,919 shares of our common stock subject to a restriction agreement (restricted shares) were issued pursuant to the terms of the acquisition agreement. The value of these restricted shares is recognized as post-combination stock-based compensation expense on a straight-line basis over the vesting term. Refer to Note 14-Stock-Based Compensation for additional details related to our stock-based compensation.

The following table summarizes the preliminary acquisition-date fair value of consideration transferred and the identifiable assets purchased and liabilities assumed as part of our acquisition of KPI Ninja (in thousands):

Assets acquired:		
Accounts receivable	$	45
Prepaid expenses and other assets		197
Property and equipment, net		15
Developed technologies		13,500
Client relationships		1,100
Trademarks		800
Total assets acquired		15,657
Less liabilities assumed:		
Accounts payable and other current liabilities		266
Deferred revenue		763
Net deferred tax liabilities		3,600
Total liabilities assumed		4,629
Total assets acquired, net		11,028
Goodwill		10,365
Total consideration transferred, net of cash acquired	$	21,393

The acquired intangible assets were valued utilizing either an income approach or a cost approach as deemed most applicable, and include developed technology, client relationships, and trademarks that will be amortized on a straight-line basis over their estimated useful lives of four years, six years, and five years, respectively. The resulting goodwill from the KPI Ninja acquisition was fully allocated to the technology reporting unit and is not deductible for income tax purposes.

In addition to the purchase price, we agreed to make cash retention payments in an aggregate amount of $3.0 million to continuing KPI Ninja team members. The retention payments are subject to vesting based upon continued employment over a required service period of four years. Any forfeited retention payments are reallocated to remaining KPI Ninja team members until the aggregate amount of $3.0 million is fully paid. Such amounts are recorded as post-combination compensation expense and recognized on a straight-line basis over the relevant vesting terms. During the years ended December 31, 2023 and 2022, we recognized compensation expense of $0.9 million and $0.9 million, respectively, related to these retention payments. As of December 31, 2023, there was an additional $1.2 million of unrecognized compensation expense related to these retention payments expected to be recognized over a weighted-average period of 2.2 years.

2021 acquisition of Twistle, Inc.

On July 1, 2021, we acquired Twistle, Inc. (Twistle), a healthcare patient engagement SaaS technology company that, among other things, helps automate patient-centered, personalized, multi-channel communication between care teams and patients that aims to transform the patient experience, drive better care outcomes, and reduce healthcare costs. We accounted for the acquisition of Twistle as a business combination. The acquisition consideration transferred was $91.9 million and was comprised of net cash consideration of $46.7 million, Health Catalyst common shares with a fair value of $43.1 million, and contingent consideration based on certain earn-out performance targets for Twistle during an earn-out period that ended on June 30, 2022, with an initial fair value of $2.1 million. The purchase resulted in Health Catalyst acquiring 100% ownership in Twistle. The earn-out contingent consideration liability was fully settled during the third quarter of 2022 for cash consideration of $1.6 million and the issuance of 439,327 shares of our common stock.

An additional 67,939 restricted shares were issued pursuant to the terms of the acquisition agreement. The value of these restricted shares was recognized as post-combination stock-based compensation expense on a straight-line basis over the vesting term. Refer to Note 14-Stock-Based Compensation for additional details related to our stock-based compensation.

In connection with the acquisition, we also agreed to make deferred cash retention payments to continuing Twistle team members related to their unvested options previously granted or promised to be granted. The retention payments were subject to quarterly or cliff vesting based on continued employment over a required service period of between 12 and 18 months post-closing. Such amounts were recorded as post-combination compensation expense on a straight-line basis over the relevant vesting terms. These retention payments were fully paid out shortly after December 31, 2022.

The following table summarizes the acquisition-date fair value of consideration transferred and the identifiable assets purchased and liabilities assumed as part of our acquisition of Twistle (in thousands):

Assets acquired:		
Accounts receivable	$	1,106
Prepaid expenses and other assets		98
Property and equipment, net		57
Developed technologies		13,000
Client relationships		23,700
Trademarks		20
Total assets acquired		37,981
Less liabilities assumed:		
Accounts payable and other current liabilities		161
Deferred revenue		900
Net deferred tax liabilities		7,142
Total liabilities assumed		8,203
Total assets acquired, net		29,778
Goodwill		62,150
Total consideration transferred, net of cash acquired	$	91,928

The acquired intangible assets were valued utilizing either an income approach or a cost approach as deemed most applicable, and include client relationships, developed technology, and trademarks that will be amortized on a straight-line basis over their estimated useful lives of seven years, three years, and one year, respectively. The resulting goodwill from the Twistle acquisition was fully allocated to the technology reporting unit and is not deductible for income tax purposes.

3. Revenue

Disaggregation of revenue

The following table represents Health Catalyst's revenue disaggregated by type of arrangement (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Recurring technology	$ 187,226	$ 175,808	$ 147,446
One-time technology (i.e., perpetual license)	357	480	272
Professional services	108,355	99,948	94,208
Total revenue	$ 295,938	$ 276,236	$ 241,926

For the years ended December 31, 2023, 2022, and 2021, 98.3%, 98.0%, and 99.2% of revenue, respectively, was related to contracts with clients located in the United States.

4. Goodwill and Intangible Assets

We operate our business in two operating segments that also represent our reporting units. Our reporting units are organized based on our technology and professional services. We have not incurred any goodwill impairment charges.

Goodwill by reporting unit is as follows (in thousands):

	As of December 31,	
	2023	2022
Technology	$ 189,870	$ 185,200
Professional services	782	782
Total goodwill	$ 190,652	$ 185,982

As of December 31, 2023, intangible assets consisted of the following (in thousands):

	Gross	Accumulated Amortization	Net
Developed technologies	$ 103,929	$ (79,057)	$ 24,872
Client relationships and contracts	90,064	(45,230)	44,834
Computer software licenses	10,680	(7,933)	2,747
Trademarks	2,820	(1,889)	931
Total intangible assets	$ 207,493	$ (134,109)	$ 73,384

As of December 31, 2022, intangible assets consisted of the following (in thousands):

	Gross	Accumulated Amortization	Net
Developed technologies	$ 100,829	$ (61,775)	$ 39,054
Client relationships and contracts	84,764	(34,757)	50,007
Computer software licenses	8,791	(6,893)	1,898
Trademarks	2,720	(1,490)	1,230
Total intangible assets	$ 197,104	$ (104,915)	$ 92,189

Amortization expense of acquired intangible assets for the years ended December 31, 2023, 2022, and 2021 was $29.6 million, $37.2 million, and $32.0 million, respectively. Amortization expense for intangible assets is included in depreciation and amortization in the consolidated statements of operations. We have not incurred any intangible asset impairment charges for the years ended December 31, 2023, 2022, and 2021.

The weighted-average remaining amortization period by type of intangible assets as of December 31, 2023 is as follows:

	Weighted-Average Remaining Amortization Period (years)
Developed technologies	2.7
Client relationships and contracts	4.3
Computer software licenses	2.1
Trademarks	2.4

As of December 31, 2023, future amortization expense for finite-lived intangible assets is estimated to be as follows (in thousands):

Year Ending December 31,	
2024	$ 25,216
2025	18,343
2026	14,491
2027	11,280
2028	2,729
Thereafter	1,325
Total future amortization expense	$ 73,384

5. Property and Equipment

Property and equipment consisted of the following (in thousands):

	As of December 31,	
	2023	2022
Computer equipment	$ 9,638	$ 10,021
Leasehold improvements	8,814	9,969
Furniture and fixtures	3,735	3,731
Capitalized internal-use software costs	30,771	19,553
Computer software	111	111
Total property and equipment	53,069	43,385
Less: accumulated depreciation	(27,357)	(17,457)
Property and equipment, net	$ 25,712	$ 25,928

Our long-lived assets are located in the United States. Depreciation expense for the years ended December 31, 2023, 2022, and 2021 was $12.6 million, $11.1 million, and $5.5 million, respectively. Depreciation expense includes amortization of assets recorded under a capital lease and the amortization of capitalized internal-use software costs. During the years ended December 31, 2023, 2022, and 2021 we impaired $1.2 million, $1.2 million, and $0.5 million, respectively, of leasehold improvements and furniture and fixtures related to the subleased portions of our corporate headquarters. Refer to Note 9-Leases for additional details. During the years ended December 31, 2023 and 2022, we also incurred $0.6 million and $1.2 million, respectively, of impairment related to discontinued capitalized internal-use software projects as part of restructuring. Refer to Note 11-Restructuring Costs for additional details.

We capitalized $12.8 million, $14.1 million, and $7.3 million of internal-use software costs for the years ended December 31, 2023, 2022, and 2021, respectively. We incurred $8.5 million, $6.8 million, and $2.4 million of capitalized internal-use software cost amortization expense for the years ended December 31, 2023, 2022, and 2021, respectively.

6. Short-term Investments

We classify our short-term investments as available for sale. Available-for-sale securities are recorded on our consolidated balance sheets at fair market value and any unrealized gains or losses are reported as part of other comprehensive gain (loss) on the consolidated statements of comprehensive loss unless unrealized losses are due to credit-related factors and accounted for as part of our provision for expected credit losses. We determine realized gains or losses on the sales of investments through the specific identification method and record such gains or losses as part of interest and other expense, net on the consolidated statements of operations. We did not have any material realized gains or losses on investments during the years ended December 31, 2023, 2022, and 2021. We measure the fair value of investments on a recurring basis.

The following table summarizes, by major security type, our cash equivalents and short-term investments that are measured at fair value on a recurring basis as of December 31, 2023 (in thousands):

	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	Cash equivalents	Short-term Investments
Money market funds	$ 99,779	$ —	$ —	$ 99,779	$ 99,779	$ —
U.S. treasury notes	65,856	68	—	65,924	—	65,924
Commercial paper	85,358	—	(18)	85,340	—	85,340
Corporate bonds	43,746	49	—	43,795	—	43,795
U.S. agency securities	16,405	—	(12)	16,393	—	16,393
Total	$ 311,144	$ 117	$ (30)	$ 311,231	$ 99,779	$ 211,452

The following table summarizes, by major security type, our cash equivalents and short-term investments that are measured at fair value on a recurring basis as of December 31, 2022 (in thousands):

	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	Cash equivalents	Short-term Investments
Money market funds	$ 114,532	$ —	$ —	$ 114,532	$ 114,532	$ —
U.S. treasury notes	63,404	—	(427)	62,977	—	62,977
Commercial paper	150,724	2	—	150,726	—	150,726
Corporate bonds	26,235	—	(156)	26,079	—	26,079
U.S. agency securities	7,390	6	—	7,396	—	7,396
Total	$ 362,285	$ 8	$ (583)	$ 361,710	$ 114,532	$ 247,178

The following table presents the contractual maturities of our short-term investments as of December 31, 2023 and December 31, 2022 (in thousands):

	As of December 31, 2023		As of December 31, 2022	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Due within one year	$ 211,365	$ 211,452	$ 247,753	$ 247,178
Due between one and five years	—	—	—	—
Total	$ 211,365	$ 211,452	$ 247,753	$ 247,178

Accrued interest receivables related to our available-for-sale securities of $0.9 million and $0.6 million as of December 31, 2023 and 2022, respectively, were included within prepaid expenses and other assets on our consolidated balance sheets.

We do not intend to sell investments that are in an unrealized loss position and it is not likely that we will be required to sell any investments before recovery of their amortized cost basis. As of December 31, 2023 and 2022, there were no material unrealized losses due to expected credit loss-related factors.

7. Fair Value of Financial Instruments

Assets measured at fair value on a recurring basis as of December 31, 2023 were as follows (in thousands):

	December 31, 2023			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$ 99,779	$ —	$ —	$ 99,779
U.S. treasury notes	65,924	—	—	65,924
Commercial paper	—	85,339	—	85,339
Corporate bonds	—	43,796	—	43,796
U.S. agency securities	—	16,393	—	16,393
Total	$ 165,703	$ 145,528	$ —	$ 311,231

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2022 were as follows (in thousands):

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Assets:				
Money market funds	$ 114,532	$ —	$ —	$ 114,532
U.S. treasury notes	62,977	—	—	62,977
Commercial paper	—	150,726	—	150,726
Corporate bonds	—	26,079	—	26,079
U.S. agency securities	—	7,396	—	7,396
Total	$ 177,509	$ 184,201	$ —	$ 361,710

There were no transfers between Level 1 and Level 2 of the fair value measurement hierarchy during the years ended December 31, 2023 and 2022.

Convertible Senior Notes

As of December 31, 2023, the estimated fair value of our convertible senior notes, with aggregate principal totaling $230.0 million, was $218.7 million. We estimate the fair value based on quoted market prices in an inactive market on the last trading day of the reporting period (Level 2). These convertible senior notes are recorded at face value less unamortized debt discount and transaction costs on our consolidated balance sheets. Refer to Note 10—Convertible Senior Notes and Credit Facilities for further information.

Level 3 fair value measurements

Consideration for the acquisition of Healthfinch, Inc. (Healthfinch) included an initial estimate for contingent consideration based on certain revenue-based earn-out performance targets for Healthfinch during an earn-out period that ended on July 31, 2021. The first half of the Healthfinch earn-out contingent consideration liability was settled during 2021 for cash consideration of $1.7 million and the issuance of 78,243 shares of our common stock. The remaining Healthfinch contingent consideration liability was fully settled during the first quarter of 2022 for cash consideration of $1.7 million and the issuance of 78,248 shares of our common stock.

The Twistle acquisition consideration included an initial estimate for contingent consideration based on certain revenue-based earn-out performance targets for Twistle during an earn-out period that ended on June 30, 2022. The Twistle contingent consideration was capped at $65.0 million and was paid in a combination of approximately 20% cash and 80% in shares of our common stock. The Twistle contingent consideration liability was fully settled during the third quarter of 2022 for cash consideration of $1.6 million and the issuance of 439,327 shares of our common stock.

There were no contingent consideration liabilities related to the acquisitions of KPI Ninja, ARMUS, and ERS and there were no contingent consideration liabilities outstanding during the year ended December 31, 2023.

Nonrecurring fair value measurements

We recorded impairment charges of $4.1 million, $3.8 million, and $1.8 million during the years ended December 31, 2023, 2022 and 2021, respectively, related to the impairment of ROU assets, leasehold improvements, and furniture and fixtures associated with recently subleased office space. These impairment charges were derived from the difference between the carrying value and the fair value of the relevant asset groups. The fair value of these asset groups was estimated using a discounted cash flow analysis of the subleased space and included certain unobservable (Level 3) inputs, including the anticipated future sublease terms and rates. Refer to Note 9-Leases for further information.

8. Accrued liabilities

As of December 31, 2023 and 2022, accrued liabilities consisted of the following (in thousands):

	As of December 31,	
	2023	2022
Accrued compensation and benefit expenses	$ 11,680	$ 12,180
Restructuring liabilities	2,355	1,837
Other accrued liabilities	9,247	5,674
Total accrued liabilities	$ 23,282	$ 19,691

9. Leases

Operating leases

We lease office space under operating leases that expire between 2024 and 2031. The terms of the leases provide for rental payments on a graduated scale, options to renew the leases (one to five years), landlord incentives or allowances, and periods of free rent.

During the year ended December 31, 2020 we took initial possession of the first 118,207 square feet of our new headquarters in South Jordan, Utah to begin leasehold improvements, which resulted in an initial right-of-use asset and corresponding operating lease liability of $23.8 million, and commencement of operating lease expense. During the year ended December 31, 2023 the leased square footage of our corporate headquarters expanded and we took possession of an additional 9,830 rentable square feet of office space, which resulted in an additional right-of-use asset and corresponding lease liability of $1.5 million. We have the right to sublease all, or a portion, of this leased office space provided that certain terms and conditions are met.

We subleased portions of our corporate headquarters to various sublessees with subleases commencing at various dates between 2021 and 2023. As of December 31, 2023, 54,399 rentable square feet of our corporate headquarters was subleased. We classified each sublease as an operating lease. The initial subleases have terms ranging from eighteen months to 8.5 years. As indicators of impairment arise, we have performed recoverability tests of the relevant asset groups, comprised of operating lease right-of-use and other related assets, and in some instances have determined that the carrying value of these asset groups were not fully recoverable. As a result, we measured and recognized total impairment charges of $4.1 million, $3.8 million, and $1.8 million during the years ended December 31, 2023, 2022, and 2021, respectively, representing the amount by which the carrying value exceeded the estimated fair value of these asset groups. The impairment charges were recorded as part of general and administrative expense in our consolidated statements of operations. During the year ended December 31, 2023, $2.9 million of the impairment charge was allocated to the ROU assets and the remaining $1.2 million was allocated to leasehold improvements, while during the year ended December 31, 2022, $2.6 million of the impairment charge was allocated to the ROU asset and the remaining $1.2 million was allocated to leasehold improvements, and during the year ended December 31, 2021, $1.3 million of the impairment charge was allocated to the ROU asset and the remaining $0.5 million was allocated to leasehold improvements and furniture and fixtures.

Our operating lease expense for the years ended December 31, 2023, 2022, and 2021, was $3.1 million, $2.6 million, and $3.6 million, respectively. In addition to those amounts, lease expense attributable to short-term leases with terms of 12 months or less for the years ended December 31, 2023, 2022, and 2021, was $0.1 million, $0.1 million, and $0.1 million, respectively.

Maturities of lease liabilities under operating leases at December 31, 2023 are as follows (in thousands):

Year ending December 31:	
2024	$ 3,359
2025	3,313
2026	3,265
2027	3,269
2028	3,272
Thereafter	9,126
Total lease payments	25,604
Less: Imputed interest	(4,570)
Total lease liability	$ 21,034

Supplemental balance sheet information related to leases as of December 31, 2023 and 2022 is as follows (in thousands other than weighted average amounts):

	As of December 31,	
	2023	2022
Operating lease right-of-use assets	$ 13,927	$ 16,658
Operating lease liabilities, current	$ 3,358	$ 3,434
Operating lease liabilities, noncurrent	17,676	18,017
Total operating lease liabilities	$ 21,034	$ 21,451
Weighted-average remaining operating lease term (years)	7.9	8.7
Weighted-average operating lease discount rate	5.2 %	5.0 %

10. Convertible Senior Notes and Credit Facilities

Convertible senior notes

On April 14, 2020, we issued $230.0 million in aggregate principal amount of 2.50% Convertible Senior Notes due 2025 (Notes), in a private placement to qualified institutional buyers exempt from registration under the Securities Act (Note Offering). The net proceeds from the issuance of the Notes were approximately $222.5 million, after deducting the initial purchasers' discounts and offering expenses payable by us.

The Notes are governed by an indenture (Indenture) between us, as the issuer, and U.S. Bank National Association, as trustee. The Notes are our senior, unsecured obligations and accrue interest payable semiannually in arrears on April 15 and October 15 of each year, beginning on October 15, 2020, at a rate of 2.50% per year. The Notes will mature on April 15, 2025, unless earlier converted, redeemed, or repurchased. The Indenture does not contain any financial or operating covenants or restrictions on the payments of dividends, the incurrence of indebtedness, or the issuance or repurchase of securities by us or any of our subsidiaries.

We were not able to redeem the Notes prior to April 20, 2023. On or after April 20, 2023, we may redeem, for cash, all or a portion of the Notes, at our option, if the last reported sale price of our common stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive), including the trading day immediately preceding the date on which we provide notice of redemption, during any 30 consecutive trading day period ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the Notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date. No sinking fund is provided for the Notes.

The Notes have an initial conversion rate of 32.6797 shares of our common stock per $1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately $30.60 per share of our common stock). Following certain corporate events that occur prior to the maturity date, we will increase the conversion rate for a holder who elects to convert its Notes in connection with such corporate event. Additionally, upon the occurrence of a corporate event that constitutes a "fundamental change" per the Indenture, holders of the Notes may require the Company to repurchase for cash all or a portion of their Notes at a purchase price equal to 100% of the principal amount of the Notes plus accrued and unpaid interest.

Holders of the Notes may convert all or any portion of their Notes at any time prior to the close of business on October 14, 2024, in integral multiples of $1,000 principal amount, only under any of the following circumstances:

- During any calendar quarter commencing after the calendar quarter ended on June 30, 2020 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;

- During the five business day period after any five consecutive trading day period (the measurement period) in which the trading price as defined in the Indenture per $1,000 principal amount of Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;

- If we call such notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date; or

- Upon the occurrence of specified corporate events described in the Indenture.

On or after October 15, 2024, until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert all or any portion of their Notes at the conversion rate at any time irrespective of the foregoing circumstances. Upon conversion, holders will receive cash, shares of our common stock or a combination of cash and shares of common stock, at our election.

As of December 31, 2023, the conditions allowing holders of the Notes to convert were not met and no events that would constitute a fundamental change that would allow the holders of the Notes to require a repurchase have occurred. The Notes are therefore not currently convertible and are classified as long-term debt.

The interest expense recognized related to the Notes was as follows (in thousands):

	As of December 31,		
	2023	2022	2021
Contractual interest expense	$ 5,776	$ 5,739	$ 5,750
Amortization of debt issuance costs and discount[(1)]	1,511	1,500	11,948
Total	$ 7,287	$ 7,239	$ 17,698

(1) Amortization of debt issuance costs and discount for the years ended December 31, 2023 and 2022 no longer includes amortization of the debt discount attributable to the conversion premium due to the adoption of ASU 2020-06 using a modified retrospective approach. Refer to Note 1 for more information.

Based on the closing price of our common stock of $9.26 on December 31, 2023, the if-converted value of the Notes was less than their respective principal amounts.

Capped Calls

On April 8, 2020, concurrently with the pricing of the Notes, we entered into privately negotiated capped call transactions (Base Capped Calls) with certain option counterparties. In addition, in connection with the initial purchasers' exercise in full of their option to purchase additional Notes, on April 9, 2020, we entered into additional capped call transactions (together with the Base Capped Calls, the Capped Calls) with each of the option counterparties. We used approximately $21.7 million of the net proceeds from the Note Offering to pay the cost of the Capped Calls and allocated issuance costs.

The Capped Calls have initial cap prices of $42.00 per share, subject to certain adjustments. The Capped Calls are expected generally to reduce the potential dilution to our common stock upon any conversion of Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted Notes, as the case may be, with such reduction and/or offset subject to the cap price. The Capped Calls are separate transactions that we entered into with the option counterparties, and are not part of the terms of the Notes. As the Capped Call transactions are considered indexed to our own stock and are considered equity classified, they were recorded in stockholders' equity and are not accounted for as derivatives. The cost incurred in connection with the Capped Calls was recorded as a reduction to additional paid-in capital on our consolidated balance sheets.

11. Restructuring Costs

2023 Restructuring Plan

During the quarter and year ended December 31, 2023, our board of directors authorized a reduction of our global workforce as part of a restructuring plan intended to optimize our cost structure and focus our investment of resources in key priority areas to align with strategic changes (2023 Restructuring Plan). As part of the 2023 Restructuring Plan, we significantly reduced headcount throughout both our professional services and technology segments, including among our senior leadership team. The restructuring costs primarily related to severance and other team member costs from workforce reductions and impairment of a discontinued capitalized internal-use software project.

The following table summarizes our 2023 Restructuring Plan costs by financial statement line item for the year ended December 31, 2023 (in thousands):

	Year Ended December 31, 2023		
2023 Restructuring Plan	**Severance and Other Team Member Costs**	**Impairment Charges**	**Total**
Cost of revenue, excluding depreciation and amortization:			
Technology	$ 484	$ —	$ 484
Professional services	1,398	—	1,398
Sales and marketing	1,210	—	1,210
Research and development	2,436	615	3,051
General and administrative	624	—	624
Total	$ 6,152	$ 615	$ 6,767

Restructuring liabilities related to the 2023 Restructuring Plan are included as a component of accrued liabilities on our consolidated balance sheets. The following table summarizes our restructuring-related activities, including costs incurred, cash payments, and the resulting liability balances (in thousands):

	2023 Restructuring Plan Liability Rollforward
Balance as of January 1, 2023	$ —
Restructuring costs	6,767
Cash payments	(3,797)
Adjustments for non-cash items[(1)]	(615)
Balance as of December 31, 2023	$ 2,355

(1) Non-cash items consist of the impairment of a discontinued capitalized internal-use software project.

Our restructuring activities as part of the 2023 Restructuring Plan are expected to continue over the next three to six months. We expect additional restructuring costs of at least $1.1 million in the first half of 2024. Restructuring initiatives are under evaluation which may affect the amount and expected timing of restructuring costs and associated payments.

2022 Restructuring Plan

During the year ended December 31, 2022, we initiated a restructuring plan (2022 Restructuring Plan) to optimize our cost structure and focus our investment of resources in key priority areas to align with strategic changes. As part of the 2022 Restructuring Plan, we significantly reduced investment in our life sciences business unit, which is generally part of the technology segment, and also reduced headcount throughout the Company, including among our senior leadership team. The restructuring costs primarily related to severance and other team member costs from workforce reductions, impairment of discontinued capitalized internal-use software projects, and other miscellaneous charges. We substantially completed all actions under the 2022 Restructuring Plan in early 2023 and, as of December 31, 2023, the related restructuring liabilities were completely settled through cash outlays made to impacted team members.

The following tables summarize our 2022 Restructuring Plan costs by financial statement line item for the years ended December 31, 2023 and 2022 (in thousands):

	Year Ended December 31, 2023			
2022 Restructuring Plan	**Severance and Other Team Member Costs**	**Impairment Charges**	**Other[1]**	**Total**
Cost of revenue, excluding depreciation and amortization:				
Technology	$ 12	$ —	$ —	$ 12
Professional services	434	—	—	434
Sales and marketing	1,190	—	15	1,205
Research and development	286	—	—	286
General and administrative	94	—	24	118
Total	$ 2,016	$ —	$ 39	$ 2,055

(1) Includes other miscellaneous charges associated with the 2022 Restructuring Plan.

	Year Ended December 31, 2022			
2022 Restructuring Plan	**Severance and Other Team Member Costs**	**Impairment Charges**	**Other[1]**	**Total**
Cost of revenue, excluding depreciation and amortization:				
Technology	$ 195	$ —	$ 34	$ 229
Professional services	1,081	—	58	1,139
Sales and marketing	2,215	—	808	3,023
Research and development	1,957	1,225	228	3,410
General and administrative	607	—	17	624
Total	$ 6,055	$ 1,225	$ 1,145	$ 8,425

(1) Includes other miscellaneous charges associated with the 2022 Restructuring Plan.

Restructuring liabilities related to the 2022 Restructuring Plan were included as a component of accrued liabilities on our consolidated balance sheets. The following table summarizes our restructuring-related activities, including costs incurred, cash payments, and the resulting liability balances (in thousands):

	2022 Restructuring Plan Liability Rollforward
Balance as of January 1, 2022	$ —
Severance and other restructuring costs	8,425
Cash payments	(4,530)
Adjustments for non-cash items[1]	(2,058)
Balance as of December 31, 2022	$ 1,837
Severance and other restructuring costs	2,055
Cash payments	(3,892)
Balance as of December 31, 2023	$ —

(1) Non-cash items consist of the impairment of discontinued capitalized internal-use software projects and other minor miscellaneous non-cash adjustments.

12. Stockholders' Equity

Preferred stock

Our board of directors has the authority, without further action by our stockholders, to issue up to 25,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, and privileges thereof, including voting rights. As of December 31, 2023 and 2022, no shares of this preferred stock were issued and outstanding.

Common stock

We had 500,000,000 shares of $0.001 par value common stock authorized, of which 58,530,880 and 55,764,942 shares were legally issued and outstanding as of December 31, 2023 and 2022, respectively. The shares legally issued and outstanding as of December 31, 2023 and 2022, included 235,389 and 503,020 shares, respectively, issued pursuant to acquisition agreements, which are subject to a restriction agreement and were unvested, and as such, for accounting purposes they were not considered to be outstanding common stock shares. Each share of common stock has the right to one vote on all matters submitted to a vote of stockholders. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when declared by the board of directors, subject to prior rights of holders of all classes of stock outstanding having priority rights as to dividends. No dividends have been declared or paid on our common stock through December 31, 2023.

Share repurchase plan

On August 2, 2022, our Board of Directors authorized a share repurchase program to repurchase up to $40.0 million of our outstanding shares of common stock (Share Repurchase Plan). During the year ended December 31, 2023, we repurchased and retired 145,027 shares of our common stock for $1.8 million at an average purchase price of $12.45 per share. The total remaining authorization for future shares of common stock repurchases under our Share Repurchase Plan is $29.8 million as of December 31, 2023.

Secondary Public Equity Offering

In August 2021, we completed an underwritten public offering of 4,882,075 shares (inclusive of the underwriters' over-allotment option to purchase 636,792 shares) of our common stock at $53.00 per share. We received net proceeds of $245.2 million, after deducting the underwriting discounts and commissions and other offering costs.

13. Net Loss Per Share

The following table presents the calculation of basic and diluted net loss per share attributable to common stockholders (in thousands, except share and per share amounts):

	Year Ended December 31,		
	2023	2022	2021
Net loss per share, basic			
Numerator:			
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Denominator:			
Weighted-average number of shares used in calculating net loss per share, basic	56,418,397	53,721,702	47,494,768
Net loss per share, basic	$ (2.09)	$ (2.56)	$ (3.23)
Net loss per share, diluted			
Numerator:			
Net loss	$ (118,147)	$ (137,403)	$ (153,210)
Dilutive change in fair value of shares issuable as contingent consideration	—	(4,668)	—
Net loss for diluted calculation	$ (118,147)	$ (142,071)	$ (153,210)
Denominator:			
Weighted-average number of shares used in calculating net loss per share, basic	56,418,397	53,721,702	47,494,768
Dilutive effect of shares issuable as acquisition-related contingent consideration[2]	—	358,030	—
Weighted-average number of shares used in calculating net loss per share, diluted	56,418,397	54,079,732	47,494,768
Net loss per share, diluted	$ (2.09)	$ (2.63)	$ (3.23)

During the years ended December 31, 2023, 2022 and 2021, we incurred net losses and, therefore, the effect of our stock options, restricted stock units, performance-based restricted stock units, convertible senior notes, and restricted shares were not included in the calculation of diluted net loss per share as the effect would be anti-dilutive. The calculation of diluted net loss per share does not include the effect of the following potentially outstanding shares of common stock. The effects of these potentially outstanding shares were not included in the calculation of diluted net loss per share when the effect would have been anti-dilutive:

	As of December 31,		
	2023	2022	2021
Common stock options	1,396,452	1,748,306	2,115,484
Restricted stock units	3,111,584	3,292,943	2,273,354
Performance-based restricted stock units	188,533	534,380	319,442
Shares related to convertible senior notes[1]	7,516,331	7,516,331	2,469,624
Shares issuable as acquisition-related contingent consideration[2]	—	—	87,415
Restricted shares	235,389	503,020	67,939
Total potentially dilutive securities	12,448,289	13,594,980	7,333,258

(1) On January 1, 2022, we adopted ASU 2020-06 using the modified retrospective method. Following this adoption, we utilize the if-converted method for our calculation of potentially dilutive shares related to our convertible senior notes. Prior to the adoption, we applied the treasury stock method as we have the intent and ability to settle the principal amount of the convertible senior notes in cash. As such, the adoption of ASU 2020-06 resulted in a significant increase in the potentially dilutive securities disclosed in the table above as of December 31, 2023 and 2022 compared to December 31, 2021. Refer to Note 1 for further details. In connection with the offering of our convertible senior notes, we entered into Capped Calls with initial caps on the conversion price of $42.00 per share, which are excluded from the calculation of diluted earnings per share, as they would be antidilutive.

(2) The effect of shares issuable as acquisition-related contingent consideration were dilutive during the year ended December 31, 2022, but anti-dilutive during the year ended December 31, 2021. The anti-dilutive shares issuable as acquisition-related contingent consideration as of December 31, 2021 in the table above were calculated based on the earn-out achieved and the estimated number of shares that would be issuable if the outstanding acquisition-related contingent consideration liabilities were to be settled as of that date. As of December 31, 2023 and 2022 there were no longer any shares issuable as acquisition-related contingent consideration.

14. Stock-Based Compensation

In 2011, our board of directors adopted the Health Catalyst, Inc. 2011 Stock Incentive Plan (2011 Plan), which provided for the direct award, sale of shares and granting of RSUs and options for our common stock to our directors, team members, or consultants. In connection with our IPO, our board of directors adopted the 2019 Stock Option and Incentive Plan (2019 Plan). The 2019 Plan provides flexibility to our compensation committee to use various equity-based incentive awards as compensation tools to motivate our workforce, including the grant of incentive and non-statutory stock options, restricted and unrestricted stock, RSUs, and stock appreciation rights to our directors, team members, or consultants.

We initially reserved 2,756,607 shares of our common stock (2,500,000 under the 2019 Plan and 256,607 shares under the 2011 Plan that were available immediately prior to the IPO registration date). The 2019 Plan provides that the number of shares reserved available for issuance under the plan will automatically increase each January 1, beginning on January 1, 2020, by 5% of the outstanding number of shares of our common stock on the immediately preceding December 31, or such lesser number of shares as determined by our compensation committee. As of January 1, 2023, there were an additional 2,788,247 shares reserved for issuance under the 2019 Plan.

As of December 31, 2023, 2022, and 2021, there were 20,717,667, 17,929,420, and 15,294,920 shares authorized for grant, respectively, and 3,831,444, 2,479,622, and 2,969,638 shares available for grant, respectively, under the 2019 Plan and 2011 Plan (collectively, the Stock Incentive Plan).

The following two tables summarize our total stock-based compensation expense by award type and where the stock-based compensation expense was recorded in our consolidated statements of operations (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Options	$ 60	$ 2,722	$ 5,276
Restricted stock units (RSUs)	45,108	54,760	40,345
Performance-based restricted stock units (PRSUs)	1,304	5,209	10,944
Employee stock purchase plan	1,731	1,623	1,511
Restricted shares	7,553	7,790	7,069
Total stock-based compensation	$ 55,756	$ 72,104	$ 65,145

	Year Ended December 31,		
	2023	2022	2021
Cost of revenue	$ 9,235	$ 10,288	$ 10,110
Sales and marketing	20,982	28,082	22,698
Research and development	11,213	12,938	10,213
General and administrative	14,326	20,796	22,124
Total stock-based compensation	$ 55,756	$ 72,104	$ 65,145

For the years ended December 31, 2023, 2022, and 2021 we capitalized $0.9 million, $1.0 million, and $0.6 million respectively, of stock-based compensation as internal-use software.

Stock options

All options were granted with an exercise price determined by the board of directors that was equal to the estimated fair value of our common stock at the date of grant, based on the information known on the date of grant. Subject to certain exceptions defined in the Stock Incentive Plan related to an employee's termination, options generally expire on the tenth anniversary of the applicable grant date. Our standard stock-based awards vest solely on a service-based condition. For these awards, we recognize stock-based compensation based on the grant date fair value of the awards and recognize that cost using the straight-line method over the requisite service period of the award. Awards that contain both service-based and performance conditions are recognized using the accelerated attribution method once the performance condition is probable of occurring. The service-based condition is generally a service period of four years.

The fair value of options, which vest in accordance with service schedules, was estimated on the date of grant or, when applicable, the modification date, using the Black-Scholes option pricing model. We account for forfeitures as they occur. All standard stock options outstanding at December 31, 2023 and 2022 are expected to vest according to their specific schedules.

A summary of the share option activity under the Health Catalyst Stock Plan for the year ended December 31, 2023, is as follows:

	Time-Based Option Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value
Outstanding at January 1, 2023	1,748,306	$ 11.51	4.9	$ 690,493
Options exercised	(130,710)	7.27		
Options cancelled/expired	(221,144)	12.78		
Outstanding at December 31, 2023	1,396,452	$ 11.70	4.0	$ 85,565
Vested and expected to vest as of December 31, 2023	1,396,452	$ 11.70	4.0	$ 85,565
Vested and exercisable as of December 31, 2023	1,396,452	$ 11.70	4.0	$ 85,565

There were no stock options granted during the years ended December 31, 2023, 2022, and 2021. The aggregate intrinsic value of stock options exercised was $0.7 million, $3.9 million, and $67.0 million for the years ended December 31, 2023, 2022, and 2021, respectively. The total grant-date fair value of stock options vested during the years ended December 31, 2023, 2022, and 2021 was $0.4 million, $5.2 million, and $6.8 million, respectively. As of December 31, 2023, all of our outstanding stock options were fully vested and there was no longer any related unrecognized compensation expense.

Restricted stock units (RSUs)

The service-based condition for restricted stock units (RSUs) is generally satisfied over four years with a cliff vesting period of one year and quarterly vesting thereafter. The following table sets forth the outstanding RSUs and related activity for the year ended December 31, 2023:

	Restricted Stock Units	Weighted Average Grant Date Fair Value
Unvested and outstanding at January 1, 2023	3,292,943	$ 29.71
RSUs granted	2,557,521	11.77
RSUs vested	(1,992,587)	25.77
RSUs forfeited	(746,293)	22.72
Unvested and outstanding at December 31, 2023	3,111,584	$ 19.16

During the years ended December 31, 2023, 2022, and 2021, we granted RSUs with a weighted-average grant date fair value of $11.77, $23.53, and $50.83, respectively, which represents the weighted-average closing price of our common stock on the grant date. The total grant date fair value of RSUs vested during the years ended December 31, 2023, 2022, and 2021 was $51.3 million, $59.2 million, and $38.1 million, respectively. As of December 31, 2023, we had $53.2 million of unrecognized stock-based compensation expense related to outstanding RSUs expected to be recognized over a weighted-average period of 2.1 years.

Performance-based restricted stock units (PRSUs)

During the year ended December 31, 2022, we granted PRSUs to all employees that included both service conditions and performance conditions related to company-wide goals for the year ended December 31, 2022. These PRSUs vested to the extent the applicable performance conditions were achieved for the year ended December 31, 2022 and if the individual employee continued to provide services to us through the vesting date of March 1, 2023. The percentage of PRSUs that ultimately vested from the 2022 PRSU grants based on our performance during the year ended December 31, 2022 against the pre-established targets ranged from 0% for named executive officers to approximately 42% for other eligible employees.

During fiscal 2022, we also granted additional executive PRSUs based on the same performance conditions described above, but with an extended four-year service condition whereby one quarter of such shares were scheduled to vest on March 1, 2023, and the remainder in quarterly installments thereafter. However, due to the year ended December 31, 2022 pre-established thresholds not being met, 0% of these executive PRSUs granted in 2022 will vest.

During the year ended December 31, 2023, certain named executive officers and other leadership team members were granted executive PRSUs with a measurement period of three years that include service conditions, performance conditions, and market conditions. The vesting of these PRSUs will be determined based on market-based targets for total shareholder return (TSR) achievement and financial performance targets for revenue growth rate achievement and Adjusted EBITDA margin achievement. Each of the three market and performance targets are weighted equally and these PRSUs may vest in an amount up to the amount granted, subject to satisfaction of the pre-established targets. The number of PRSUs that will vest for the 2023, 2024, and 2025 vesting periods will be calculated as follows: (i) the market/performance achievement for the applicable vesting period, multiplied by (ii) approximately 33.33% of the PRSUs for each of the 2023, 2024 and 2025 vesting periods, each rounded to the nearest whole share.

The fair value of the market-based tranches included in the 2023 executive PRSUs is estimated on the date of grant using the Monte Carlo simulation valuation model with the following assumptions for the year ended December 31, 2023:

	Year Ended December 31, 2023
Expected volatility	61.7%
Expected term (in years)	1-3
Risk-free interest rate	4.38% - 5.01%
Expected dividends	—

The following table sets forth the outstanding PRSUs, including executive PRSUs, and related activity for the year ended December 31, 2023:

	Performance-based Restricted Stock Units	Weighted Average Grant Date Fair Value
Unvested and outstanding at January 1, 2023	534,380	$ 25.45
PRSUs granted	226,071	12.42
PRSUs vested	(192,093)	25.24
PRSUs forfeited	(379,825)	23.98
Unvested and outstanding at December 31, 2023	188,533	$ 12.99

During the years ended December 31, 2023, 2022, and 2021 we granted PRSUs with a weighted-average grant date fair value of $12.42 and $25.46, and $50.24 respectively, which represents the weighted-average closing price of our common stock on the grant date for performance-based tranches and the estimated fair value using a Monte Carlo simulation valuation model for the market-based tranches. The total grant date fair value of PRSUs vested during the years ended December 31, 2023 and 2022 was $4.8 million and $13.0 million, respectively. As of December 31, 2023, we had $1.1 million of unrecognized stock-based compensation expense related to outstanding PRSUs expected to be recognized over a remaining weighted-average period of 1.5 years.

Employee stock purchase plan

In connection with our IPO in July 2019, our board of directors adopted the ESPP and a total of 750,000 shares of common stock were initially reserved for issuance under the ESPP. The number of shares of common stock available for issuance under the ESPP will be increased on the first day of each calendar year beginning January 1, 2020 and each year thereafter until the ESPP terminates. The number of shares of common stock reserved and available for issuance under the ESPP shall be cumulatively increased by the least of (i) 750,000 shares, (ii) one percent of the number of shares of common stock issued and outstanding on the immediately preceding December 31, and (iii) such lesser number of shares of common stock as determined by the ESPP Administrator. As of January 1, 2023, the number of shares of common stock available for issuance under the ESPP increased by 557,649 shares.

The ESPP generally provides for six-month offering periods. The offering periods generally start on the first trading day after June 30 and December 31 of each year. The ESPP permits participants to elect to purchase shares of common stock through fixed percentage contributions from eligible compensation during each offering period, not to exceed 15% of the eligible compensation a participant receives during an offering period or accrue at a rate which exceeds $25,000 of the fair value of the stock (determined on the option grant dates(s)) for each calendar year. A participant may purchase the lowest of (i) a number of shares of common stock determined by dividing such participant's accumulated payroll deductions on the exercise date by the option price, (ii) 2,500 shares; or (iii) such other lesser maximum number of shares as shall have been established by the ESPP Administrator in advance of the offering period. Amounts deducted and accumulated by the participant will be used to purchase shares of common stock at the end of each offering period.

The purchase price of the shares will be 85% of the lower of the fair value of common stock on the first trading day of each offering period or on the purchase date. Participants may end their participation at any time during an offering period and will be paid their accumulated contributions that have not been used to purchase shares of common stock. Participation ends automatically upon termination of employment.

The fair value of the purchase right for the ESPP option component is estimated on the date of grant using the Black-Scholes model with the following assumptions for the years ended December 31, 2023, 2022, and 2021:

	Year Ended December 31,		
	2023	2022	2021
Expected volatility	54.3%-99.4%	37.5%-75.8%	33.8%-40.4%
Expected term (in years)	0.5	0.5	0.5
Risk-free interest rate	4.8%-5.5%	0.2%-2.5%	0.1%
Expected dividends	—	—	—

Expected volatility estimates were based on the historical volatility of our common stock as of the beginning of each respective offering period. The expected term of the ESPP option component was based on the six-month offering period and the risk-free rate represented the yield on U.S. Treasury bonds with maturity equal to the expected term as of the beginning of each respective offering period.

During the year ended December 31, 2023, we issued 419,680 shares under the ESPP, with a weighted-average purchase price per share of $8.55. Total cash proceeds withheld from employees for the purchase of shares under the ESPP in 2023 were $3.6 million. As of December 31, 2023, 1,470,158 shares are reserved for future issuance under the ESPP.

Restricted shares

As part of the Able Health acquisition that closed on February 21, 2020, 179,392 shares of our common stock were issued pursuant to the terms of the acquisition agreement and are a stock-based compensation arrangement subject to a restriction agreement. The vesting of those shares was subject to one year of continuous service by the applicable team members.

As part of the Vitalware acquisition that closed on September 1, 2020, 203,997 shares of our common stock were issued pursuant to the terms of the acquisition agreement and were considered a stock-based compensation arrangement subject to a restriction agreement. 75% of these restricted shares vested on a monthly basis over a term of approximately one year and the remaining 25% vested on the one year anniversary of the acquisition closing date.

As part of the Twistle acquisition that closed on July 1, 2021, 67,939 shares of our common stock were issued pursuant to the terms of the acquisition agreement and were considered a stock-based compensation arrangement subject to a restriction agreement. The vesting of those shares was subject to one year or, in some instances, eighteen months of continuous service and the restricted shares were released on the eighteen-month anniversary of the acquisition closing date.

As part of the KPI Ninja acquisition that closed on February 24, 2022, 356,919 shares of our common stock were issued pursuant to the terms of the acquisition agreement and are considered a stock-based compensation arrangement subject to a restriction agreement. The vesting of those shares is subject to continuous service with 25% vesting upon each six-month anniversary of the acquisition close date.

As part of the ARMUS acquisition that closed on April 29, 2022, 235,330 shares of our common stock were issued pursuant to the terms of the acquisition agreement and are considered a stock-based compensation arrangement subject to a restriction agreement. The vesting of those shares was subject to eighteen months of continuous service with cliff vesting upon the eighteen-month anniversary of the acquisition close date.

As part of the ERS acquisition that closed on October 2, 2023, 175,901 shares of our common stock were issued pursuant to the terms of the acquisition agreement and are considered a stock-based compensation arrangement subject to a restriction agreement. The vesting of those shares was originally subject to eighteen months of continuous service with cliff vesting upon the eighteen-month anniversary of the acquisition close date. However, due to workforce reductions made subsequent to December 31, 2023 as part of the 2023 Restructuring Plan, the ERS restricted shares will fully vest in February 2024, resulting in an acceleration of the related stock-based compensation expense.

As of December 31, 2023, we had $2.0 million of unrecognized stock-based compensation expense related to outstanding restricted shares expected to be fully recognized during the first quarter of 2024.

15. Income Taxes

For the years ended December 31, 2023, 2022, and 2021, the income tax benefit consisted of the following (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Current taxes:			
Federal	$ —	$ —	$ —
Foreign	204	43	27
State	144	200	209
Total current tax provision	348	243	236
Deferred taxes:			
Federal	8	(3,723)	(5,975)
Foreign	(1)	(1)	—
State	1	(799)	(1,159)
Total deferred provision (benefit)	8	(4,523)	(7,134)
Total income tax provision (benefit)	$ 356	$ (4,280)	$ (6,898)

A reconciliation of the statutory U.S. federal income tax rate to our effective income tax rate is as follows:

	Year Ended December 31,		
	2023	2022	2021
Tax at U.S. statutory rates	21.0 %	21.0 %	21.0 %
State income tax, net of federal tax effect	(0.1)	0.5	0.6
Federal research and development credits	—	(0.1)	2.4
Stock-based compensation	(7.0)	(7.1)	6.1
Contingent consideration	—	0.9	(2.7)
Change in valuation allowance	(14.0)	(11.7)	(22.9)
Other, net	(0.2)	(0.5)	(0.2)
Effective income tax rate	(0.3)%	3.0 %	4.3 %

The income tax provision of $0.4 million for the year ended December 31, 2023 consists of current and deferred taxes for U.S. federal, state, and foreign income taxes. The income tax benefit of $4.3 million and $6.9 million recorded for the years ended December 31, 2022 and 2021, respectively, is primarily related to the discrete deferred tax benefits attributable to the release of a portion of the domestic valuation allowance during the respective periods. The release of valuation allowance is attributable to the acquisitions of KPI Ninja and ARMUS in 2022 and Twistle in 2021, which resulted in deferred tax liabilities that, upon acquisition, allowed us to recognize certain deferred tax assets of $4.5 million and $7.1 million, respectively.

Notes to the Consolidated Financial Statements

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and liabilities were as follows as of December 31, 2023 and 2022 (in thousands):

	As of December 31,	
	2023	2022
Deferred income tax assets:		
Net operating loss carryforwards	$ 154,938	$ 151,256
Research and development credits	27,273	27,283
Code 174 capitalized research and development	30,745	16,564
Operating lease liabilities	5,345	5,453
Interest limitation carryforward	3,167	6,204
Stock-based compensation	1,653	3,363
Deferred revenue	722	377
Property and equipment	1,683	1,234
Intangible assets	4,946	1,299
Accrued expenses	1,968	542
Allowance for bad debt	1,028	577
Other	118	117
Total deferred income tax assets	233,586	214,269
Valuation allowance	(226,267)	(206,022)
Net deferred income tax assets	7,319	8,247
Deferred income tax liabilities:		
Convertible debt	(33)	(27)
Operating lease right-of-use assets	(3,493)	(4,183)
Prepaid expenses	(2,470)	(3,034)
Deferred commissions	(1,323)	(1,002)
Indefinite-lived intangible assets	(73)	(65)
Deferred contract costs	—	(1)
Total deferred income tax liabilities	(7,392)	(8,312)
Net deferred income tax liabilities	$ (73)	$ (65)

We account for deferred taxes under ASC 740, *Income Taxes*, which requires a reduction of the carrying amounts of deferred tax assets by a valuation allowance if, based on available evidence, it is more likely than not that such assets will not be realized. Accordingly, the need to establish valuation allowances for deferred tax assets is assessed periodically based on the ASC 740 more-likely-than-not realization threshold criterion. This assessment considers matters such as future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, legislative developments, and results of recent operations. The evaluation of the recoverability of the deferred tax assets requires that we weigh all positive and negative evidence to reach a conclusion that it is more likely than not that all or some portion of the deferred tax assets will not be realized. The weight given to the evidence is commensurate with the extent to which it can be objectively verified.

We have provided a valuation allowance for our net deferred tax assets, absent differences related to intangible assets with indefinite lives, at December 31, 2023 and 2022, due to the uncertainty surrounding the future realization of such assets and the cumulative losses we have generated. Therefore, no benefit has been recognized in the financial statements for the net operating loss carryforwards and other deferred tax assets, apart from an immaterial deferred tax liability as noted previously. The net deferred income tax liability balance is recorded under Other Liabilities on the consolidated balance sheets. During the years ended December 31, 2023 and 2022, respectively, the valuation allowance increased by $20.2 million and $45.5 million, respectively.

As of December 31, 2023, we had approximately $602.6 million of consolidated federal net operating loss carryforwards and $505.5 million of apportioned state net operating loss carryforwards available to offset future taxable income, respectively. If unused, the federal and state net operating loss carryforwards will begin to expire in 2032 and 2024, respectively.

We have federal research and development credit carryforwards of $25.5 million and state research and development credit carryforwards of $10.9 million, which if not utilized will begin to expire in 2032 and 2025, respectively. To the extent we do not utilize our carryforwards within the applicable statutory carryforward periods, either because of ownership changes and limitations under Code Sections 382 and 383 and similar state laws or the lack of sufficient taxable income, the carryforwards will expire unused.

Utilization of net operating loss carryforwards and credits may be subject to a substantial annual limitation due to the ownership change limitations provided by the Code, and similar state provisions. The Company most recently performed a detailed analysis in December 2021 to determine whether an ownership change under Section 382 of the Code had occurred or will occur. Due to pre-acquisition changes in ownership identified as part of the most recent Section 382 analysis, net operating loss carryforwards of $2.0 million will be permanently lost pursuant to Section 382, as well as federal research and development tax credit carryforwards $0.6 million will be permanently lost pursuant to Section 383. It is possible that additional limitations may arise in future years due to future changes in the ownership of the Company.

We file federal and state income tax returns in jurisdictions with varying statutes of limitations. With few exceptions, we are no longer subject to federal or state income tax examinations by tax authorities for tax years prior to 2020 and 2019, respectively.

We recognize tax benefits from uncertain tax positions when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. The following table summarizes the activity related to unrecognized tax benefits for the years ended December 31, 2023, 2022, and 2021 (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Beginning balance	$ 6,821	$ 6,848	$ 5,578
Decrease in unrecognized tax benefits taken in prior years	(3)	(27)	(122)
Increase in unrecognized tax benefits related to the current year	—	—	1,392
Ending balance	$ 6,818	$ 6,821	$ 6,848

The total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate is zero due to the valuation allowance. We do not anticipate material changes in the total amount of our unrecognized tax benefits within 12 months of the reporting date. Our policy is to accrue interest and penalties related to unrecognized tax benefits within the provision for income taxes. However, as of December 31, 2023 and 2022, we have not accrued interest and penalties because we have net operating loss carryforwards.

16. Contingencies

Litigation

Liabilities for loss contingencies arising from claims, assessments, litigation, fines, penalties, and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

We are involved in legal proceedings from time to time that arise in the normal course of business. In the opinion of management, such routine claims and lawsuits are not significant, and we do not expect them to have a material adverse effect on our business, financial condition, results of operations, or liquidity, except as noted below. We were party to the proceedings set forth below.

On December 21, 2020, Pascal Metrics, Inc. (Pascal Metrics) filed a complaint against the Company in the Delaware Chancery Court (as amended, Complaint) alleging that the Company misappropriated alleged trade secrets of Pascal Metrics and seeking monetary damages. The Complaint focuses upon Patient Safety Monitor. On June 15, 2023, we entered into a settlement and mutual release agreement (Settlement Agreement) with Pascal Metrics and agreed to pay $18.8 million without admission of any wrongdoing, resolving the litigation amongst the parties. The Settlement Agreement provided us with a broad intellectual property license of the alleged trade secrets that were the subject matter of the Complaint. The Complaint was dismissed with prejudice on June 20, 2023 and the settlement amount was paid on June 27, 2023. The litigation charges were recorded as part of general and administrative expense in our consolidated statements of operations.

17. Deferred Revenue and Performance Obligations

Deferred revenue includes advance client payments and billings in excess of revenue recognized. For the year ended December 31, 2023, approximately 18% of the revenue recognized was included in deferred revenue at the beginning of the period.

Transaction price allocated to the remaining performance obligations

Most of our technology and professional services contracts have a three or five-year term, of which many are terminable after one year upon 90 days' notice. For arrangements that do not allow the client to cancel within one year or less, we expect to recognize $264.4 million of revenue on unsatisfied performance obligations as of December 31, 2023. We expect to recognize approximately 65% of the remaining performance obligations over the next 24 months, with the balance recognized thereafter.

18. Related Parties

We have entered into arrangements with a client, Carle Health, and a member of the client's executive leadership team began serving on our board of directors effective July 1, 2023 and currently serves on our board of directors. We recognized revenue from this related party of $8.1 million after the related party relationship commenced during the year ended December 31, 2023. As of December 31, 2023, we had receivables from this related party of $1.9 million and deferred revenue with this related party of $0.1 million.

In the past, we also entered into arrangements with another client, Mass General Brigham (formerly Partners Healthcare), where, at that time, a member of the client's management was a member of our board of directors. This former director served on our board from January 2018 to May 2021. He resigned from his executive position with our client on March 31, 2021. As such, we no longer consider this client to be a related party subsequent to March 31, 2021. We recognized $0.9 million of revenue from this client prior to the related party relationship ending during the year ended December 31, 2021.

We have revenue arrangements with clients that were also our investors. None of these clients hold a significant amount of ownership in our equity interests.

19. Employee Benefit Plans

We have a 401(k) defined contribution plan covering eligible employees. Our contributions were $5.7 million, $4.9 million, and $3.8 million for the years ended December 31, 2023, 2022, and 2021, respectively. As of December 31, 2023 and 2022, we matched 100% of the first 4% of an employees' 401(k) plan contributions.

20. Segments

We operate our business in two operating segments that also represent our reportable segments. Our business is organized based on our technology offerings and professional services. Accordingly, our segments are:

- Technology - Our technology segment (Technology) includes our data platform, analytics applications and support services and generates revenues primarily from contracts that are cloud-based subscription arrangements, time-based license arrangements, and maintenance and support fees; and

- Professional Services - Our professional services segment (Professional Services) is generally the combination of analytics, implementation, strategic advisory, outsource, and improvement services to deliver expertise to our clients to more fully configure and utilize the benefits of our Technology offerings.

Revenues and cost of revenues generally are directly attributed to our segments. All segment revenues are from our external clients. Asset and other balance sheet information at the segment level is not reported to our CODM.

Segment revenue and Adjusted Gross Profit for the years ended December 31, 2023, 2022, and 2021 were as follows (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Revenue:			
Technology	$ 187,583	$ 176,288	$ 147,718
Professional Services	108,355	99,948	94,208
Total	$ 295,938	$ 276,236	$ 241,926

	Year Ended December 31,		
	2023	2022	2021
Adjusted Gross Profit:			
Technology	$ 127,744	$ 122,284	$ 102,326
Professional Services	16,316	23,565	25,544
Total reportable segments Adjusted Gross Profit	144,060	145,849	127,870
Less Adjusted Gross Profit reconciling items:			
Stock-based compensation	(9,235)	(10,288)	(10,110)
Acquisition-related costs, net[(1)]	(664)	(1,006)	(188)
Restructuring costs	(2,328)	(1,368)	—
Less other reconciling items:			
Sales and marketing	(67,321)	(87,514)	(75,027)
Research and development	(72,627)	(75,680)	(62,733)
General and administrative	(76,559)	(61,701)	(85,934)
Depreciation and amortization	(42,223)	(48,297)	(37,528)
Interest and other income (expense), net	9,106	(1,678)	(16,458)
Loss before income taxes	$ (117,791)	$ (141,683)	$ (160,108)

(1) Acquisition-related costs, net include deferred retention expenses following the ARMUS, KPI Ninja, and Twistle acquisitions.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of disclosure controls and procedures

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (Exchange Act)), as of the end of the period covered by this Annual Report on Form 10-K. Based on such evaluation, our principal executive officer and principal financial officer have concluded that as of such date, our disclosure controls and procedures were effective at a reasonable assurance level.

Management's report on internal control over financial reporting

Our management is responsible for establishing and maintaining adequate internal controls over financial reporting. Our management, including the CEO and CFO, conducted an evaluation of the effectiveness of our internal control over financial reporting, as defined in Rule 13a-15(f) of the Securities Exchange Act of 1934, as amended. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies may deteriorate.

Management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2023 using the criteria issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control—Integrated Framework (2013). Based on the results of this evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2023.

The effectiveness of our internal control over financial reporting as of December 31, 2023 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report which is provided in Part II, Item 8 of this Annual Report on Form 10-K.

Changes in internal control over financial reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the period covered by the three months ended December 31, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Inherent limitations on effectiveness of disclosure controls and procedures

Our management, including our principal executive officer and principal financial officer, do not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Due to inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not Applicable.

PART III

Item 10. Directors, Executive Officers, and Corporate Governance

The information required by this item is incorporated by reference to our proxy statement relating to our 2024 Annual Meeting of Stockholders. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the year ended December 31, 2023.

Our board of directors has adopted a Code of Business Conduct and Ethics (Code of Conduct) that applies to all officers, directors, and employees, which is available on our website at ir.healthcatalyst.com under "Corporate Governance." The nominating and corporate governance committee of our board of directors is responsible for overseeing the Code of Conduct and must approve any waivers of the Code of Conduct for employees, executive officers, and directors. We expect that any amendments to the Code of Conduct, or any waivers of its requirements, will be disclosed on our website, as required by applicable law or the Nasdaq listing standards.

Item 11. Executive Compensation

The information required by this item is incorporated by reference to our proxy statement relating to our 2024 Annual Meeting of Stockholders. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the year ended December 31, 2023.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is incorporated by reference to our proxy statement relating to our 2024 Annual Meeting of Stockholders. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the year ended December 31, 2023.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is incorporated by reference to our proxy statement relating to our 2024 Annual Meeting of Stockholders. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the year ended December 31, 2023.

Item 14. Principal Accountant Fees and Services

The information required by this item is incorporated by reference to our proxy statement relating to our 2024 Annual Meeting of Stockholders. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the year ended December 31, 2023.

PART IV

Item 15. Exhibits and Financial Statement Schedules

The following documents are filed as a part of this Annual Report on Form 10-K:

(a) Financial statements

The information concerning our financial statements, including the Report of Independent Registered Public Accounting Firm required by this item is incorporated by reference herein to the section of this Annual Report on Form 10-K in Item 8, entitled "Consolidated Financial Statements and Supplementary Data."

(b) Financial statement schedules

All schedules have been omitted because the required information is not present or not present in amounts sufficient to require submission of the schedules, or because the information required is included in the section of this Annual Report on Form 10-K Item 8, entitled "Consolidated Financial Statements and Supplementary Data."

(c) Exhibits

See the Exhibit Index immediately preceding the signature page of this Annual Report on Form 10-K.

Item 16. Form 10-K Summary

None.

EXHIBIT INDEX

Exhibit Number	Description of Document	Incorporated by Reference from Form	Incorporated by Reference from Exhibit Number	Date Filed
3.1	Amended and Restated Certificate of Incorporation.	S-1/A	3.2	July 12, 2019
3.2	Amended and Restated Bylaws.	S-1/A	3.4	July 12, 2019
3.3	Amendment to the Amended and Restated Bylaws	8-K	3.1	August 2, 2021
4.1	Form of common stock certificate.	S-1/A	4.1	July 12, 2019
4.2	Fifth Amended and Restated Registration Agreement, dated February 6, 2019, by and among the Registrant and certain of its stockholders.	S-1	4.2	June 27, 2019
4.3	Fifth Amended and Restated Investor Rights Agreement, dated February 6, 2019, by and among the Registrant and certain of its stockholders.	S-1	4.3	June 27, 2019
4.4	Fifth Amended and Restated Stockholders Agreement, dated February 6, 2019, by and among the Registrant and certain of its stockholders.	S-1	4.4	June 27, 2019
4.5	Amendment No. 1 to Financing Documents, dated July 10, 2019, by and among the Registrant and certain of its stockholders.	S-1/A	4.5	July 12, 2019
4.6	Description of securities registered under Section 12 of the Exchange Act.	10-K	4.6	February 28, 2020
10.1#	Non-Employee Director Compensation Policy.	Filed herewith		
10.2#	2019 Stock Option and Incentive Plan, and forms of agreements thereunder.	S-1/A	10.12	July 12, 2019
10.3#	Amended and Restated 2011 Stock Incentive Plan, and forms of agreements thereunder.	S-1	10.13	June 27, 2019
10.4#	2019 Employee Stock Purchase Plan.	S-1/A	10.14	July 12, 2019
10.5#	Executive Severance Plan.	S-1/A	10.16	July 12, 2019
10.6#	Offer Letter, dated August 7, 2020, between the Registrant and Kevin Freeman.	10-K	10.6	February 28, 2023
10.7#	Offer Letter, dated September 26, 2011, between the Registrant and Daniel Burton.	S-1	10.6	June 27, 2019
10.8#	Offer Letter, dated March 27, 2014, between the Registrant and Bryan Hunt.	10-K	10.10	February 25, 2021
10.9#	Offer Letter, dated May 22, 2013, between the Registrant and Linda Llewelyn.	S-1	10.10	June 27, 2019
10.10#	Offer Letter, dated April 4, 2013, between the Registrant and Jason Alger.	10-K	10.15	February 25, 2021
10.11#	Offer Letter, dated March 27, 2023, between the Registrant and Anne Marie Bickmore.	10-Q	10.1	May 10, 2023
10.12#	Offer Letter, dated March 27, 2023, between the Registrant and Ben Landry.	10-Q	10.2	May 10, 2023
10.13#	Separation and Release Agreement, dated December 4, 2023, between the Registrant and Anne Marie Bickmore.	Filed herewith		
10.14#	Senior Executive Cash Incentive Bonus Plan.	S-1	10.15	June 27, 2019
10.15#	Form of Indemnification Agreement, between the Registrant and each of its executive officers and directors.	S-1	10.18	June 27, 2019

21.1	Subsidiaries of Registrant.	Filed herewith
23.1	Consent of Independent Registered Public Accounting Firm.	Filed herewith
24.1	Power of Attorney (included on signature page to this Annual Report on Form 10-K).	Filed herewith
31.1	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed herewith
31.2	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed herewith
32.1^	Certifications of the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	Furnished herewith
97	Policy for Recovery of Erroneously Awarded Compensation	Filed herewith
101.SCH	Inline XBRL Taxonomy Extension Schema Document	Filed herewith
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	Filed herewith
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	Filed herewith
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	Filed herewith
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	Filed herewith
104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101)	Filed herewith

# Indicates management contract or compensatory plan.

^ The certifications attached as Exhibit 32.1 accompanying this Annual Report on Form 10-K, are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Health Catalyst, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K, irrespective of any general incorporation language contained in such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HEALTH CATALYST, INC.

Date: 2/22/2024

By: /s/ Bryan Hunt

Bryan Hunt

Chief Financial Officer
(Principal Financial Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints each of Daniel Burton, Bryan Hunt, Jason Alger, and Benjamin Landry, with full power of substitution and resubstitution, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file, any and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorney-in-fact and agents or any of them or their and his or her substitute or substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Daniel Burton	Chief Executive Officer and Director	2/22/2024
Daniel Burton	*(Principal Executive Officer)*	
/s/ Bryan Hunt	Chief Financial Officer	2/22/2024
Bryan Hunt	*(Principal Financial Officer)*	
/s/ Jason Alger	Chief Accounting Officer	2/22/2024
Jason Alger	*(Principal Accounting Officer)*	
/s/ John A. Kane	Director	2/22/2024
John A. Kane		
/s/ Duncan Gallagher	Director	2/22/2024
Duncan Gallagher		
/s/ Matthew Kolb	Director	2/22/2024
Matthew Kolb		
/s/ Julie Larson-Green	Director	2/22/2024
Julie Larson-Green		
/s/ Anita V. Pramoda	Director	2/22/2024
Anita V. Pramoda		
/s/ S. Dawn Smith	Director	2/22/2024
S. Dawn Smith		
/s/ Mark Templeton	Director	2/22/2024
Mark Templeton		

Exhibit 10.1

HEALTH CATALYST, INC.

NON-EMPLOYEE DIRECTOR COMPENSATION POLICY

The purpose of this Non-Employee Director Compensation Policy (the "Policy") of Health Catalyst, Inc., a Delaware corporation (the "Company"), is to provide a total compensation package that enables the Company to attract and retain, on a long-term basis, high-caliber directors who are not employees or officers of the Company or its subsidiaries ("Outside Directors"). This Policy will become effective as of the Annual Meeting of Stockholders of the Company in June, 2024 (the "Effective Date"). In furtherance of the purpose stated above, all Outside Directors shall be paid compensation for services provided to the Company as set forth below:

1. Cash Retainers

(a) Additional Annual Retainers for Committee Membership:

Audit Committee Chairperson: $22,500

Audit Committee member: $10,000

Compensation Committee Chairperson: $15,000

Compensation Committee member: $7,500

Nominating and Corporate Governance Committee Chairperson: $10,000

Nominating and Corporate Governance Committee member: $5,000

Transactions Committee Chairperson: $10,000

Transactions Committee member: $5,000

(b) Additional Retainer for Non-Executive Chairman of the Board: $30,000 to acknowledge the additional responsibilities and time commitment of the role.

All cash retainers will be paid in cash quarterly in arrears promptly following the end of the applicable calendar quarter, but in no event more than 30 days after the end of such quarter. If an Outside Director does not serve as an Outside Director, or in the applicable positions described above, for an entire calendar quarter, the retainer paid to such Outside Director will be prorated for the portion of such calendar quarter actually served as an Outside Director, or in such position, as applicable.

Notwithstanding the foregoing, all Outside Directors may elect to receive (i) fully vested restricted stock units in lieu of the cash retainer noted above or (ii) receive 50% of the cash retainer noted above in the form of fully vested restricted stock units ("Equity Election"). Each Equity Election must be submitted to the Company in the form and manner specified by the Board or its Compensation Committee (the "Compensation Committee"). An individual who fails to make a timely Equity Election will not receive a restricted stock unit award and instead

will receive the applicable annual retainer in cash. Equity Elections must comply with the following timing requirements:

- Initial Election. Each individual who first becomes an Outside Director may make an Equity Election with respect to cash retainer payments scheduled to be paid in the same calendar year as such individual first becomes a Non-Employee Director (the "Initial Equity Election"). The Initial Equity Election must be submitted to the Company on or before the date that the individual first becomes a Non-Employee Director (the "Initial Election Deadline"), and the Initial Equity Election will become final and irrevocable as of the Initial Election Deadline.

- Annual Election. No later than April 30th of each calendar year, or such earlier deadline as may be established by the Board or the Compensation Committee, in its discretion (the "Annual Election Deadline"), each individual who is an Outside Director as of immediately before the Annual Election Deadline may make an Equity Election with respect to the cash retainer relating to services to be performed following the next applicable Annual Meeting of the Stockholders (the "Annual Equity Election"). The Annual Equity Election must be submitted to the Company on or before the applicable Annual Election Deadline and will become effective and irrevocable as of the next applicable Annual Meeting of the Stockholders.

2. Equity Retainers

All grants of equity retainer awards to Outside Directors pursuant to this Policy will be automatic and nondiscretionary and will be made in accordance with the following provisions:

(a) Value. For purposes of this Policy, "Value" means with respect to (i) any award of stock options the grant date fair value of the option (i.e., Black-Scholes Value) determined in accordance with the reasonable assumptions and methodologies employed by the Company for calculating the fair value of options under ASC 718; and (ii) any award of restricted stock and restricted stock units the product of (A) the average closing market price on the NASDAQ (or such other market on which the Company's Common Stock is then principally listed) of one share of the Company's Common Stock over the trailing 30-day period ending on the last day of the month immediately prior to the month of the grant date or if the Company's Common Stock has been listed and traded for less than 30 days prior to the month of the grant date, then the average closing market price on the NASDAQ (or such other market on which the Company's Common Stock is then principally listed) of one share of the Company's Common Stock over the total trailing period ending on the day immediately prior to the grant date and (B) the aggregate number of shares pursuant to such award.

(b) Revisions. Subject to approval from the Board of Directors, the Compensation Committee in its discretion may change and otherwise revise the terms of awards to be granted under this Policy, including, without limitation, the number of shares subject thereto, for awards of the same or different type granted on or after the date the Compensation Committee determines to make any such change or revision.

(c) Sale Event Acceleration. In the event of a Sale Event (as defined in the Company's 2019 Stock Option and Incentive Plan (the "2019 Plan")), the equity retainer awards granted to Outside Directors pursuant to this Policy shall become 100% vested and exercisable.

(d) Initial Grant. Upon initial election to the Board of Directors, each new Outside Director will receive an initial, one-time grant of restricted stock units (the "Initial Grant") with a Value of $225,000 that vests in three equal annual installments over three years; provided, however, that all vesting ceases if the director resigns from our Board of Directors or otherwise ceases to serve as a director, unless the Board of Directors determines that the circumstances warrant continuation of vesting. This Initial Grant applies to Outside Directors who are first elected to the Board of Directors effective as of or subsequent to the Company's initial public offering.

(e) Annual Grant. On the date of the Company's Annual Meeting of Stockholders, each Outside Director who will continue as a member of the Board of Directors following such Annual Meeting of Stockholders will receive a grant of restricted stock units on the date of such Annual Meeting (the "Annual Grant") comprised of a total Value of the following grants applicable to such Outside Director that vest in full on the one-year anniversary of the grant date or the next Annual Meeting of Stockholders; provided, however, that all vesting ceases if the director resigns from our Board of Directors or otherwise ceases to serve as a director, unless the Board of Directors determines that the circumstances warrant continuation of vesting.

(i) Annual Equity Long-Term Incentive: $140,000

(ii) Annual Retainer for Board Membership: $45,000 for general availability and participation in meetings and conference calls of our Board of Directors. No additional compensation for attending individual Board meetings.

(f) Equity Election In Lieu of Cash. Each Outside Director that makes an Equity Election and continues to be a member of the Board of Directors, shall receive on September 1, December 1, March 1 and June 1 following such election a grant of restricted stock units with a total Value equal to the applicable quarterly cash retainer amounts noted in Section 1 earned in the prior quarter that are subject to the Equity Election, each of which shall immediately vest on the date of such grant.

3. Expenses

The Company will reimburse all reasonable out-of-pocket expenses incurred by Outside Directors in attending meetings of the Board of Directors or any Committee thereof.

4. Maximum Annual Compensation

The aggregate amount of compensation, including both equity compensation and cash compensation, paid to any Outside Director in a calendar year period shall not exceed (i) $1,000,000 in the first calendar year an individual becomes an Outside Director and (ii) $500,000 in any other year (or in each case, such other limits as may be set forth in Section 3(b) of the 2019 Plan or any similar provision of a successor plan). For this purpose, the "amount" of equity compensation paid in a calendar year shall be determined based on the grant date fair value thereof, as determined in accordance with ASC 718 or its successor provision, but excluding the impact of estimated forfeitures related to service-based vesting conditions.

Date Policy Approved: February 20, 2024

Separation and Release Agreement

This Separation and Release Agreement (the "Agreement") is made and entered into as of the last date on the signature page (the "Effective Date") and confirms the following understandings and agreements among Health Catalyst, Inc. ("Health Catalyst" or the "Company") and Anne Marie Bickmore (hereinafter referred to as "you" or "your").

WHEREAS, you were employed by Health Catalyst as a(n) Chief Operating Officer and Chief Product Officer (your "Employment");

WHEREAS, your Employment ended effective on the close of business December 01, 2023 (the "Separation Date");

WHEREAS, you signed a Participation Agreement to participate in the Company's Executive Severance Plan ("Executive Severance Plan") that entitles you to certain severance, subject to the terms and conditions therein upon a Qualified Termination Event, including you signing a Separation Agreement and Release (as defined in the Executive Severance Plan);

WHEREAS, you and Health Catalyst desire to fully and finally settle all issues, differences, and claims, whether potential or actual, between you and Health Catalyst, including, but not limited to, any claims that might arise out of your Employment or the termination of your Employment, including, without limitation, the occurrence of a Qualified Termination Event; and

WHEREAS, in connection with the separation from your Employment, you and Health Catalyst now desire to enter into this Agreement, which sets forth a mutually satisfactory arrangement concerning, among other things, separation from your Employment and payment of a severance to which you would otherwise not be entitled.

NOW, THEREFORE, in consideration of the promises set forth herein, you and Health Catalyst agree as follows:

1. Employment Status and Effect of Separation.

(a) You acknowledge, and Health Catalyst hereby accepts, your separation from your Employment, and from any position you held or hold at Health Catalyst, effective as of the Separation Date. From and after the Separation Date, you agree not to represent yourself as being an employee, officer, director, agent or representative of Health Catalyst for any purpose.

(b) The Separation Date shall be the termination date of your Employment for purposes of participation in and coverage under all benefit plans and programs sponsored by or through Health Catalyst. In connection with your separation from Employment, you will be entitled to receive amounts payable to you under any retirement and fringe benefit plans maintained by Health Catalyst and in which you participate in accordance with the terms of each such plan and applicable law.

(c) You acknowledge and agree that all of the payment(s) and other benefits you have received as of the Separation Date and specifically contemplated in Section 2 are in full discharge and satisfaction of any and all liabilities and obligations of Health Catalyst or any of its direct or indirect parent(s), subsidiaries, and/or affiliates (collectively, the "Company Group") to you, monetarily or with respect to employee benefits or otherwise, including but not limited to any and all obligations arising under any alleged written or oral employment agreement, policy, plan (including, without limitation, the Executive Severance Plan) or procedure of Health Catalyst or any other

member of the Company Group and/or any alleged understanding or arrangement between you and Health Catalyst or any other member of the Company Group.

2. Release and Waiver of Claims.

(a) Subject to your compliance with the terms herein, you signing and returning an executed copy of the Agreement to the Company, and the Revocation Period expiring without any revocation or rescission by you, Health Catalyst will pay you, as a severance payment, $237,000.00 (the "Cash Consideration") and will accelerate the vesting of 17,272 Restricted Stock Units of the Company that would otherwise be unvested on the Separation Date (the "Equity Acceleration" and, together with the Cash Consideration, the "Consideration"). The Cash Consideration will be paid to you in one lump sum and the Equity Acceleration will occur within thirty (30) calendar days after you sign and return an executed copy of the Agreement to the Company and the Revocation Period expires without any revocation by you, in each case less applicable deductions and withholdings for state and federal taxes. If you are currently enrolled in a Health Catalyst medical plan and if you actively elect medical, dental and/or vision COBRA coverage via the COBRA enrollment form, Health Catalyst will fully subsidize your medical, dental and/or vision COBRA premium for up to the first (9) full calendar month(s) following the termination of enrollment in your Health Catalyst medical plan. You acknowledge that the Consideration represents monies and equity that are not earned wages and to which you would not be entitled but for this Agreement.

(b) For and in consideration of the Consideration, and for other good and valuable consideration set forth herein, you, for and on behalf of yourself and your heirs, administrators, executors and assigns, effective as of the Effective Date, do fully and forever release, remise and discharge Health Catalyst and each member of the Company Group, and each of their direct and indirect parents, subsidiaries and affiliates, together with their respective former and current officers, directors, partners, shareholders, members, managers, owners, employees, attorneys, and agents (collectively, the "Company Parties"), from any and all claims whatsoever up to the Effective Date which you had, may have had, or now have against the Company Parties, for or by reason of any matter, cause or thing whatsoever, including without limitation any claim arising out of or attributable to your Employment or the termination of your Employment with Health Catalyst or any member of the Company Group whether for tort, breach of express or implied employment contract, intentional infliction of emotional distress, wrongful termination, failure to hire, re-hire, or contract with as an independent contractor, unjust dismissal, defamation, libel or slander, or under any federal, state or local law dealing with discrimination based on age, race, sex, national origin, handicap, religion, disability or sexual orientation. This release of claims includes, but is not limited to, all claims arising under the Civil Rights Act of 1866, 42 U.S.C. § 1981 et seq.; the Civil Rights Act of 1964, 42 U.S.C. § 2000 et seq.; the Civil Rights Act of 1991; the Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq.; the Americans with Disabilities Act, 42 U.S.C. § 1201 et seq.; the Family and Medical Leave Act, 29 U.S.C. § 2601 et seq.; the National Labor Relations Act, 29 U.S.C. § 151 et seq.; the Fair Labor Standards Act, 29 U.S.C. § 201 et seq.; the Vietnam Era Veterans' Readjustment Assistance Act of 1974, 38 U.S.C. § 4212 et seq.; the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001 et seq., the Occupational Safety and Health Act, 29 U.S.C. § 651 et seq.; the Worker Adjustment and Retraining Notification Act, 29 U.S.C. § 2101 et seq.; the Fair Credit Reporting Act, 15 U.S.C. §1681 et seq.; the Age Discrimination in Employment Act of 1967, 29 U.S.C. § 621 et seq.; the Equal Pay Act of 1963, 29 U.S.C. §206 et seq.; the Utah Antidiscrimination Act, Utah Code Ann. § 34A-5-1060 et seq.; the Utah Payment of Wages Act, Utah Code Ann. § 34-28-1 et seq.; the Utah Minimum Wage Act, Utah Code Ann. § 34-40-101 et seq.; the Utah Labor Rules; the Wisconsin Fair Employment Practices Act, Wis. Stat. § 111.31 et seq.; any other federal, state, or local human or civil rights, wage-hour, anti-discrimination, pension or labor law, rule and/or regulation, each as may be amended from time to time; all other federal, state and local laws, statutes, and ordinances; the common law; and any other purported restriction on an employer's right to terminate the employment of employees. As used in this Agreement, the term "claims" will include all claims, covenants, warranties, promises, undertakings, actions, suits, causes of action, obligations, debts, accounts, attorneys' fees, judgments, losses and liabilities, of whatsoever kind or nature, in law, equity or otherwise. The parties intend the

release contained herein to be a general release of any and all claims to the fullest extent permitted by applicable law.

(c) You acknowledge and agree that as of the Effective Date you have no knowledge of any facts or circumstances that give rise to or could give rise to any claims under any of the laws listed in the preceding paragraph.

(d) Nothing contained in this Section 2 shall be a waiver of any claims that cannot be waived by law.

(e) Without limiting the scope of the release herein, the release also includes, without limitation, any claims or potential claims against any of the Company Group for wages, earned vacation, paid time off, bonuses, expenses, severance pay, and benefits earned through the date of the execution of this Agreement. Such amounts are not consideration for this Agreement.

(f) You understand that nothing contained in this Agreement, including, but not limited to, this Section 2, will be interpreted to prevent you from engaging in Protected Activity as set forth in Section 6. However, you agree that you are waiving the right to monetary damages or other individual legal or equitable relief awarded as a result of any such proceeding.

3. Right to Revoke and Rescind. You are hereby informed of your right to revoke your release of claims, insofar as it extends to potential claims under the Age Discrimination in Employment Act, by informing Health Catalyst of your intent to do so within 7 calendar days following your signing of this Agreement (the "Revocation Period"). You understand that any such revocation or rescission must be made in writing and delivered (i) by hand or by certified mail, return receipt requested, postmarked on or before the last day within the applicable revocation period to: Health Catalyst, Inc., Attn: Linda Llewelyn, Chief People Officer, 10897 S River Front Parkway, South Jordan, UT 84095, and (ii) by email to Legal@healthcatalyst.com.

4. Opportunity for Review; Acceptance. You have until 45 days after the Separation Date (the "Review Period") to review and consider whether to sign this Agreement. Changes to this Agreement, whether material or immaterial, will not restart the 45-day Review Period. During this time, Health Catalyst advises you to consult with an attorney of your choice. To accept this Agreement, and the terms and conditions contained herein, prior to the expiration of the Review Period, you must execute and date this Agreement where indicated below and return the executed copy of the Agreement to Health Catalyst, Inc., Attn: Linda Llewelyn, Chief People Officer, 10897 S River Front Parkway, South Jordan, UT 84095. In the event of your failure to execute and deliver this Agreement prior to the expiration of the Review Period, this Agreement will be null and void and of no effect, and neither Health Catalyst nor any member of the Company Group will have any obligations hereunder.

By execution of this Agreement, you expressly waive any and all rights or claims arising under the Age Discrimination in Employment Act of 1967 ("ADEA") and: (a) You acknowledge that this waiver of rights or claims arising under the ADEA is in writing, and is knowing, voluntary and understood by you; (b) You expressly understand that this waiver specifically refers to rights or claims arising under the ADEA; (c) You expressly understand that by execution of this Agreement, you do not waive any rights or claims under the ADEA that may arise after the date the waiver is executed; (d) You acknowledge that the waiver of rights or claims arising under the ADEA is in exchange for the Consideration, which is above and beyond that to which you are entitled; (e) You acknowledge that the Company is expressly advising you to consult with an attorney of your choosing prior to executing this Agreement; (f) You have been advised by the Company that you are entitled to up to forty-five (45) days from receipt of this Agreement within which to consider this Agreement, which period is referred to as the Review Period; (g) You acknowledge that you have been advised by the Company that you are entitled to revoke (in the event you execute this Agreement) this waiver of rights or claims arising under the ADEA within seven (7) days after executing this Agreement and that said waiver will not be, and does not become, effective or enforceable until

the seven (7) day Revocation Period has expired; (h) The parties agree that should you exercise your right to revoke the waiver, this entire Agreement, and its obligations, including, but not limited to the obligation to provide you with Consideration and any other benefits, are null, void and of no effect; (i) You acknowledge and agree that you will communicate your decision to accept or reject this Agreement to the Company as provided herein; and (j) Nothing in this Agreement shall be construed to prohibit you from engaging in Protected Activity as set forth in Section 6, though you have waived any right to monetary relief. Should you elect to revoke this Agreement within the Revocation Period, a written notice of revocation shall be delivered to Health Catalyst, Inc., Attn: Linda Llewelyn, Chief People Officer, 10897 S River Front Parkway, South Jordan, UT 84095.

5. Other Agreements. Your duties and obligations pursuant to Sections 1-2, 3.2-3.12, 3.14, 4.1-4.3 and 4.54.9 of the Employee Agreement and Invention and Confidentiality Agreement (the "Employment Agreement") signed by you shall survive this Agreement and remain in full force and effect, and the Consideration herein constitutes consideration for your promises and obligations.

6. Protected Activity Not Prohibited.

(a) You understand that nothing in this Agreement in any way limits or prohibits you from engaging in any Protected Activity. For purposes of this Agreement, "Protected Activity" means filing a charge, complaint, or report with, or otherwise communicating, cooperating, or participating in any investigation or proceeding that may be conducted by, any federal, state or local government agency or commission, including the Securities and Exchange Commission, the Equal Employment Opportunity Commission, the Occupational Safety and Health Administration, and the National Labor Relations Board ("Government Agencies").

(b) You understand that in connection with such Protected Activity, you are permitted to disclose documents or other information as permitted by law, and without giving notice to, or receiving authorization from, Health Catalyst. Notwithstanding the foregoing, you agree to take all reasonable precautions to prevent any unauthorized use or disclosure of any information that may constitute Company Confidential Information under this Agreement or the Employment Agreement to any parties other than the Government Agencies.

(c) You further understand that "Protected Activity" does not include the disclosure of any Company attorney-client privileged communications or attorney work product. Any language in this Agreement or the Employment Agreement regarding your right to engage in Protected Activity that conflicts with, or is contrary to, this Section is superseded by this Agreement.

(d) Pursuant to the Defend Trade Secrets Act of 2016, you are notified that an individual will not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that (i) is made in confidence to a federal, state, or local government official (directly or indirectly) or to an attorney solely for the purpose of reporting or investigating a suspected violation of law, or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if (and only if) such filing is made under seal. In addition, an individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the individual's attorney and use the trade secret information in the court proceeding, if the individual files any document containing the trade secret under seal and does not disclose the trade secret, except pursuant to court order.

7. Confidential Information. You recognize and acknowledge that Health Catalyst's business and continued success depends upon the use and protection of confidential and proprietary business information, including, without limitation, the information and technology developed by or available through licenses to any member of the Company Group to which you had access during your Employment (all such information being "Confidential Information"). The phrase Confidential Information will be interpreted to include all information of any sort (whether merely remembered or embodied in a tangible or intangible form) that is (i) related to any member of the

Company Group's or its subsidiaries' or affiliates' (including their predecessors) current or potential business and (ii) not generally or publicly known. Confidential Information includes, without limitation, the information, observations and data obtained by you while employed by any member of the Company Group and its subsidiaries (or any of their predecessors) or while performing services hereunder concerning the business or affairs of any member of the Company Group or any of its subsidiaries or affiliates, the identities of the current, former or prospective employees, suppliers and customers of any member of the Company Group or its subsidiaries, development, transition and transformation plans, fee schedules, information system materials, methodologies and methods of doing business, strategic, marketing and expansion plans, financial and business plans, financial data, pricing information, employee lists and telephone numbers, locations of sales representatives, new and existing customer or supplier programs and services, customer terms, customer service and integration processes, requirements and costs of providing service, support and equipment. Provided, however, that the phrase does not include information that (a) was lawfully in your possession prior to disclosure of such information by any member of the Company Group; (b) was, or at any time becomes, available in the public domain other than through a violation of this Agreement; (c) is documented by you as having been developed by you outside the scope of your rendering services hereunder and independently; or (d) is furnished to you by a third party not under an obligation of confidentiality to Health Catalyst or any other member of the Company Group. You agree that you will not directly or indirectly use or divulge, or permit others to use or divulge, any Confidential Information for any reason, except as authorized in writing by Health Catalyst. You will be allowed to disclose such information of the Company or any member of the Company Group to the extent that such disclosure is: (a) duly approved in writing by the Company or by the member of the Company Group; (b) necessary for you to enforce your rights under this Agreement in connection with a legal proceeding; (c) required by law or by the order of a court or similar judicial or administrative body, provided that you notify the Company of such required disclosure promptly and cooperates with the Company in any lawful action to contest or limit the scope of such required disclosure; or (d) to report possible violations of federal law or regulation to any governmental agency or entity or making other disclosures that are protected under the whistleblower provisions of federal law or regulation. You do not need the prior authorization of the Company to make any such reports or disclosures and you are not required to notify the Company that you have made such reports or disclosures. Your obligations under this Agreement are in addition to any obligations you have under state or federal law. You agree that you will not violate in any way the rights that Health Catalyst or any other member of the Company Group has with regard to trade secrets or proprietary or Confidential Information. Your obligations under this Section are indefinite in term.

8. Non-Disparagement. Except as set forth in Section 6, for a period of two (2) years following the Effective Date, you agree to refrain from making any disparaging, negative or uncomplimentary statements or communications, whether public or private, regarding the Company or any member of the Company Group. As used in this paragraph, "disparaging" means anything unflattering and/or negative, whether such communication is true or untrue.

9. Knowing and Voluntary Waiver. You expressly acknowledge and agree that you (a) are able to read the language, and understand the meaning and effect, of this Agreement; (b) are specifically agreeing to the terms of the release contained in this Agreement because Health Catalyst has agreed to pay you the Consideration, which Health Catalyst has agreed to provide because of your agreement to accept it in full settlement of all possible claims you might have or ever had, and because of your execution, of this Agreement; (c) acknowledge that but for your execution of this Agreement, you would not be entitled to the Consideration; (d) were advised to consult with your attorney regarding the terms and effect of this Agreement; and (e) have signed this Agreement knowingly and voluntarily. You agree that no promise or inducement has been offered except as set forth in this Agreement, and that you are signing this Agreement without reliance upon any statement or representation by Health Catalyst or any representative or agent of Health Catalyst except as set forth in this Agreement. You agree and acknowledge that the Review Period provides you with a reasonable and sufficient period of time to consider whether or not to accept this Agreement.

10. No Suit. Except as set forth in Section 6, you represent and warrant that you have not previously filed, and to the maximum extent permitted by law agree that you will not file, a complaint, charge or lawsuit against any of the Company Parties regarding any of the claims released herein. If, notwithstanding this representation and warranty, you have filed or file such a complaint, charge or lawsuit, you agree that you shall cause such complaint, charge or lawsuit to be dismissed with prejudice and shall pay any and all costs required in obtaining dismissal of such complaint, charge or lawsuit, including without limitation reasonable attorneys' fees of Health Catalyst or any of the Company Group against whom you have filed such a complaint, charge or lawsuit.

11. Return of Property. You shall return prior to the Effective Date, and not retain in any form or format, all Company Group documents, data, and other property in your possession or control. Company Group "documents, data, and other property" includes, without limitation, any computers, fax machines, cell phones, access cards, keys, reports, manuals, records, product samples, inventory, correspondence and/or other documents or materials related to any member of the Company Group's business that you have compiled, generated or received while working for any member of the Company Group including all copies, samples, computer data, disks, or records of such material. After returning these documents, data, and other property, you will permanently delete from any electronic media in your possession, custody, or control (such as computers, cell phones, hand-held devices, back-up devices, zip drives, PDAs, etc.), or to which you have access (such as remote e-mail exchange servers, back-up servers, off-site storage, etc.), all documents or electronically stored images of any member of the Company Group, including writings, drawings, graphs, charts, sound recordings, images, and other data or data compilations stored in any medium from which such information can be obtained. Furthermore, you agree, on or before the Effective Date, to provide Health Catalyst with a list of any documents that you created or are otherwise aware to be password protected and the password(s) necessary to access such password protected documents. Health Catalyst's obligations under this Agreement are contingent upon you returning all Company Group documents, data, and other property as set forth above.

12. Miscellaneous. The provisions of this Agreement shall be binding on and inure to the benefit of your heirs, executors, administrators, legal personal representatives and assigns. If any provision of this Agreement shall be held by any court of competent jurisdiction to be illegal, void or unenforceable, such provision shall be of no force or effect. The illegality or unenforceability of such provision, however, shall have no effect upon and shall not impair the enforceability of any other provision of this Agreement. This Agreement constitutes the entire understanding and agreement of the parties hereto regarding the subject matter hereof, including without limitation the termination of your Employment. Except as set forth in Section 5, this Agreement supersedes all prior negotiations, discussions, correspondence, communications, understandings and agreements between the parties relating to the subject matter of this Agreement. This Agreement may not be altered or amended, and no right hereunder may be waived, except by an instrument executed by each of the parties hereto. No waiver of any term, provision, or condition of this Agreement, in any one or more instances, shall be deemed to be or construed as a further or continuing waiver of any such term, provision or condition or as a waiver of any other term, provision or condition of this Agreement. EXCEPT WHERE PREEMPTED BY FEDERAL LAW, THIS AGREEMENT AND THE EICA SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH FEDERAL LAW AND THE LAWS OF THE STATE OF UTAH, APPLICABLE TO AGREEMENTS MADE AND TO BE PERFORMED IN THAT STATE. ANY DISPUTE ARISING OUT OF THIS AGREEMENT, OR THE BREACH THEREOF, SHALL BE BROUGHT IN A COURT OF COMPETENT JURISDICTION IN SALT LAKE COUNTY, STATE OF UTAH, THE PARTIES EXPRESSLY CONSENTING TO VENUE IN SALT LAKE COUNTY STATE OF UTAH. EACH PARTY TO THIS AGREEMENT HEREBY WAIVES ANY RIGHT TO TRIAL BY JURY IN CONNECTION WITH ANY SUIT, ACTION OR PROCEEDING UNDER OR IN CONNECTION WITH THIS AGREEMENT. THE PREVAILING PARTY IN ANY LAWSUIT THAT GIVES RISE TO CLAIMS GOVERNED BY THIS AGREEMENT SHALL BE ENTITLED TO AN AWARD OF ATTORNEYS' FEES FROM THE OTHER PARTY. You acknowledge that it would be difficult to fully compensate Health Catalyst for damages resulting from any breach of this Agreement. Accordingly, in the event of any actual or threatened breach of such provisions, Health Catalyst shall (in addition to any other remedies that it may have) be entitled to temporary

and/or permanent injunctive relief to enforce such provisions, and such relief may be granted without the necessity of proving actual damages.

13. Confidentiality. Except as set forth in Section 6, the parties intend that this Agreement be confidential. You warrant that you have not disclosed, and agree that you will not in the future disclose, the terms of this Agreement, or the terms of the consideration to be paid hereunder, to any person other than your attorney, spouse, tax advisor, or representatives of the Equal Employment Opportunity Commission ("EEOC") or a comparable state agency, all of whom shall be bound by the same prohibitions against disclosure as bind you, and you shall be responsible for advising these individuals of this confidentiality provision and obtaining their commitment to maintain such confidentiality. You shall not provide or allow to be provided to any person this Agreement, or any copies thereof, nor shall you now or in the future disclose in any way any information concerning any purported claims, charges, or causes of action against the Company or any of the Company Group to any person, with the sole exception of communications with your spouse, attorney, tax advisor, or representatives of the EEOC or a comparable state agency, unless otherwise ordered to do so by a court or agency of competent jurisdiction.

14. Offer Remains Open for the Review Period. You have through the Review Period to review and consider whether to sign this Agreement. Changes to this Agreement, whether material or immaterial, will not restart the Review Period. During this time, Health Catalyst advises you to consult with an attorney of your choice. To accept this Agreement, and the terms and conditions contained herein, prior to the expiration of the Review Period, you must execute and date this Agreement where indicated below and return the executed copy of the Agreement to Health Catalyst, Inc., Attn: Linda Llewelyn, Chief People Officer, 10897 S River Front Parkway, South Jordan, UT 84095. In the event of your failure to execute and deliver this Agreement prior to the expiration of the Review Period, this offer is withdrawn and revoked, and the Agreement will be null and void and of no effect, and neither Health Catalyst nor any member of the Company Group will have any obligations hereunder. Nothing contained in this Agreement will be deemed or construed as an admission of wrongdoing or liability on the part of you, Health Catalyst or any member of the Company Group.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date.

TEAM MEMBER NAME

/s/ Anne Marie Bickmore

Date: 12/1/2023

HEALTH CATALYST, INC.

/s/ Linda Llewelyn
Its: Chief People Officer
Date: 12/4/2023

THIS AGREEMENT IS NOT TO BE EXECUTED UNTIL AFTER THE SEPARATION OF EMPLOYMENT HAS OCCURRED

List of Subsidiaries of Health Catalyst, Inc.

Health Catalyst Australia PTY LTD (Australia)

Health Catalyst UK Ltd (England and Wales)

Health Catalyst India Private Limited (India)

Health Catalyst Singapore Pte. Ltd. (Singapore)

Health Catalyst Middle East FZ-LLC (incorporated within a Free Zone in the UAE)

Able Health, LLC (Delaware, United States)

ARMUS I LLC (Delaware, United States)

Electronic Registry Systems, LLC (Delaware, United States)

Healthfinch, LLC (Delaware, United States)

KPI Ninja, LLC (Delaware, United States)

Medicity LLC (Delaware, United States)

Twistle, LLC (Delaware, United States)

Vitalware, LLC (Delaware, United States)

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

1. Registration Statement (Form S-8 No. 333-232795) pertaining to the Amended and Restated 2011 Stock Incentive Plan, the 2019 Stock Option and Incentive Plan and the 2019 Employee Stock Purchase Plan of Health Catalyst, Inc.,

2. Registration Statement (Form S-8 No. 333-236731) pertaining to the 2019 Stock Option and Incentive Plan and the 2019 Employee Stock Purchase Plan of Health Catalyst, Inc.,

3. Registration Statement (Form S-8 No. 333-253542) pertaining to the 2019 Stock Option and Incentive Plan and the 2019 Employee Stock Purchase Plan of Health Catalyst, Inc.,

4. Registration Statement (Form S-3 No. 333-258625) of Health Catalyst, Inc,

5. Registration Statement (Form S-8 No. 333-263197) pertaining to the 2019 Stock Option and Incentive Plan and the 2019 Employee Stock Purchase Plan of Health Catalyst, Inc., and

6. Registration Statement (Form S-8 No. 333-270138) pertaining to the 2019 Stock Option and Incentive Plan and the 2019 Employee Stock Purchase Plan of Health Catalyst, Inc.;

of our reports dated February 22, 2024, with respect to the consolidated financial statements of Health Catalyst, Inc. and the effectiveness of internal control over financial reporting of Health Catalyst, Inc. included in this Annual Report (Form 10-K) of Health Catalyst, Inc. for the year ended December 31, 2023.

/s/ Ernst & Young LLP

Salt Lake City, UT
February 22, 2024

Exhibit 31.1

CERTIFICATION PURSUANT TO RULE 13a-14(a) OR 15d-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Daniel Burton, certify that:

1. I have reviewed this Annual Report on Form 10-K of Health Catalyst, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2024

/s/ Daniel Burton

Daniel Burton
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO RULE 13a-14(a) OR 15d-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Bryan Hunt, certify that:

1. I have reviewed this Annual Report on Form 10-K of Health Catalyst, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2024

/s/ Bryan Hunt
Bryan Hunt
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the filing of the Annual Report on Form 10-K for the fiscal year ended December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report") by Health Catalyst, Inc. (the "Company"), Daniel Burton, as the Chief Executive Officer of the Company, and Bryan Hunt, as the Chief Financial Officer of the Company, each hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of his knowledge:

1 The Report fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2 The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 22, 2024

/s/ Daniel Burton
Daniel Burton
Chief Executive Officer
(Principal Executive Officer)

/s/ Bryan Hunt
Bryan Hunt
Chief Financial Officer
(Principal Financial Officer)

HEALTH CATALYST, INC. POLICY FOR RECOVERY OF ERRONEOUSLY AWARDED COMPENSATION

Health Catalyst, Inc. (the "***Company***") has adopted this Policy for Recovery of Erroneously Awarded Compensation (the "***Policy***"), effective as of October 2, 2023 (the "***Effective Date***"). Capitalized terms used in this Policy but not otherwise defined herein are defined in Section 11.

1. **Persons Subject to Policy**

This Policy shall apply to current and former Officers of the Company. Each Officer shall be required to sign an acknowledgment pursuant to which such Officer will agree to be bound by the terms of, and comply with, this Policy; however, any Officer's failure to sign any such acknowledgment shall not negate the application of this Policy to the Officer.

2. Compensation Subject to Policy

This Policy shall apply to Incentive-Based Compensation received on or after the Effective Date. For purposes of this Policy, the date on which Incentive-Based Compensation is "received" shall be determined under the Applicable Rules, which generally provide that Incentive-Based Compensation is "received" in the Company's fiscal period during which the relevant Financial Reporting Measure is attained or satisfied, without regard to whether the grant, vesting or payment of the Incentive-Based Compensation occurs after the end of that period.

3. Recovery of Compensation

In the event that the Company is required to prepare a Restatement, the Company shall recover, reasonably promptly, the portion of any Incentive-Based Compensation that is Erroneously Awarded Compensation, unless the Committee has determined that recovery would be Impracticable. Recovery shall be required in accordance with the preceding sentence regardless of whether the applicable Officer engaged in misconduct or otherwise caused or contributed to the requirement for the Restatement and regardless of whether or when restated financial statements are filed by the Company. For clarity, the recovery of Erroneously Awarded Compensation under this Policy will not give rise to any person's right to voluntarily terminate employment for "good reason," or due to a "constructive termination" (or any similar term of like effect) under any plan, program or policy of or agreement with the Company or any of its affiliates.

4. Manner of Recovery; Limitation on Duplicative Recovery

The Committee shall, in its sole discretion, determine the manner of recovery of any Erroneously Awarded Compensation, which may include, without limitation, reduction or cancellation by the Company or an affiliate of the Company of Incentive-Based Compensation or Erroneously Awarded Compensation, reimbursement or repayment by any person subject to this Policy of the Erroneously Awarded Compensation, and, to the extent permitted by law, an offset of the Erroneously Awarded Compensation against other compensation payable by the Company or an affiliate of the Company to such person. Notwithstanding the foregoing, unless otherwise prohibited by the Applicable Rules, to the extent this Policy provides for recovery of Erroneously Awarded Compensation already recovered by the Company pursuant to Section 304 of the Sarbanes-Oxley Act of 2002 or Other Recovery Arrangements, the amount of Erroneously Awarded Compensation already recovered by the Company from the recipient of such Erroneously Awarded Compensation may be credited to the amount of Erroneously Awarded Compensation required to be recovered pursuant to this Policy from such person.

5. Administration

This Policy shall be administered, interpreted and construed by the Committee, which is authorized to make all determinations necessary, appropriate or advisable for such purpose. The Board of Directors of the Company (the "***Board***") may re-vest in itself the authority to administer, interpret and construe this Policy in accordance with applicable law, and in such event references herein to the "Committee" shall be deemed to be references to the Board. Subject to any permitted review by the applicable national securities exchange or association pursuant to the Applicable Rules, all determinations and decisions made by the Committee pursuant to the provisions of this Policy shall be final, conclusive and binding on all persons, including the Company and its affiliates, equityholders and

employees. The Committee may delegate administrative duties with respect to this Policy to one or more directors or employees of the Company, as permitted under applicable law, including any Applicable Rules.

6. Interpretation

This Policy will be interpreted and applied in a manner that is consistent with the requirements of the Applicable Rules, and to the extent this Policy is inconsistent with such Applicable Rules, it shall be deemed amended to the minimum extent necessary to ensure compliance therewith.

7. No Indemnification; No Liability

The Company shall not indemnify or insure any person against the loss of any Erroneously Awarded Compensation pursuant to this Policy, nor shall the Company directly or indirectly pay or reimburse any person for any premiums for third-party insurance policies that such person may elect to purchase to fund such person's potential obligations under this Policy. None of the Company, an affiliate of the Company or any member of the Committee or the Board shall have any liability to any person as a result of actions taken under this Policy.

8. Application; Enforceability

Effective as of the Effective Date, the Policy shall supersede and replace in its entirety the Company's existing Compensation Recovery Policy (the "***Prior Clawback Policy***"); provided, that, notwithstanding the foregoing, any cash incentive-based compensation or equity incentive awards that are received prior to the Effective Date shall continue to remain subject to the Prior Clawback Policy.

Except as otherwise determined by the Committee or the Board, the adoption of this Policy does not limit, and is intended to apply in addition to, any other clawback, recoupment, forfeiture or similar policies or provisions of the Company or its affiliates, including any such policies or provisions of such effect contained in any employment agreement, bonus plan, incentive plan, equity-based plan or award agreement thereunder or similar plan, program or agreement of the Company or an affiliate or required under applicable law (the "***Other Recovery Arrangements***"). The remedy specified in this Policy shall not be exclusive and shall be in addition to every other right or remedy at law or in equity that may be available to the Company or an affiliate of the Company.

9. Severability

The provisions in this Policy are intended to be applied to the fullest extent of the law; provided, however, to the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted, and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to any limitations required under applicable law.

10. Amendment and Termination

The Board or the Committee may amend, modify or terminate this Policy in whole or in part at any time and from time to time in its sole discretion. This Policy will terminate automatically when the Company does not have a class of securities listed on a national securities exchange or association.

11. Definitions

"***Applicable Rules***" means Section 10D of the Exchange Act, Rule 10D-1 promulgated thereunder, the listing rules of the national securities exchange or association on which the Company's securities are listed, and any applicable rules, standards or other guidance adopted by the Securities and Exchange Commission or any national securities exchange or association on which the Company's securities are listed.

"***Committee***" means the committee of the Board responsible for executive compensation decisions comprised solely of independent directors (as determined under the Applicable Rules), or in the absence of such a committee, a majority of the independent directors serving on the Board.

"***Erroneously Awarded Compensation***" means the amount of Incentive-Based Compensation received by a current or former Officer that exceeds the amount of Incentive-Based Compensation that would have been received

by such current or former Officer based on a restated Financial Reporting Measure, as determined on a pre-tax basis in accordance with the Applicable Rules.

"***Exchange Act***" means the Securities Exchange Act of 1934, as amended.

"***Financial Reporting Measure***" means any measure determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measures derived wholly or in part from such measures, including GAAP, IFRS and non-GAAP/IFRS financial measures, as well as stock or share price and total equityholder return.

"***GAAP***" means United States generally accepted accounting principles.

"***IFRS***" means international financial reporting standards as adopted by the International Accounting Standards Board.

"***Impracticable***" means (a) the direct costs paid to third parties to assist in enforcing recovery would exceed the Erroneously Awarded Compensation; provided that the Company (i) has made reasonable attempts to recover the Erroneously Awarded Compensation, (ii) documented such attempt(s), and (iii) provided such documentation to the relevant listing exchange or association, (b) to the extent permitted by the Applicable Rules, the recovery would violate the Company's home country laws pursuant to an opinion of home country counsel; provided that the Company has (i) obtained an opinion of home country counsel, acceptable to the relevant listing exchange or association, that recovery would result in such violation, and (ii) provided such opinion to the relevant listing exchange or association, or (c) recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the Company, to fail to meet the requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and the regulations thereunder.

"***Incentive-Based Compensation***" means, with respect to a Restatement, any compensation that is granted, earned, or vested based wholly or in part upon the attainment of one or more Financial Reporting Measures and received by a person: (a) after beginning service as an Officer; (b) who served as an Officer at any time during the performance period for that compensation; (c) while the issuer has a class of its securities listed on a national securities exchange or association; and (d) during the applicable Three-Year Period.

"***Officer***" means each person who serves as an executive officer of the Company, as defined in Rule 10D-1(d) under the Exchange Act.

"***Restatement***" means an accounting restatement to correct the Company's material noncompliance with any financial reporting requirement under securities laws, including restatements that correct an error in previously issued financial statements (a) that is material to the previously issued financial statements or (b) that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period.

"***Three-Year Period***" means, with respect to a Restatement, the three completed fiscal years immediately preceding the date that the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare such Restatement, or, if earlier, the date on which a court, regulator or other legally authorized body directs the Company to prepare such Restatement. The "Three-Year Period" also includes any transition period (that results from a change in the Company's fiscal year) within or immediately following the three completed fiscal years identified in the preceding sentence. However, a transition period between the last day of the Company's previous fiscal year end and the first day of its new fiscal year that comprises a period of nine to 12 months shall be deemed a completed fiscal year.

Date Policy Approved: October 27, 2023