



Smarter, faster, clinical
communication

2022



A Message from the President and Chief Executive Officer

Dear Fellow Stockholders,

2022 was a year of change in an effort to quickly respond to marketplace dynamics, as well as demand for our products and solutions. In February, we announced a new strategic business plan that set a priority on maximizing cash flow, with the goal of returning capital to our stockholders. As part of that strategic pivot, we made the tough decision to discontinue the development and sales of Spok Go® and eliminate all associated costs and focus our attention on our existing software solutions.

As such, we right-sized the company to focus on cash-flow generation. This was accomplished by focusing on our core Wireless and Software solutions, while streamlining Spok's management and board structure by approximately 50%, reducing our employee head count by about 30%, rationalizing external costs, reducing capital expenditures, and consolidating our offices.

These difficult steps were taken due to the challenging financial and resource environments our hospital customer base has experienced and continues to experience due to the pandemic. This continues to be a difficult environment for new projects, as hospital resources and budgets remain tight and are focused on getting more out of their existing solutions. Spok's Wireless and Software service lines are ideally situated for this environment.

Our new strategic business plan, which we began implementing on Feb. 17, 2022, includes maximizing revenue and cash flow generation from our established Spok Care Connect® suite, including Spok Mobile®, and our Wireless service offerings. The Company already has an excellent track record of driving revenue from these businesses and enjoys a significant market leadership position in narrowband personal communications services and hospital call center solutions. Moving forward, we plan to invest in a targeted and disciplined manner in these important and valuable franchises in order to continue our long-standing relationships with the nation's leading healthcare providers. These customers include 18 of the top 20 adult hospitals and all 10 children's hospitals named to the U.S. News & World Report's 2022-2023 Best Hospitals Honor Roll. In fact, over the past decade, nearly every hospital named to that honor roll has been a Spok customer.

The Company has prioritized returning capital to our stockholders, and as a result of the pivot, we increased our regular quarterly dividend by 150% from \$0.125 per share, or \$0.50 annually, to \$0.3125 per share, or \$1.25 annually. Based on our new business plan and our view of the future, we believe we can continue to pay this level of dividend for the foreseeable future and expect to be able to fund the majority of it from net cash provided by operating activities in 2023 and beyond. This new level of dividend represents a significant recurring yield on Spok shares going forward.



True To Our Mission

While our operations have seen significant change over the past several years, we have remained true to our mission and core values. Spok delivers information to care teams, when and where it matters most, to improve patient outcomes, as Spok enables smarter, faster, clinical communications for our customers. Spok's solutions for critical communications provide a vital service for our trusted customers.

We have over 2,200 health care facilities as customers, representing the who's who of hospitals in the United States. We have built our solutions over many years and have long-standing, valuable customer relationships. We honor and respect our customer service in providing world-class healthcare, and we value our place in their communications ecosystem. This is coupled with a financial strength that over 83% of our revenue is re-occurring in nature, and we are a company with no debt, which provides us significant flexibility.

We continue to focus on investing in and enhancing our integrated Spok Care Connect software solutions and wireless products in order to continue our long-standing relationships with the nation's leading healthcare providers. In 2022, although we sharply reduced our research and development spend from the previous year, we still spent approximately \$8.7 million to support development of our Spok Care Connect platform, as well as wireless products.

We expect to expand that investment to approximately \$11.3 million this year, in line with spending levels prior to the introduction of Spok Go. This investment is important, relative to our plans for stabilization and eventual growth of future software revenue, and these incremental costs are embedded in our financial guidance. We believe these attributes, combined with our experienced, dedicated, and committed employee base, will allow us to generate significant cash flow into the future and return capital to our stockholders.





Corporate Highlights

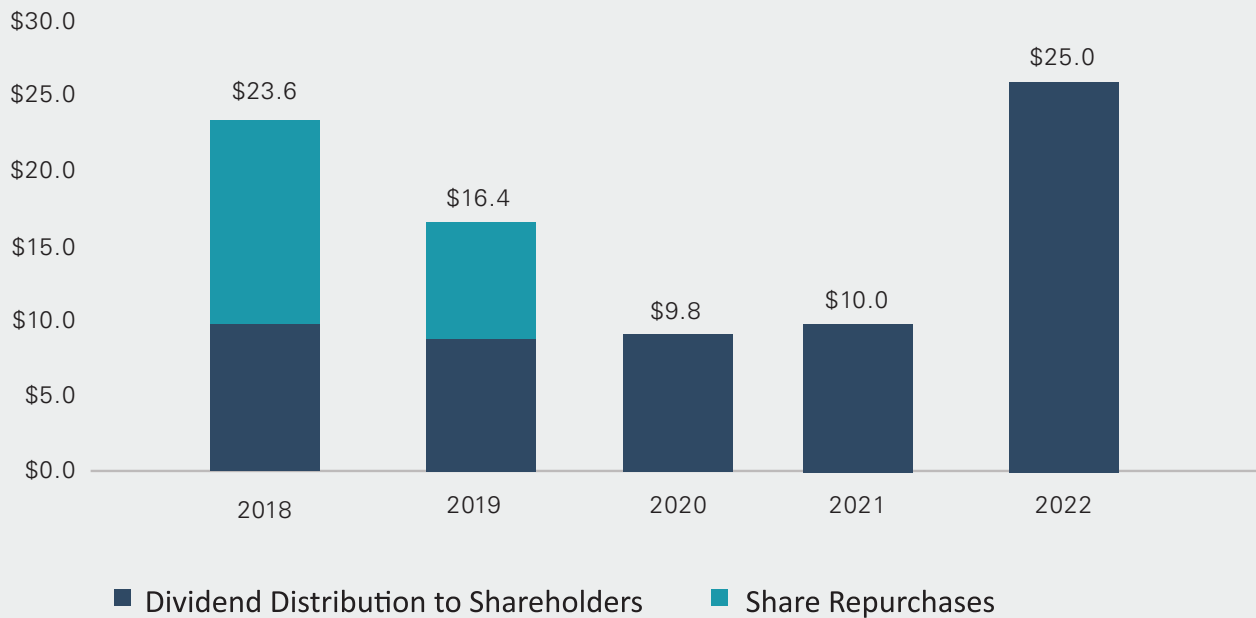
While 2022 was a challenging year for the Company, we made significant progress in our strategic pivot and saw strong improvement in many performance metrics, including wireless trends, software bookings and backlog levels, as well as expense management, as we further aligned our cost structure with our business plan. In 2022, Spok generated over \$24 million of proforma adjusted EBITDA¹ and returned \$25 million to stockholders through the quarterly dividend. And as you've seen from our guidance, we are on track to do it again this year. With a renewed focus on Spok Care Connect clients, full year 2022 software operations bookings totaled just under \$25 million, a nearly 17% year-over-year increase, and we signed 66 new six-figure customer contracts. This momentum continues in 2023, as we continue to see growth in our new customer sales pipeline, both in terms of size and quality.

As I stated previously, in 2022, we made significant progress in mitigating wireless customer and revenue attrition, through pricing actions and sales of our new GenA™ pager. The GenA pager enables fast, secure, and effective communication—when and where it is needed most. More than ever before, communication needs to be immediate and reliable regardless of cell coverage.

Spok pagers help provide peace of mind and remain among the most reliable, survivable, and affordable technology for critical communications that many of our customers rely on. We are committed to continually enhancing communication solutions, like the GenA pager, that can help save lives and eliminate the barriers to effective communication facing healthcare systems and public safety organizations today.

Finally, subsequent to the end of the fourth quarter 2022, we announced that for the sixth consecutive year Spok was voted the top-rated secure communications platform by healthcare industry clients in Black Book Industry's 2023 survey. The award demonstrates that our customers can continue to count on Spok for secure and reliable care team communications, especially with the increase in data breaches and security threats since the onset of the pandemic.

Cash Returned to Stockholders Dividends and Share Repurchases (dollars in millions)



2022 Financial Performance

For fiscal year 2022, we achieved our previously communicated full year financial guidance for revenue, adjusted operating expenses², and capital expenditures. Total GAAP revenue for fiscal year 2022 was \$134.5 million, consisting of wireless revenue of \$75.6 million and software revenue of \$58.9 million. With respect to wireless revenue, 2022 performance was driven by a lower level of pager unit churn on a year-over-year basis. Our 2022 adjusted operating expenses of \$123.4 million were down significantly from \$154.3 million in the prior year. Adjusted operating expenses were lower primarily due to the previously outlined cost actions we took early in the year as a result of our strategic alternatives review process. Our balance sheet remained strong with a cash, cash equivalents, and short-term investment balance of \$35.8 million as of December 31, 2022, and deferred tax assets totaling \$52.4 million. Finally, we continue to operate as a debt-free company!



We remain committed to our mission to be a strategic partner of choice for enterprise grade communications and patient care coordination. This commitment has allowed Spok to create a significant market position with long-standing relationships with the nation's leading healthcare providers. This vision serves as the framework for every aspect of our business. We want to express to all our stakeholders that we are committed to the core principles that will guide our organization's future. Every Spok representative and partner must embody these core tenets of our values.

2023 and Beyond

We are optimistic about our prospects for 2023 and are confident in our plan to maximize revenue and cash flow generation from our established Spok Care Connect solutions, including Spok Mobile and our wireless service offerings. Our offerings provide the Company with a very predictable revenue base, coming from either our legacy wireless offerings or software maintenance contracts. Additionally, our Spok Care Connect solutions provide products with potential for new license sales and a valuable maintenance stream. Maintenance continues to provide a foundation under our legacy software business and is important to maintain as we transition to focus on cash flow generation.

For 2023 we expect total revenue to be in the range of \$129.0 million to \$136.5 million. Included in that, we expect wireless revenue to range between \$71.5 million to \$74.5 million, where the midpoint reflects an annual revenue attrition rate of approximately 3.4%, 230 basis points lower than the attrition rate in 2021. Software revenue is expected to range from \$57.5 million to \$62.0 million, where the midpoint reflects a slight year-over-year annual revenue increase of approximately \$0.9 million from 2022. We believe that these revenue projections will drive our business to generate adjusted EBITDA in the range of \$24 million to \$26 million in 2023. Finally, though we are not providing specific guidance for capital expenditures, we would expect those levels would be in line with prior years. Total capital expenditures for the full year 2022 were \$3.8 million, down from \$4.4 million in 2021.

We remain committed to our mission to be a strategic partner of choice for enterprise grade communications and patient care coordination. This commitment has allowed Spok to create a significant market position with long-standing relationships with the nation's leading healthcare providers. This vision serves as the framework for every aspect of our business. We want to express to all our stakeholders that we are committed to the core principles that will guide our organization's future. Every Spok representative and partner must embody these core tenets of our values.



In summary, our commitment to our stockholders, customers and other stakeholders has never wavered. We are moving forward with a clear vision for the future, and we are focused on transforming that vision into action through compelling products and innovative strategies that position us to capitalize on the robust opportunities in our evolving marketplace. We wish to thank you, our stockholders, for your support and patience as we have navigated these challenging times. We believe that the best is yet to come. We also thank our Board of Directors for their continued stewardship and guidance, our employees for their tireless dedication to our mission, and our customers for their continued support. We look forward to the journey ahead.

Yours truly,

Vincent D. Kelly
President and Chief Executive Officer
April 2023

Adjusted EBITDA represents net income/(loss) before interest income/expense, income tax benefit/expense, depreciation, amortization and accretion expense, stock-based compensation expense, impairment of intangible assets, severance and restructuring, and effects of capitalized software development costs. Proforma Adjusted EBITDA results exclude one-time costs related to the strategic pivot as well as costs related to operations under our prior strategy that will not be incurred going forward. Had those strategic changes been in effect as of January 1, 2022, our Adjusted EBITDA would have been \$9.5 million higher for the year. This includes costs related to terminated employees of approximately \$7.5 million, and non-payroll Spok Go and other costs of approximately \$2.0 million.

Adjusted operating expenses excludes depreciation, amortization and accretion, impairment of intangible assets, severance and restructuring costs, and effects of capitalized software development costs.

Statements contained herein which are not historical fact, such as statements regarding our future operating and financial performance, are forward-looking statements for purposes of the safe harbor provisions under the Private Securities Litigation Reform Act of 1995. These forward-looking statements involve risks and uncertainties that may cause our actual results to be materially different from the future results expressed or implied by such forward-looking statements. Factors that could cause actual results to differ materially from those expectations include, but are not limited to, our ability to manage wireless network rationalization to lower our costs without causing disruption of service to our customers; our ability to retain key management personnel and to attract and retain talent within the organization; the productivity of our sales organization and our ability to deliver effective customer support; our ability to identify potential acquisitions, consummate and successfully integrate such acquisitions, and achieve the expected benefits of such acquisitions; risks related to the COVID-19 pandemic; economic conditions such as recessionary economic cycles, higher interest rates, inflation and higher levels of unemployment; competition for our services and products from new technologies or those offered and/or developed from firms that are substantially larger and have much greater financial and human capital resources; continuing decline in the number of paging units we have in service with customers, commensurate with a continuing decline in our wireless revenue; our ability to address changing market conditions with new or revised software solutions; undetected defects, bugs, or security vulnerabilities in our products; our dependence on the U.S. healthcare industry; the sales cycle of our software solutions and services can run from six to eighteen months, making it difficult to plan for and meet our sales objectives and bookings on a steady basis quarter-to-quarter and year-to-year; our reliance on third-party vendors to supply us with wireless paging equipment; our ability to maintain successful relationships with our channel partners; our ability to protect our rights in intellectual property that we own and develop and the potential for litigation claiming intellectual property infringement by us; our use of open source software, third-party software and other intellectual property; the reliability of our networks and servers and our ability to prevent cyber-attacks and other security issues and disruptions; unauthorized breaches or failures in cybersecurity measures adopted by us and/or included in our products and services; our ability to realize the benefits associated with our deferred income tax assets; future impairments of our long-lived assets, amortizable intangible assets or goodwill; risks related to data privacy and protection-related laws and regulation; and our ability to manage changes related to regulation, including laws and regulations affecting hospitals and the healthcare industry generally, as well as other risks described from time to time in our other filings with the Securities and Exchange Commission. Although we believe the expectations reflected in the forward-looking statements are based on reasonable assumptions, we can give no assurance that our expectations will be attained. We disclaim any intent or obligation to update any forward-looking statements.

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, 2022
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 001-32358



SPOK HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

5911 Kingstowne Village Pkwy, 6th Floor
Alexandria, Virginia

(Address of principal executive offices)

16-1694797

(I.R.S. Employer
Identification No.)

22315

(Zip Code)

(800) 611-8488

(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Trading Symbol</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$0.0001 per share	SPOK	NASDAQ

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	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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. ☒

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

The aggregate market value of the common stock held by non-affiliates of the registrant was \$120 million based on the closing price of \$6.30 per share on the NASDAQ National Market® on June 30, 2022.

The number of shares of registrant's common stock outstanding on February 17, 2023, was 19,997,142.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Definitive Proxy Statement for the 2023 Annual Meeting of Stockholders of the registrant, which will be filed with the Securities and Exchange Commission pursuant to Regulation 14A no later than May 1, 2023, are incorporated by reference into Part III of this Report.

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Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements and information relating to Spok Holdings, Inc. and its subsidiaries ("Spok" or the "Company") that set forth anticipated results based on management's current plans, known trends and assumptions. These statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Statements that are predictive in nature, that depend upon or refer to future events or conditions, or that include words such as "anticipate," "believe," "estimate," "expect," "intend," "will," "target," "forecast" and similar expressions, as they relate to Spok, are forward-looking statements.

Although these statements are based upon current plans, known trends and assumptions that management considers reasonable, they are subject to certain risks, uncertainties and assumptions, including but not limited to the following:

- Our ability to manage wireless network rationalization to lower our costs without causing disruption of service to our customers;
- Our ability to retain key management personnel and to attract and retain talent within the organization;
- The productivity of our sales organization and our ability to deliver effective customer support;
- Our ability to identify potential acquisitions, consummate and successfully integrate such acquisitions, and achieve the expected benefits of such acquisitions;
- Risks related to the COVID-19 pandemic;
- Economic conditions such as recessionary economic cycles, higher interest rates, inflation and higher levels of unemployment;
- Risks related to our overall business strategy, including maximizing revenue and cash generation from our established businesses and returning capital to stockholders through dividends and repurchases of shares of our common stock;
- Competition for our services and products from new technologies or those offered and/or developed from firms that are substantially larger and have much greater financial and human capital resources;
- Continuing decline in the number of paging units we have in service with customers, commensurate with a continuing decline in our wireless revenue;
- Our ability to address changing market conditions with new or revised software solutions;
- Undetected defects, bugs, or security vulnerabilities in our products;
- Our dependence on the U.S. healthcare industry;
- The sales cycle of our software solutions and services can run from six to eighteen months, making it difficult to plan for and meet our sales objectives and bookings on a steady basis quarter-to-quarter and year-to-year;
- Our reliance on third-party vendors to supply us with wireless paging equipment;
- Our ability to maintain successful relationships with our channel partners;
- Our ability to protect our rights in intellectual property that we own and develop and the potential for litigation claiming intellectual property infringement by us;
- Our use of open source software, third-party software and other intellectual property;
- The reliability of our networks and servers and our ability to prevent cyber-attacks and other security issues and disruptions;
- Unauthorized breaches or failures in cybersecurity measures adopted by us and/or included in our products and services;
- Our ability to realize the benefits associated with our deferred income tax assets;
- Future impairments of our long-lived assets, amortizable intangible assets or goodwill;
- Risks related to data privacy and protection-related laws and regulation
- Our ability to manage change related to regulation, including laws and regulations affecting hospitals and the healthcare industry generally; and
- Those matters that are discussed in this Annual Report under Item 1A "Risk Factors."

Should known or unknown risks or uncertainties materialize, known trends change, or underlying assumptions prove inaccurate, actual results or outcomes may differ materially from past results and those described herein as anticipated, believed, estimated, expected, intended, targeted or forecasted. Investors are cautioned not to place undue reliance on these forward-looking statements.

The Company undertakes no obligation to revise or update forward-looking statements, except as required by law. Investors are advised to consult all further disclosures the Company makes in its subsequent quarterly reports on Form 10-Q and current reports on Form 8-K that it will file with the United States Securities and Exchange Commission ("SEC").

Also note that, in the risk factors section, the Company provides a cautionary discussion of risks, uncertainties and possibly inaccurate assumptions relevant to its business. These are factors that, individually or in the aggregate, could cause the Company's actual results to differ materially from past results as well as those results that may be anticipated, believed, estimated, expected, intended, targeted or forecasted. It is not possible to predict or identify all such risk factors. Consequently, investors should not consider the risk factor discussion to be a complete discussion of all of the potential risks or uncertainties that could affect Spok's business, statement of operations or financial condition, subsequent to the filing of this Annual Report.

PART I

The terms "we," "us," "our," "Company" and "Spok" refer to Spok Holdings, Inc. and its direct and indirect wholly owned subsidiaries.

ITEM 1. **BUSINESS**

Overview

Spok, Inc., a wholly owned subsidiary of Spok Holdings, Inc. (NASDAQ: SPOK), is proud to be a global leader in healthcare communications. We deliver clinical information to care teams when and where it matters most to improve patient outcomes. Top hospitals rely on Spok products and services to enhance workflows for clinicians, support administrative compliance, and provide a better experience for patients.

Our headquarters is located at 5911 Kingstowne Village Pkwy, 6th Floor, Alexandria, Virginia 22315, and our telephone number is 800-611-8488. We maintain a website at <http://www.spok.com>. (This website address is for information only and is not intended to be an active link or to incorporate any website information into this 2022 Annual Report on Form 10-K ("2022 Form 10-K").)

We deliver smart, reliable clinical communication and collaboration solutions to help protect the health, well-being, and safety of people in the United States and abroad, on a limited basis, in Europe, Canada, Australia, Asia and the Middle East. Our customers rely on Spok for workflow improvement, secure texting, paging services, contact center optimization, and public safety response. We develop, sell, and support enterprise-wide systems primarily for healthcare and other organizations needing to automate, centralize, and standardize their approach to clinical communications. Our solutions can be found in prominent hospitals, large government agencies, leading public safety institutions, colleges and universities; large hotels, resorts and casinos; and well-known manufacturers. We offer our services and products to three major market segments: healthcare, government, and large enterprise, with a greater emphasis on the healthcare market segment.

In February 2022, our Board of Directors announced a new strategic business plan. In accordance with this plan, we discontinued Spok Go and successfully eliminated all associated costs. We have completed rightsizing the Company to focus on cash flow and stabilizing revenue in our Spok Care Connect and Wireless products and service lines.

Industry Overview

In March 2020, the World Health Organization declared COVID-19 a global pandemic. The pandemic has had a severe impact on the global economy and has caused a significant strain on the healthcare industry. While the impact of COVID-19 has varied greatly from one organization or region to the next, in general, reducing costs was a critical theme for the healthcare provider industry in 2020 and 2021.

Aside from the serious impact that COVID-19 has had on the healthcare industry, the United States healthcare market continues to experience significant change. Healthcare costs continue to rise, reimbursements from Centers for Medicare and Medicaid Services are being reduced in certain areas, digitization of healthcare information continues and the industry continues to shift towards a value-based purchasing model and away from the traditional fee-for-service model. The value-based purchasing model places an emphasis on incentivizing value and quality at an individual patient level in order to provide better patient outcomes and reduce 30-day readmissions.

In response, healthcare providers now require greater communication and better collaboration between clinicians in order to generate improvements in the quality, safety, satisfaction and efficiency of patient care delivery. Improvements in these areas are necessary for healthcare providers to successfully navigate many of these issues. Many providers are seeking improvement through the adoption of technology, looking to take advantage of workflow automation, process improvement and, in limited circumstances, machine learning and artificial intelligence. Providers also look to increase efficiencies through consolidation as larger health systems continue to acquire smaller hospitals for the primary purpose of gaining regional market share amongst tough competition.

We believe these changes and continued pressure for organizations to provide improved services with fewer resources place an even greater emphasis on the need for improved clinical communication and collaboration tools to meet the increasing requirements demanded by the healthcare industry in today's marketplace. Our solutions help hospitals significantly increase the quality and safety of patient care delivery, while increasing patient and provider satisfaction and simultaneously increasing employee productivity, reducing costs and clinician burnout. This is accomplished through workflow enhancement; secure, reliable and integrated communication tools; and mobile accessibility.

Sales and Marketing

We offer a focused suite of unified clinical communication and collaboration solutions primarily to organizations in the healthcare sector. We generate wireless revenue from the sales of wireless messaging services, equipment, maintenance plans and/or equipment loss protection to both one-way and two-way messaging subscribers. We generate software revenue from the sale of our software solutions, including software licenses, professional services, equipment we procure from third parties, and post-contract support.

Sales

We market and distribute our clinical communication and collaboration solutions through a direct sales force and an indirect sales channel.

The direct sales force contracts or sells products, solutions, messaging services and other services directly to customers ranging from small and medium-sized businesses to companies in the Fortune 1000, as well as federal, state, and local government agencies. We will continue to market primarily to commercial enterprises, with a focus on healthcare organizations, interested in our communication solutions. We maintain a sales presence in key markets throughout the United States, and in limited markets internationally through strategic partnerships, in an effort to gain new customers and to retain and increase sales to existing customers. The direct sales force targets leadership responsible for the procurement of clinical communication and collaboration solutions such as chief information officers, chief technology officers, chief medical officers, chief nursing officers, information technology directors, telecommunications directors, laboratory directors, radiology directors and contact center managers. The timing for a direct sale varies but may take from 6 to 18 months depending on the type and scope of software solution.

The indirect sales channel complements our direct sales force. Through relationships with alliance partners we are able to sell our solutions to a wider customer base. For wireless services that we do not provide directly, we contract with and invoice an intermediary for airtime services. For our software sales, relationships with alliance partners assist us in broadening the distribution of our products and further diversifying into markets outside of the healthcare provider vertical as well as in the Asia Pacific regions. We will continue to expand partnership efforts in 2023.

Within our target market, we have identified and focused our efforts to address the following dynamics:

- A heightened awareness of the ubiquitous, critical role of communications in healthcare;
- An increased focus within hospitals on quality of care and patient safety initiatives;
- The importance of confidentiality when sharing information;
- Increased regulations that may result in process changes, increased documentation and reporting and increased costs;
- A continuing focus within hospitals to reduce labor and administrative costs while increasing productivity; and
- A broader proliferation of information technology in healthcare as hospitals strive to apply technology to address their operational issues.

Marketing

We have a centralized marketing function, which is focused on supporting our solutions and sales efforts by strengthening our corporate brand, generating sales leads, and facilitating the sales process. Our principal marketing programs include:

- Website development and maintenance, which provides product and Company information, customer support options, paging capabilities, as well as thought leadership and engagement;
- Content marketing (e.g., eBriefs, case studies, brochures, videos and infographics) as an underlying foundation of all marketing campaigns or initiatives;
- Webinars about customer successes, current industry trends, and our solutions;
- Social media involvement to provide information regarding upcoming educational events or new product offerings;
- Blog posts to provide information about industry trends and our solutions to customers, prospects, and alliances; and
- Participation at trade shows and industry events, such as Healthcare Information and Management Systems Society (HIMSS), College of Healthcare Information Management Executives (CHIME), and other Healthcare Information technology related shows and conferences; and
- Annual customer conferences (virtual) that solicit feedback on our solutions and services.

Licenses and Messaging Networks

In order to provide our wireless services, we hold licenses to operate on various frequencies in the 900 MHz narrowband. We are licensed by the United States Federal Communications Commission (the "FCC") to operate Commercial Mobile Radio Services ("CMRS"). These licenses are required to provide one-way and two-way messaging services over our networks.

Our messaging networks and related infrastructure are located exclusively in the United States. We operate local, regional and nationwide one-way networks, which enable subscribers to receive messages over a desired geographic area. One-way networks operating in 900 MHz frequency bands utilize the *FLEX*[™] protocol developed by Motorola Mobility, Inc. ("Motorola"). The *FLEX*[™] protocol has advantages of functioning at higher network speeds (which increases the volume of messages that can be transmitted over the network) and of having more robust error correction (which facilitates message delivery to a device with fewer transmission errors).

Our two-way networks utilize the *ReFLEX 25*[™] protocol, also developed by Motorola. *ReFLEX 25*[™] promotes spectrum efficiency and high network capacity by dividing coverage areas into zones and sub-zones. Messages are directed to the zone or sub-zone where the subscriber is located, allowing the same frequency to be reused to carry different traffic in other zones or sub-zones. As a result, the *ReFLEX 25*[™] protocol allows the two-way network to transmit substantially more messages than a one-way network using the *FLEX*[™] protocols. The two-way network also provides for assured message delivery. The network stores, for a limited amount of time, messages that could not be delivered to a device that is out of coverage for any reason, and when the unit returns to service, those messages are delivered. The two-way paging network operates under a set of licenses called narrowband Personal Communications Service, which uses 900 MHz frequencies. These licenses require certain minimum five and ten-year build-out commitments established by the FCC, which have been satisfied.

Although the capacities of our networks vary by geographic area, we have excess capacity at a consolidated level. We have implemented a plan to manage network capacity and to improve overall network efficiency by consolidating subscribers onto fewer, higher capacity networks with increased transmission speeds. This plan is referred to as network rationalization. Network rationalization will result in fewer networks and therefore fewer transmitter locations, which we believe will result in lower operating expenses due primarily to lower site rent expenses.

As we continue to implement our network rationalization plan, we expect to have fewer transmitters that can be removed efficiently from our networks and still maintain the level of service required for our customers, and thus the benefits of network rationalization will decline. Cost savings have slowed as compared to historical cost savings. As we reach certain minimum frequency commitments, as outlined by the FCC, we may be limited in our ability to continue our efforts to rationalize and consolidate our networks.

Generally, our software solutions do not require licenses or permits from federal, state and/or local government agencies in order to be sold to customers. However, certain of our software products are subject to regulation by the United States Food and Drug Administration ("FDA") and are subject to certification by the Joint Interoperability Test Command to be sold to the branches of the armed services of the United States and the United States government. (see "Regulation" below).

Our Strategy

In alignment with our strategic business plan announced in February 2022, our over-arching strategy has been, and will continue to be, the prioritization of free cash flow generation and the return of capital to stockholders, by maximizing revenue and cash generation from our established lines of business while effectively managing expenses. Through targeted investments in these important and valuable business lines, we aim to reinvigorate growth in our legacy software solutions and minimize wireless revenue attrition.

Particular areas of strategic emphasis include:

Acquire new customers and expand relationships within our existing customer base - We will continue to focus our sales and marketing efforts in the healthcare market in order to identify opportunities for new sales as well as grow revenues from our existing customer base. We have ongoing initiatives to further penetrate the hospital segment in the United States, and while we believe there is a significant opportunity to sell clinical communication and collaboration solutions to hospitals located outside the United States, our near-term focus is on the domestic market.

We have a significant presence in the healthcare marketplace, and we intend to leverage the strength of our market presence and the breadth of our product offerings to further expand our customer base in healthcare.

Minimize wireless revenue attrition - We continue to have a valuable wireless presence in the healthcare market, particularly in larger hospitals. We offer a comprehensive suite of wireless messaging products and services focused on healthcare and "campus" type environments and critical mission notification. We will continue to focus on network reliability and customer service to help minimize the rate of revenue attrition.

We recognize that the number of wireless subscribers, units in service, and the related revenue will likely continue to decline. We intend to continue reducing our underlying cost structure impacting this declining wireless revenue stream by reducing payroll and related expenses as well as network related expenses where possible, alongside periodic price increases. We will integrate and consolidate operations as necessary to ensure the lowest cost operational platform for our consolidated business.

The introduction of our GenA pagers in November 2021 was a key initiative that we believe will also help slow our wireless revenue attrition. Further details on GenA pagers can be found under "GenA Pagers."

Enhance existing software applications - We will continue to invest in the development and enhancement of our Spok Care Connect Suite products and services, although at a significantly reduced rate relative to our total research and development costs over the last several years. Targeted enhancements and continued development efforts are critical to our ability to maintain our core software maintenance revenue and are necessary to drive future software operations revenue. Additionally, targeted enhancements of the Spok Mobile application will be critical in our ability to help further mitigate wireless customer attrition.

Manage expenses – With a renewed focus on generating cash flow, it is critical that we manage costs in alignment with our revenue. We will continue to look for ways to reduce our underlying cost structure should revenue continue to decline. While we will continue to invest in the business, we will do so in a more targeted manner to drive tangible earnings that can be returned to our stockholders.

Return capital to our stockholders - We understand that our primary objective is to create long-term stockholder value. We will continue to evaluate how best to deploy our capital resources to support sustainable business growth and maximize stockholder value. We expect to continue to pay a quarterly dividend of \$0.3125 per share of common stock, or \$1.250 annually, in 2023.

Products and Services

Wireless Products and Related Services

We offer subscriptions to one-way or two-way messaging services for a periodic (monthly, quarterly, semi-annual, or annual) service fee. The level of service fees is generally based upon the type of service provided, the geographic area covered, the number of devices provided to the customer and the period of commitment. We also sell devices to resellers who lease or resell them to their subscribers and then sell messaging services utilizing our networks.

Wireless products and services revenue represented 56%, 55% and 56% of total consolidated revenue for the years ended December 31, 2022, 2021 and 2020, respectively. Demand for one-way and two-way messaging services declined during these years, and we believe demand will continue to decline for the foreseeable future. As demand for one-way and two-way messaging has declined, we have developed or added service offerings, including our GenA pagers discussed below, in order to optimize our revenue potential and mitigate the decline in our wireless revenues. We will continue to evaluate opportunities within our wireless business while providing customers the highest value possible.

Legacy Wireless Services

A subscriber to one-way messaging services may select coverage on a local, regional, or nationwide basis to best meet their messaging needs, while two-way messaging is generally offered on a nationwide basis. In addition, subscribers either contract to use a messaging device that we own for an additional fixed monthly fee, or they own the device used, after either purchasing it from us or from another vendor.

We offer exclusive one-way (T5) and two-way (T52) alphanumeric pagers that are configurable to support unencrypted or encrypted operation. When configured for encryption, these devices utilize AES-128 bit encryption, screen locking and remote wipe capabilities. With encryption, these secure paging devices enhance our service offerings to the healthcare community by adding Health Insurance Portability and Accountability Act ("HIPAA") security capabilities to the low cost and high reliability and availability benefits of paging. We also offer ancillary services, such as voicemail and equipment loss or maintenance protection, which help increase the monthly recurring revenue we receive, along with these traditional messaging services.

GenA Pagers

On November 16, 2021, we announced the launch of our newest pager, GenA. This one-way alphanumeric pager, available on our wide-area paging network, features a high resolution ePaper display, intuitive modern user interface, advanced HIPAA-compliant encryption and security features, over-the-air remote programming, and an antimicrobial housing. The ePaper display advances the user experience with its larger screen featuring a high-resolution, high-contrast display for easy reading in all conditions, while an automatic front-light eases reading messages in the dark. Users can select from various font sizes, and the large GenA display also leverages proportional fonts to maximize key information on a single screen.

GenA pagers also allow for superior message reception in buildings with difficult coverage conditions using the high-powered Spok 900MHz simulcast network. Enhanced over-the-air (OTA) programming through the Spok My Account customer web portal enables remote pager configuration changes such as updating the user's name on the pager, assigning a pager to a group, deleting message data and encryption keys, modifying global security settings, and remotely unlocking the device. The GenA pager also provides advanced message management features allowing critical messages to be locked to prevent deletion or saved to a separate folder. In addition, separate inbox folders can be set up for group messages.

The GenA pager is the only product available on the market with these capabilities, and we maintain an exclusive arrangement with the product's manufacturer whereby it may not market or sell the product to any third party without our consent. Given the uniqueness of the GenA pager, we believe its development is a key initiative that may help slow our wireless revenue attrition.

Software

Dependable clinical communications are paramount for individuals in healthcare and a host of other industries. We offer a number of solutions, providing our customers with the ability to communicate anywhere, anytime across a number of situations. Our solutions are used for contact centers, clinical alerting and notification, mobile communications and messaging, and for public safety notifications.

Spok Care Connect® Suite

Contact Center

- **Spok® Healthcare Console:** Provides operators with the information needed to process calls using their computers with just a few keystrokes. This solution integrates with the customers' existing phone systems and is used by the operator group to answer incoming calls to the contact center. Operators can quickly and accurately perform directory searches and code calls, as well as messaging and paging by individuals, groups, and roles using the Spok Healthcare Console's computer telephony integration and directory capabilities.
- **Spok® Web-Based Directory:** Makes employee contact information more accessible and enables staff to send messages quickly right from the directory. Authenticated users can log on anywhere, anytime to perform a variety of important updates to contact information and on-call schedules, search the directory, and send important messages.
- **Spok® Web-Based On-Call Scheduling:** Keeps personnel, calendars and on-call scheduling information updated, even with thousands of staff, using a secure web portal to maintain and allow password-protected access to the latest on-call schedules and personnel information.
- **Spok® Speech:** Enables the organization to process routine phone requests, including transfers, directory assistance, messaging and paging without live operators and with more ease-of-use than touch-tone menus.
- **Spok® Call Recording and Quality Management:** Records, monitors, and scores operators' conversations to allow for better management of calls, helping improve customer service.

Clinical Alerting

- **Spok® Messenger:** Provides an intelligent, FDA-compliant, 510(k)-cleared solution that connects virtually all crucial alert systems, including nurse call, fire, security, patient monitoring, and building management to mobile staff via their wireless communication devices. This solution provides the ability to reach mobile team members within seconds of an alert, improving overall workflow, staff productivity, and the convenience and safety of everyone in the facility.

- **Spok® e.Notify:** Enables organizations to quickly and reliably notify and confirm team member availability during emergency situations without relying on calling trees, thereby reducing confusion that may arise in an emergency situation. This solution automatically delivers messages, collects responses, escalates issues to others, and logs all activities for reporting and analysis purposes.
- **Spok® Critical Test Results Management:** Automates and streamlines the process of delivering critical test results to the appropriate clinicians to help ensure patient safety. This solution can send messages from the cardiology, laboratory and radiology departments by means of encrypted smartphone communications, two-way paging, secure email, secure text, images, annotations, and voice to a variety of endpoints such as workstations, laptops, tablets, smartphones, pagers, and other wireless devices.

Mobile Communications

- **Spok Mobile®:** Simplifies communications and strengthens care by using smartphones and tablets for secure code alerts, patient updates, results, consult requests, and much more. Allows users to access the full directory of accurate contact information to send messages/photos/videos to smartphones and other devices, and helps to ensure all clinical communications are logged with security, traceability, and reliability.
- **Spok® Device Preference Engine:** Facilitates voice conversations among doctors and caregivers by enabling users to choose the desired communication method based on factors such as message priority.

Public Safety

- **Spok® pc/psap:** Speeds emergency dispatch by giving Public Safety Answering Point call-takers an easy-to-use, standards-based, graphical interface that integrates the underlying phone system, mapping systems, and other resources for critical information availability. 9-1-1 call-takers are able to instantly involve police, fire, EMT, and hazardous material personnel with a single click of the mouse or touch of the screen.
- **Spok® Enterprise Alert:** Directs emergency personnel to a 9-1-1 caller's exact location (building, floor, room), helping to ensure speed, accuracy, and reliability of response. The E9-1-1 software provides real-time, onsite notification when 9-1-1 is dialed, and works to decrease emergency response time.

Services

We offer a variety of professional services to assist our customers in the successful implementation of, and to maximize the benefits obtained from the use of, our software solutions. We also offer support services to enhance and refine the customer's experience throughout their relationship with Spok.

- **Professional Services:** We offer a full suite of professional services that are provided by a dedicated group of professional service employees. Our professional services include consultation, implementation, and training services. Our professional services staff uses a branded, consistent methodology that provides a comprehensive phased work plan for both new software installations and/or upgrades. In support of our implementation methodology, we manage the various aspects of the process through a professional services automation tool. We may also use third-party professional services firms as supplemental resources to implement our solutions for customers as needed. Professional services revenue represented 9% of total consolidated revenue for the year ended December 31, 2022 and 12% each for the years ended December 31, 2021 and 2020. The decrease in the professional services revenue for 2022 was from having lower billable hours as a result of our efforts to better align staffing levels with our backlog as well as to drive greater profitability through more efficient services delivery.
- **Software License Updates and Product Support (Maintenance):** Software license updates and product support, which is generally referred to as maintenance when sold to customers, is an important offering to customers who utilize our on-premise software solutions. In order to support our products that provide clinical communication and collaboration solutions to our customer's organizations, we have a dedicated customer support organization. The customer support organization provides support 24 hours a day, seven days a week, 365 days a year and the service can be accessed via telephone, email or the Internet via the Spok webpage. The Spok support service is augmented by third-party services where needed. Software license updates and product support are generally priced together as a percentage of the software licenses for which these services will be provided. Largely all of our customers purchase maintenance when they purchase new software licenses, after which renewals generally occur on an annual basis and are paid in advance. Software license updates provide customers with rights to unspecified product upgrades as well as maintenance and patch releases that are released during the term of the support period. Software license updates and product support revenue (i.e. Maintenance revenue) represented 27% of total consolidated revenue for the years ended December 31, 2022 and 2021, and 26% for the year ended December 31, 2020.

Sources of Equipment

We do not manufacture the messaging devices our customers need to make use of our wireless services or the network equipment we use to provide wireless messaging services. We have relationships with several vendors to purchase new messaging devices. Used messaging devices are available in the secondary market from various sources. We believe existing inventory, returns of devices from customers that canceled wireless services, and purchases from other available sources of new and reconditioned devices will be sufficient to meet expected messaging device requirements for the foreseeable future. With the exception of our GenA pagers, the network equipment and messaging devices on which we may place our logo or label are generic.

We sell third-party equipment for use with our software solutions. The third-party equipment that we sell is generally available and does not require any specialty manufacturing to accommodate our software solutions.

We currently have inventory and network equipment on hand that we believe will be sufficient to meet our wireless and software equipment requirements for the foreseeable future. However, the COVID-19 pandemic has contributed to global supply chain disruptions from which we are not immune. These disruptions may contribute to delayed production of certain of the products that we offer, including, but not limited to, GenA pagers, which are assembled with certain microchip technology that has experienced, and may continue to experience, shortages. Such shortages may result in delayed delivery of the products that we offer to customers.

Intellectual Property

As of December 31, 2022, we held 74 trademarks and five patents, as well as four pending trademarks and one pending patent, which we believe are important to protect our intellectual property. We believe our intellectual property distinguishes our business from our competition and is integral to our continued success in the area of clinical communication and collaboration solutions. The expiration dates of these trademarks range from 2023 to 2033 and can be extended for 10-year periods upon renewals.

Research and Development

We maintain a product development group, a substantial portion of which is focused on the enhancement of existing software products. Our product development group uses a methodology that balances enhancement requests from a number of sources including customers, regulatory requirements, professional services staff, customer support incidents, known defects, market and technology trends, and competitive requirements. These requests are reviewed and prioritized based on criteria that include the potential for increased revenue, customer/employee satisfaction, possible cost savings, and development time and expense.

Customers

Our customers include businesses and their employees who need to be accessible to their offices or customers, first responders who need to be accessible in emergencies, and third parties, such as other telecommunication carriers and resellers that pay us to use our networks. Customers include businesses, professionals, management personnel, medical personnel, field sales personnel and service forces, members of the construction industry and construction trades, real estate brokers and developers, sales and services organizations, specialty trade organizations, manufacturing organizations and government agencies.

Our wide-ranging customer base allows for low customer revenue concentration and as a result, no single customer accounted for more than 10% of our total revenues in 2022, 2021 or 2020.

We pursue close, long-term relationships with our customers because we believe strong customer relationships enable us to retain our current customer base and expand our services and revenue to that customer base.

Competition

The competitors and degree of competition vary among our various product categories. Competition is particularly strong for our wireless messaging services. Within the wireless industry, companies compete on the basis of price, coverage area, services offered, transmission quality, network reliability and customer service. We compete by maintaining competitive pricing for our products and services, by providing broad coverage options through high-quality, reliable messaging networks and by providing quality customer service. Direct competitors for wireless messaging services include American Messaging Service, LLC and a variety of other regional and local providers. We also compete with a broad array of wireless messaging services provided by mobile telephone companies, including AT&T Mobility LLC, T-Mobile USA, Inc., and Verizon Wireless, Inc. This competition has intensified as prices for the services of mobile

telephone companies have declined and messaging capabilities are generally available in today's mobile phone devices. Many of these companies possess far greater financial, technical and other resources than we do.

Most personal communication and other mobile phone devices currently sold in the United States are capable of sending and receiving one-way and two-way messages. Most subscribers that purchase these services no longer need to subscribe to a separate messaging service. As a result, many one-way and two-way messaging subscribers can readily switch to cellular, personal communications service and other mobile telephone services. The decrease in prices and increase in capacity and functionality for cellular, personal communications service, Wi-Fi, and other mobile telephone services have led many subscribers to select combined voice and messaging services from mobile telephone companies as an alternative to our stand-alone messaging services.

We also have a number of competitors whose software products compete with one or more modules of our clinical communication and collaboration solutions. These competitors are a mix of privately held and public companies that offer a number of call center, alerting and mobile communication products. Our primary competitive advantages include having:

- An integrated product suite;
- A communication-driven workflow;
- Certifications, such as those through the Joint Interoperability Test Command (see "Joint Interoperability Test Command" below) and the FDA; and
- A complete directory of contacts throughout the customer enterprise.

Although we have no competitors that offer a comprehensive set of software modules that match our product offerings, several competitors offer software similar to many of our solutions. Selected competitors for portions of our product portfolio include:

- American Software, Inc.. - Enterprise software solutions;
- CareCloud, Inc. - Healthcare solutions;
- Computer Programs and Systems, Inc. - Healthcare IT solutions;
- Domo, Inc. - Cloud-based solutions;
- eGain Corporation - Cloud-based solutions;
- Health Catalyst, Inc. - Healthcare data and analytics;
- HealthStream, Inc. - Healthcare workforce solutions;
- Kaltura, Inc. - Cloud-based solutions;
- KORE Group Holdings Inc. - Mobile communications solutions;
- LiveVox Holdings, Inc. - Healthcare solutions;
- NantHealth Inc. - Healthcare solutions;
- OptimizeRx Corporation. - Healthcare solutions;
- Tabula Rasa Healthcare, Inc. - Healthcare solutions;
- UpHealth, Inc. - Healthcare solutions; and
- Weave Communications, Inc. - Software solutions.

In addition to these select competitors, substantially larger companies in the electronic medical records space such as Epic Systems Corporation, Cerner Corporation, Athenahealth, Inc. and Allscripts Healthcare Solutions, Inc. may choose to offer software-related solutions similar to our clinical communication and collaboration solutions or may acquire one of our competitors.

Furthermore, the healthcare sector continues to experience significant consolidation, in large part due to COVID-19, which has highlighted the need to improve patient outcomes, reduce the burden on providers and streamline operations. As certain industries have been challenged during the pandemic, many organizations are motivated to reduce costs and improve efficiencies while others attempt to enter new markets with complementary or divergent product offerings and drive growth. With larger organizations like Microsoft Corporation and Oracle Corporation entering the market in which we operate, they may have a competitive advantage through aggressive pricing power, established brand recognition, extensive capital resources, and broader delivery and distribution channels.

Human Capital

At December 31, 2022 and 2021, we had 376 and 563 full time equivalent ("FTE") employees, respectively. As part of the restructuring of our business in connection with the strategic business plan announced by our Board of Directors in February 2022, we eliminated 176 positions, primarily in research and development, and also in professional services,

selling and marketing, and back-office support functions. Our employees are not represented by labor unions or covered by a collective bargaining agreement.

Employee Health, Safety and Well-Being

Spok is committed to conducting its business operations in a manner that protects the health and safety of its employees, visitors, contractors and the public, and reduces risks within our work centers. Spok believes that no job is so important that our employees cannot take the time to ensure the work is performed safely and in an environmentally conscious manner. Spok's policies and procedures are intended to provide employees with the information needed to meet all federal, state and local guidelines for occupational health and safety.

The COVID-19 pandemic continues to affect our policies with regard to our employees, whose health and safety is our highest priority. Following strategies recommended by the Centers for Disease Control and Prevention, we have continued to follow enhanced safety measures, including performing enhanced cleaning procedures in our offices, providing remote work arrangements for our office-based employees, and liberal leave policies for employees who may be affected by illness, isolation or childcare obligations. We are compliant with all federal, state and local regulations as applicable.

Diversity and Inclusion

As a global company, Spok strives to create an environment that embraces diversity and fosters inclusion. We recognize the value and contributions of individuals with a wide range of capabilities, experience, and perspectives, and draw upon this diversity to create value for our customers and maintain an effective and engaged workforce. Spok is committed to maintaining a work environment free from discrimination and harassment, and one where employees are treated with dignity and respect. We refuse to accept or tolerate harassment or discrimination against any employee or applicant for employment.

Spok has a council composed of employees and executive sponsors to provide feedback and make recommendations regarding our diversity and inclusion policies and practices. We believe that by promoting and supporting inclusiveness and by leveraging our organization's diversity, we have a competitive advantage that allows us to innovate and draw from our workforce's differing perspectives. By bringing together employees from diverse backgrounds and providing each with an opportunity to develop their skills and actively contribute to our mission, we cultivate an engaged workforce which in turn helps us deliver value to our customers.

Ethical Standards

Integrity is a core tenet of Spok's culture, and we have measures and controls in place to regularly ensure that our work and organization are held to the highest ethical standards. We provide numerous resources to our employees, including regular, annual training on maintaining these standards. We also maintain employee guidelines and policies that align with Spok's Code of Business Conduct and Ethics.

Regulation

Federal Regulation

The FCC issues licenses to use radio frequencies necessary to conduct our business and regulate many aspects of the operations that support our wireless revenue. Licenses granted to us by the FCC have varying terms, generally of up to 10 years, at which time the FCC must approve renewal applications. In the past, FCC renewal applications generally been granted upon showing compliance with the Communications Act of 1934, as amended (the "Communications Act"), and FCC regulations and adequate service to the public. Other than those still pending, the FCC has thus far granted each license renewal that we have requested.

The Communications Act requires radio licensees, including us, to obtain prior approval from the FCC for the assignment or transfer of control of any construction permit or station license or authorization of any rights thereunder. The FCC has thus far granted each assignment or transfer request we have made in connection with a change of control.

The Communications Act also places limitations on foreign ownership of CMRS licenses, which constitute the majority of our licenses. These foreign ownership restrictions limit the percentage of stockholders' equity that may be owned or voted, directly or indirectly, by non-United States citizens or their representatives, foreign governments or their representatives, or foreign corporations. Our Amended and Restated Certificate of Incorporation permits the redemption of our equity from stockholders where necessary to ensure compliance with these requirements.

The FCC's rules require us to pay a variety of fees that increase our costs of doing business. For example, the FCC requires licensees, including Spok, to pay levies and fees, such as universal service fees, to cover the costs of certain

regulatory programs and to promote various other societal goals. These requirements increase the cost of the services we provide. By law, we are permitted to bill our customers for these regulatory costs and we typically do so.

Additionally, the Communications Assistance to Law Enforcement Act of 1994, ("CALEA") and certain rules implementing CALEA require some telecommunication companies, including Spok, to design and/or modify their equipment in order to allow law enforcement personnel to "wiretap" or otherwise intercept messages. Other regulatory requirements restrict how we may use customer information and prohibit certain commercial electronic messages, even to our own customers.

In addition, the FCC's rules require us to pay other carriers for the transport and termination of some telecommunication traffic. As a result of various FCC decisions over the last few years, we no longer pay fees for the termination of traffic originating on the networks of local exchange carriers providing wireline services interconnected with our services. In some instances, we received refunds for prior payments to certain local exchange carriers. We have entered into a number of interconnection agreements with local exchange carriers in order to resolve various issues regarding charges imposed by local exchange carriers for interconnection.

Failure to follow the FCC's rules and regulations can result in a variety of penalties, ranging from monetary fines to the loss of licenses. Additionally, the FCC has the authority to modify licenses, or impose additional requirements through changes to its rules.

The FDA has determined software systems that connect to medical devices are subject to regulation as medical devices as defined by the federal Food, Drug and Cosmetic Act (the "FDC Act"). Since our middleware software products connect to medical devices, we are required to comply with the FDC Act's requirements, including but not limited to: registration and listing, labeling, medical device reporting (reporting of medical device-related adverse events), removal and correction, and good manufacturing practice requirements. We have complied with the regulatory requirements of the FDC Act, and registered and received the necessary clearances for our products. As we modify and/or enhance our software products (including our middleware product), we may be required to request FDA clearance before we are permitted to market these products.

In addition, our software solutions may handle or have access to personal health information subject in the United States to the HIPAA, the Health Information Technology for Economic and Clinical Health Act ("HITECH"), and related regulations. These statutes and related regulations impose numerous requirements regarding the use and disclosure of personal health information with which we help our customers comply. Our failure to accurately anticipate or interpret these complex and technical laws could subject us to civil and/or criminal liability. We believe that we are in compliance with these laws and their related regulations.

Although these and other regulatory requirements have not, to date, had a material adverse effect on our operating results, such requirements could have a material impact on our operating results in the future. We monitor discussions at the FCC and FDA on pending changes in regulatory policy or regulations; however, we are unable to predict what changes, if any, may occur in 2023 to regulatory policy or regulations.

State Regulation

As a result of the enactment by the United States Congress of the Omnibus Budget Reconciliation Act of 1993 ("OBRA") in August 1993, states are now generally preempted from exercising rate or entry regulation over any of our operations. States are not preempted, however, from regulating "other terms and conditions" of our operations, including consumer protection and similar rules of general applicability. Zoning requirements are also generally permissible, however, provisions of the OBRA prohibit local zoning authorities from unreasonably restricting wireless services. Several states require us to hold a license or otherwise register to provide our wireless services in the jurisdiction, and those states that regulate our services also may require us to obtain prior approval of (1) the acquisition of controlling interests in other paging companies and (2) a change of control.

At this time, we are not aware of any proposed state legislation or regulations that would have a material adverse impact on our business.

Joint Interoperability Test Command ("JITC") Certification

JITC is a military organization that tests technology for use by the branches of the armed services of the United States and the United States government. JITC certification is required of all systems with joint interfaces or joint information exchanges with other systems used by these organizations and is done to ensure all systems operate effectively together. All information technology and national security systems that exchange and use information to enable units or forces to operate effectively in joint, combined, coalition and interagency operations and simulations must be certified. Once a system has been certified under this program, the certification must be renewed every four years or after any changes that may affect interoperability. The interoperability certification process consists of four basic steps, which are:

- Identify (interoperability) requirements;
- Develop certification approach (planning);
- Perform interoperability test and evaluation; and
- Report certifications and statuses.

We submit and receive JITC certification for certain of our products through the Defense Information Systems Agency, which allows us to sell and implement our solutions at federal government agencies. We currently certify a console, web, speech, mass notification, public safety answering point, call recording and campus 911 product with JITC. We have a roadmap to renew the existing certifications with new releases of existing products and to bring additional products to JITC to increase the products that can be sold to federal agencies.

Available Information

We make available on our website, <http://www.spok.com>, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the SEC. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at <http://www.sec.gov>. We also make available on our website, and in print, if any stockholder or other person so requests, our code of business conduct and ethics entitled "Code of Ethics" which is applicable to all employees and directors, our "Corporate Governance Guidelines" and the charters for all committees of our Board of Directors, including Audit, Compensation and Nominating and Governance. Any changes to our Code of Ethics or waiver, if any, of our Code of Ethics for executive officers or directors will be posted on that website.

ITEM 1A. RISK FACTORS

The following important factors, among others, could cause our actual operating results to differ materially from those indicated or suggested by forward-looking statements made in this 2022 Form 10-K or presented elsewhere by management from time to time.

Risks Related to our Business and Operations

Wireless service to our customers could be adversely impacted by network rationalization.

We have an active program to consolidate the number of wireless networks and related transmitter locations, which is referred to as network rationalization. Network rationalization is necessary to match our technical infrastructure to our smaller subscriber base and to reduce both site rent and telecommunication costs. The implementation of the network rationalization program could adversely impact wireless service to our new and existing subscribers, and there can be no assurance that any efforts to minimize that impact would be successful. Any adverse impact to our wireless service could lead to increases in the rate of gross subscriber cancellations and/or the level of wireless revenue erosion. Adverse changes in gross subscriber cancellations and/or wireless revenue erosion could have a material adverse effect on our business, financial condition, operating results and ability to pay cash dividends to stockholders.

We depend on highly skilled personnel, and, if we are unable to retain or hire qualified personnel, we may not be able to achieve our strategic objectives.

To execute our growth plan and achieve our strategic objectives, we must continue to attract, hire and retain highly qualified and motivated personnel across our organization. In particular, to continue to enhance our software solutions, add new and innovative core functionality and services and develop new products, it is critical for us to maintain a strong research and development organization, including hiring and retaining highly skilled software engineers. Competition for talent is intense within our industry, and there continues to be upward pressure on compensation. In addition, for us to achieve broader market acceptance of our software solutions, grow our customer base, and pursue adjacent markets, we will need to continue to develop and maintain our sales and marketing and customer support organizations. Identifying and recruiting qualified personnel, training them in the use of our software solutions and ensuring they are well-equipped to serve our customers requires a significant investment of time and resources, and it can be particularly difficult to retain these individuals.

We face significant competition for experienced personnel, and many of our competitors have greater name recognition and financial resources than we have. If we hire employees from competitors or other companies, former employers may assert claims against us for breach of legal obligations to the former employer, resulting in a diversion of our time and resources. In addition, the job market in the Minneapolis-St. Paul area, where the majority of our software developers are located, has historically been very competitive. While we are able to expand our candidate pool by opening our opportunities nationwide, allowing us to be more competitive, the job market continues to be a challenge everywhere, making it vitally important to retain our current team members. When considering employment opportunities, candidates and existing employees often consider the value of the equity awards. If the actual or perceived value of our equity awards declines, or if the price of our common stock experiences significant volatility, this may adversely affect our ability to recruit and retain highly skilled employees. As a result, we may have greater difficulty hiring and retaining skilled personnel than some of our competitors. If we are unable to attract and retain the personnel necessary to execute our growth plan, we may be unable to achieve our strategic objectives and our business, financial condition, operating results and ability to pay cash dividends to stockholders may be adversely affected.

Growth in our software revenue and bookings, and maintenance of our wireless revenue and subscriber base is dependent on the productivity of our sales organization.

Our ability to achieve revenue growth will depend, in large part, on our success in recruiting, training and retaining sufficient numbers of sales personnel to support our growth. New hires require significant training and may take significant time before they achieve full productivity. Based on past experience, we expect new sales team members to reach full productivity after nine months of employment. However, our recent and planned hires may not become productive as quickly as expected, or at all, and we may be unable to hire or retain a sufficient number of qualified individuals in the markets in which we do business or plan to do business.

From time to time it may be necessary to reorient our sales representatives to focus on specific market segments, product lines or new software solutions or to remove underperforming individuals, which may require additional resources to maintain productivity. The impact of these changes could adversely impact our ability to achieve our sales productivity goals. We have also identified the following risks that could impact our sales productivity:

- **Customer Dissatisfaction and Reputational Harm.** We may experience customer dissatisfaction with our solutions that could result in lost opportunities for sales. Potential low ratings of our solutions by customers may result in us being excluded from consideration by current and prospective customers with respect to future opportunities. In addition, fewer customer references for our solutions could impact our ability to prospect new sales.
- **Training.** Training of our marketing and sales personnel regarding the clinical requirements of our healthcare customers and the complexity of our service offerings, takes time and requires a substantial, continuing investment for both new hires and long-term employees.
- **Competitive Speed.** Sales productivity can be impacted by the capabilities of our competitors. There is a risk that competitors may innovate or partner faster than we do.
- **Employee Retention.** The items noted above may challenge the ability of employees to generate sales, which may affect morale and employee retention.
- **Customer Uncertainty.** The discontinuation of Spok Go may create a perception of uncertainty regarding our future operations, which may limit our ability to sell products and services to prospective customers. Additionally, this perceived uncertainty may contribute to an increase in churn of existing customers.

If we are unable to deliver effective customer support, our relationships with our existing customers and our ability to attract new customers could be harmed

Our revenue growth depends, in part, on our ability to satisfy our customers, including by providing continued customer support, which may contribute to increased customer retention and adoption and utilization of our wireless services and software solutions. Once our wireless services and software solutions are deployed, our customers depend on our customer support group to resolve technical issues relating to their use of our solutions. We may be unable to respond quickly to accommodate short-term increases in customer demand for support services or may otherwise encounter difficult customer issues. If a customer is unsatisfied with the quality of our customer support, we may incur additional costs or experience customer terminations or non-renewals.

Our sales process is highly dependent on the ease of use of our wireless services and software solutions, our reputation and positive recommendations from our existing customers. Any failure to maintain high-quality or responsive customer support, or a market perception that we do not maintain high-quality or responsive customer support, could harm our reputation, cause us to lose customers and adversely impact our ability to sell our wireless services and software solutions to prospective customers.

We have investigated potential acquisitions and may not be able to identify an opportunity at favorable terms or have the ability to close on the financing necessary to consummate the transaction.

We cannot provide any assurances that we will be successful in finding such acquisitions or consummating future acquisitions on favorable terms. We anticipate that future acquisitions will be financed through a combination of methods, including, but not limited to, the use of available cash on hand, and, if necessary, borrowings from third-party financial institutions. Disruptions or volatility in credit markets may impede our access to capital markets, including higher borrowing costs, less available capital, more stringent terms and tighter covenants, and may limit our ability to finance acquisitions.

We have investigated potential acquisitions and may be unable to successfully integrate such acquisitions into our business and may not achieve all or any of the operating synergies or anticipated benefits of those acquisitions.

We continue to evaluate acquisitions of other businesses that we believe will yield increased cash flows, improved market penetration and/or operating efficiencies and synergies. We may face various challenges with integration efforts related to any future acquisitions, including the combination and simplification of product and service offerings, sales and marketing approaches and establishment of combined operations.

We may have limited or no history of owning and operating any business that we acquire. If we were to acquire these businesses, there can be no assurance that:

- Such businesses will perform as expected;
- Such businesses will not incur unforeseen obligations or liabilities;
- Such businesses will generate sufficient cash flow to support the indebtedness, if incurred, to acquire such business or the expenditures needed to develop such business; and
- The rate of return from such businesses will justify the decision to invest the capital to acquire them.

There can be no assurance that we will manage these challenges and risks successfully. Moreover, if we are not successful in completing transactions that we have pursued or may pursue, our business may be adversely affected, and we may incur substantial expenses and divert significant management time and resources. In addition, while pursuing and completing such transactions, we could use substantial portions of our available cash to pay for all or a portion of the purchase price or retention incentives to employees of the acquired business, or we may incur substantial debt. We could also issue additional securities to finance all or a portion of the purchase price for these transactions or as retention incentives to employees of the acquired business, which could cause our stockholders to suffer significant dilution. Such transactions may not generate additional revenue or profit for us, or may take longer than expected to do so, which may adversely affect our business, financial condition, operating results and cash flows.

Our business, financial condition and operating results have been, and in the future may be, adversely affected by the COVID-19 pandemic.

Our business, financial condition and operating results have been, and in the future may be, adversely affected by the COVID-19 pandemic. Beginning in early 2020, the COVID-19 pandemic caused delays in, or the loss of, revenue from services that required onsite implementation, as well as delays in, or the loss of, software bookings, which directly impacted license and services revenues, as healthcare organizations put these projects on hold to focus limited resources

and personnel capacity towards the treatment of COVID-19. The COVID-19 pandemic also contributed to global supply chain disruptions, including delayed production of certain products that we offer, such as our GenA pagers.

The extent to which COVID-19 may impact our results in the future will depend on future developments, which are highly uncertain and cannot be predicted. These developments may include the emergence of new COVID-19 variants of concern, as well as actions taken to further contain the virus or treat its impact, the possible reinstatement of government or other restrictions implemented in certain locations, and the acceptance, distribution and effectiveness of new and existing vaccines and other medications to treat and prevent the spread of COVID-19.

Economic conditions that are largely out of our control may adversely affect our financial condition and statement of operations.

Our business is sensitive to recessionary economic cycles, higher interest rates, inflation, higher levels of unemployment, higher tax rates and other changes in tax laws, or other economic factors that may affect business spending or buying habits that could adversely affect the demand for our services. This adverse impact, including results of any continuing effects of the COVID-19 pandemic, could increase the rate of gross subscriber cancellations and/or the level of revenue erosion for our wireless business and could cause delays in or the loss of software revenue or bookings, which impacts license, professional services, equipment and subscription revenues.

A significant portion of our revenue is derived from healthcare customers, and we are impacted by changes in the healthcare economic environment. The healthcare industry is highly regulated and is subject to changing political, legislative, regulatory, and other economic developments. These developments can have a dramatic effect on the decision-making and spending by our customers for information technology and software. This economic uncertainty can add to the unpredictability of decision-making and lengthen our sales cycle.

Further, the uncertainty created by the possibility of additional healthcare reform legislation impacts customer decision making and information technology plans in our key healthcare market. We are unable to predict the full consequences of this uncertainty on our operations. Adverse changes in the economic environment could adversely impact our ability to increase the prices we charge for our offerings, while effectively managing customer churn, or successfully market and sell our wireless and software solutions to healthcare customers.

Risks Related to our Products and Services

The rate of wireless subscriber and revenue erosion could exceed our ability to reduce wireless operating expenses in order to maintain overall positive operating cash flow from our wireless business.

Our wireless revenue is dependent on the number of subscribers that use our paging devices. Our customers may not renew their subscriptions after the expiration of their subscription agreements. In addition, our customers may opt for one of our lower-priced offerings or for fewer subscriptions. Customer renewal rates may decline or fluctuate due to a number of factors, including their level of satisfaction with our offerings and their ability to continue their operations and spending levels. Increasing awareness and concern over HIPAA/HITECH compliance is causing healthcare organizations, our largest customer segment, to re-evaluate paging subscriptions for clinical use cases when users are not equipped with our encrypted pager offerings.

We face intense competition for subscribers from other paging service providers and alternate wireless communications providers, such as mobile phone and mobile data service providers. There is a risk that our competitors' products may provide better performance or include additional features when compared to our offerings. Competitive pressures could also affect the prices we may charge or the demand for our offerings, resulting in reduced profit margins and loss of market share. In addition, new competitors may emerge as a result of changing dynamics and trends in the market and industry, and we may not be adequately prepared to respond to these changes in the healthcare landscape. If we are unable to compete effectively, our business, financial condition, operating results and ability to pay cash dividends to stockholders may be adversely affected.

In addition to competition, our customer base may be impacted by the introduction of new technologies. As mobile communications technology evolves, competitors that provide wireless broadband data services may lower their prices to customers that approach, meet or undercut our prices for paging services. We are unable to predict how customer perceptions of the value of our wireless services will be impacted by the development of new wireless technologies. Our continued success will depend on our ability to adapt to rapidly changing technologies and user preferences, to adapt our offerings to evolving industry standards, to predict user preferences and industry changes in order to continue to provide value to our customers and to improve the performance and reliability of our offerings. Our failure to adapt to such changes could harm our business, and our efforts to adapt to such changes could require substantial expenditures on our part to modify our offerings or infrastructure. Delays in developing, completing or delivering new or enhanced offerings and technologies could result in delayed or reduced revenue for those offerings and could also adversely affect customer acceptance of those offerings and technologies. Even if we are able to enhance our existing offerings or introduce new offerings that are well perceived by the market, if our marketing or sales efforts do not generate interest in or sales for these offerings, they may be unsuccessful.

We expect our wireless subscriber results, units in service and revenue will continue to decline for the foreseeable future. As this revenue erosion continues, maintaining positive operating cash flow from our wireless business is dependent on substantial and timely reductions in selected wireless operating expenses. Reductions in wireless operating expenses require both the reduction of internal costs and negotiation of lower costs from outside vendors. As we require fewer services and products from our vendors, our negotiating leverage to lower our costs is diminished. There can be no assurance that we will be able to reduce our wireless operating expenses commensurate with the level of revenue erosion. The inability to reduce wireless operating expenses would have a material adverse impact on our business, financial condition, operating results and ability to pay cash dividends to stockholders.

Technical problems and higher costs may affect our product development initiatives.

Our future software revenue growth depends on our ability to develop, introduce and effectively deploy new solutions and features to our existing software solutions. These new features and functionalities are designed to address both existing and new customer requirements. We may experience technical problems and additional costs as these new features are tested and deployed. Failure to effectively develop new or improved software solutions could adversely impact software revenue growth and could have a material adverse effect on our business, financial condition, operating results and ability to pay cash dividends to stockholders.

Undetected defects, bugs, or security vulnerabilities in our products could adversely affect the market acceptance of new products, damage our reputation with current or prospective customers, and materially and adversely affect our operating costs.

Software products, such as those we offer, may contain defects and bugs when they are first introduced or as new versions are released, or their release may be delayed due to unforeseen difficulties during product development. If any of our products, including products of companies we have acquired, or third-party components used in our products, contain defects or bugs, or have reliability, quality or compatibility problems, we may not be able to successfully design workarounds or resolve these issues. Any defects we do not detect and fix in pre-release testing could result in reduced sales and revenue, damage to our reputation, repair or remediation costs, delays in the release of new products or versions or legal liability. There can be no assurance that provisions in our license agreements that limit our exposure to liability will be sufficient or withstand legal challenge. Computer programmers and hackers also may be able to develop and deploy viruses, worms, and other malicious software programs that attack our products or otherwise exploit any security vulnerabilities of our products.

We are dependent on the U.S. healthcare provider industry for most of our revenue.

We generate more than 75% of our revenue from sales to hospitals and other healthcare provider organizations in the United States. These customers, both non-profit and for-profit, are greatly affected by macroeconomic conditions, the COVID-19 pandemic, healthcare reform legislation and the reimbursement policies of federal and state governments and health insurance companies, and any decline in revenue received by our customers due to adverse economic conditions or legislative or regulatory changes could significantly affect the type and amount of services and products they order from us. We do not anticipate any flexibility in increasing prices for our wireless services, notwithstanding general inflation, due to an unrelenting focus by our customers on their cost structures, and our customers could be slow to invest in our software products and professional services due to budgetary pressures.

We may experience a long sales cycle for our software products.

Our software revenue growth results from a long sales cycle that from initial contact to final sales order may take 6 to 18 months, depending on the type of software solution. Our software sales and marketing efforts involve educating our customers on the technical capabilities of our software solutions and the potential benefits from the deployment of our software, as well as educating ourselves as to the clinical needs of our customers. The inherent unpredictability of decision making in our target market segment of healthcare, resulting from customer budget constraints, multiple approvals and administrative issues, may result in fluctuating bookings and revenue from month to month, quarter to quarter and year to year. Our bookings and corresponding revenue are dependent on actions that have occurred in the past. Each month we need to spend substantial time, effort, and expense on our marketing and sales efforts that may not result in future revenue.

We may be unable to find vendors able to supply us with wireless paging equipment based on future demands.

We purchase paging equipment from third-party vendors. This equipment is sold or leased to customers in order to provide wireless messaging services. The reduction in industry demand for paging equipment has caused various suppliers to cease manufacturing this equipment or increase prices for devices. There can be no assurance that we will continue to find vendors to supply paging equipment, or that the vendors will supply equipment at costs that allow us to remain a competitive alternative in the wireless messaging industry. A lack of paging equipment could impact our ability to provide certain wireless messaging services and could have a material adverse effect on our business, leading to additional wireless revenue erosion.

We may be unable to maintain successful relationships with our channel partners.

We use channel partners such as resellers, consulting firms, original equipment manufacturers, and technology partners to license and support our products. We rely, to a significant degree, on each of our channel partners to select, screen and maintain relationships with its respective distribution network and to distribute our offerings in a manner that is consistent with applicable law and regulatory requirements and our quality standards. Contract defaults by any of these channel partners or the loss of our relationships with them may materially adversely affect our ability to develop, market, sell, or support our communication solution offerings. If our indirect distribution channel is disrupted, we may be required to devote more resources to distribute our offerings directly and support our customers, which may not be as effective and could lead to higher costs, reduced revenue and growth that is slower than expected.

Recruiting and retaining qualified channel partners and training them in the use of our enterprise technologies requires significant time and resources. If we fail to devote sufficient resources to support and expand our network of channel partners, our business may be adversely affected. In addition, because we rely on channel partners for the indirect distribution of our enterprise technologies, we may have little or no contact with the ultimate end-users of our technologies, thereby making it more difficult for us to establish brand awareness, ensure proper delivery and installation of our software, support ongoing customer requirements, estimate end-user demand, respond to evolving customer needs and obtain subscription renewals from end users.

We may experience litigation claiming intellectual property infringement by us, and we may not be able to protect our rights in intellectual property that we own and develop.

Intellectual property infringement litigation has become commonplace, particularly in the wireless and software industries in which we operate. Litigation can be protracted, expensive, and time consuming. There is no assurance that we will remain immune to this litigation. Any such claims, whether meritorious or not, could be time-consuming and costly in terms of both resources and management time.

We may receive claims that we have infringed the intellectual property rights of others, including claims regarding patents, copyrights, and trademarks. The number and types of these claims may grow as a result of constant technological change in the segments in which our wireless services and software products compete, the extensive patent coverage of existing technologies, and the rapid rate of issuance of new patents.

Our patents, trademarks, copyrights and trade secrets relating to our wireless services and networks, and our software solutions, are important assets. The efforts we undertake to protect our proprietary rights may not be sufficient or effective. Any significant impairment of our intellectual property rights could harm our business and our ability to compete effectively. Protecting our intellectual property rights can be costly and time consuming.

We seek to maintain certain of our intellectual property rights as trade secrets, including the source code for many of our software solutions and innovations. Our source code and system architecture may be reverse engineered by our competitors, or the secrecy of our solutions and designs could be compromised through a security breach, cyberattack or otherwise, or by our employees or former employees, intentionally or accidentally. Any compromise of our trade secrets could cause us to lose any competitive advantage our software solutions have and the investment we have made in developing our products and services.

Our portfolio of issued patents and copyrights may be insufficient to defend ourselves against intellectual property infringement claims, and the validity and scope of our patents could be challenged by third parties were we to seek to enforce them.

Risks Related to Technology

Our use of open source software, third-party software and other intellectual property may expose us to risks.

We license and integrate certain software components from third parties into our software, and we expect to continue to use third-party software in the future. Some open source software licenses require users who distribute or make available as a service open source software as part of their own software product to publicly disclose all or part of the source code of the users' developed software or to make available any derivative works of the open source code on unfavorable terms or at no cost. Our efforts to use the open source software in a manner consistent with the relevant license terms that would not require us to disclose our proprietary code or license our proprietary software at no cost may not be successful. We may face claims by third parties seeking to enforce the license terms applicable to such open source software, including by demanding the release of the open source software, derivative works or our proprietary source code that was developed using such software. In addition, if the license terms for the open source code change, we may be forced to re-engineer our software or incur additional costs.

Some of our products and services include other software or intellectual property licensed from third parties, and we also use software and other intellectual property licensed from third parties in our business. This exposes us to risks over which we may have little or no control. For example, a licensor may have difficulties keeping up with technological changes or may stop supporting the software or other intellectual property that it licenses to us. There can be no assurance that the licenses we use will be available on acceptable terms, if at all. In addition, a third party may assert that we or our customers are in breach of the terms of a license, which could, among other things, give such third party the right to terminate a license or seek damages from us, or both. Our inability to obtain or maintain certain licenses or other rights or to obtain or maintain such licenses or rights on favorable terms, or the need to engage in litigation regarding these matters, could result in delays in releases of new products, and could otherwise disrupt our business, until equivalent technology can be identified, licensed or developed. In addition, sophisticated hardware and operating system software and applications that we procure from third parties may contain defects in design or manufacture, including "bugs," security vulnerabilities, and other problems that could unexpectedly interfere with the expected operation of our products and services or expose us to cyberattacks and security breaches.

System disruptions and security threats to our computer networks, satellite control or telecommunications systems, or to those of our service providers, could have a material adverse effect on our business.

The performance and reliability of our computer network and telecommunications systems infrastructure, as well as the technology infrastructure of third parties, are critical to our operations. This technology infrastructure may be vulnerable to damage or interruption from natural disasters, power loss, telecommunication failures, terrorist attacks, software errors and other events. Any computer system or satellite network error or failure, regardless of cause, could result in a substantial outage that materially disrupts our operations. In addition, we face the threat to our computer systems, or those of our service providers, of unauthorized access, computer hackers, computer viruses, malicious code, organized cyber-attacks and other security problems and system disruptions (e.g., distributed denial of service (DDoS) attacks, ransomware attacks). Our satellite network connections for our wireless services depend upon very small aperture terminals, many of which are based on decades-old technology or equipment that could fail and result in a loss of service to our customers. With respect to our Enterprise Reporting and Management systems and data storage, and other operational needs, we rely on third-party data centers and services for maintaining accessibility, reliability and uninterrupted connectivity, among other things.

A significant number of the systems making up this infrastructure are not redundant, and our disaster recovery planning may not be sufficient for every eventuality, such as a ransomware attack that encrypts some or all of our or our service providers' systems, data or infrastructure. We may not carry business interruption insurance sufficient to protect us from all losses that may result from interruptions in our services as a result of technology infrastructure failures or cyberattacks, or to cover all contingencies. We may be required to expend significant resources to protect against the threat of these system disruptions or to remediate or otherwise alleviate problems caused by such disruptions. Any interruption in the availability of our websites and online interactions with customers or partners may cause a reduction in customer or partner satisfaction levels, which in turn could result in legal claims, reduced revenue or loss of customers or partners. There can be no assurance that any precautions we take will prove successful, and such problems could result in, among other consequences, a loss of data, a loss of confidence in the stability and reliability of our offerings, damage to our reputation, and legal liability, all of which may adversely affect our business, financial condition, operating results and cash flows.

Unauthorized intrusions, data breaches or failures in cybersecurity measures adopted by us or our service providers and/or included in our products and services could have a material adverse effect on our business.

Our security controls are designed to maintain the physical security of our facilities and to protect the systems that process and store our customers', suppliers' and employees' confidential information, as well as our own proprietary information. We are also dependent on a number of third-party providers of various technology, tools and services relating to, among other things, human resources, electronic communications, data storage, finance, and other business functions, and we are, of necessity, dependent on the security systems of these providers. Accidental or willful cyberattacks, breaches or other unauthorized access events committed or enabled by third parties or by our employees or contractors (for example, due to social engineering or phishing attacks) can impact the security of our facilities, our systems or the systems of our third-party providers, and the information maintained in such systems. In addition, the existence of computer viruses, malware or security vulnerabilities in our or our service providers' data, software, products or services, as well as external cyberattacks and data breaches, could expose us to the risks of corruption, loss, and misappropriation of proprietary and confidential information. We also routinely transmit and receive proprietary and confidential information, including through third parties, which makes that information vulnerable to interception, misuse or mishandling.

We utilize a security framework that includes security policies and procedures, security appliances and software, third-party vulnerability testing, business continuity plans, and other administrative, physical and technical measures. The frequency and scope of cyberattacks has been steadily increasing, and attackers are increasingly sophisticated, using tools and techniques that we and our service providers may be unable to detect or identify, or that may cause significant delays in our detection or identification. Once identified, we and our service providers may be unable to investigate or remediate incidents due to attackers taking steps to obfuscate or remove forensic evidence and to circumvent logging tools and counter-measures, rendering us unable to anticipate or implement adequate preventative or restorative measures.

We and our service providers have, from time to time, been subject to unauthorized network intrusions, malware and other cyberattacks. We expect cyberattacks to continue, as we are an attractive target for such attacks given our customer base and industry. In addition, remote working arrangements that started during the COVID-19 pandemic may continue in the future, which increases the risk that threat actors will engage in social engineering and exploit vulnerabilities inherent in many non-corporate home networks. Any theft, misuse of, or unauthorized access to confidential, personal or proprietary information as a result of such incidents could result in, among other things, unfavorable publicity, damage to our reputation, loss of our trade secrets and other competitive information, difficulty in marketing our products, increased costs of investigation, remediation and compliance, allegations by our customers that we have not performed our contractual obligations, litigation by affected parties (including class actions) and possible financial obligations for liabilities and damages related to the theft or misuse of such information, regulatory investigations and enforcement actions, as well as fines and other sanctions pursuant to data privacy and security rules and regulations, any or all of which could have a material adverse effect on our reputation, operations, business, profitability and financial condition. Any losses, costs and liabilities may not be covered by, or may exceed the coverage limits of, any or all of our applicable insurance policies.

Risks Related to our Financial Results

We may be unable to realize the benefits associated with our deferred income tax assets.

We have significant deferred income tax assets that are available to offset future taxable income and increase cash flows from operations. The use of these deferred income tax assets is dependent on the availability of taxable income in future periods. The availability of future taxable income is dependent on our ability to profitably manage our operations to support a growing base of software revenue offset by declining wireless subscribers and revenue. To the extent that anticipated reductions in wireless operating expenses do not occur or sufficient revenue is not generated, we may not achieve sufficient taxable income to allow for use of our deferred income tax assets. The accounting for deferred income tax assets is based upon an estimate of future results, and any valuation allowance we may apply to our deferred tax assets may be increased or decreased as conditions change or if we are unable to implement certain tax planning strategies. If we are unable to use these deferred income tax assets, our financial condition and statement of operations may be materially affected. In addition, a significant portion of our deferred income tax assets relate to net operating losses. If our ability to utilize these losses is limited, due to Internal Revenue Code ("IRC") Section 382, our financial condition and statement of operations may be materially affected. For example, we maintained a valuation allowance of \$2.3 million and \$24.2 million at December 31, 2022 and 2021, respectively, to reduce net deferred income tax assets as their realization did not meet the applicable more-likely-than-not criterion.

If our long-lived assets or goodwill become impaired, we may be required to record significant impairment charges.

We are required to evaluate the carrying value of our long-lived assets and goodwill. For long-lived assets, we assess quarterly whether circumstances exist which suggest that the carrying value of long-lived assets may not be recoverable. We evaluate goodwill for impairment at least annually, or when events or circumstances suggest a potential impairment has occurred. We generally perform this annual goodwill impairment test in the fourth quarter of the fiscal year.

If our long-lived assets or goodwill are deemed to be impaired, an impairment loss equal to the amount by which the carrying amount exceeds the fair value of the assets would be recognized. We may be required to record a significant charge in our financial statements during the period in which any impairment of our long-lived assets or goodwill is determined, which would negatively affect our results of operations. For example, as a result of our periodic evaluation of our capitalized software development costs, we recorded an impairment charge of \$15.7 million for the year ended December 31, 2021.

Our estimates of market opportunity for our software solutions are subject to significant uncertainty and, even if the markets in which we compete meet or exceed our size estimates, we could fail to increase our revenue or market share.

Market opportunity estimates are based on assumptions and estimates, and our internal analysis and industry experience. However, assessing the market for clinical communication and collaboration solutions is difficult due to several factors, such as limited available information and rapid evolution of the market. Our estimates of market opportunity depend on the assumptions we made, and the estimated market opportunity could be materially different with different assumptions. Even if the markets in which we compete meet or exceed our size estimates, our software solutions may fail to gain market acceptance and our business may not grow in line with our forecasts. In addition, an increase in the prevalence of cloud-based offerings by our competitors could also unfavorably impact the pricing of our on-premise offerings and dampen overall demand for our on-premise offerings, which could have a material adverse impact on our business, financial condition and operating results.

Risks Related to Regulatory Matters

We are subject to data privacy and protection-related laws and regulation, and we may encounter issues with privacy and security of personal information.

A substantial portion of our revenue comes from healthcare customers. As part of our business, we (or third parties with whom we contract) may receive, store and process our data, as well as our customers' and partners' private data and personal information. As such, our business is subject to a variety of federal, state and international laws and regulations that apply to the collection, use, retention, protection, disclosure, transfer and processing of personal data.

Our software solutions may handle or have access to personal health information subject in the United States to HIPAA, HITECH and related regulations as well as legislation and regulations in foreign countries. These statutes and related regulations impose numerous requirements regarding the use and disclosure of personal health information with which we and our software solutions must comply. Our failure to accurately anticipate or interpret these complex and technical laws

and regulations could subject us to civil and/or criminal liability. Such failure could adversely impact our ability to market and sell our software solutions to healthcare customers, and have a material adverse impact on our software sales.

In addition to personal health information, the Company may handle or have access to personal information in the European Union subject to the General Data Protection Regulation (the "GDPR"). The GDPR imposes several stringent requirements for controllers and processors of personal data and increases our obligations, including, for example, by requiring more robust disclosures to individuals, strengthening the individual data rights regime, shortening timelines for data breach notifications, limiting retention periods and secondary use of information, and imposing additional obligations when we contract third-party processors in connection with the processing of personal data. In addition, the GDPR restricts transfers of personal data outside of the European Economic Area and the UK, including to the United States, under certain scenarios. While lawful data transfer mechanisms have been proposed, there remains uncertainty, and we are exposed to potential investigations and enforcement in this area.

The GDPR could limit our ability to use and share personal data or could cause our costs to increase and harm our business, financial condition, operating results and cash flows. Failure to comply with the requirements of the GDPR and the applicable European Union member states may result in fines of up to €20,000,000 or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher, and other administrative penalties. To comply with the data protection rules imposed by the GDPR, we may be required to put in place additional mechanisms that could be onerous and adversely affect our business, financial condition, and operating results.

Existing privacy-related laws and regulations in the United States and other countries are evolving and are subject to potentially differing interpretations, and various federal and state or other international legislative and regulatory bodies may expand or enact laws regarding privacy and data security-related matters. For example, in the U.S., the state of California enacted the California Consumer Privacy Act ("CCPA"), which came into effect on January 1, 2020, and the California Privacy Rights Act ("CPRA"), which will expand upon the CCPA and go into effect in January 2023 (with a lookback period until January 2022). The CCPA requires (and the CPRA will require) covered businesses to, among other things, provide certain disclosures to California consumers and afford such consumers certain privacy rights. The CCPA provides for civil penalties for violations, as well as a private right of action for certain security breaches that may increase security breach litigation. The CPRA imposes additional obligations on covered businesses, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses and disclosure of sensitive personal information. The CPRA also creates a new California data protection agency authorized to issue substantive regulations and could result in increased privacy, cybersecurity and data protection enforcement. The CCPA and CPRA have spurred similar legislation in many other states, and we expect this trend to continue.

In addition, customers may use our wireless services to transmit patient health information subject to HIPAA and other regulatory requirements. While we offer encrypted pagers to our customers, many customers use wireless devices provided by us that do not encrypt text messages. While we disclaim liability for customer non-compliance with HIPAA and other privacy requirements, there remains some risk we could be held responsible for privacy violations by our customers.

There can be no assurance that the security and testing measures we take relating to our offerings and operations will prevent all security breaches and data loss that could harm our business or the businesses of our customers and partners. These risks may increase as we continue to grow our services and offerings and as we receive, store and process more of our customers' data. Actual or perceived vulnerabilities may lead to regulatory investigations, claims against us by customers, partners or other third parties, or costs, such as those related to providing customer notifications and fraud monitoring. There can be no assurance that any provisions in our customer agreements limiting our liability will be enforceable or effective under applicable law. In addition, the cost and operational consequences of implementing further data protection measures could be significant.

The data privacy and protection-related laws and regulations to which we are subject are evolving, with new or modified laws and regulations proposed and implemented frequently, and existing laws and regulations subject to new or different interpretations. Any failure by us to comply with data privacy- and protection-related laws and regulations could result in enforcement actions, significant penalties or other legal actions against us or our customers or suppliers. An actual or alleged failure to comply, which could result in negative publicity, reduce demand for our offerings, increase the cost of compliance, require changes in business practices that result in reduced revenue, restrict our ability to provide our offerings in certain locations, result in our customers' inability to use our offerings and prohibit data transfers or result in other claims, liabilities or sanctions, including fines, and could have an adverse effect on our business, financial condition, operating results and cash flows.

Our wireless products are regulated by the FCC and, to a lesser extent, state and local regulatory authorities. Changes in regulation could result in increased costs to us and our customers.

We are subject to regulation by the FCC and, to a lesser extent, by state and local authorities. Changes in regulatory policy could increase the fees we must pay to the government or to third parties, and could subject us to more stringent requirements that could cause us to incur additional capital and/or operating costs. To the extent additional regulatory costs are passed along to customers, those increased costs could adversely impact subscriber cancellations.

For example, the FCC issued an order in October 2007 that mandated paging carriers (including the Company) along with all other CMRS providers serving a defined minimum number of subscribers to maintain an emergency back-up power supply at all cell sites to enable operation for a minimum of eight hours in the event of a loss of commercial power (the "Back-up Power Order"). Ultimately, after a hearing by the U.S. Court of Appeals for the DC Circuit and disapproval by the Office of Management and Budget (the "OMB") of the information collection requirements of the Back-up Power Order, the FCC indicated that it would not seek to override the OMB's disapproval. Rather the FCC indicated that it would issue a Notice of Proposed Rulemaking with the goal of adopting revised back-up power rules. To date, there has been no Notice of Proposed Rulemaking by the FCC and we are unable to predict what impact, if any, a revised back-up power rule could have on our business, financial condition, operating results and ability to pay cash dividends to stockholders.

As a further example, the FCC continues to consider changes to the rules governing the collection of universal service fees. The FCC is evaluating a flat monthly charge per assigned telephone number as opposed to assessing universal service contributions based on telecommunication carriers' interstate and international revenue. There is no timetable for any rulemaking to implement this numbers-based methodology. If the FCC adopts a numbers-based methodology, our attempt to recover the increased contribution costs from our customers could significantly diminish demand for our services, and our failure to recover such increased contribution costs could have a material adverse impact on our business, financial condition and operating results.

Certain of our software products are regulated by the FDA. The application of or changes in regulations could impact our ability to market new or revised software products to our customers.

Certain of our software products are regulated by the FDA as medical devices. The classification of our software products as medical devices means that we are required to comply with certain registration and listing, labeling, medical device reporting, removal and correction, and good manufacturing practice requirements. Updates to these products or the development of new products could require us to seek clearance from the FDA before we are permitted to market or sell these software products.

In addition, changes to FDA regulations could impact existing software products or require updates to existing products. The impact of delays in FDA clearance or changes to FDA regulations could impact our ability to market or sell our software products and could have a material adverse effect on our business, financial condition, operating results and ability to pay cash dividends to stockholders.

ITEM 1B. UNRESOLVED STAFF COMMENTS

We had no unresolved SEC staff comments as of February 23, 2023.

ITEM 2. PROPERTIES

In March 2021, we relocated our corporate headquarters to a commercial property located in Alexandria, Virginia, consisting of approximately 26,000 square feet of space under a lease that will expire on September 30, 2026.

At December 31, 2022, we leased facility space, including our corporate headquarters, sales offices, technical facilities, warehouse and storage facilities in 47 locations in 24 states in the United States and one facility in the Middle East. The total leased space is approximately 117,000 square feet. At December 31, 2022, we owned three small parcels of land in three states in the United States.

At December 31, 2022, we leased transmitter sites on commercial broadcast towers, buildings and other fixed structures, some of which are free of charge, in approximately 2,738 locations throughout the United States. These leases are for our active transmitters and are for various terms and provide for periodic lease payments at various rates.

At December 31, 2022, we had 3,325 active transmitters on leased sites which provide service to our customers.

ITEM 3. LEGAL PROCEEDINGS

Refer to Note 11, "Commitments and Contingencies," in the Notes to Consolidated Financial Statements for information regarding legal proceedings in which we are involved.

PART II**ITEM 4. MINE SAFETY DISCLOSURES**

Not applicable.

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES**Market Information**

Our sole class of common equity is our \$0.0001 par value common stock, which is listed on the NASDAQ National Market® and is traded under the symbol "SPOK."

Holders of Common Stock

As of February 17, 2023, there were 2,825 holders of record of our common stock.

Dividends

The Company declared dividends totaling \$25.8 million and \$10.2 million during 2022 and 2021, respectively. Cash dividends declared for the years ended December 31, 2022 and 2021, respectively, include dividends related to unvested restricted stock units ("RSUs") and shares of unvested restricted common stock ("restricted stock") granted under the Company's Equity Plans (as defined below) to executives and non-executive members of our Board of Directors. Cash distributions on RSUs and restricted stock are accrued and paid when the applicable vesting conditions are met. Accrued cash distributions on forfeited RSUs and restricted stock are also forfeited.

The following table details information on our dividends declared and cash distributions since the formation of the Company in 2005 through the year ended December 31, 2022:

(Dollars in Thousands)

Year	Dividends Declared Per Share Amount	Total Payment⁽¹⁾
Prior to 2018	\$ 18.775	\$ 467,267
2018	0.500	10,064
2019	0.500	9,819
2020	0.500	9,771
2021	0.500	10,025
2022	1.250	25,011
Total	\$ 22.025	\$ 531,957

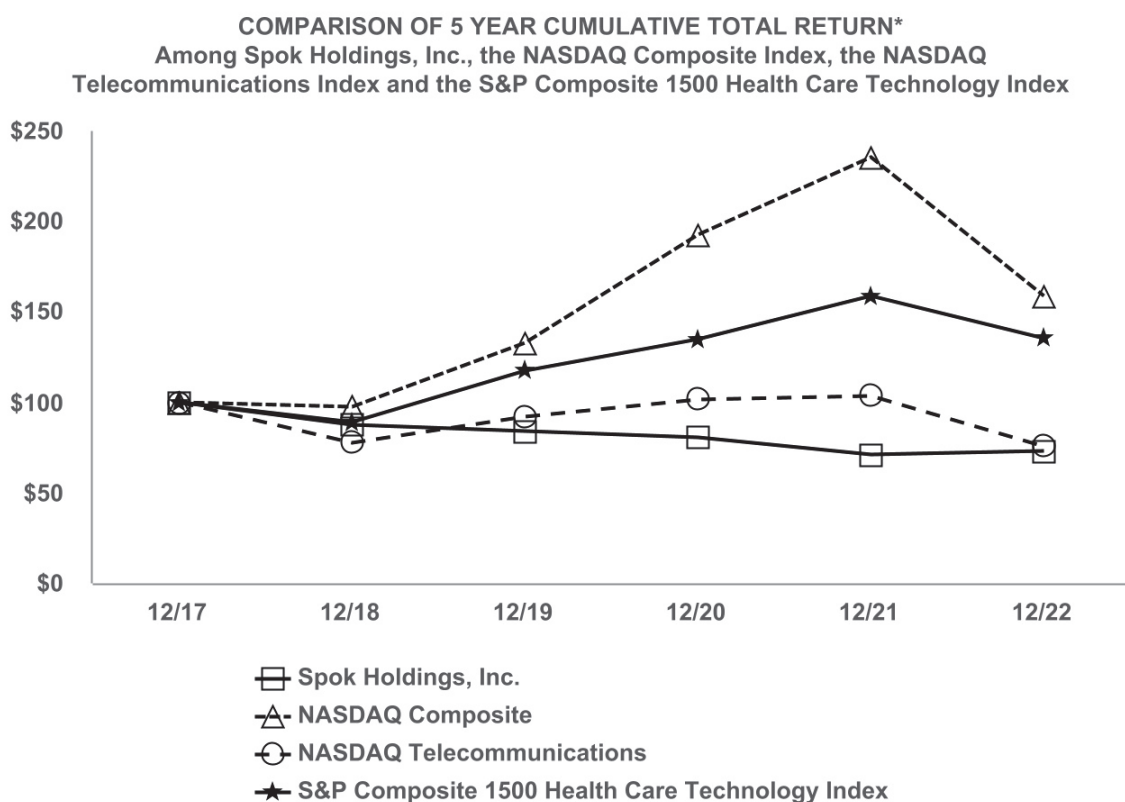
⁽¹⁾ The total payment reflects the cash distributions paid in relation to common stock, vested RSUs and vested shares of restricted stock.

On February 22, 2023, the Board of Directors declared a regular quarterly cash dividend of \$0.3125 per share of common stock, with a record date of March 16, 2023, and a payment date of March 30, 2023. This cash dividend of approximately \$6.3 million is expected to be paid from available cash on hand.

Performance Graph

We began trading on the NASDAQ National Market® on November 17, 2004. The chart below compares the relative changes in the cumulative total return of our common stock for the period of December 31, 2017, to December 31, 2022, against the cumulative total return of the NASDAQ Composite Index®, the NASDAQ Telecommunications Index® and the S&P Composite 1500 Health Care Technology Index for the same period.

The chart assumes that on December 31, 2017, \$100 was invested in our common stock and in each of the indices. The comparisons assume that all cash distributions were reinvested. The chart indicates the dollar value of each hypothetical \$100 investment based on the closing price as of the last trading day of each fiscal year from December 31, 2017, to December 31, 2022. The stock performance depicted on the chart represents historical stock performance and is not necessarily indicative of future stock price performance.



	December 31,					
	2017	2018	2019	2020	2021	2022
Spok Holdings, Inc.	\$ 0.10	\$ 0.09	\$ 0.08	\$ 0.08	\$ 0.07	\$ 0.07
NASDAQ Composite	0.10	0.10	0.13	0.19	0.24	0.16
NASDAQ Telecommunications	0.10	0.08	0.09	0.10	0.10	0.08
S&P Composite 1500 Health Care Technology Index	0.10	0.09	0.12	0.13	0.16	0.14

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

No common stock was repurchased by the Company (excluding the purchase of common stock for tax withholdings) during the twelve months ended December 31, 2022.

Repurchased shares of our common stock are accounted for as a reduction to common stock and additional paid-in-capital in the period in which the repurchase occurs. In February 2022, the Company's Board of Directors authorized a share repurchase program of up to \$10 million of the Company's common stock.

Transfer Restrictions on Common Stock

In order to reduce the possibility that certain changes in ownership could impose limitations on the use of our deferred income tax assets, our Amended and Restated Certificate of Incorporation contains provisions that generally restrict transfers by or to any 5% stockholder of our common stock or any transfer that would cause a person or group of persons to become a 5% stockholder of our common stock. After a cumulative indirect shift in ownership of more than 45% since our emergence from bankruptcy proceedings in May 2002 through a transfer of our common stock, any transfer of our common stock by or to a 5% stockholder of our common stock or any transfer that would cause a person or group of persons to become a 5% stockholder of such common stock, will be prohibited unless the transferee or transferor provides notice of the transfer to us and our Board of Directors determines in good faith that the transfer would not result in a cumulative indirect shift in ownership of more than 47%.

Prior to a cumulative indirect ownership change of more than 45%, transfers of our common stock will not be prohibited, except to the extent that they result in a cumulative indirect shift in ownership of more than 47%, but any transfer by or to a 5% stockholder of our common stock or any transfer that would cause a person or group of persons to become a 5% stockholder of our common stock requires notice to us. Similar restrictions apply to the issuance or transfer of an option to purchase our common stock, if the exercise of the option would result in a transfer that would be prohibited pursuant to the restrictions described above. These restrictions will remain in effect until the earliest of (1) the repeal of IRC Section 382 (or any comparable successor provision) and (2) the date on which the limitation amount imposed by IRC Section 382 in the event of an ownership change would not be less than the tax attributes subject to these limitations. Transfers by or to us and any transfer pursuant to a merger approved by our Board of Directors or any tender offer to acquire all of our outstanding stock where a majority of the shares have been tendered will be exempt from these restrictions.

Based on publicly available information and after considering any direct knowledge we may have, our combined cumulative change in ownership was an insignificant amount as of December 31, 2022 and 2021.

ITEM 6. [RESERVED]

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis should be read in conjunction with our consolidated financial statements and related notes and the discussion under "Organization and Significant Accounting Policies" (refer to Note 1 in the Notes to the Consolidated Financial Statements), which describes key estimates and assumptions we make in the preparation of our consolidated financial statements; the cautionary language that appears under the title "Forward Looking Statements" immediately following the Table of Contents; "Item 1. Business," which describes our operations; and "Item 1A. Risk Factors," which describes key risks associated with our operations and markets in which we operate. A reference to a "Note" in this section refers to the accompanying Notes to Consolidated Financial Statements.

Overview and Highlights

We offer a focused suite of unified clinical communication and collaboration solutions that include call center applications, clinical alerting and notifications, one-way and advanced two-way wireless messaging services, mobile communications and public safety solutions. Our customers rely on Spok for workflow improvement, secure texting, paging services, contact center optimization and public safety response. Our product offerings are capable of addressing a customer's clinical communications needs. We develop, sell and support enterprise-wide systems for healthcare and other organizations needing to automate, centralize and standardize their approach to clinical communications. While our primary market has been the healthcare industry with a focus on prominent hospitals, our solutions can also be found in large government agencies; leading public safety institutions; colleges and universities; large hotels, resorts and casinos; and well-known manufacturers.

Revenue generated by wireless messaging services (including voice mail, personalized greetings, message storage and retrieval), equipment, maintenance plans and/or equipment loss protection to both one-way and two-way messaging subscribers is presented as wireless revenue in our statements of operations. Revenue generated by the sale of our software solutions, which includes software license, professional services (installation, consulting and training), equipment procured by us from third parties (to be used in conjunction with our software) and post-contract support (on-going maintenance), is presented as software revenue in our statements of operations. Our software is licensed to end users under an industry standard software license agreement.

Strategic Business Plan

In February 2022, our Board of Directors announced a new strategic business plan that included a restructuring of our business to discontinue Spok Go and eliminate all associated costs and optimize the Company's existing structure to drive continued cost improvement. The strategic business plan included a renewed focus on our existing and established business, including the Spok Care Connect Suite and our wireless service offerings. These restructuring efforts were completed during the fourth quarter of 2022. As a result of the implementation of the plan, we eliminated 176 positions, primarily in research and development, and also in professional services, selling and marketing, and back-office support functions. These actions allowed us to better align costs and, as a result, return capital to stockholders in the form of increased quarterly dividends of \$0.3125 per share in 2022 as compared to \$0.1250 in 2021. We will continue to focus on optimizing costs to allow us to prioritize cash flow generation and the return of capital to stockholders.

Further details related to costs incurred as a part of the restructuring can be found in Note 3 "Restructuring" in the Notes to Consolidated Financial Statements.

COVID-19

In March 2020, the World Health Organization declared COVID-19 a global pandemic, and the virus significantly impacted the global economy. Although federal and state restrictions were not widely adopted until late in the first quarter of 2020, we began to experience a direct impact on our sales cycle in late February 2020 as hospitals began to delay purchasing decisions and address staff reductions. These delays continued to affect our software bookings, which directly impacted license and equipment revenues during 2020 and 2021. We also experienced delays in our ability to deliver on-site implementation services, which have impacted our services revenue resulting in delays in the timing of revenue recognition during 2020 and 2021, as associated revenue corresponds to our backlog of performance obligations ready for delivery at some point in the future.

During 2020 and 2021, we continued to prudently manage operating expenses and liquidity, with the goal of neutralizing the impact of the pandemic on our cash flows. We maintained a Company-wide plan that reduced work schedules, resulting in a temporary reduction in compensation expenses during the second, third and fourth quarters of 2020 and continuing through the first half of 2021. We also enacted a plan for the first three quarters of 2021 whereby qualified employees received a portion of their compensation in the form of shares of the Company's common stock in lieu of cash. Under this alternative payment plan, which was in effect from the third quarter of 2020 through the third quarter of 2021, all non-employee directors voluntarily elected to receive either DSUs or restricted stock in lieu of the entire cash portion of their compensation.

In 2022, we operated at pre-pandemic levels and barring the emergence of a severe COVID-19 variant in the near future, which could have significant negative effects on the overall economy and our customer base specifically, we believe we will continue to operate at pre-pandemic levels in 2023 and beyond.

2022 Highlights

Total revenue declined by \$7.6 million or 5.4% during 2022 compared to 2021, primarily as a result of lower professional services revenue, driven by fewer billable resources following our restructuring efforts, as well as the expected decline in wireless revenue.

The wireless revenue attrition rate declined in 2022 to 4.1%, from 5.7% in 2021. This decrease was primarily driven by a continued decline in unit churn as well as price increases implemented in the latter part of 2022.

For the year ended December 31, 2022, total operating expenses decreased by \$35.6 million, or 20.9%, compared to 2021, driven primarily by the restructuring of our business initiated in 2022. The decrease in total operating expenses included reductions in depreciation, amortization and accretion, research and development, selling and marketing, general and administrative, cost of revenue and technology operations expenses, as well as the non-recurrence of the \$15.7 million capitalized software development impairment charge we recorded in 2021, partially offset by one-time, pre-tax

restructuring charges of approximately \$7.3 million recorded in 2022 as a result of the implementation of our strategic business plan.

Additionally, we recorded non-cash benefits to income taxes of \$21.9 million with a corresponding increase to deferred tax assets which reflects the reduction of our valuation allowance in alignment with our projections of future taxable income.

We returned approximately \$25.0 million of capital to stockholders in the form of cash dividends.

Results of Operations

The following table is a summary of our Consolidated Statements of Operations for the years ended December 31, 2022, 2021 and 2020 and the discussion that follows compares the year ended December 31, 2022 to the year ended December 31, 2021. For a discussion and analysis of the year ended December 31, 2021, compared to the year ended December 31, 2020, please refer to Management's Discussion and Analysis of Financial Condition and Results of Operations included in Part II, Item 7 of our Annual Report on [Form 10-K](#) for the year ended December 31, 2021, filed with the SEC on February 17, 2022:

(Dollars in thousands)	2022	Change		2021	Change		2020
Revenue:							
Wireless revenue	\$ 75,622	(3,204)	(4.1)%	\$ 78,826	\$ (4,767)	(5.7)%	\$ 83,593
Software revenue	58,912	(4,415)	(7.0)%	63,327	(1,260)	(2.0)%	64,587
Total revenue	134,534	(7,619)	(5.4)%	142,153	(6,027)	(4.1)%	148,180
Operating expenses:							
Cost of revenue (exclusive of items shown separately below)	28,267	(4,203)	(12.9)%	32,470	1,523	4.9 %	30,947
Research and development	13,625	(3,889)	(22.2)%	17,514	1,772	11.3 %	15,742
Technology operations	27,412	(1,432)	(5.0)%	28,844	(641)	(2.2)%	29,485
Selling and marketing	16,296	(4,787)	(22.7)%	21,083	767	3.8 %	20,316
General and administrative	37,796	(5,735)	(13.2)%	43,531	3,931	9.9 %	39,600
Severance and restructuring	7,329	7,009	2,190.3 %	320	(372)	(53.8)%	692
Depreciation, amortization and accretion	3,571	(6,875)	(65.8)%	10,446	1,390	15.3 %	9,056
Goodwill and capitalized software development impairment	—	(15,663)	(100.0)%	15,663	(9,344)	(37.4)%	25,007
Total operating expenses	134,296	(35,575)	(20.9)%	169,871	(974)	(0.6)%	170,845
Operating income (loss)	238	27,956	(100.9)%	(27,718)	(5,053)	22.3 %	(22,665)
Interest income	592	272	85.0 %	320	(367)	(53.4)%	687
Other income	167	101	153.0 %	66	(142)	(68.3)%	208
Income (loss) before income taxes	997	28,329	(103.6)%	(27,332)	(5,562)	25.5 %	(21,770)
Benefit from (provision for) income taxes	20,859	15,707	304.9 %	5,152	27,607	(122.9)%	(22,455)
Net income (loss)	\$ 21,856	\$ 44,036	(198.5)%	\$ (22,180)	\$ 22,045	(49.8)%	\$ (44,225)
Supplemental Information							
FTEs	376	(187)	(33.2)%	563	(39)	(6.5)%	602
Active transmitters	3,325	(143)	(4.1)%	3,468	(178)	(4.9)%	3,646

Revenue

We offer a focused suite of unified clinical communications and collaboration solutions that include call center applications, clinical alerting and notifications, one-way and advanced two-way wireless messaging services, mobile communications and public safety solutions.

We develop, sell and support enterprise-wide systems for healthcare, government, large enterprise and other organizations needing to automate, centralize and standardize their approach to clinical communications and collaboration. Our solutions can be found in prominent hospitals, large government agencies, leading public safety institutions, colleges and universities, large hotels, resorts and casinos, and well-known manufacturers. Our primary market is the healthcare industry, particularly hospitals. While we have historically identified hospitals with 200 or more beds as the primary targets for our software solutions, as well as our paging services, we have recently expanded our focus to include smaller hospitals with shorter sales cycles, including academic medical centers.

Revenue generated by wireless messaging services (including voice mail, personalized greeting, message storage and retrieval), equipment, maintenance plans and/or equipment loss protection for both one-way and two-way messaging subscribers is presented as wireless revenue in our Statement of Operations. Revenue generated by the sale of our software solutions, which includes software license, professional services (installation, consulting and training), equipment (to be used in conjunction with the software), and post-contract support (ongoing maintenance), is presented as software revenue in our Statement of Operations. Our software is licensed to end users under an industry standard software license agreement.

Refer to Note 4, "Revenue, Deferred Revenue and Prepaid Commissions," in the Notes to Consolidated Financial Statements for additional information on our wireless and software revenue streams.

The table below details total revenue for the periods stated:

(Dollars in thousands)	2022	Change		2021	Change		2020
Wireless revenue:							
Paging revenue	\$ 73,323	\$ (2,522)	(3.3)%	\$ 75,845	\$ (4,071)	(5.1)%	\$ 79,916
Product and other revenue	2,299	(682)	(22.9)%	2,981	(696)	(18.9)%	3,677
Wireless revenue	75,622	(3,204)	(4.1)%	78,826	(4,767)	(5.7)%	83,593
Software revenue:							
License	7,202	1,285	21.7 %	5,917	672	12.8 %	5,245
Professional services	12,565	(4,596)	(26.8)%	17,161	(749)	(4.2)%	17,910
Hardware	2,211	(56)	(2.5)%	2,267	(574)	(20.2)%	2,841
Operations revenue	21,978	(3,367)	(13.3)%	25,345	(651)	(2.5)%	25,996
Maintenance	36,934	(1,048)	(2.8)%	37,982	(609)	(1.6)%	38,591
Software revenue	58,912	(4,415)	(7.0)%	63,327	(1,260)	(2.0)%	64,587
Total revenue	\$ 134,534	\$ (7,619)	(5.4)%	\$ 142,153	\$ (6,027)	(4.1)%	\$ 148,180

Wireless Revenue

Wireless revenue consists of two primary components: paging revenue and product and other revenue. Paging revenue consists primarily of recurring fees associated with the provision of messaging services and fees for paging devices and is net of a provision for service credits. Product and other revenue reflects system sales, sales of paging devices and charges for devices that are not returned and are net of anticipated credits. See Item 1. "Business" for more details.

We offer subscriptions to one-way or two-way messaging services for a periodic (monthly, quarterly, semiannual, or annual) service fee. The level of service fees is generally based upon the type of service provided, the geographic area covered, the number of devices provided to the customer and the period of commitment. We also sell devices to resellers who lease or resell such devices to their subscribers and then sell messaging services utilizing our networks.

A subscriber to one-way messaging services may select coverage on a local, regional or nationwide basis to best meet their messaging needs, while two-way messaging is generally offered on a nationwide basis. In addition, subscribers either contract to use a messaging device that we own and provide for an additional fixed monthly fee or they own the device used, after either purchasing it either from us or from another vendor.

We offer exclusive one-way (T5) and two-way (T52) alphanumeric pagers, which are configurable to support unencrypted or encrypted operation. When configured for encryption, they utilize AES-128 bit encryption, screen locking and remote wipe capabilities. With encryption enabled, these new secure paging devices enhance our service offerings to the healthcare community by adding HIPAA security capabilities to the low cost, highly reliable and availability benefits of paging. We also offer ancillary services, such as voicemail and equipment loss or maintenance protection, which help increase the monthly recurring revenue we receive along with these traditional messaging services.

The decrease in wireless revenue during 2022 compared to 2021 reflects the secular decrease in demand for our wireless services. Wireless revenue is generally reflective of the number of units in service and measured monthly as Average Revenue Per User ("ARPU"). On a consolidated basis, ARPU is affected by several factors, including the mix of units in service and the pricing of the various components of our services. The number of units in service changes based on subscribers added, referred to as gross placements, less subscriber cancellations, or disconnects.

For the year ended December 31, 2022, ARPU was \$7.34, as compared to \$7.30 in 2021. Total units in service were 0.8 million for the years ended December 31, 2022 and 2021. The increase in ARPU was primarily driven by the nominal increase in the standard rate, as a result of price increases initiated in late third quarter.

While demand for wireless services continues to decline, it has done so at a slower rate for each of the periods presented. While we are optimistic that this trend will continue in future periods, we believe that demand will continue to decline for the foreseeable future in line with recent and historical trends. As our wireless products and services are replaced with other competing technologies, such as the shift from narrowband wireless service offerings to broadband technology services, our wireless revenue will continue to decrease.

The following reflects the impact of subscribers and ARPU on the change in wireless revenue:

(Units and Dollars in Thousands)	Units in Service as of December 31,			Revenue for the Year Ended December 31,			Change Due To:	
	2022	2021	Change	2022	2021	Change	ARPU	Units
Paging revenue	817	847	(30)	\$ 73,323	\$ 75,845	\$ (2,522)	\$ 475	\$ (2,997)

As demand for one-way and two-way messaging has declined, we have developed or added service offerings such as encrypted paging and Spok Mobile with a pager number in order to increase our revenue potential and mitigate the decline in our wireless revenue. We will continue to explore ways to innovate and provide customers the highest value possible.

In late 2021, we began offering our newest pager, GenA. This one-way alphanumeric pager features a high resolution ePaper display, intuitive modern user interface, advanced encryption and security features, over-the-air remote programming, and an antimicrobial housing. Users can select from various font sizes, and the large GenA display also leverages proportional fonts to maximize key information on a single screen. The GenA pager is the only product available on the market with these capabilities, and we maintain an exclusive arrangement with the product's manufacturer. Given the product differentiation of the GenA pager, its development is a key initiative in providing a competitive advantage and we expect this new technology will be popular with our customers in clinical environments and may help slow our wireless revenue attrition.

Software Revenue

Software revenue consists of two components: operations revenue and maintenance revenue. Operations revenue consists primarily of license and subscription revenues for our healthcare communications solutions, revenue from the sale of equipment that facilitates the use of our software solutions, and professional services revenue related to the implementation of our solutions. Maintenance revenue is generated from our ongoing support of our software solutions or related equipment, typically for a period of one year after project completion.

To a large degree, software revenue corresponds to our backlog of performance obligations ready to deliver at some point in the future, and any delays in implementation may affect the timing of revenue recognition. Our software projects generally originate from fixed-bid contracts, although many involve a protracted sales cycle and may result in unforeseen complexity and deviation from the original scope. The time needed to complete projects, therefore, may not align with our original expectations, which affects our backlog. As a result, software revenue may fluctuate on a short-term basis, and we generally evaluate longer-term trends when managing this business.

Revenue items impacted by timing generally relate to specific renewal contracts that do not have auto-renewal terms and for which we must negotiate at the end of each term. We are generally precluded from recognizing revenue on these contracts until new terms have been agreed to even though we continue to provide maintenance service for these customers while negotiations are ongoing. While certain commercial customers require this type of contract renewal, these contracts are generally limited to government organizations, including federal, state and local entities. When a renewal of this nature has been contracted, it is often accompanied by several months of "catch-up" revenue from services performed in past periods resulting in a one-time value that is greater than the normal monthly revenue expected over the life of the remaining term.

While we have not seen a meaningful increase in our normal customer churn as it relates to maintenance revenue, our ability to replace this churn with new revenues will not likely replicate what we have accomplished historically nor do we expect to fully offset this with annual increases of our existing base. Given these dynamics, we believe annual maintenance revenue is likely to be relatively flat or slightly down as we move forward, until such time that we are able to develop new licenses that can provide an avenue for additional maintenance revenue.

Operations Revenue

Software operations revenue decreased during 2022 when compared to 2021. Professional services revenue decreased primarily from having fewer billable resources as a result of our restructuring efforts. These changes were made in conjunction with our efforts to better align staffing levels with our backlog, as well as to drive greater profitability through more efficient services delivery. The decline in professional services revenue was partially offset by an increase in license revenue. License revenue increased primarily due to our shift in priorities as a result of the new strategic business plan, which now allows our sales team to focus exclusively on selling the Spok Care Connect Suite of products ("CCS"), combined with an improving economy and selling environment when compared to 2021.

Maintenance Revenue

Software maintenance revenue decreased during 2022 when compared to 2021. Current trends in revenue churn rates remain relatively stable and are in line with historical trends. However, the deterioration of maintenance revenue from new license bookings has created an environment where churn is greater than the inflow of new revenue.

While we have not seen a meaningful increase in our normal customer churn, our ability to replace this churn with new revenues will not likely replicate what we have accomplished historically nor do we expect to fully offset this with annual increases of our existing base. Given these dynamics, we believe annual maintenance revenue is likely to be down slightly until such time that we are able to enhance our existing software solutions, which would provide an avenue to reduce levels of gross churns and result in additional maintenance revenue.

Operating Expenses

Our operating expenses are presented in functional categories. Certain of our functional categories are especially important to overall expense control and management. These operating expenses are categorized as follows:

- **Cost of Revenue.** These are expenses we incur for the delivery of products and services to our customers and consist primarily of hardware, third-party software, outside services expenses and payroll and related expenses for our professional services, logistics, customer support and maintenance staff.
- **Research and Development.** These expenses relate primarily to the development of new software products and the ongoing maintenance and enhancement of existing products. This classification consists primarily of employee payroll and related expenses, outside services related to the design, development, testing and enhancement of our solutions and to a lesser extent hardware equipment. Research and development expenses exclude any development costs that qualify for capitalization.
- **Technology Operations.** These are expenses associated with the operation of our paging networks. Expenses consist largely of site rent expenses for transmitter locations, telecommunication expenses to deliver messages over our paging networks, and payroll and related expenses for our engineering and pager repair functions. We actively pursue opportunities to consolidate transmitters and other service, rental and maintenance expenses in order to maintain an efficient network while simultaneously ensuring adequate service for our customers. We believe continued reductions in these expenses will occur for the foreseeable future as we continue to consolidate our networks, although the benefits of such network rationalization efforts and resulting costs savings will continue to decline.
- **Selling and Marketing.** The sales and marketing staff are involved in selling our communication solutions primarily in the United States. These expenses support our efforts to maintain gross placements of units in service, which mitigated the impact of disconnects on our wireless revenue base, and to identify business opportunities for additional or future software sales. We maintain a centralized marketing function, that is focused on supporting our products and vertical sales efforts by strengthening our brand, generating sales leads and facilitating the sales process. These marketing functions are accomplished through targeted email campaigns, webinars, regional and national user conferences, monthly newsletters and participation at industry trade shows. Expenses consist largely of payroll and related expenses, commissions and other costs such as travel and advertising costs.
- **General and Administrative.** These are expenses associated with information technology and administrative functions, including finance and accounting, human resources and executive management. This classification consists primarily of payroll and related expenses, outside service expenses, taxes, licenses and permit expenses, and facility rent expenses.
- **Depreciation, Amortization and Accretion.** These are expenses that may be associated with one or more of the aforementioned functional categories. This classification generally consists of depreciation from capital expenditures or other assets that are core to our ongoing operations, amortization of intangible assets, amortization of capitalized software development costs, and accretion of asset retirement obligations.

The following is a review of our operating expense categories for the years ended December 31, 2022 and 2021.

Cost of Revenue

Cost of revenue consisted primarily of the following items:

(Dollars in thousands)	2022	Change		2021	Change		2020
Payroll and related	\$ 17,394	\$ (2,941)	(14.5)%	\$ 20,335	\$ 658	3.3 %	\$ 19,677
Cost of sales	5,951	(479)	(7.4)%	6,430	56	0.9 %	6,374
Recoverable taxes and fees	3,205	(138)	(4.1)%	3,343	531	18.9 %	2,812
Stock-based compensation	344	(557)	(61.8)%	901	457	102.9 %	444
Other	1,373	(88)	(6.0)%	1,461	(179)	(10.9)%	1,640
Total cost of revenue	\$ 28,267	\$ (4,203)	(12.9)%	\$ 32,470	\$ 1,523	4.9 %	\$ 30,947
FTEs	133	(49)	(26.9)%	182	(7)	(3.7)%	189

Cost of revenue decreased for the year ended December 31, 2022, compared to December 31, 2021, driven by decreases in payroll and related expenses, stock-based compensation, and cost of sales.

The decrease in payroll and related and stock-based compensation is attributable to the restructuring activities and the related elimination of positions. Additionally, stock-based compensation decreased as we discontinued the cash saving measure to provide a portion of compensation for certain employees in the form of shares of the Company's common stock in lieu of cash. Cost of sales expenses decreased primarily due to reduced use of third-party professional services that we utilize to augment company resources when short-term capacity constraints exist.

Research and Development

Research and development consisted primarily of the following items:

(Dollars in thousands)	2022	Change		2021	Change		2020
Payroll and related	\$ 8,469	\$ (8,959)	(51.4)%	\$ 17,428	\$ 47	0.3 %	\$ 17,381
Outside services	4,442	(3,414)	(43.5)%	7,856	(2)	— %	7,858
Capitalized software development	—	10,842	(100.0)%	(10,842)	410	(3.6)%	(11,252)
Stock-based compensation	216	(1,233)	(85.1)%	1,449	484	50.2 %	965
Other	498	(1,125)	(69.3)%	1,623	833	105.4 %	790
Total research and development	\$ 13,625	\$ (3,889)	(22.2)%	\$ 17,514	\$ 1,772	11.3 %	\$ 15,742
FTEs	35	(67)	(65.7)%	102	(19)	(15.7)%	121

Research and development expenses decreased for the year ended December 31, 2022, compared to 2021, driven largely by the decision to discontinue Spok Go which resulted in the discontinuation of Spok Go software development cost capitalization and the elimination of positions and associated outside services.

The decrease in other expenses was driven by a \$0.9 million loss contingency we recorded in the fourth quarter of 2021 related to a license and service contract from which we do not believe we will be able to realize any benefits. Due to a change in standards required for electronic health records, we no longer need the product enhancements that would be provided under this contract.

We intend to continue focusing our development efforts on our software solutions, however these efforts will be targeted to specific enhancements. For 2023, total research and development costs are expected to decrease from 2022 given that we incurred three to four months of Spok Go related development costs in 2022.

Technology Operations

Technology operations consisted primarily of the following items:

(Dollars in thousands)	2022	Change		2021	Change		2020
Payroll and related	\$ 9,675	\$ (284)	(2.9)%	\$ 9,959	\$ 322	3.3 %	\$ 9,637
Site rent	11,977	(588)	(4.7)%	12,565	(1,013)	(7.5)%	13,578
Telecommunications	2,935	(381)	(11.5)%	3,316	(452)	(12.0)%	3,768
Stock-based compensation	219	(240)	(52.3)%	459	269	141.6 %	190
Other	2,606	61	2.4 %	2,545	233	10.1 %	2,312
Total technology operations	\$ 27,412	\$ (1,432)	(5.0)%	\$ 28,844	\$ (641)	(2.2)%	\$ 29,485
FTEs	74	(12)	(14.0)%	86	(2)	(2.3)%	88

Technology operations expenses decreased for the year ended December 31, 2022, compared to 2021, driven by lower site rent, telecommunications costs, payroll and related and stock-based compensation costs.

Site rent and telecommunication costs decreased as a result of a reduction in the number of active transmitters, resulting from our network rationalization efforts. The number of active transmitters, which directly affects our telecommunication and site rent expenses, declined 4.1% from December 31, 2021 to December 31, 2022. As we reach certain minimum frequency commitments, as outlined by the FCC, we may be unable to continue our efforts to rationalize and consolidate our networks.

The decrease in payroll and related expenses is attributable to the restructuring activities and the related elimination of positions. This decrease was partially offset by an increase in costs resulting from the discontinuation of the cash saving measure of providing a portion of compensation for certain employees in the form of shares of our common stock in lieu of cash, as well as the discontinuation of reduced work schedules as of the third quarter of 2021. Stock-based compensation decreased as a result of discontinuing our plan to provide a portion of compensation for certain employees in the form of shares of our common stock in lieu of cash.

Selling and Marketing

Selling and marketing consisted primarily of the following items:

(Dollars in thousands)	2022	Change		2021	Change		2020
Payroll and related	\$ 10,298	\$ (3,403)	(24.8)%	\$ 13,701	\$ 1,048	8.3 %	\$ 12,653
Commissions	4,033	(393)	(8.9)%	4,426	125	2.9 %	4,301
Advertising and events	1,303	(262)	(16.7)%	1,565	(69)	(4.2)%	1,634
Stock-based compensation	344	(660)	(65.7)%	1,004	144	16.7 %	860
Other	318	(69)	(17.8)%	387	(481)	(55.4)%	868
Total selling and marketing	\$ 16,296	\$ (4,787)	(22.7)%	\$ 21,083	\$ 767	3.8 %	\$ 20,316
FTEs	65	(28)	(30.1)%	93	(12)	(11.4)%	105

Selling and marketing expense decreased for the year ended December 31, 2022, compared to 2021, driven by decreases in payroll and related expenses and stock-based compensation.

Payroll and related expenses declined for the year ended December 31, 2022, largely due to restructuring activities and the related elimination of positions, partially offset by increased payroll resulting from the discontinuation of reduced work schedules as of the third quarter of 2021.

Stock-based compensation for the year ended December 31, 2022 decreased due to the discontinuation of the cash saving measure to provide a portion of compensation for certain employees in the form of shares of our common stock in lieu of cash. Additionally, there was a general decrease in employees compensated with stock-based compensation in 2022, attributable to the restructuring activities and the related elimination of positions.

General and Administrative

General and administrative consisted primarily of the following items:

(Dollars in thousands)	2022	Change	2021	Change	2020
Payroll and related	\$ 14,563	\$ (770) (5.0)%	\$ 15,333	\$ 995 6.9 %	\$ 14,338
Stock-based compensation	2,704	(722) (21.1)%	3,426	377 12.4 %	3,049
Facility rent, office and technology costs	9,282	(953) (9.3)%	10,235	1,219 13.5 %	9,016
Outside services	6,414	(3,100) (32.6)%	9,514	1,703 21.8 %	7,811
Taxes, licenses and permits	1,015	(32) (3.1)%	1,047	719 219.2 %	328
Bad debt	751	91 13.8 %	660	(391) (37.2)%	1,051
Other	3,067	(249) (7.5)%	3,316	(691) (17.2)%	4,007
Total general and administrative	\$ 37,796	\$ (5,735) (13.2)%	\$ 43,531	\$ 3,931 9.9 %	\$ 39,600
FTEs	69	(31) (31.0)%	100	1 1.0 %	99

General and administrative expenses decreased for the year ended December 31, 2022, compared to 2021, driven by decreases in outside services, facility rent, office and technology costs, payroll and related costs, and stock-based compensation.

Outside Services decreased as a result of lower legal and other professional services for the twelve months ended December 31, 2022.

The decrease in facility rent, office and technology costs was primarily due to the closing of the Minnesota office in February 2022.

Payroll and related expenses decreased due to savings from the reduction of headcount due to restructuring activities, partially offset by the increase in costs resulting from the discontinuation of the cash saving measure of providing a portion of compensation for certain employees in the form of shares of our common stock in lieu of cash, as well as the discontinuation of reduced work schedules as of the third quarter of 2021.

Stock-based compensation decreased as we discontinued the cash saving measure to provide a portion of compensation for certain employees in the form of shares of our common stock in lieu of cash, which ended as of the fourth quarter of 2021. Additionally, there was an overall decrease in the number of employees compensated with stock-based compensation in 2022, attributable to the restructuring activities.

Depreciation, Amortization and Accretion

For the year ended December 31, 2022, compared to 2021, depreciation, amortization and accretion expenses decreased by \$6.9 million. Amortization expense decreased by \$5.8 million for the year, as the Spok Go related capitalized costs and the resulting amortization were eliminated. Depreciation expense declined by \$1.2 million for the year, largely due to lower depreciation for asset retirement costs as well as paging equipment, for which a large purchase of pagers became fully depreciated in 2022. Refer to Note 6, "Consolidated Financial Statement Components," in the Notes to Consolidated Financial Statements for further discussion.

Severance and Restructuring

For the year ended December 31, 2022, severance and restructuring expenses were \$7.3 million. Expenses increased for the year ended December 31, 2022, primarily due to an increase in severance and personnel related costs and costs related to contractual terminations, resulting from the implementation of the new strategic business plan. Further details can be found in Note 3, "Restructuring" in the Notes to Consolidated Financial Statements.

Goodwill and Long-Lived Asset Impairment

We perform our annual goodwill impairment testing in the fourth quarter of each year. For the years ended December 31, 2022 and 2021, no goodwill impairment was recognized.

We evaluate our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset group may not be recoverable. We did not record any impairment of long-lived assets or definite lived intangible assets for the year ended December 31, 2022. For the year ended December 31, 2021, we recognized a capitalized software development impairment charge of \$15.7 million. With the discontinuation of Spok Go and related costs, there were no capitalized software development costs as of December 31, 2022.

Refer to Note 1, "Organization and Significant Accounting Policies," and Note 7, "Goodwill, Capitalized Software Development and Intangible Assets, Net" in the Notes to Consolidated Financial Statements for further discussion.

Interest Income, Other Income (Expense) and Income Tax (Benefit) Expense

Interest Income

Interest income increased by \$0.3 million for the year ended December 31, 2022, compared to 2021, primarily due to an increase in interest earned on the Company's cash balances and short-term investments, driven by higher interest rates from macro economic events.

Other Income

For the year ended December 31, 2022, compared to 2021, other income increased by \$0.1 million.

Provision for (Benefit from) Income Taxes

The effects of foreign taxes are immaterial for all periods presented. The following provides the effective tax rate reconciliation for the years ended December 31, 2022, 2021 and 2020, respectively (See Note 10, "Income Taxes" in the Notes to Consolidated Financial Statements for further discussion on our income taxes):

(Dollars in thousands)	2022		2021		2020		
Income (loss) before income taxes	\$	997	\$	(27,332)	\$	(21,770)	
Income taxes computed at the federal statutory rate	\$	209	21.0 %	\$ (5,740)	21.0 %	\$ (4,572)	21.0 %
State income taxes, net of federal benefit		121	12.1 %	(1,513)	5.5 %	(703)	3.2 %
Goodwill impairment		—	— %	—	— %	6,341	(29.1)%
Change in valuation allowance		(21,850)	(2,191.6)%	2,070	(7.6)%	22,108	(101.6)%
Research and development and other tax credits		(88)	(8.8)%	(808)	3.0 %	(1,316)	6.0 %
Excess executive compensation		231	23.1 %	272	(1.0)%	266	(1.2)%
Other		518	52.0 %	567	(2.1)%	331	(1.5)%
(Benefit from) provision for income taxes	\$	(20,859)	(2,092.2)%	\$ (5,152)	18.8 %	\$ 22,455	(103.1)%

Benefit from income taxes changed by \$15.7 million for the year ended December 31, 2022, from 2021 primarily due to a reduction of the valuation allowance in 2022, offset by an increase in both federal and state income taxes stemming from a swing from a loss before income taxes in 2021 to income in 2022 as a result of our restructuring efforts. Our investment in research and development qualifies for the research and development income tax credit under Section 41 of the Internal Revenue Code. Unused research and development tax credits have a 20-year carryover and will provide future tax benefits once Spok's net operating losses are fully utilized.

We assess the recoverability of our deferred income tax assets, which represent the tax benefits of future tax deductions, based on available positive and negative evidence, and by considering the adequacy of future taxable income from all sources, including prudent and feasible tax planning strategies. This assessment is required to determine whether, based on all available evidence, it is "more likely than not" (meaning a probability of greater than 50%) that all or some portion of our deferred income tax assets will be realized in future periods.

Historically, the cumulative loss incurred by the Company over the prior three-year period constituted a piece of objective negative evidence which limited our ability to consider other subjective evidence. Given the completion of our recent restructuring efforts and our expected return to profitability (as indicated by income generated before income taxes in 2022), we have eliminated costs that had resulted in our cumulative loss over the prior three-year period, that are not present in our current operating posture or future forecasts. As a result, we determined the negative evidence presented by a cumulative loss position to be weighted less in our assessment compared to positive evidence from our historical core operating results and future projections. Additionally, we considered there to be lower forecast uncertainty as a result of our new strategy and lessening impacts of COVID-19, such that we believe that positive evidence from our projections of future profitability to be weighted more heavily in our assessment of the recoverability of our deferred income tax assets.

Based on the assessment completed, utilizing our annual long-range planning and forecasting updates that are traditionally completed in the fourth quarter of each year, we reduced the valuation allowance by \$21.9 million as of December 31, 2022, to increase net deferred income tax assets, as their realization met the more-likely-than-not criterion. The Company maintained a valuation allowance of \$2.3 million related to Federal Foreign Tax Credits and certain state net operating losses and state tax credits, as we do not believe current projections of future taxable income will be sufficient to utilize those tax assets prior to expiration.

Refer to Note 1, "Organization and Significant Accounting Policies," and Note 10, "Income Taxes," in the Notes to Consolidated Financial Statements for further discussion.

Liquidity and Capital Resources

Cash and Cash Equivalents

At December 31, 2022, we held cash, cash equivalents and short-term investments of \$35.8 million. The available cash and cash equivalents consist of cash in our operating accounts and cash invested in interest-bearing funds managed by third-party financial institutions. These funds invest in U.S. Treasury securities and are therefore classified as held-to-maturity and reported at amortized cost in our Consolidated Balance Sheets. To date, we have experienced no loss or lack of access to our invested cash or cash equivalents; however, we can provide no assurance that access to our invested cash and cash equivalents will not be impacted by adverse market conditions. Our short-term investments consist entirely of U.S. Treasury securities, which are classified as held-to-maturity and are measured at amortized cost on our Consolidated Balance Sheets.

We maintain a level of liquidity sufficient to allow us to meet our cash needs in both the short term (next 12 months) and long term (beyond 12 months). At any point in time, we maintain approximately \$5.0 to \$10.0 million in our operating accounts at third-party financial institutions. While we monitor daily the cash balances in our operating accounts and adjust the cash balances as appropriate, these cash balances could be impacted if the underlying financial institutions fail or are subject to other adverse conditions in the financial markets. To date, we have experienced no loss or lack of access to cash in our operating accounts.

We intend to use our cash on hand to provide working capital, to support operations, to invest in our business, and to return value to stockholders through cash dividends and repurchases of our common stock. We may also consider using cash to fund or complete opportunistic investments and acquisitions that we believe will provide a measure of growth or revenue stability while supporting our existing operations. As part of the restructuring program in connection with our new strategic business plan, we recorded one-time pre-tax restructuring charges of approximately \$7.3 million, comprised of \$6.0 million in severance and personnel related costs and \$1.3 million in contractual terminations. The restructuring actions associated with these charges were completed in 2022. Future cash payments related to these charges incurred in 2022 are expected to be \$2.2 million, with the majority paid out in the first quarter of 2023. Because of the cash payments related to the restructuring program, our cash on hand decreased during 2022. However, these efforts were meant to refocus our operational efforts towards cash flow generation and the return of capital to our stockholders. With the successful completion of the restructuring and our ongoing efforts to stabilize revenue and optimize costs, we anticipate future operating periods will return to positive cash flow generation.

On February 22, 2023, the Board of Directors declared a regular quarterly cash dividend of \$0.3125 per share of common stock, with a record date of March 16, 2023, and a payment date of March 30, 2023. This cash dividend of approximately \$6.3 million is expected to be paid from available cash on hand.

In February 2022, the Board of Directors authorized a share repurchase program of up to \$10 million of the Company's common stock. This repurchase authority allows us, at management's discretion, to selectively repurchase shares of our common stock from time to time in the open market depending upon market price and other factors.

Cash Flows Overview

In the event that net cash provided by operating activities and cash on hand are not sufficient to meet future cash requirements, we may be required to reduce planned capital expenses, reduce or eliminate our cash dividends to stockholders, not repurchase shares of our common stock under the share repurchase program, sell assets or seek additional financing. We can provide no assurance that reductions in planned capital expenses or proceeds from asset sales would be sufficient to cover shortfalls in available cash or that additional financing would be available on acceptable terms.

Based on current and anticipated levels of operations, we anticipate that net cash provided by operating activities, together with the available cash on hand at December 31, 2022, should be adequate to meet anticipated cash requirements for the short term (next 12 months) and long term (beyond 12 months).

The following table sets forth information on our net cash flows from operating, investing, and financing activities for the periods stated:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Net cash provided by operating activities	\$ 6,456	\$ 7,968	\$ 26,163
Net cash provided by (used in) investing activities	11,257	(225)	(14,571)
Net cash used in financing activities	(26,221)	(11,753)	(10,373)

Operating Activities

As discussed above, we are dependent on cash flows from operating activities to meet our cash requirements. Cash from operations varies depending on changes in various working capital items, including deferred revenues, accounts payable, accounts receivable, prepaid expenses and various accrued expenses.

For the year ended December 31, 2022, net cash provided by operating activities was \$6.5 million, a decrease of \$1.5 million compared to 2021. This decline was driven by accounts payable, accrued liabilities and other of \$2.3 million and accounts receivable of \$1.8 million. These declines were partially offset by non-cash items such as valuation allowance of \$21.9 million, depreciation, amortization and accretion of \$3.6 million, stock-based compensation of \$3.8 million, the provision for credit losses, service provisions and other of \$1.8 million, and deferred income tax expense of \$0.9 million.

For the year ended December 31, 2021, net cash provided by operating activities was \$8.0 million, a decrease of \$18.2 million compared to 2020. The net cash provided in 2021 includes the impact of reduced work schedules and equity in lieu of compensation, which ended in the second and third quarters of 2021, respectively. This decline was driven by the net loss of \$22.2 million, the deferred income tax benefit of \$5.5 million, and changes in deferred revenue of \$3.4 million and accounts payable, accrued liabilities and other of \$0.7 million. These declines were partially offset by non-cash items such as capitalized software development impairment of \$15.7 million, depreciation, amortization and accretion of \$10.4 million, stock-based compensation of \$7.2 million, and the provision for credit losses, service provisions and other of \$1.2 million, as well as changes in prepaid expenses and other assets of \$2.6 million, accounts receivable of \$1.8 million, and lease liability of \$0.8 million.

Investing Activities

For the year ended December 31, 2022, net cash provided by investing activities was \$11.3 million, primarily due to the sale and purchase of U.S. treasury securities offset by capital expenditures. For the year ended December 31, 2021, net cash used in investing activities was \$0.2 million, primarily due to purchase and maturity of U.S. treasury securities, capital expenditures and capitalization of software development costs. With the discontinuation of Spok Go, we did not incur capitalization of software development costs in 2022.

Financing Activities

For the years ended December 31, 2022 and 2021, net cash used in financing activities was \$26.2 million and \$11.8 million, respectively, primarily due to cash distributions to stockholders of \$25.0 million and \$10.0 million, respectively.

Commitments and Contingencies

In the ordinary course of our operations, we enter into certain contractual obligations. Such obligations include data processing services, operating leases for premises and equipment, agreements with respect to borrowed funds and deposit liabilities.

Purchase obligations are defined as agreements to purchase goods or services that are enforceable, legally binding, non-cancelable, have a remaining term in excess of one year and that specify all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum or variable pricing provisions; and the approximate timing of transactions. The amounts of such obligations are based on our contractual commitments, however, it is possible that we may be able to negotiate lower payments if we choose to exit these contracts before their expiration date.

Our contractual payment obligations for operating leases apply to leases for office space and transmitter locations. In March 2021, we relocated our corporate headquarters to office space located in Alexandria, Virginia, consisting of approximately 26,000 square feet of space under a lease that will expire on September 30, 2026. Over the life of this lease, cash payments are expected to total approximately \$4.9 million.

The following table provides the Company's significant commitments and contractual obligations as of December 31, 2022:

(Dollars in thousands)	Payments Due by Period				
	Total	Less than 1 year	2 to 3 years	4 to 5 years	More than 5 years
Operating lease obligations	\$ 18,262	5,777	\$ 8,915	\$ 1,100	\$ 2,470
Unconditional purchase obligations	5,162	3,195	1,965	2	—
Total contractual obligations	<u>\$ 23,424</u>	<u>\$ 8,972</u>	<u>\$ 10,880</u>	<u>\$ 1,102</u>	<u>\$ 2,470</u>

We do not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. As such, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had engaged in such relationships.

The Company evaluates contingencies on an ongoing basis and establishes loss provisions for matters in which losses are probable and the amount of loss can be reasonably estimated. As part of this evaluation, for the year ended December 31, 2022, the Company did not identify any probable losses.

Related Parties

Refer to Note 13, "Related Parties" in the Notes to Consolidated Financial Statements for further discussion on our related party transactions.

Inflation

Inflation has not had a material effect on our operations to date. System equipment and operating costs have not significantly increased in price, and the price of wireless messaging devices has tended to decline in recent years. Our general operating expenses, such as salaries, site rent for transmitter locations, employee benefits and occupancy costs, are subject to normal inflationary pressures.

Critical Accounting Estimates

The Company's accounting policies are described more fully in Note 1 of the Consolidated Financial Statements. As disclosed in Note 1, the preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions about future events that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ significantly from those estimates. We believe that the following discussion addresses the Company's most critical accounting estimates, which are those that involve a significant level of estimation uncertainty and have had or are reasonably likely to have a material impact on the Company's financial condition and results of operations.

Revenue Recognition

We review each contract to determine whether to account for the various promises as one or more performance obligations. The assessment and determination of performance obligations for a given contract requires significant judgment. Wireless service contracts are generally considered to be a single promise and therefore accounted for as a single performance obligation. Contracts which include goods or services related to our software solutions and subscriptions are generally sold with multiple promises and therefore will often include multiple performance obligations. Material performance obligations related to the sale of our software solutions include software licenses, professional services, hardware and maintenance.

If a contract is separated into more than one performance obligation, we allocate the total transaction price to each performance obligation proportionately based on the estimated relative standalone selling price ("SSP") of the promised goods or services underlying each performance obligation. We rarely sell goods or services as readily observable standalone sales, however, if we do, the observable standalone sales are used to determine the SSP. In most cases, we must estimate the relative SSP which requires significant judgment and estimates. In instances where SSP is not directly observable, we determine the SSP using information that may include contractually stated prices, market conditions, costs, renewal contracts, list prices and other observable inputs. A discount is present if the total transaction price is less than the sum of the estimated SSPs of the goods or services promised in the contract. Discounts are generally allocated proportionately based on the relative SSP of the identified performance obligations for a given contract.

Our wireless, professional, maintenance, and subscription services are generally recognized over time due to a customer's simultaneous receipt and consumption of the benefit as we perform the work. As we transfer control over time, we recognize revenue based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires significant judgment and is based on the nature of the products or services to be provided. Generally, we use the time-elapsed measure of progress for performance obligations that include wireless, maintenance, or subscription services. We believe this method best depicts the simultaneous transfer and consumption of the benefit based on our performance as these services are generally considered standby services. For professional services, we leverage an input methodology based on the number of hours worked on a project versus the total expected hours necessary to complete the project. Revenues are recognized proportionally as hours are incurred. This is a significant area of judgment as it requires an estimate at completion ("EAC") for each contract. Our initial EAC is primarily based on prior experience also taking into consideration any specific facts and circumstances for a given contract. As projects progress, the EAC is periodically updated and reviewed to ensure the timing of revenue recognition is appropriate. The creation, maintenance and review of a project's EAC requires significant judgment to determine an appropriate number of hours over which the remaining project is expected to be completed.

Our software licenses and hardware are generally recognized at a point in time when we have transferred control to the customer. For software licenses, revenue is not recognized until the related license(s) has been made available to the customer and the customer can begin to benefit from its right to use the license(s). Our software licenses represent a right to use Spok's Intellectual Property ("IP") as it exists at a point in time at which the license is granted. Many of our software licenses have significant standalone functionality due to their ability to process a transaction or perform a function or task, and we do not need to maintain those products, once provided to the customer, for value to exist. While the functionality of IP that we license may substantively change during the license period, customers are not contractually or practically required to update their license as a result of those changes. In most contracts transfer of control for software licenses occurs in a short period of time after a contract has been executed and licenses are made electronically available.

Income Taxes

Deferred income tax assets and liabilities are calculated based on temporary differences between the financial statement values and the tax bases of assets and liabilities including net operating loss and tax credit carryforwards at the enacted tax rates expected to apply to taxable income when taxes are actually paid or recovered. Changes in deferred income tax assets and liabilities are included as a component of deferred income tax expense. Deferred income tax assets represent amounts available to reduce future income taxes payable. We assess the recoverability of our deferred income tax assets, which represent the tax benefits of future tax deductions, based on available positive and negative evidence and by considering the adequacy of future taxable income from all sources, including prudent and feasible tax planning strategies. This assessment is required to determine whether, based on all available evidence, it is "more likely than not" (meaning a probability of greater than 50%) that all or some portion of our deferred income tax assets will be realized in future periods. We provide a valuation allowance when we consider it "more likely than not" that a deferred income tax asset will not be fully recovered. The assessment of our deferred income tax assets requires significant judgment, however, our methods, assumptions, and estimates used in assessing the need for a valuation allowance remained materially unchanged in 2022. We reduced the valuation allowance by \$21.9 million, as of December 31, 2022, based on

the assessment completed utilizing our annual long-range planning and forecasting updates. The Company maintained a valuation allowance of \$2.3 million related to federal foreign tax credits and certain state net operating losses as we do not believe current projections of future taxable income will be sufficient to utilize those tax assets prior to expiration.

Impairment of Goodwill, Long-Lived Assets and Intangible Assets Subject to Amortization

We are required to evaluate the carrying value of our goodwill, long-lived assets and intangible assets subject to amortization.

Goodwill is not amortized but is evaluated for impairment at least annually, or when events or circumstances suggest a potential impairment has occurred. We generally perform this annual impairment test in the fourth quarter of the fiscal year. We evaluate goodwill for impairment between annual tests if indicators of impairment exist. Significant judgment is required in the determination of a triggering event given the qualitative nature of the assessment. The fair value of the reporting unit is estimated under a market-based approach using the fair value of the Company's common stock. The estimated fair value requires significant judgments, including timing and appropriateness of the price of common stock used (e.g. point-in-time application, simple moving average, exponential moving average), as well as application of an estimated control premium, if necessary. The estimated control premium is based on a review of current and past market information published by a third-party resource, assessment of the Company's future projected discounted cash flows and other relevant information if available. Our methods, assumptions, and estimates used in assessing goodwill in a quantitative form remained materially unchanged in 2022. We recorded no impairment of goodwill for the years ended December 31, 2022 and 2021, and impairment of \$25.0 million for the year ended December 31, 2020.

Quarterly, we assess whether circumstances exist which suggest that the carrying value of long-lived and amortizable intangible assets (asset groups) may not be recoverable. Similar to our quarterly assessment of goodwill, significant judgment is required in the determination of a triggering event given the qualitative nature of the assessment. We did not identify any triggering event for long-lived and amortizable intangible assets in 2022.

We did not record any impairment of long-lived assets or definite-lived intangible assets for the years ended December 31, 2022 and 2020. We recorded an impairment charge of \$15.7 million related to capitalized software development for the year ended December 31, 2021 based on a triggering event identified in the fourth quarter of 2021.

Recent Accounting Pronouncements

Refer to Note 2, "Recent Accounting Standards," in the Notes to Consolidated Financial Statements for a summary of recent and pending accounting standards.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

At December 31, 2022, we had no outstanding borrowings or associated debt service requirements.

Foreign Currency Exchange Rate Risk

We conduct a limited amount of business outside the United States. The financial impact of transactions billed in foreign currencies is immaterial to our financial results and, consequently, we do not have any material exposure to the risk of foreign currency exchange rate fluctuations.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The consolidated financial statements are included in this Report beginning on Page F-1.

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ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

There are no reportable events.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management carried out an evaluation, as required by Rule 13a-15(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), with the participation of our principal executive officer and our principal financial officer, of the effectiveness of our disclosure controls and procedures, as of the end of our last fiscal year. Disclosure controls and procedures are defined under Rule 13a-15(e) under the Exchange Act as controls and other procedures of an issuer that are designed to ensure that the information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and (ii) is accumulated and communicated to the issuer's management, including its principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Based upon this evaluation, our principal executive officer and our principal financial officer have concluded that our disclosure controls and procedures were effective as of December 31, 2022.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in the Exchange Act Rule 13a-15(f) and 15d-15(f). Management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the 2013 *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

Such internal controls include those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures are being made only in accordance with authorizations of management and members of the Board of Directors of the Company; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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. 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.

Based on our evaluation under the 2013 *Internal Control — Integrated Framework*, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

The effectiveness of our internal control over financial reporting as of December 31, 2022, has been audited by Grant Thornton LLP, an independent registered public accounting firm, as stated in its report which appears in this 2022 Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes made in the Company's internal control over financial reporting during the quarter ended December 31, 2022, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

Certain information called for by Items 10 through 14 is incorporated by reference from Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders, which will be filed with the SEC no later than May 1, 2023.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The following information required by this item is incorporated by reference from Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders:

- Information regarding directors is set forth under the caption "Election of Directors";
- Information regarding executive officers is set forth under the caption "Executive Officers";
- Information regarding our audit committee and designated "audit committee financial expert" is set forth under the caption "Committees of the Board of Directors"; and
- If applicable, information regarding compliance with Section 16(a) of the Exchange Act is set forth under the caption "Delinquent Section 16(a) Reports."

We also make available on our website, and in print, if any stockholder or other person so requests, our code of business conduct and ethics entitled "Code of Ethics" which is applicable to all employees and directors, our "Corporate Governance Guidelines," and the charters for all committees of our Board of Directors, including Audit, Compensation and Nominating and Governance. Any changes to our Code of Ethics or waiver, if any, of our Code of Ethics for executive officers or directors will be posted on our website.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference from the section of Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders entitled "Compensation Discussion and Analysis."

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference from the section of Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders entitled "Security Ownership of Certain Beneficial Owners and Management."

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item with respect to certain relationships and related transactions is incorporated by reference from the section of Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders entitled "Related Person Transactions and Code of Conduct." The information required by this item with respect to director independence is incorporated by reference from the section of Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders entitled "Board of Directors and Governance Matters."

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item is incorporated by reference from the section of Spok's definitive Proxy Statement for our 2023 Annual Meeting of Stockholders entitled "Independent Registered Public Accounting Firm Fees."

PART IV

ITEM 15. EXHIBIT AND FINANCIAL STATEMENT SCHEDULES

The following documents are filed as part of this Form 10-K:

- 1. Financial Statements.** As listed in the index to financial information on page [F-1](#)
- 2. Exhibits.** As listed in the index to exhibits on page [F-1](#)

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on our behalf by the undersigned, thereunto duly authorized.

Spok Holdings, Inc.
By: /s/ Vincent D. Kelly
Vincent D. Kelly
President and Chief Executive Officer
February 23, 2023

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Vincent D. Kelly</u> Vincent D. Kelly	Director, President and Chief Executive Officer (principal executive officer)	February 23, 2023
<u>/s/ Calvin C. Rice</u> Calvin C. Rice	Chief Financial Officer (principal financial officer and principal accounting officer)	February 23, 2023
<u>/s/ Christine M. Cournoyer</u> Christine M. Cournoyer	Chairman of the Board	February 23, 2023
<u>/s/ Dr. Bobbie Byrne</u> Dr. Bobbie Byrne	Director	February 23, 2023
<u>/s/ Randy Hyun</u> Randy Hyun	Director	February 23, 2023
<u>/s/ Brett Shockley</u> Brett Shockley	Director	February 23, 2023
<u>/s/ Todd Stein</u> Todd Stein	Director	February 23, 2023

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
Spok Holdings, Inc.

We have audited the accompanying consolidated balance sheets of Spok Holdings, Inc. (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income (loss), stockholders’ equity, and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and financial statement schedule included under Item 15(a) (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

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, 2022, based on criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”), and our report dated February 23, 2023 expressed an unqualified opinion.

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 critical audit matters does not alter in any way our opinion on the 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.

Realizability of Deferred Tax Assets and Valuation Allowance Assessment

As described further in Note 10 to the consolidated financial statements, the Company assesses the realizability of deferred income tax assets, which represent the tax benefits of future tax deductions, based on available positive and negative evidence. Based on the assessment completed, the Company reduced the valuation allowance by \$21.9 million as of December 31, 2022, to increase net deferred income tax assets, as management concluded their realization met the more-likely-than-not criterion. We identified the realizability of deferred tax assets and the assessment of the need for a valuation allowance as a critical audit matter.

The principal consideration for our determination that the realizability of deferred tax assets is a critical audit matter is that evaluating the available positive and negative evidence of realizability is an area of significant judgment by management, including determining the impact of recent events on the reliability and relevance of both negative evidence in the form of cumulative losses and positive evidence in the form of results of restructuring efforts and projections of future taxable income. There is inherent uncertainty and subjectivity related to management’s judgments and assumptions regarding the positive and negative evidence, which are complex in nature and require significant auditor judgment.

Our audit procedures related to the realizability of deferred tax assets and valuation allowance assessment included the following, among others.

- We tested the effectiveness of controls over management's estimates of the realization of the deferred tax assets, and the determination of whether it is more likely than not that the deferred tax assets will be realized prior to expiration.
- With the assistance of individuals with specialized skills and knowledge in income taxes, we evaluated the reasonableness of the methods, assumptions, and judgments used by management to assess available positive and negative evidence and determine whether a valuation allowance was necessary.
- With the assistance of individuals with specialized skills and knowledge in income taxes, we evaluated the nature of each of the deferred tax assets, including their expiration dates and their projected utilization when compared to projections of future taxable income.
- We obtained the Company's future taxable income estimate used to support realization of the deferred tax asset. We assessed the reasonableness of the projection by considering historical pre-tax income, adjusted for significant permanent and non-recurring items, as an estimate for future periods and published industry sector growth rate projections. We also performed a sensitivity analysis of the estimate of the Company's future taxable income, to determine if the Company's net operating losses could be realized prior to expiration based on pre-tax income that was less than the future pre-tax income used in the Company's estimate.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2006.

Arlington, Virginia
February 23, 2023

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
Spok Holdings, Inc.

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of Spok Holdings, Inc. (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2022, based on criteria established in the 2013 *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in the 2013 *Internal Control-Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the consolidated financial statements of the Company as of and for the year ended December 31, 2022, and our report dated February 23, 2023 expressed an unqualified opinion on those financial statements.

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/ GRANT THORNTON LLP

Arlington, Virginia
February 23, 2023

SPOK HOLDINGS, INC.
CONSOLIDATED BALANCE SHEETS

(Dollars in thousands, except share and per share amounts)	December 31,	
	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 35,754	\$ 44,583
Short-term investments	—	14,999
Accounts receivable, net	26,861	26,908
Prepaid expenses	6,849	6,641
Other current assets	587	922
Total current assets	70,051	94,053
Non-current assets:		
Property and equipment, net	8,223	6,746
Operating lease right-of-use assets	13,876	15,821
Goodwill	99,175	99,175
Deferred income tax assets, net	52,398	31,653
Other non-current assets	754	706
Total non-current assets	174,426	154,101
TOTAL ASSETS	\$ 244,477	\$ 248,154
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 5,880	\$ 5,292
Accrued compensation and benefits	11,628	13,948
Deferred revenue	26,274	25,608
Operating lease liabilities	5,096	5,405
Other current liabilities	4,573	4,745
Total current liabilities	53,451	54,998
Non-current liabilities:		
Asset retirement obligations	7,237	6,355
Operating lease liabilities	10,604	11,883
Other non-current liabilities	1,107	1,227
Total non-current liabilities	18,948	19,465
TOTAL LIABILITIES	72,399	74,463
COMMITMENTS AND CONTINGENCIES (Note 11)		
STOCKHOLDERS' EQUITY:		
Preferred stock—\$0.0001 par value; 25,000,000 shares authorized; no shares issued or outstanding	\$ —	\$ —
Common stock—\$0.0001 par value; 75,000,000 shares authorized; 20,076,578 and 19,828,033 shares issued and outstanding as of December 31, 2022 and December 31, 2021, respectively.	2	2
Additional paid-in capital	99,908	97,291
Accumulated other comprehensive loss	(1,909)	(1,588)
Retained earnings	74,077	77,986
TOTAL STOCKHOLDERS' EQUITY	172,078	173,691
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$ 244,477	\$ 248,154

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

SPOK HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

(Dollars in thousands, except share and per share amounts)	For the Year Ended December 31,		
	2022	2021	2020
Revenue:			
Wireless revenue	\$ 75,622	\$ 78,826	\$ 83,593
Software revenue	58,912	63,327	64,587
Total revenue	134,534	142,153	148,180

Operating expenses:			
Cost of revenue (exclusive of items shown separately below)	28,267	32,470	30,947
Research and development	13,625	17,514	15,742
Technology operations	27,412	28,844	29,485
Selling and marketing	16,296	21,083	20,316
General and administrative	37,796	43,531	39,600
Severance and restructuring	7,329	320	692
Depreciation, amortization and accretion	3,571	10,446	9,056
Goodwill and capitalized software development impairment	—	15,663	25,007
Total operating expenses	134,296	169,871	170,845
Operating income (loss)	238	(27,718)	(22,665)
Interest income	592	320	687
Other income	167	66	208
Income (loss) before income taxes	997	(27,332)	(21,770)
Benefit from (provision for) income taxes	20,859	5,152	(22,455)
Net income (loss)	\$ 21,856	\$ (22,180)	\$ (44,225)
Basic net income (loss) per common share	\$ 1.11	\$ (1.14)	\$ (2.32)
Diluted net income (loss) per common share	\$ 1.09	\$ (1.14)	\$ (2.32)
Basic weighted average common shares outstanding	19,672,423	19,404,477	19,028,918
Diluted weighted average common shares outstanding	19,991,202	19,404,477	19,028,918
Cash dividends declared per common share	\$ 1.250	\$ 0.500	\$ 0.500

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

SPOK HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Net income (loss)	\$ 21,856	\$ (22,180)	\$ (44,225)
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustments	(321)	(136)	149
Other comprehensive (loss) income	(321)	(136)	149
Comprehensive income (loss)	\$ 21,535	\$ (22,316)	\$ (44,076)

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

SPOK HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(Dollars in thousands, except share amounts)	Outstanding Common Shares	Common Stock	Additional Paid-In Capital and Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
Balance, January 1, 2020	19,071,614	\$ 2	\$ 85,273	\$ 164,819	\$ 250,094
Net loss	—	—	—	(44,225)	(44,225)
Adoption of current expected credit loss ("CECL")	—	—	—	(365)	(365)
Issuance of common stock under the Employee Stock Purchase Plan	35,661	—	300	—	300
Issuance of common stock for vested restricted stock units under the 2012 Equity Plan	282,871	—	—	—	—
Purchase of common stock for tax withholding	(79,981)	—	(902)	—	(902)
Amortization of stock-based compensation	—	—	5,508	—	5,508
Cash dividends declared	—	—	—	(9,946)	(9,946)
Issuance of restricted stock under the Equity Plans	74,027	—	—	—	—
Cumulative translation adjustment	—	—	149	—	149
Balance, December 31, 2020	19,384,192	\$ 2	\$ 90,328	\$ 110,283	\$ 200,613
Net loss	—	—	—	(22,180)	(22,180)
Issuance of common stock under the Employee Stock Purchase Plan	16,015	—	132	—	132
Issuance of restricted stock under the Equity Plans	430,476	—	—	—	—
Purchase of common stock for tax withholding	(172,594)	—	(1,860)	—	(1,860)
Amortization of stock-based compensation	—	—	7,239	—	7,239
Cash dividends declared	—	—	—	(10,117)	(10,117)
Issuance of common stock in lieu of cash compensation	169,944	—	—	—	—
Cumulative translation adjustment	—	—	(136)	—	(136)
Balance, December 31, 2021	19,828,033	\$ 2	\$ 95,703	\$ 77,986	\$ 173,691
Net income	—	—	—	21,856	21,856
Issuance of restricted stock under the Equity Plans	381,571	—	—	—	—
Purchase of common stock for tax withholding	(133,026)	—	(1,210)	—	(1,210)
Amortization of stock-based compensation	—	—	3,827	—	3,827
Cash dividends declared	—	—	—	(25,765)	(25,765)
Cumulative translation adjustment	—	—	(321)	—	(321)
Balance, December 31, 2022	20,076,578	\$ 2	\$ 97,999	\$ 74,077	\$ 172,078

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

SPOK HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Operating activities:			
Net income (loss)	\$ 21,856	\$ (22,180)	\$ (44,225)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation, amortization and accretion	3,571	10,446	9,056
Goodwill and capitalized software development impairment	—	15,663	25,007
Valuation allowance	(21,850)	—	22,108
Deferred income tax expense (benefit)	903	(5,483)	438
Stock-based compensation	3,827	7,239	5,508
Provisions for credit losses, service credits and other	1,777	1,162	1,212
Changes in assets and liabilities:			
Accounts receivable	(1,757)	1,833	(1,588)
Prepaid expenses and other assets	(88)	2,594	1,445
Net operating lease liabilities	357	763	10
Accounts payable, accrued liabilities and other	(2,258)	(679)	4,017
Deferred revenue	118	(3,390)	3,175
Net cash provided by operating activities	6,456	7,968	26,163
Investing activities:			
Purchases of property and equipment	(3,776)	(4,393)	(3,455)
Capitalized software development	—	(10,842)	(11,252)
Purchase of short-term investments	(14,967)	(44,990)	(59,864)
Maturity of short-term investments	30,000	60,000	60,000
Net cash provided by (used in) investing activities	11,257	(225)	(14,571)
Financing activities:			
Cash distributions to stockholders	(25,011)	(10,025)	(9,771)
Proceeds from issuance of common stock under the Employee Stock Purchase Plan	—	132	301
Purchase of common stock for tax withholding on vested equity awards	(1,210)	(1,860)	(903)
Net cash used in financing activities	(26,221)	(11,753)	(10,373)
Effect of exchange rate on cash and cash equivalents	(321)	(136)	149
Net (decrease) increase in cash and cash equivalents	(8,829)	(4,146)	1,368
Cash and cash equivalents, beginning of period	44,583	48,729	47,361
Cash and cash equivalents, end of period	\$ 35,754	\$ 44,583	\$ 48,729
Supplemental disclosure:			
Income taxes paid/(refunded)	\$ 223	\$ (126)	\$ 1

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

**SPOK HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

NOTE 1 - ORGANIZATION AND SIGNIFICANT ACCOUNTING POLICIES

Spok, Inc., a wholly owned subsidiary of Spok Holdings, Inc. (NASDAQ: SPOK) ("Spok," the "Company," "we," "us" and "our") is proud to be the global leader in healthcare communications. We deliver clinical information to care teams when and where it matters most to improve patient outcomes. Top hospitals rely on Spok products and services to enhance workflows for clinicians, support administrative compliance, and provide a better experience for patients.

We offer a focused suite of unified clinical communication and collaboration solutions that include call center applications, clinical alerting and notifications, one-way and advanced two-way wireless messaging services, mobile communications and public safety solutions.

We provide one-way and advanced two-way wireless messaging services, including information services, throughout the United States. These services are offered on a local, regional and nationwide basis, employing digital networks. One-way messaging consists of numeric and alphanumeric messaging services. Numeric messaging services enable subscribers to receive messages that are composed entirely of numbers, such as a phone number, while alphanumeric messages may include numbers and letters, which enable subscribers to receive text messages. Two-way messaging services enable subscribers to send and receive messages to and from other wireless messaging devices, including pagers, personal digital assistants and personal computers. We also offer voice mail, personalized greetings, message storage and retrieval, and equipment loss and/or maintenance protection to both one-way and two-way messaging subscribers. These services are commonly referred to as wireless messaging and information services.

We also develop, sell and support enterprise-wide systems for hospitals and other organizations needing to automate, centralize and standardize clinical communications. These solutions are used for contact centers, clinical alerting and notification, mobile communications and messaging and for public safety notifications. These areas of market focus compliment the market focus of our wireless services outlined above.

Basis of Presentation

The accompanying Consolidated Financial Statements include our accounts and the accounts of our wholly owned direct and indirect subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation. Our Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP") and the rules and regulations of the United States Securities and Exchange Commission (the "SEC"). In management's opinion, the Consolidated Financial Statements include all adjustments and accruals that are necessary for the presentation of the results of all periods reported herein and all such adjustments are of a normal, recurring nature.

Amounts shown on the consolidated statements of operations within the operating expense categories of cost of revenue; research and development; technology operations; selling and marketing; and general and administrative are recorded exclusive of depreciation, amortization and accretion. These items are shown separately on the Consolidated Statements of Operations within operating expenses to the extent that they are considered material for the periods presented.

Certain prior period amounts in the Consolidated Financial Statements have been reclassified to conform to the current period's presentation. These reclassifications had no effect on the reported results of operations or the Consolidated Balance Sheets.

Use of Estimates

The preparation of these consolidated financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues, expenses and related disclosures. On an ongoing basis, we evaluate estimates and assumptions, including but not limited to those related to the impairment of long-lived assets, intangible assets subject to amortization and goodwill, accounts receivable allowances, revenue recognition, depreciation expense, asset retirement obligations, and income taxes. We base our estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Revenue Recognition

The majority of our revenues are derived from short-term contracts related to the sale of wireless paging services and software solutions. Our arrangements exist primarily with customers in the healthcare market and to a lesser extent state and federal governments, as well as large enterprise businesses.

Under the typical payment terms of our software contracts, customers will normally pay a material amount of the contract price immediately upon execution of the contract. The remaining payments are required when the product is delivered, when services begin and, to a lesser extent, when services are completed. Wireless services are generally billed as incurred on a monthly basis. Our contracts will generally result in billings in excess of revenue recognized, which we present as deferred revenues on the Consolidated Balance Sheets, primarily due to the receipt of payment in advance of the product or services we provide. Amounts billed and due from our customers are classified as accounts receivable on the Consolidated Balance Sheets. At times, we may have contracts which require us to perform work or provide products prior to billing which will generally result in revenue recognized in excess of billings. This excess is presented as unbilled receivables in the Notes to the Consolidated Financial Statements. We generally do not have transactions that include a significant financing component (whether payments are made in advance or in arrears) as our contracts typically take less than 12 months to complete once started. We would not adjust the total consideration for the effects of a significant financing component if we anticipate, at contract inception, that the period between when we transfer a promised good or service to a customer and when the customer pays for that good or service will be one year or less.

We account for a contract when: (1) both parties have approved the contract through mutually signed agreements or through other methods such as purchase orders or master agreements; (2) the rights of the parties have been identified; (3) payment terms have been identified; (4) the contract has commercial substance; and (5) collectability of consideration is probable. We also evaluate whether two or more contracts should be combined and accounted for as a single contract. In our evaluation, we consider criteria such as, but not limited to, whether: (1) the contracts are negotiated as a package with a single commercial objective; (2) the amount of consideration to be paid in one contract is dependent on the price or performance of another contract; and (3) some or all of the goods or services promised in the contracts are a single performance obligation. Should we consider contracts related, we would account for those contracts as if they were a single contract. Evaluating whether two or more contracts should be combined and accounted for as a single contract requires significant judgment. In the aggregate, a decision to combine a group of contracts could significantly impact the amount of revenue and profit recorded in a given period.

We review each contract to determine whether to account for the various promises as one or more performance obligations. The assessment and determination of performance obligations for a given contract requires significant judgment. Wireless service contracts are generally considered to be a single promise and therefore accounted for as a single performance obligation. Contracts which include goods or services related to our software solutions and subscriptions are generally sold with multiple promises and therefore will often include multiple performance obligations. Material performance obligations related to the sale of our software solutions include software licenses, professional services, hardware and maintenance.

More often than not, total consideration will equate to the stated value on the contract taking into consideration any period or term over which services are to be provided, if applicable. However, we could have contracts in which variable consideration is present. It is common for our contracts that include wireless services to contain customer penalties if rental pagers are not returned and fees for usage of services in excess of the contractually allotted amount for a given period. It is also common for our contracts that include professional services to include travel-related costs. These are costs which we incur in the normal course of delivering professional services and are generally billable to the customer based on our incurred expenses. These elements of variable consideration are fully constrained when an agreement is initially executed and are generally not considered estimable until the penalties, fees or costs have been incurred or are otherwise known. We include estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Estimating variable consideration requires significant judgment and our assessment includes all relevant information that is reasonably available to us including historical, current and forecasted information. We have elected to exclude from revenue all amounts collected on behalf of third parties, and therefore, items such as sales and use tax are excluded from our calculation of the total transaction price.

If a contract is separated into more than one performance obligation we allocate the total transaction price to each performance obligation proportionately based on the estimated relative standalone selling price ("SSP") of the promised goods or services underlying each performance obligation. We rarely sell goods or services as readily observable standalone sales, however, if we do, the observable standalone sales are used to determine the SSP. In most cases, we must estimate the relative SSP which requires significant judgment and estimates. In instances where SSP is not directly observable, we determine the SSP using information that may include contractually stated prices, market conditions, costs, renewal contracts, list prices and other observable inputs. A discount is present if the total transaction price is less than the sum of the estimated SSPs of the goods or services promised in the contract. Discounts are generally allocated proportionately based on the relative SSP of the identified performance obligations for a given contract.

Our wireless, professional, maintenance, and subscription services are generally recognized over time due to a customer's simultaneous receipt and consumption of the benefit as we perform the work. As we transfer control over time, we recognize revenue based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires significant judgment and is based on the nature of the products or services to be provided. Generally, we use the time-elapsed measure of progress for performance obligations that include wireless, maintenance, or subscription services. We believe this method best depicts the simultaneous transfer and consumption of the benefit based on our performance as these services are generally considered standby services. For professional services, we leverage an input methodology based on the number of hours worked on a project versus the total expected hours necessary to complete the project. Revenues are recognized proportionally as hours are incurred. This is a significant area of judgment as it requires an estimate at completion ("EAC") for each contract. Our initial EAC is primarily based on prior experience also taking into consideration any specific facts and circumstances for a given contract. As projects progress, the EAC is periodically updated and reviewed to ensure the timing of revenue recognition is appropriate. The creation, maintenance and review of a project's EAC requires significant judgment to determine an appropriate number of hours over which the remaining project is expected to be completed.

Our software licenses and hardware are generally recognized at a point in time when we have transferred control to the customer. For software licenses, revenue is not recognized until the related license(s) has been made available to the customer and the customer can begin to benefit from its right to use the license(s). Our software licenses represent a right to use Spok's Intellectual Property ("IP") as it exists at a point in time at which the license is granted. Many of our software licenses have significant standalone functionality due to their ability to process a transaction or perform a function or task, and we do not need to maintain those products, once provided to the customer, for value to exist. While the functionality of IP that we license may substantively change during the license period, customers are not contractually or practically required to update their license as a result of those changes. In most contracts transfer of control for software licenses occurs in a short period of time after a contract has been executed and licenses are made electronically available.

Contracts may be modified to account for changes in a project's scope or other customer requirements. Most of our contract modifications are for goods or services that are distinct from the existing contract. In these instances, the contract modification would either be recognized as an entirely new and separate contract or the modification would be treated as if it were a termination of the existing contract and the creation of a new contract including all undelivered goods and services under the previous contract. Revenue would be recognized on a prospective basis and a cumulative catch-up would not be recognized.

Incremental Costs of Obtaining a Contract and Costs to Fulfill a Contract

Our incremental costs primarily relate to sales commissions. We capitalize commissions and proportionally recognize the related expense to revenue as it is recognized on the underlying performance obligations. Some of these costs may relate to specific future anticipated contracts, specifically future maintenance renewals, on which we do not pay commensurate sales commissions. We amortize commission costs proportionally with revenue, thus it is necessary for us to estimate future revenues when there are future anticipated contracts. We estimate future revenues based on anticipated renewal amounts over an expected useful life (e.g. the period over which we believe the initial sales commissions relate to future anticipated contracts). The expected useful life is based on a review of our product life cycles, customer upgrade patterns and the rate at which customers renew maintenance. Commission expense was \$4.0 million, \$4.4 million and \$4.3 million for the years ended December 31, 2022, 2021 and 2020, respectively. Commission expense is classified within the selling and marketing operating expenses category.

Leases

Operating lease right-of-use ("ROU") assets and liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. We have made an accounting policy election not to apply the recognition requirements of ASC 842, "Leases," to short-term leases. Those leases which have a term of less than 12 months will have lease payments recognized, in our Consolidated Statements of Operations, on a straight-line basis over the lease term. An optional renewal or termination is not recognized as part of the lease term unless we determine that it is reasonably certain that we will exercise that option. The term reasonably certain is a high threshold for which pervasive evidence generally does not exist, and therefore, optional renewal periods are generally excluded from our ROU assets and lease liabilities until they have been exercised. Lease expense is recognized on a straight-line basis over the lease term.

As most of our leases do not provide an implicit rate, we use an estimated incremental borrowing rate in determining the present value of lease payments. The Company uses a portfolio approach when determining the discount rate applied to its leases. Significant judgment is necessary when determining a discount rate because we must estimate the discount rate based on a number of factors and observable inputs including current market conditions, market yields, government bond rates, credit risk, and other factors as necessary. The Company must also exercise significant judgment when determining whether an option to renew or terminate a lease should be included in the lease term. This judgment includes an assessment of all relevant economic factors such as costs relating to the termination or extension of a lease, importance of the underlying asset to the Company's operations, and the terms and conditions of the optional periods in relation to current market rates.

Where we have lease agreements which contain lease and nonlease components, we have elected to make use of the practical expedient to account for each separate lease component and associated nonlease component as a single lease component. This practical expedient is applied to our facility and site leases whereby maintenance and utilities charges are included with lease components in the measurement of our lease liability.

Impairment of Goodwill, Long-Lived Assets, and Intangible Assets Subject to Amortization

Goodwill is not amortized but is evaluated for impairment at least annually, or when events or circumstances suggest a potential impairment has occurred. We perform this annual impairment test in the fourth quarter of the fiscal year. We evaluate goodwill for impairment between annual tests if indicators of impairment exist. The impairment test involves comparing the fair value of the reporting unit with its carrying value. An impairment charge is recognized for the amount that the carrying value exceeds the reporting unit's fair value. For purposes of the goodwill impairment evaluation, the Company as a whole is considered the reporting unit. The fair value of the reporting unit is estimated under a market-based approach using the fair value of the Company's common stock. The estimated fair value requires significant judgments, including timing and appropriateness of the price of common stock used (e.g. point-in-time application, simple moving average, exponential moving average), as well as application of an estimated control premium. The estimated control premium is based on a review of current and past market information published by a third-party resource, assessment of the Company's future projected discounted cash flows and other relevant information if available.

We recorded no impairment of goodwill for the years ended December 31, 2022 and 2021, and an impairment of \$25.0 million for the year ended December 31, 2020.

We are required to evaluate the carrying value of our long-lived assets, amortizable intangible assets and goodwill. Amortizable intangible assets include customer-related intangibles that resulted from previous acquisitions. Such intangibles are amortized over periods up to 10 years. Quarterly, we assess whether circumstances exist which suggest that the carrying value of long-lived and amortizable intangible assets (asset groups) may not be recoverable. When applicable, we assess the recoverability of the carrying value of our long-lived assets (asset groups) and certain amortizable intangible assets based on estimated undiscounted cash flows generated from such assets (asset groups). We determine asset groups based on the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. In assessing the recoverability of these assets, we forecast cash flows based on various operating assumptions such as revenue forecasted by product line, in-process research and development cost, and other direct costs. Significant judgment is required in determining the recoverability, including the timing and appropriateness of the estimated undiscounted cash flows. If the forecast of undiscounted cash flows does not exceed the carrying value of the long-lived and amortizable intangible assets, we record an impairment charge to the extent the carrying value exceeded the fair value of such assets. Significant judgment may be required in estimating fair value dependent on the availability of objective, market-based, evidence and the input level (e.g., Level 1, 2 or 3) of that evidence.

We did not record any impairment of long-lived assets or definite lived intangible assets for the years ended December 31, 2022 and 2020. We recorded an impairment of \$15.7 million related to capitalized software development for the year ended December 31, 2021.

Accounts Receivable Allowances

Our two most significant allowance accounts are: an allowance for credit losses and an allowance for service credits. Provisions for these allowances are recorded on a monthly basis and are included as a component of general and administrative expenses, respectively.

Estimates are used in determining the allowance for credit losses and are based on historical collection experience and current and forecasted trends, as well as known specific collection risks. In determining these estimates, we review historical write-offs, including comparisons of write-offs to provisions for credit losses. We compare the ratio of the allowance to gross receivables to historical levels, and monitor amounts collected and related statistics. We write off receivables when they are deemed uncollectible. While write-offs of customer accounts have historically been within our expectations and the provisions established, we cannot guarantee that the future write-off experience will be consistent with historical experience, which could result in material differences when compared to the allowance for credit losses and related provisions.

From time to time, we grant service credits for customer retention purposes or when there is an adjustment in the scope of work. The allowance for service credits related provisions are based on historical credit percentages, current credit and aging trends, historical actual payment trends and actual credit experience. We analyze our past credit experience over several time frames. Using this analysis along with current operational data, including existing experience of credits issued and the time frames in which credits are issued, we establish an appropriate allowance for service credits. This allowance also reduces accounts receivable for lost and non-returned pagers to the expected realizable amounts and for free wireless services. While credits issued have been within our expectations and the provisions established, we cannot guarantee that future credit experience will be consistent with historical experience, which could result in material differences when compared to the allowance for service credits and maintenance-related provisions.

Property and Equipment

Property and equipment are reported at cost and are depreciated using the straight-line method based on estimated useful lives which range from one to five years.

Transmitter assets are grouped into tranches based on our transmitter decommissioning forecast and are depreciated using the group life method on a straight-line basis. Depreciation expense is determined by the expected useful life of each tranche of the underlying transmitter assets. The expected useful life is based on our forecasted usage of those assets and their retirement over time and aligns the useful lives of these transmitter assets with their planned removal from service. Disposals are charged against accumulated depreciation with no gain or loss recognized. This rational and systematic method matches the underlying usage of these assets to the underlying revenue that is generated from these assets. Depreciation expense for these assets is subject to change based upon revisions in the timing of transmitter deconstruction resulting from our long-range planning and network rationalization process.

Asset Retirement Obligations

We recognize liabilities and corresponding assets for future obligations associated with the retirement of assets. We have paging equipment assets, principally transmitters, which are located at leased locations. The underlying leases generally require the removal of equipment at the end of the lease term; therefore, a future obligation exists. Asset retirement costs are reflected in paging equipment assets with depreciation expense recognized over the estimated lives, which range between one and five years. The asset retirement costs and the corresponding liabilities that have been recorded to date generally relate to either current plans to consolidate networks or to the removal of assets at a future terminal date. When an asset retirement obligation arises, the liabilities and corresponding assets are recorded at their present value using a discounted cash flow approach and the liabilities are accreted using the interest method.

The recognition of an asset retirement obligation requires that management make numerous assumptions regarding such factors as the cost and timing of deconstruction; the credit-adjusted risk-free rate to be used; inflation rates; and future advances in technology. The fair value of contractor fees to remove each asset, based on historical trend, is estimated to escalate by 3.1% each year through the terminal date. The total estimated liability is based on the estimated future value of those costs and the timing of deconstruction.

We believe these estimates are reasonable at the present time, but we can give no assurance that changes in technology, our financial condition, the economy or other factors would not result in higher or lower asset retirement obligations. Any variations from our estimates would generally result in a change in the assets and liabilities in equal amounts, and operating results would differ in the future by any difference in depreciation expense and accretion expense (see Note 6, "Consolidated Financial Statements' Components", and Note 8, "Asset Retirement Obligations" for additional details).

Income Taxes

We file a consolidated U.S. federal income tax return and income tax returns in state, local and foreign jurisdictions as required. The provision for current income taxes is calculated and accrued on income and expenses expected to be included in current year U.S. and foreign income tax returns. The provision for current income taxes may also include interest, penalties and an estimated amount reflecting uncertain tax positions.

Deferred income tax assets and liabilities are calculated based on temporary differences between the financial statement values and the tax bases of assets and liabilities including net operating loss and tax credit carryforwards at the enacted tax rates expected to apply to taxable income when taxes are actually paid or recovered. Changes in deferred income tax assets and liabilities are included as a component of deferred income tax expense. Deferred income tax assets represent amounts available to reduce future income taxes payable. We assess the recoverability of our deferred income tax assets, which represent the tax benefits of future tax deductions, based on available positive and negative evidence and by considering the adequacy of future taxable income from all sources, including prudent and feasible tax planning strategies. This assessment is required to determine whether, based on all available evidence, it is "more likely than not" (meaning a probability of greater than 50%) that all or some portion of our deferred income tax assets will be realized in future periods. We provide a valuation allowance when we consider it "more likely than not" that a deferred income tax asset will not be fully recovered. The assessment of our deferred income tax assets requires significant judgment. We reduced the valuation allowance by \$21.9 million, as of December 31, 2022, based on the assessment completed, utilizing our annual long-range planning and forecasting updates. The Company maintained a valuation allowance of \$2.3 million related to federal foreign tax credits and certain state net operating losses as we do not believe current projections of future taxable income will be sufficient to utilize those tax assets prior to expiration.

Assets and liabilities are established for uncertain tax positions taken or positions expected to be taken in income tax returns when such positions fail to meet the "more likely than not" threshold based on the technical merits of the positions. We assess whether previously unrecognized tax benefits may be recognized when the tax position is (1) more likely than not of being sustained based on its technical merits, (2) effectively settled through examination, negotiation or litigation, or (3) settled through actual expiration of the relevant tax statutes. The assessment of an uncertain tax position requires significant judgment. We had no uncertain tax positions for the periods ended December 31, 2022 and 2021 (see Note 10, "Income Taxes," for additional details).

Research and Development

In accordance with ASC 985-20, Software to be Sold, Leased, or Marketed, certain software development costs are charged to operations and expensed as incurred until technological feasibility has been established. Material costs incurred after technological feasibility is established and before the product is ready for general release are capitalized and amortized on a straight-line basis over the estimated remaining economic life of the product or the ratio of current revenues to total projected product revenues, whichever is greater. To date, the time between technological feasibility and general release to the public has been extremely short and consequently expenses available for capitalization have been immaterial. Accordingly, all research and developments costs incurred to date, accounted for in accordance with ASC 985-20, have been expensed as incurred.

In accordance with ASC 350-40, Internal-Use Software, certain software development costs were capitalized while in the application development stage related to software developed for internal use or software sold in a Software as a Service ("SaaS") arrangement. This included certain development costs for our integrated communications and collaboration platform, Spok Go®, prior to our new strategic business plan in February 2022 that discontinued Spok Go. These costs qualified for capitalization beginning in the first quarter of 2020. All other costs incurred during the preliminary project stage or the post-implementation stage were expensed as incurred. Significant judgment was required when assessing costs and determining whether they fell within the preliminary project, application development, or post-implementation stage that determined whether the associated costs were expensed as incurred or capitalized.

Capitalized software development was amortized on a straight-line basis over the estimated useful life of the asset, typically three years, beginning when those development efforts were placed into service (e.g., generally once made commercially available). Determining the estimated useful life required significant judgment as we considered factors such as the rapid and continuous developments in software technology, obsolescence and anticipated life of the service offering before enhancements would have been necessary. We recorded an impairment of \$15.7 million related to capitalized software development for the year ended December 31, 2021, based on the impairment analysis performed in the fourth quarter of 2021.

Shipping and Handling Costs

We incur shipping and handling costs to send and receive messaging devices and other equipment to/from our customers. Amounts billed to customers related to shipping and handling are classified as revenue and the Company's shipping and handling costs are classified as cost of revenue. These costs are expensed as incurred.

Advertising Expenses

Advertising costs are charged to operations when incurred. Advertising costs are classified as selling and marketing expenses. Advertising expenses were \$1.0 million, \$1.4 million and \$1.3 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Stock-Based Compensation

We account for share-based payments to employees, including restricted stock units ("RSUs"), restricted common stock ("restricted stock") and the option to purchase common stock under the Employee Stock Purchase Plan ("ESPP"), based on their fair value and the estimated number of shares we expect will vest based on the performance metrics associated with the award, if applicable. Fair value for RSUs and restricted stock is measured based on the closing fair market value of the Company's common stock on the date of grant. Fair value for ESPP is measured using the Black-Scholes model for each offering period based on the offer date. Compensation expense is recognized on a straight-line basis over the requisite service period. Forfeitures and withdrawals are accounted for on an as incurred basis.

Changes in our estimates of the expected attainment of performance targets are reflected in the amount of compensation expense that we recognize for the related instruments during the interim reporting period when the change in estimate is determined and may cause the amount of compensation expense that we record for each period to vary. Further information regarding stock-based compensation can be found in Note 9, "Stockholders' Equity."

Concentration of Credit Risk

Our financial instruments that are potentially subject to concentrations of credit risk consist primarily of cash, cash equivalents, short-term receivables and accounts receivable. While our cash and cash equivalents are managed by reputable financial institutions, deposits at these institutions and funds may, at times, exceed federally insured limits. Management believes that these financial institutions and funds are financially sound and, accordingly, that minimal credit risk exists.

Accounts receivable are typically unsecured and are derived from revenue earned from customers across different geographic locations, primarily within the U.S. We perform ongoing credit evaluations of our customers, and generally do not require collateral. We maintain an allowance for estimated credit losses. During the years ended December 31, 2022, 2021 and 2020, our bad debt expenses were \$1.2 million, \$0.7 million and \$1.1 million, respectively. In the event that accounts receivable collection cycles deteriorate, our operating results and financial position could be adversely affected. No customer represented 10% or more of total revenue or accounts receivable during the years ended December 31, 2022, 2021 and 2020.

Sales and Use Taxes

Sales and use taxes imposed on the ultimate consumer are excluded from revenue where we are required by law or regulation to act as collection agent for the taxing jurisdiction.

Fair Value Measurements and Financial Instruments

We account for certain assets and liabilities at fair value. We categorize each of our fair value measurements in one of the following three levels based on the lowest level input that is significant to the fair value measurement in its entirety. These levels are:

- **Level 1:** Inputs are based upon unadjusted quoted prices for identical instruments in active markets.
- **Level 2:** Inputs are based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, inputs other than quoted prices that are observable for the asset or liability and inputs that are corroborated by other observable market data.
- **Level 3:** Unobservable inputs that cannot be corroborated by observable market data and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability.

We consider all highly liquid interest-earning investments with a maturity of three months or less at the date of purchase to be cash equivalents. Those investments with an original maturity of greater than three months and less than one year are classified as short-term investments. Cash and cash equivalents consist primarily of cash on deposit with banks and investments in money market funds.

Our short-term investments consist entirely of U.S. Treasury securities which are classified as held-to-maturity and are measured at amortized cost on our Consolidated Balance Sheets. These investments are classified as Level 1 and mature within 12 months. The differences between carrying value and fair value are not material to the Consolidated Financial Statements.

Financial instruments including cash and cash equivalents, accounts receivable and accounts payable all have fair values that approximate their carrying values at December 31, 2022 and 2021 due to their short maturities.

Earnings Per Common Share

The calculation of earnings per common share is based on the weighted-average number of common shares outstanding during the applicable period. The calculation for diluted earnings per common share recognizes the effect of all potentially dilutive common shares that were outstanding during the respective periods, unless the impact would be anti-dilutive. Further information regarding earnings per common share can be found in Note 9, "Stockholders' Equity."

NOTE 2 - RECENT ACCOUNTING STANDARDS

The Company considers the applicability and impact of all Accounting Standards Updates ("ASUs") issued by the Financial Accounting Standards Board ("FASB"). The Company has determined that all recent ASUs issued by the FASB are either not applicable or are not expected to have a material impact on the Company's Consolidated Financial Statements.

NOTE 3 - RESTRUCTURING

In February 2022, the Company announced a new strategic business plan that includes a restructuring of its business to discontinue Spok Go, eliminate all associated costs and optimize the Company's existing structure to drive continued cost improvement.

As part of the restructuring program, the Company eliminated 176 positions, primarily in research and development, and also in professional services, selling and marketing, and back-office support functions.

For the year ended December 31, 2022, the Company incurred total severance and restructuring costs of \$7.3 million respectively, which are included within the Consolidated Statement of Operations. These costs are as follows:

	For the Year Ended December 31, 2022
(Dollars in thousands)	
Severance and personnel related costs	\$ 6,006
Contractual terminations	1,323
Total severance and restructuring costs	\$ 7,329

A summary of restructuring related liabilities associated with the strategic business plan and included within accrued compensation and benefits and other current liabilities within the Consolidated Balance Sheet at December 31, 2022, is as follows:

	For the Year Ended December 31, 2022
(Dollars in thousands)	
Balance at December 31, 2021	\$ —
Restructuring and other charges	6,649
Payments	(4,286)
Non-cash adjustment	(155)
Balance at December 31, 2022	\$ 2,208

NOTE 4 - REVENUE, DEFERRED REVENUE AND PREPAID COMMISSIONS

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services.

The following table presents our revenues disaggregated by revenue type:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Revenue:			
Paging revenue	\$ 73,323	\$ 75,845	\$ 79,916
Product and other revenue	2,299	2,981	3,677
Wireless revenue	\$ 75,622	\$ 78,826	\$ 83,593
License	\$ 7,202	\$ 5,917	\$ 5,245
Professional services	12,565	17,161	17,910
Hardware	2,211	2,267	2,841
Operations revenue	21,978	25,345	25,996
Maintenance	36,934	37,982	38,591
Software revenue	\$ 58,912	\$ 63,327	\$ 64,587
Total revenue	\$ 134,534	\$ 142,153	\$ 148,180

The Company is currently structured as a single operating (and reportable) segment, a clinical communication and collaboration business. The U.S. was the only country that accounted for more than 10% of the Company's total revenue for the years ended December 31, 2022, 2021 and 2020. Revenue generated in the U.S. and internationally consisted of the following for the periods stated:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Revenue:			
United States	\$ 130,380	\$ 138,265	\$ 145,349
International	4,154	3,888	2,831
Total revenue	\$ 134,534	\$ 142,153	\$ 148,180

Deferred Revenues

Our deferred revenues represent payments made to, or due from, customers in advance of our performance. Changes in the balance of total deferred revenue during the twelve months ended December 31, 2022, are as follows:

(Dollars in thousands)	December 31, 2021	Additions	Revenue Recognized	December 31, 2022
Deferred Revenue	\$ 26,406	\$ 58,536	\$ (58,418)	\$ 26,524

During the twelve months ended December 31, 2022, the Company recognized \$22.8 million of revenue related to amounts deferred as of December 31, 2021.

Prepaid Commissions

Our prepaid commissions represent payments made to employees in advance of our performance on the related underlying contracts. These costs have been incurred directly in relation to obtaining a contract. As such, these costs are amortized over the estimated period of benefit. Changes in the balance of total prepaid commissions during the year ended December 31, 2022, are as follows:

(Dollars in thousands)	December 31, 2021	Additions	Commissions Recognized	December 31, 2022
Prepaid Commissions	\$ 1,821	\$ 3,957	\$ (4,033)	\$ 1,745

Prepaid commissions are included within prepaid expenses in the Consolidated Balance Sheets and commissions expense is included within Selling and marketing on the Consolidated Statements of Operations.

Remaining Performance Obligations

The balance of consideration allocated to remaining performance obligations at December 31, 2022 was \$44.0 million. We expect to recognize approximately \$33.1 million of these remaining performance obligations over the next 12 months, with the remaining balance recognized thereafter.

NOTE 5 - LEASES

We have operating lease arrangements for corporate offices, cellular towers, storage units and small building spaces. The building space is used to house infrastructure, such as transmitters, antennae and other various equipment for the Company's wireless paging services. For leases with a term of 12 months or less, renewal terms are generally of an evergreen nature (either month-to-month or year-to-year). For leases with a term greater than 12 months, renewal terms are generally explicit and provide for one to five optional renewals consistent with the initial term. Many of our leases, with the exception of those for our corporate offices, include options to terminate the lease within one year. Variable lease payments, residual value guarantees or purchase options are not generally present in these leases.

In May 2022, we extended 23 site leases on a Master License Agreement which included a term of 10 years with an option to terminate within 45 days of notification of termination. At that time, we recorded a \$2.9 million right-of-use asset and a corresponding operating lease liability for these leases.

In December 2022, we modified an office lease to reduce the leased space and optimize costs, which resulted in a reduction of \$1.8 million in right-of-use assets and corresponding operating lease liabilities.

Lease costs are included in Technology Operations and General and Administrative expenses on the Consolidated Statements of Operations. The following table presents lease costs disaggregated by type:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Operating lease cost	\$ 6,063	\$ 6,221	\$ 5,797
Short-term lease cost	9,916	10,529	7,991
Short-term lease cost - related party ⁽¹⁾	—	—	3,518
Total lease cost	\$ 15,979	\$ 16,750	\$ 17,306

⁽¹⁾ A former member of our Board of Directors, who departed the Board during the third quarter of 2020, concurrently served as a director for an entity that leases transmission tower sites to the Company. Refer to Note 13, "Related Parties," for additional details.

The following table presents supplemental cash flow information:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities - operating leases	\$ 5,708	\$ 5,625	\$ 5,685

The following table presents the weighted average remaining lease term and discount rate:

(Dollars in thousands)	December 31,		
	2022	2021	2020
Weighted-average remaining lease term - operating leases (in years)	5.00	4.73	5.06
Weighted-average discount rate - operating leases	4.39%	4.44%	5.17%

We relocated our corporate headquarters in March of 2021 to office space located in Alexandria, Virginia, consisting of approximately 26,000 square feet of space under a lease that will expire on September 30, 2026. At that time, we recorded \$4.4 million in a right-of-use asset and corresponding operating lease liability for this lease.

Maturities of lease liabilities as of December 31, 2022, were as follows:

(Dollars in thousands)	For the Year Ended December 31,
2023	\$ 5,096
2024	3,843
2025	2,820
2026	2,252
2027	1,100
Thereafter	2,470
Total future lease payments	17,581
Imputed interest	(1,881)
Total	\$ 15,700

NOTE 6 - CONSOLIDATED FINANCIAL STATEMENTS' COMPONENTS

Depreciation, Amortization and Accretion

Depreciation, amortization and accretion consisted of the following for the periods stated:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Depreciation			
Leasehold improvements	\$ 64	\$ 88	\$ 57
Asset retirement costs	(702)	(87)	(643)
Paging and computer equipment	3,289	3,797	5,291
Furniture, fixtures and vehicles	240	258	307
Total depreciation	2,891	4,056	5,012
Amortization			
Intangible assets	—	417	2,500
Capitalized software development costs	—	5,357	1,073
Total amortization	—	5,774	3,573
Accretion	680	616	471
Total depreciation, amortization and accretion expense	\$ 3,571	\$ 10,446	\$ 9,056

Accounts Receivable, net

Accounts receivable was recorded net of an allowance of \$1.8 million and \$1.4 million for the years ended December 31, 2022 and 2021, respectively. Accounts receivable, net included \$5.9 million and \$7.1 million of unbilled receivables for the years ended December 31, 2022 and 2021, respectively. Unbilled receivables are defined as the Company's right to consideration in exchange for goods or services that we have transferred to the customer but have not yet billed for, generally as a result of contractual billing terms.

Property and Equipment, net

Property and equipment, net consisted of the following for the periods stated:

(Dollars in thousands)	Useful Life (In Years)	For the Year Ended December 31,	
		2022	2021
Leasehold improvements	lease term	\$ 2,497	\$ 3,307
Asset retirement costs	1-5	3,848	2,307
Paging and computer equipment	1-5	88,427	89,844
Furniture, fixtures and vehicles	3-5	3,289	3,668
Total property and equipment		98,061	99,126
Accumulated depreciation		(89,838)	(92,380)
Total property and equipment, net		\$ 8,223	\$ 6,746

For purposes of assessing our asset retirement costs, we completed a review of the estimated useful life of our transmitter assets during the fourth quarter of 2022 (that are part of paging and computer equipment). This review was based on the results of our long-range planning and network rationalization process and indicated that the expected useful life of the last tranche of the transmitter assets was no longer appropriate. As a result of that review, the expected useful life of the final tranche of transmitter assets was extended from 2026 to 2027. This change resulted in a revision of the expected future depreciation expense for the transmitter assets and an immaterial impact on the consolidated financial statements beginning in 2023. We believe these estimates remain reasonable at the present time, but we can give no assurance that changes in technology, customer usage patterns, our financial condition, the economy or other factors would not result in changes to our transmitter decommissioning plans. Any further variations from our estimates could result in a change in the expected useful lives of the underlying transmitter assets and operating results could differ in the future by any difference in depreciation expense. The extension of the depreciable life was accounted for as a change in accounting estimate.

NOTE 7 - GOODWILL, CAPITALIZED SOFTWARE DEVELOPMENT AND INTANGIBLE ASSETS, NET

Goodwill

For purposes of the goodwill impairment assessment, the Company as a whole is considered the reporting unit. The fair value of the reporting unit is estimated under a market-based approach using the fair value of the Company's common stock. The estimated fair value requires significant judgments, including the timing and appropriateness of the price of common stock used (e.g., point-in-time application, simple moving average, exponential moving average), as well as application of an estimated control premium. There are a number of judgmental factors that are incorporated into our assessment to establish an estimated control premium, including the review of current and past market information published by a third-party resource, assessment of the Company's future projected discounted cash flows and other relevant information if available. While a formal impairment assessment is performed annually, the Company monitors its business environment for potential triggering events on a quarterly basis.

As of December 31, 2022 we had goodwill of \$99.2 million, which includes accumulated impairment losses of \$33.9 million. There was no change in goodwill as compared to December 31, 2021.

Capitalized Software Development

Capitalized software development was amortized on a straight-line basis over the estimated useful life of the asset, typically three years. With the discontinuation of Spok Go, we had no capitalized software development costs or resulting amortization for the year ended December 31, 2022. Capitalized software development costs were \$10.8 million and \$11.3 million for the years ended December 31, 2021 and December 31, 2020, respectively. Amortization expense with respect to software development costs was \$5.4 million and \$1.1 million for the years ended December 31, 2021 and December 31, 2020, respectively.

During the fourth quarter of 2021, we determined that a triggering event had occurred based on a number of factors including a continuing trend of unsatisfactory Spok Go sales relative to our expectations, a significant accumulation of costs combined with a reduction of future sales projections which indicated continuing losses associated with Spok Go, and our expectation that Spok Go would not provide substantive future service potential. As such, further assessment of recoverability was necessary. The analysis determined that the remaining balance of capitalized software development costs had no fair value, and as a result, we recorded an impairment charge of \$15.7 million for the year ended December 31, 2021.

Intangible Assets

There were no remaining amortizable intangible assets at December 31, 2022 and intangible assets in 2021 related primarily to customer relationships. These intangible assets, with an original gross carrying amount of \$25.0 million, were being amortized over a period of 10 years and became fully amortized during the quarter ended March 31, 2021. We did not record an impairment of our amortizable intangible assets during the years ended December 31, 2022, 2021 and 2020.

The net consolidated balance of intangible assets consisted of the following at December 31, 2022 and 2021:

(Dollars in thousands)	As of December 31,					
	2022			2021		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	\$ 25,002	\$ (25,002)	\$ —	\$ 25,002	\$ (25,002)	\$ —

NOTE 8 - ASSET RETIREMENT OBLIGATIONS

The components of the changes in the asset retirement obligation liabilities for the periods stated were as follows:

(Dollars in thousands)	Short-Term Portion	Long-Term Portion	Total
Balance at December 31, 2020	\$ 335	\$ 7,289	\$ 7,624
Accretion	(125)	741	616
Amounts paid	(334)	—	(334)
Additions	(129)	(1,292)	(1,421)
Reclassifications	383	(383)	—
Balance at December 31, 2021	130	6,355	6,485
Accretion	138	542	680
Amounts paid	(288)	—	(288)
Additions	70	533	603
Reclassifications	193	(193)	—
Balance at December 31, 2022	\$ 243	\$ 7,237	\$ 7,480

Increases and reductions other than accretion, reclassification and amounts paid primarily relate to changes in estimates of the underlying liability, specifically related to updates in estimated costs to remove a transmitter and the estimated timing of removal. Estimated removal costs and timing refinements due to ongoing network rationalization activities are expected to accrete to a total liability of \$9.1 million.

Additional information regarding asset retirement costs and accretion expense can be found in Note 6, "Consolidated Financial Statements' Components."

NOTE 9 - STOCKHOLDERS' EQUITY

General

Our authorized capital stock consists of 75 million shares of common stock, par value \$0.0001 per share, and 25 million shares of preferred stock, par value \$0.0001 per share.

At December 31, 2022 and 2021, we had no stock options outstanding.

At December 31, 2022 and 2021, there were 20,076,578 and 19,828,033 shares of common stock outstanding, respectively, and no shares of preferred stock were outstanding.

Dividends

For the year ending December 31, 2022, our Board of Directors declared cash dividends per share of our outstanding common stock of \$1.25, compared to \$0.50 per share for each of the years ending December 31, 2021 and December 31, 2020. dividends declared that relate to unvested RSUs and unvested shares of restricted stock are accrued for and paid when the applicable vesting conditions are met. Accrued cash dividends on forfeited RSUs and restricted stock are also forfeited. Cash dividends paid as disclosed in the Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020 included previously declared cash dividends on vested RSUs and on shares of vested restricted stock issued to non-executive members of our Board of Directors.

On February 22, 2023, the Board of Directors declared a regular quarterly cash dividend of \$0.3125 per share of common stock, with a record date of March 16, 2023, and a payment date of March 30, 2023. This cash dividend of approximately \$6.3 million is expected to be paid from available cash on hand.

Common Stock Repurchase Program

In February 2022, our Board of Directors authorized the repurchase of up to \$10.0 million of our common stock. This repurchase authority allows us, at management's discretion, to selectively repurchase shares of our common stock from time to time in the open market depending upon market price and other factors.

The Company did not repurchase any of its common stock during 2022, 2021 or 2020.

Net Loss per Common Share

Basic net loss per common share is computed on the basis of the weighted average common shares outstanding. Diluted net loss per common share is computed on the basis of the weighted average common shares outstanding plus the effect of all potentially dilutive common shares, including unvested and outstanding equity awards. The components of basic and diluted net loss per common share were as follows for the periods stated:

(In thousands, except for share and per share amounts)	For the Year Ended December 31,		
	2022	2021	2020
Numerator:			
Net income (loss)	\$ 21,856	\$ (22,180)	\$ (44,225)
Denominator:			
Basic weighted average common shares outstanding	19,672,423	19,404,477	19,028,918
Diluted weighted average common shares outstanding	19,991,202	19,404,477	19,028,918
Basic net income (loss) per common share	\$ 1.11	\$ (1.14)	\$ (2.32)
Diluted net income (loss) per common share	\$ 1.09	\$ (1.14)	\$ (2.32)

For the years ended December 31, 2022, 2021 and 2020, the following securities were not included in the calculation of diluted shares outstanding as the effect would have been anti-dilutive:

	For the Year Ended December 31,		
	2022	2021	2020
Restricted stock units	—	371,194	297,757

Share-Based Compensation Plans

On March 23, 2012, our Board of Directors adopted the Spok Holdings, Inc. 2012 Equity Incentive Award Plan (the "2012 Equity Plan") that our stockholders subsequently approved on May 16, 2012. A total of 2,194,986 shares of common stock were reserved for issuance under this plan.

On April 29, 2020, our Board of Directors adopted the Spok Holdings, Inc. 2020 Equity Incentive Award Plan (the "2020 Equity Plan" and together with the 2012 Equity Plan, the "Equity Plans") that our stockholders subsequently approved on July 28, 2020. At July 28, 2020, a total of 1,699,950 shares of common stock had been reserved for issuance under the Equity Plans, including 1,600,000 shares available under the 2020 Equity Plan and 99,950 shares which, as of the Stockholder Approval Date, remained available for issuance under the 2012 Equity Plan. No further grants were to be made under the 2012 Equity Plan, although the 2012 Equity Plan continues to govern all outstanding awards thereunder.

Awards under the 2020 Equity Plan may be in the form of stock options, restricted common stock, RSUs, performance awards, dividend equivalents, stock payment awards, deferred stock, deferred stock units ("DSUs"), stock appreciation rights or other stock or cash-based awards.

Restricted stock awards generally vest one year from the date of grant. Related dividends accumulate during the vesting period and are paid at the time of vesting.

Contingent RSUs generally vest over a three-year performance period upon successful completion of the performance objectives. Non-contingent RSUs generally vest in thirds, annually, over a three-year period. Dividend equivalent rights generally accompany each RSU award and those rights accumulate and vest along with the underlying RSU.

Dividend equivalent rights generally accompany each DSU award and are paid to participants in cash on the Company's applicable dividend payment date whether the DSU is vested or unvested. The dividend equivalent right associated with a DSU continues until delivery of the underlying shares of common stock is made.

Payment of the underlying shares of common stock occurs at the earliest of a participant's separation from service, disability, death, or a change in control. Any shares subject to an award under the 2012 Equity Plan that are forfeited or expire will be available for the future grant of awards under the 2020 Equity Plan. As of December 31, 2022, there were no unvested equity awards under the 2012 Equity Plan.

The following table summarizes the activities under the Equity Plans from January 1, 2019, through December 31, 2022:

	Activity
Total equity securities available at January 1, 2020	646,480
Plus: Additional shares available for issuance under the 2020 Equity Plan	1,600,000
Less: RSU and restricted stock awarded to eligible employees, net of forfeitures	(547,166)
Total equity securities available at December 31, 2020	1,699,314
Less: RSU and restricted stock awarded to eligible employees, net of forfeitures	(539,241)
Less: stock issued in lieu of cash compensation	(169,944)
Total equity securities available at December 31, 2021	990,129
Less: RSU, DSU and restricted stock awarded to eligible employees, net of forfeitures	(307,077)
Total equity securities available at December 31, 2022	683,052

The following table details activities with respect to outstanding RSUs, DSUs, and restricted stock under the Equity Plans for the year ended December 31, 2022:

	Shares	Weighted-Average Grant Date Fair Value per Share
Unvested at January 1, 2022	771,171	\$ 11.24
Granted	464,572	8.63
Vested	(463,939)	11.03
Forfeited	(157,495)	10.66
Unvested at December 31, 2022	614,309	\$ 8.06

Of the 614,309 unvested RSUs, DSUs and restricted stock outstanding at December 31, 2022, 356,896 RSUs include contingent performance requirements for vesting purposes. At December 31, 2022, there was \$2.6 million of unrecognized net compensation cost related to RSUs and restricted stock, which is expected to be recognized over a weighted average period of 1.6 years.

During the years ended December 31, 2021 and 2020, the Company granted 657,492 and 603,171 RSUs, respectively, with a weighted-average grant date fair value of \$11.02 and \$11.94 per share, respectively. The fair value of RSUs that vested was \$3.8 million and \$3.7 million for the years ended December 31, 2021 and December 31, 2020, respectively, based on the closing price of the Company's common stock of \$9.33 and \$11.13 at December 31, 2021 and 2020, respectively.

Employee Stock Purchase Plan

In 2016, our Board of Directors adopted the ESPP that our stockholders subsequently approved on July 25, 2016. A total of 250,000 shares of common stock were reserved for issuance under this plan.

The ESPP allows employees to purchase shares of common stock at a discounted rate, subject to plan limitations. Under the ESPP, eligible participants can voluntarily elect to have contributions withheld from their pay for the duration of an offering period, subject to the ESPP limits. At the end of an offering period, contributions will be used to purchase the Company's common stock at a discount to the market price based on the first or last day of the offering period, whichever is lower.

Participants are required to hold common stock for a minimum period of two years from the grant date. Participants will begin earning dividends on shares after the purchase date. Each offering period will generally last for no longer than six months. Once an offering period begins, participants cannot adjust their withholding amount. If a participant chooses to withdraw, any previously withheld funds will be returned to the participant, with no stock purchased, and that participant will be eligible to participate in the ESPP at the next offering period. If the participant terminates employment with the Company during the offering period, all contributions will be returned to the employee and no stock will be purchased.

The Company uses the Black-Scholes model to calculate the fair value of each offering period on the offer date. The Black-Scholes model requires the use of estimates for the expected term, the expected volatility of the underlying common stock over the expected term, the risk-free interest rate and the expected dividend payment.

For the year ended December 31, 2022, no shares of the Company's stock were purchased, as compared to 16,015 shares purchased for a total cost of \$0.1 million for the year ended December 31, 2021.

The following table summarizes the activities under the ESPP from January 1, 2020, through December 31, 2022:

	Activity
Total ESPP equity securities available at January 1, 2020	184,860
Less: common stock purchased by eligible employees	(35,661)
Total ESPP equity securities available at January 1, 2021	149,199
Less: common stock purchased by eligible employees	(16,015)
Total ESPP equity securities available at January 1, 2022	133,184
Less: common stock purchased by eligible employees	—
Total ESPP equity securities available at December 31, 2022	133,184

Amounts withheld from participants are classified as a liability on the Consolidated Balance Sheets until funds are used to purchase shares. This liability amount is immaterial to the consolidated financial statements.

Stock-Based Compensation Expense

Compensation expense associated with common stock, RSUs and restricted stock was recognized based on the grant date fair value of the instruments, over the instruments' vesting period. The following table reflects stock-based compensation expense for the periods stated:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Performance-based RSUs	\$ 1,559	\$ 1,608	\$ 2,019
Time-based RSUs and restricted stock	2,260	3,754	3,389
Equity in lieu of salary	—	1,845	—
ESPP	8	32	100
Total stock-based compensation	\$ 3,827	\$ 7,239	\$ 5,508

NOTE 10 - INCOME TAXES

The significant components of our (provision for) benefit from income taxes attributable to current operations for the periods stated were as follows:

(Dollars in thousands)	For the Year Ended December 31,		
	2022	2021	2020
Income (loss) before income taxes	\$ 997	\$ (27,332)	\$ (21,770)
Current:			
Federal tax	\$ —	\$ —	\$ —
State tax	38	48	58
Foreign tax	50	283	(150)
Total current	88	331	(92)
Deferred:			
Federal tax	(20,642)	(4,178)	20,594
State tax	25	(1,561)	1,910
Foreign tax	(330)	256	43
Total deferred	(20,947)	(5,483)	22,547
Benefit from (provision for) income taxes	\$ (20,859)	\$ (5,152)	\$ 22,455

Foreign income before income tax (benefit) expense is immaterial to consolidated income before income tax (benefit) expense. The following table summarizes the principal elements of the difference between the United States federal statutory rate of 21% and our effective tax rate for the years ended December 31, 2022, 2021 and 2020:

(Dollars in thousands)	2022		2021		2020	
Income (loss) before income taxes	\$ 997		\$ (27,332)		\$ (21,770)	
Income taxes computed at the federal statutory rate	\$ 209	21.0 %	\$ (5,740)	21.0 %	\$ (4,572)	21.0 %
State income taxes, net of federal benefit	121	12.1 %	(1,513)	5.5 %	(703)	3.2 %
Goodwill impairment	—	— %	—	— %	6,341	(29.1)%
Change in valuation allowance	(21,850)	(2,191.6)%	2,070	(7.6)%	22,108	(101.6)%
Research and development and other tax credits	(88)	(8.8)%	(808)	3.0 %	(1,316)	6.0 %
Excess executive compensation	231	23.1 %	272	(1.0)%	266	(1.2)%
Other	518	52.0 %	567	(2.1)%	331	(1.5)%
(Benefit from) provision for income taxes	\$ (20,859)	(2,092.2)%	\$ (5,152)	18.8 %	\$ 22,455	(103.1)%

The anticipated effective income tax rate is expected to continue to differ from the federal statutory rate primarily due to the effect of state income taxes and permanent differences between book and taxable income. The earnings of non-U.S. subsidiaries are deemed to be indefinitely reinvested in non-U.S. operations.

The components of deferred income tax assets at December 31, 2022 and 2021 were as follows:

(Dollars in thousands)	December 31,	
	2022	2021
Capitalized research and development costs	\$ 13,862	\$ 13,436
Net operating loss carryforward	25,710	25,284
Property and equipment	4,142	5,139
Accrued liabilities, reserves and other expenses	3,877	4,350
Research and development credits	6,430	6,342
Tax credits	717	495
Stock based compensation	1,834	2,283
Operating lease liabilities	3,999	4,427
Other	120	289
Gross deferred income tax assets	60,691	62,045
Deferred income tax liabilities:		
Intangible assets	(2,269)	(2,128)
Right-of-use assets	(3,534)	(4,051)
Prepaid and other expenses	(162)	(35)
Gross deferred income tax liabilities	(5,965)	(6,214)
Net deferred income tax assets	54,726	55,831
Valuation allowance	(2,328)	(24,178)
Total deferred income tax assets	\$ 52,398	\$ 31,653

Net Operating Losses

As of December 31, 2022, we had approximately \$110.2 million of net operating losses available to offset future taxable income, of which approximately \$70.6 million were federal net operating losses with expiration dates that begin expiring in 2026 and will fully expire in 2030 and \$39.6 million that were indefinite lived.

Valuation Allowance

We assess the recoverability of our deferred income tax assets, which represent the tax benefits of future tax deductions, based on available positive and negative evidence and by considering the adequacy of future taxable income from all sources, including prudent and feasible tax planning strategies. This assessment is required to determine whether, based on all available evidence, it is "more likely than not" (meaning a probability of greater than 50%) that all or some portion of the deferred income tax assets will be realized in future periods.

Historically, the cumulative loss incurred by the Company over the prior three-year period constituted a piece of objective negative evidence which limited our ability to consider other subjective evidence. Given the completion of our recent restructuring efforts and our expected return to profitability (as indicated by income generated before income taxes in 2022), we have eliminated costs that had resulted in our cumulative loss over the prior three-year period, that are not present in our current operating posture or future forecasts. As a result, we determined the negative evidence presented by a cumulative loss position to be weighted less in our assessment compared to positive evidence from our historical core operating results and future projections. Additionally, we considered there to be lower forecast uncertainty as a result of our new strategy and lessening impacts of COVID-19, such that we believe that positive evidence from our projections of future profitability to be weighted more heavily in our assessment of the recoverability of our deferred income tax assets.

Based on the assessment completed, utilizing our annual long-range planning and forecasting updates that are traditionally completed in the fourth quarter of each year, we reduced the valuation allowance by \$21.9 million as of December 31, 2022, to increase net deferred income tax assets, as their realization met the more-likely-than-not criterion. The Company maintained a valuation allowance of \$2.3 million related to Federal Foreign Tax Credits and certain state net operating losses and state tax credits, as we do not believe current projections of future taxable income will be sufficient to utilize those tax assets prior to expiration.

Income Tax Audits

The 2020, 2021 and 2022 federal and state income tax returns are within the statute of limitations (“SOL”) and are currently not under examination by any Federal or state tax authority.

We operate in all states and the District of Columbia and are subject to various state income and franchise tax audits. The states’ SOL varies from three to four years from the later of the due date of the return or the date filed. We usually file our federal and all state and local income tax returns on or before September 15 of the following year; therefore, the SOL for those states with a three-year SOL is open for calendar years ending 2019 through 2022, and for the four-year SOL states, the SOL is open for years ending from 2018 through 2022.

NOTE 11 - COMMITMENTS AND CONTINGENCIES**Contractual Obligations**

We had no significant commitments and contractual obligations as of December 31, 2022.

Other Commitments

We have various LOCs outstanding with multiple state agencies which are considered to be immaterial to the consolidated financial statements. The LOCs typically have one to three-year contract requirements and contain automatic renewal terms.

Loss Contingencies

The Company evaluates contingencies on an ongoing basis and establishes loss provisions for matters in which losses are probable and the amount of loss can be reasonably estimated. As part of this evaluation, no loss contingencies were identified for the year ended December 31, 2022. For the year ended December 31, 2021, we recognized a loss of \$0.9 million in the fourth quarter of 2021 related to the minimum remaining contractual obligation for a license and service contract classified as a research and development cost on the Consolidated Statement of Operations.

Legal Contingencies

We are involved, from time to time, in lawsuits arising in the normal course of business. We believe the potential outcomes from these lawsuits will not have a material adverse impact on our financial position or statement of operations.

Operating Leases

We have operating leases for office and transmitter locations. Substantially all of these leases have lease terms ranging from one month to five years. We continue to review our office and transmitter locations, and intend to replace, reduce or consolidate leases, where possible.

Future minimum lease payments under non-cancelable operating leases at December 31, 2022, were as follows:

(Dollars in thousands)

For the Year Ended December 31,	Operating Leases
2023	\$ 5,777
2024	3,843
2025	2,820
2026	2,252
2027	1,100
Thereafter	2,470
Total	\$ 18,262

These leases typically include renewal options and escalation clauses. Where material, we recognize rent expense on a straight-line basis over the lease period.

Total rent expense under operating leases for the years ended December 31, 2022, 2021 and 2020, was approximately \$16.0 million, \$16.8 million and \$17.3 million, respectively.

NOTE 12 - EMPLOYEE BENEFIT PLANS

The Company has a savings plan in the U.S., the Spok Holdings, Inc. Savings and Retirement Plan, which qualifies under Section 401(k) of the Internal Revenue Code. Participating U.S. employees may elect to contribute a percentage of their wages, subject to certain limitations. Matching contributions under the savings plan were approximately \$1.2 million for the year ended December 31, 2022 and \$1.6 million for each of the years ended December 31, 2021 and 2020.

NOTE 13 - RELATED PARTIES

A former member of our Board of Directors, who departed the Board during the third quarter of 2020, concurrently served as a director for an entity that leases transmission tower sites to the Company. For the years ended December 31, 2020, we recorded site rent expenses pertaining to the leases of \$3.5 million. This amount was included within technology operations expenses.

A member of our Board of Directors, who was appointed at the beginning of 2020, serves as Chief Information Officer for an entity that is also a customer of the Company. For the years ended December 31, 2022, 2021 and 2020, we recognized revenues of \$0.6 million, \$1.0 million and \$0.7 million, respectively, related to contracts from the entity at which the individual is employed.

SPOK HOLDINGS, INC.
VALUATION AND QUALIFYING ACCOUNTS

Allowance for Credit Losses, Service Credits and Other (Dollars in thousands)	Balance at the Beginning of the Period	Charged to Operations	Write-offs	Balance at the End of the Period
Year ended December 31, 2022	\$ 1,442	\$ 1,268	\$ (902)	\$ 1,808
Year ended December 31, 2021	\$ 1,669	\$ 573	\$ (800)	\$ 1,442
Year ended December 31, 2020	\$ 1,293	\$ 1,382	\$ (1,006)	\$ 1,669

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation	8-K	001-32358	3.1	7/8/2014	
3.2	Fourth Amended and Restated Bylaws of Spok Holdings, Inc dated October 26, 2022	8-K	001-32358	3.1	10/28/2022	
3.3	Certificate of Designations of Series A Junior Participating Preferred Stock of Spok Holdings, Inc.	8-K	001-32358	3.1	9/3/2021	
4.1*	Specimen of common stock certificate, par value \$0.0001 per share	S-4/A	333-115769	4.1	10/6/2004	
4.2	Description of securities registered under Section 12 of the Securities Exchange Act of 1934	10-K	001-32358	4.3	2/17/2022	
10.1	Form of Indemnification Agreement for executive officers of Spok, Holding Inc.	10-Q	001-32358	10.1	10/25/2018	
10.2*	USA Mobility, Inc. Equity Incentive Plan Restricted Stock Agreement (For Board of Directors),(amended)	10-Q	001-32358	10.18	11/1/2007	
10.3*	Form of Director's Indemnification Agreement	10-Q	001-32358	10.24	10/30/2008	
10.4*	USA Mobility, Inc. 2012 Equity Incentive Award Plan	DEF 14A	001-32358	A	3/28/2012	
10.5†	Employment Agreement, between Spok Holdings, Inc. and Vince D. Kelly, dated as of January 1, 2019	8-K	001-32358	10.1	1/4/2019	
10.6*	Restricted Stock Unit Grant Notice for the USA Mobility, Inc. 2012 Equity Incentive Award Plan	10-K	001-32358	10.16	3/2/2017	
10.7	Restricted Stock Unit Grant Notice for the Spok Holdings, Inc. 2015 Long-Term Incentive Plan	10-K	001-32358	10.17	3/2/2017	
10.8†	Spok Holdings, Inc. Severance Pay Plan and Summary Plan Description (For certain C-Level, not including CEO) (amended and restated)	10-K	001-32358	10.18	3/2/2017	
10.9†	Spok Holdings, Inc. 2018 Long-Term Incentive Plan	10-K	001-32358	10.12	2/18/2021	
10.10†	Exhibits to Spok Holdings, Inc., 2018 Long-Term Incentive Plan for the 2020-2022 performance period.					Filed
10.11†	Spok Holdings, Inc. 2019 Short-Term Incentive Plan	10-K	001-32358	10.16	2/28/2019	
10.12†	Spok Holdings, Inc. 2020 Short-Term Incentive Plan	10-K	001-32358	10.16	2/27/2020	
10.13†	Spok Holdings, Inc. 2021 Short-Term Incentive Plan	10-K	001-32358	10.16	2/18/2021	
10.14†	Spok Holdings, Inc. 2022 Short-Term Incentive Plan	10-K	001-32358	10.15	2/17/2022	
10.15†	Spok Holdings, Inc. 2023 Short-Term Incentive Plan					Filed
10.16*	Amendment to the USA Mobility, Inc. 2012 Equity Incentive Award Plan	DEF 14A	001-32358	A	4/27/2017	
10.17†	NEO Severance and Change in Control Document	10-Q	001-32358	10.2	4/27/2017	
10.18†	Spok Holdings, Inc. 2020 Equity Incentive Award Plan	DEF 14A	001-32358	A	6/19/2020	
10.19†	Employment Agreement Extension Letter, by and between Spok Holdings, Inc. and Vincent D. Kelly, dated as of June 18, 2020	8-K	001-32358	10.1	6/18/2020	
10.20	Restricted Stock Unit Grant Notice for the Spok Holdings, Inc. 2020 Equity Incentive Award Plan	10-K	001-32358	10.21	2/18/2021	

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10.21	Voting and Standstill Agreement, dated March 20, 2022, by and between Spok Holdings, Inc., Braeside Investments, LLC, Braeside Capital, L.P. and Braeside Capital II, L.P.	8-K	001-32358	10.1	3/21/2022	
10.22	Spok Holdings, Inc. Deferred Compensation Plan For Non-Employee Directors	10-K	001-32358	10.23	2/18/2021	
10.23	Employment Agreement Extension Letter, by and between Spok Holdings, Inc. and Vincent D. Kelly, dated as of February 16, 2022	10-Q	001-32358	10.1	4/28/2022	
21.1	Subsidiaries of the Company	10-K	001-32358	21	3/1/2018	
23.1	Consent of Grant Thornton LLP					Filed
31.1	Certification of President and Chief Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended					Filed
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended					Filed
32.1	Certification of President and Chief Executive Officer pursuant to 18 U.S.C. Section 1350					Furnished
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350					Furnished
101.INS	Inline XBRL Instance Document - the instance does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document**					Filed
101.SCH	Inline XBRL Taxonomy Extension Schema**					Filed
101.CAL	Inline XBRL Taxonomy Extension Calculation**					Filed
101.DEF	Inline XBRL Taxonomy Extension Definition**					Filed
101.LAB	Inline XBRL Taxonomy Extension Labels**					Filed
101.PRE	Inline XBRL Taxonomy Extension Presentation**					Filed
104	Cover Page Interactive Data File (the cover page XBRL tags are embedded within the Inline XBRL document and included in Exhibit 101)					Filed

* On July 8, 2014, the Company changed its name from USA Mobility, Inc. to Spok Holdings, Inc.

** The financial information contained in these XBRL documents is unaudited.

† Denotes a management contract or compensatory plan or arrangement.



LONG TERM INCENTIVE PLAN PERFORMANCE PERIOD 2020-2022

Spok 2020 Long Term Incentive Plan (LTIP) Payout Scale Based on LRP_20

(Software Operations Bookings - 50%; Operating & Capital Expenses - 50%)

Operating and Capital Expenses (50%) ⁽¹⁾			
	Result	Performance	Payout
Over Perform	\$357.722	80.0%	125.0%
	\$380.080	85.0%	120.0%
	\$402.438	90.0%	115.0%
Target	\$424.795	95.0%	107.5%
	\$447.153	100.0%	100.0%
	\$469.511	105.0%	95.0%
Under Perform	\$491.868	110.0%	90.0%
	\$514.226	115.0%	85.0%
	\$536.584	120.0%	80.0%
	> \$536.584	> 120.0%	0.0%

Operations Bookings (50%)			
	Result	Performance	Payout
Over Perform	\$143.927	110.0%	150.0%
	\$137.385	105.0%	137.5%
	\$134.114	102.5%	125.0%
Target	\$132.151	101.0%	112.5%
	\$130.843	100.0%	100.0%
	\$124.300	95.0%	95.0%
Under Perform	\$117.758	90.0%	90.0%
	\$111.216	85.0%	85.0%
	\$104.674	80.0%	80.0%
	\$98.132	75.0%	75.0%
	\$91.590	70.0%	70.0%
	\$85.048	65.0%	65.0%
	\$78.506	60.0%	60.0%
	\$71.963	55.0%	55.0%
	\$65.421	50.0%	50.0%
	\$58.879	45.0%	45.0%
	\$52.337	40.0%	40.0%
	\$45.795	35.0%	35.0%
	\$39.253	30.0%	30.0%
	\$32.711	25.0%	25.0%
	\$26.169	20.0%	20.0%
	\$19.626	15.0%	15.0%
	\$13.084	10.0%	10.0%
	\$6.542	5.0%	5.0%
	\$0.000	0.0%	0.0%
	< \$0	< 0.0%	0.0%

CCS Bookings	\$	36,000	\$	23,000	\$	22,843	\$	81,843
Spok Go Bookings	\$	12,000	\$	37,000	\$	-	\$	49,000
Operations Bookings	\$	48,000	\$	60,000	\$	22,843	\$	130,843

(1) Operating and Capital Expenses excludes severance and stock based compensation expense.

Amount is calculated as follows:

	2020	2021	2022	Total
Operating Expenses	\$ 162,245	\$ 164,173	\$ 132,577	\$ 458,996
Capital Expenses	4,280	4,025	3,766	12,070
Add Back- Severance	(220)	(338)	(7,421)	(7,979)
Stock Based Compensation	(5,449)	(6,498)	(3,987)	(15,934)
Operating and Capital Expenses	\$ 160,856	\$ 161,362	\$ 124,935	\$ 447,153



Spok Holdings, Inc.
2023 Short-Term Incentive Plan
(Effective January 1, 2023)

- I. Effective Date. The 2023 Short-Term Incentive Plan (the “Plan”) for Spok Holdings, Inc., was adopted by the Compensation Committee of the Board of Directors (the “Compensation Committee”) of Spok Holdings, Inc., (the “Parent” or the “Company”), a Delaware corporation for the employees of Spok, Inc., a Delaware corporation and an indirect wholly-owned subsidiary of the Parent (“Spok”) on December 2, 2022. The Plan is effective as of January 1, 2023 and supersedes and replaces all former management short-term incentive plans, including the Spok Holdings, Inc., 2022 Short-Term Incentive Plan.
 - II. Purpose. The Plan is designed to attract, motivate, retain and reward key employees for their performance during the calendar year, from January 1 through December 31, 2023 (the “Performance Period”). The Plan rewards key employees by allowing them to receive cash bonuses based on how well the Company performs against the performance objectives as set forth by the Compensation Committee and, as may be adjusted by the Compensation Committee in the event of a Change of Control or other corporate reorganization, merger, similar transaction, to take into account extraordinary events or as the Compensation Committee determines is in the best interests of the Company. In order for bonuses to be earned, the Company must meet the quantitative Performance Objectives by December 31, 2023. Performance Objectives are based solely on the consolidated performance of the Company. For clarity, Performance Objectives and the attainment thereof does not include revenue or expenses related to acquisitions or due diligence expenses occurring after the Effective Date of this Plan except as directed by the Compensation Committee.
 - III. Eligibility. Participation in the Plan is limited to those key employees who are selected for participation in the Plan by the Compensation Committee, in its sole discretion (each such individual, a “Participant”). Individuals selected by the Compensation Committee to participate as of January 1, 2023 are listed on Exhibit B. Newly hired or promoted employees, or employees who otherwise become eligible to participate, who are selected to participate in the Plan after January 1, 2023 but before October 1, 2023 will participate in the Plan on a prorated basis based on the number of days worked during the performance period after becoming bonus eligible. Employees who are newly hired or promoted on or after October 1, 2023 will not be eligible to participate in the Plan.
 - IV. Target Bonus. The target bonus for each Participant is based on a percentage of the Participant’s annual (or prorated, if applicable) salary as of January 1, 2023 (or date of hire or promotion to an eligible position, if later) or a flat amount as designated. The applicable percentage or amount is determined by the Compensation Committee with respect to executives earning \$250,000 or more and by the CEO for other management and need not be identical among Participants. The earned bonus may be greater than or less than the target bonus depending on the level at which the Performance Objectives are attained.
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I. Payment of Earned Bonus.

- i. Except as provided herein, each earned bonus under the Plan will be calculated based on the attainment of the Performance Objectives and will be paid in a lump sum (subject to any required withholding for income and employment taxes) after the 2023 annual audit of the Parent's consolidated financial statement has been completed and the Parent's 2023 Annual Report on Form 10-K has been filed with the Securities and Exchange Commission but in no event later than December 31, 2023.
 - ii. If the Participant involuntarily Separates from Service without Cause or due to disability or dies prior to December 31, 2023, he or she will be eligible to receive a prorated bonus provided that the Company is on track to attain the Performance Objectives as reasonably determined by the Compensation Committee and provided further that, in the event Participant involuntarily Separates from Service without Cause, he or she has executed a release, any waiting period in connection with such release has expired, he or she has not exercised any rights to revoke the release and he or she has followed any other applicable and customary termination procedures, as determined by the Parent in its sole discretion. The bonus will be prorated to the date of Participant's Separation from Service or death, calculated as follows: one-hundred percent (100%) of a Participant's target bonus will be multiplied by a fraction, the numerator of which is the number of days the Participant was continuously providing services to the Company from January 1, 2023 through the date immediately prior to the Participant's Separation from Service or death, and the denominator of which is 365 days. Prorated bonuses will be paid to the Participant, or in the event of Participant's death, the Participant's estate, on the sixty-fifth (65th) day following the date of Participant's Separation from Service or death.
 1. For purposes of the Plan, "Separation from Service" shall have the meaning provided in the Treasury Regulations under section 409A of the Internal Revenue Code of 1986, as amended (the "Code"), and "Separates from Service" shall have a consistent meaning. Unless otherwise defined in an employment agreement between the Participant and the Parent or the Company, for purposes of the Plan, "Cause" means (i) dishonesty of a material nature that relates to the performance of services for the Company by Participants; (ii) criminal conduct (other than minor infractions and traffic violations) that relates to the performance of services for the Company by Participant; (iii) the Participant's willfully breaching or failing to perform his or her duties as an employee of the Company (other than any such failure resulting from the Participant having a disability (as defined herein)), within a reasonable period of time after a written demand for substantial performance is delivered to the Participant by the Compensation Committee, which demand specifically identifies the manner in which the Compensation Committee believes that the Participant has not substantially performed his duties; or (iv) the willful engaging by the Participant in conduct that is demonstrably and materially injurious to the Parent, Company or an Affiliate, monetarily or otherwise. No act or failure to act on the Participant's part shall be deemed "willful" unless done, or omitted to be done; by the Participant not in good faith
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and without reasonable belief that such action or omission was in the reasonable best interests of the Parent, Company and Affiliates. For this purpose, “disability” means a condition or circumstance such that the Participant has become totally and permanently disabled as defined or described in the Parent’s long term disability benefit plan applicable to executive officers as in effect at the time the Participant incurs a disability.

- i. Change in Control. Notwithstanding anything herein to the contrary, upon the occurrence of a Change in Control (as defined in the Company’s 2020 Equity Incentive Award Plan) prior to the end of the Performance Period, each Participant who remains employed with the Company through the date of the Change in Control will receive a cash payment equal to his or her target bonus amount multiplied by a fraction, the numerator of which is the number of days elapsed from January 1, 2023 (or if later the date of the Participant’s commencement of employment) through the date of the Change in Control and the denominator of which is 365. Following payment of such amount, this Plan will terminate, and no further payments will be made hereunder, unless otherwise determined by the Compensation Committee.
 - ii. Notwithstanding anything to the contrary in this Plan, no payments contemplated by this Plan will be paid during the six-month period following a Participant’s Separation from Service unless the Company determines, in its good faith judgment, that paying such amounts at the time indicated in paragraph b above would not cause the Participant to incur an additional tax under Code section 409A (a)(2)(B)(i), in which case the bonus payment shall be paid in a lump sum on the first day of the seventh month following the Participant’s Separation from Service.
 - II. Forfeiture. Any Participant whose employment is terminated for Cause or who voluntarily Separates from Service prior to the date bonuses are paid shall forfeit any right to receive a bonus award.
 - III. Clawback. The Compensation Committee of the Board may require forfeiture or a clawback of any incentive compensation awarded or paid under this Plan in excess of the compensation actually earned based on a restatement of the Company’s financial statements as filed with the Securities and Exchange Commission for the period covered by this Plan.
 - IV. Administrator. The Compensation Committee shall administer the Plan in accordance with its terms, and shall have full discretionary power and authority to construe and interpret the Plan; to prescribe, amend and rescind rules and regulations, terms, and notices hereunder; and to make all other determinations necessary or advisable in its discretion for the administration of the Plan. Any actions of the Compensation Committee with respect to the Plan shall be conclusive and binding upon all persons interested in the Plan. The Compensation Committee, in its sole discretion and on such terms and conditions as it may provide, may delegate all or part of its authority and powers under the Plan to one or more directors and/or officers of the Parent or the Company.
 - V. Amendment; Termination. The Compensation Committee, in its sole discretion, without prior notice to Participants, may amend or terminate the Plan, or any part thereof, including the Performance Objectives as described in Section II, at any time and for any
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reason, to the extent such action will not cause adverse tax consequences to a participant under Code section 409A. Any amendment or termination must be in writing and shall be communicated to all Participants. No award may be granted during any period of suspension or after termination of the Plan.

VI. Miscellaneous.

- i. No Rights as Employee. Nothing contained in this Plan or any documents relating to this Plan shall (a) confer on a Participant any right to continue in the employ of the Company; (b) constitute any contract or agreement of employment; or (c) interfere in any way with the Company's right to terminate the Participant's employment at any time, with or without Cause.
- ii. Tax Withholding. To the extent required by applicable federal, state, local or foreign law, the Company shall withhold all applicable taxes (including, but not limited to, the Participant's FICA and Social Security obligations) from any bonus payment.
- iii. Transferability. A Participant may not sell, assign, transfer or encumber any of his or her rights under the Plan.
- iv. Unsecured General Creditor. Participants (or their beneficiary) may seek to enforce any rights or claims for payment under the Plan solely as an unsecured general creditor of the Parent or Spok.
- v. Successors. This Plan shall be binding upon and inure to the benefit of the Parent, Company and any successor to the Company and the Participant's heirs, executors, administrators and legal representatives.
- vi. Code Section 409A. The Plan is intended to be a nonqualified deferred compensation plan within the meaning of Code section 409A and shall be interpreted to meet the requirements of Code section 409A. To the extent that any provision of the Plan would cause a conflict with the requirements of Code section 409A, or would cause the administration of the Plan to fail to satisfy Code section 409A, such provision shall be deemed null and void to the extent permitted by applicable law. Nothing herein shall be construed as a guarantee of any particular tax treatment to a Participant.
- vii. Governing Law. All questions pertaining to the validity, construction and administration of the Plan shall be determined in accordance with the laws of the State of Delaware, without regard to conflicts of law provisions.
- viii. Integration. This document and each exhibit hereto represent the entire agreement and understanding between the Company and the Participants and supersede any and all prior agreements or understandings, whether oral or written, with the Company relating to the subject matter covered by this Plan.
- ix. Severability. In case any provision of this Plan shall be held illegal or invalid, such illegality or invalidity shall be construed and enforced as if said illegal or invalid provision had never been inserted herein and shall not affect the remaining provisions of this Plan, but shall be fully severable, and the Plan shall be construed and enforced as if any such illegal or invalid provision were not a part hereof.

[Execution page follows]

IN WITNESS WHEREOF, Spok Holdings, Inc., by its duly authorized officer acting in accordance with a resolution duly adopted by the Compensation Committee of the Board of Directors of Spok Holdings, Inc., has executed this Plan for the benefit of employees of Spok Holdings, Inc. and subsidiaries, effective as of January 1, 2023.

SPOK HOLDINGS, INC.

/s/ Vincent D. Kelly.
Vincent D. Kelly, President & CEO

Exhibit A

Performance Objectives

Exhibit B

Participants

Employee Name	Job Title
KELLY, VINCENT D.	CEO
Wallace, Michael W.	President & COO
Woods Keisling, Sharon	Corp Secretary & Treasurer
Czop, Michael	VP, Technology Ops
Deboer, John	VP, Tech Engineering
Hall, Lisa R.	VP, HR & Admin
Ling, Michael J.	VP, Maintenance Revenue
Rice, Calvin C.	Chief Financial Officer
Tindle, Timothy E.	Chief Information Officer
Wax, Jonathan	VP, Sales
Grandfield, Michele	VP, Customer Support
Hodes, Matthew	VP, PSG
Patel, Jinita	Controller
Smith, Jill	VP, Marketing

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated February 23, 2023, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of Spok Holdings, Inc. on Form 10-K for the year ended December 31, 2022. We consent to the incorporation by reference of said reports in the Registration Statements of Spok Holdings, Inc. on Forms S-8 (File No. 333-182444, File No. 333-212724 and File No. 333-240213).

/s/ GRANT THORNTON LLP

Arlington, Virginia
February 23, 2023

**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, Vincent D. Kelly, certify that:

1. I have reviewed this Annual Report on Form 10-K of Spok Holdings, 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(s) 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - c. 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
 - d. 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(s) 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 23, 2023

/s/ Vincent D. Kelly

Vincent D. Kelly

President and Chief Executive Officer

**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, Calvin C. Rice, certify that:

1. I have reviewed this Annual Report on Form 10-K of Spok Holdings, 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(s) 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - c. 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
 - d. 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(s) 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 23, 2023

/s/ Calvin C. Rice

Calvin C. Rice

Chief Financial Officer

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

Pursuant to 18 U.S.C. § 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Spök Holdings, Inc. (the "Company") hereby certifies, to such officer's knowledge, that:

- (i) the accompanying Annual Report on Form 10-K of the Company for the year ended December 31, 2022 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
- (ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 23, 2023

/s/ Vincent D. Kelly

Vincent D. Kelly

President and Chief Executive Officer

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

Pursuant to 18 U.S.C. § 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Spok Holdings, Inc. (the "Company") hereby certifies, to such officer's knowledge, that:

- (i) the accompanying Annual Report on Form 10-K of the Company for the year ended December 31, 2022 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
- (ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 23, 2023

/s/ Calvin C. Rice

Calvin C. Rice

Chief Financial Officer

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Board of Directors

Christine M. Cournoyer
Chairperson of the Board, Spok
Former Chairperson and Chief Executive Officer,
N-of-One, Inc.

Dr. Bobbie Byrne
Chief Information Officer,
Advocate Aurora Health

Randy Hyun
Chief Operations Officer of CarepathRx LLC,
Chief Executive Officer of CarepathRx Health,
Systems Solutions

Vincent D. Kelly
President and Chief Executive Officer,
Spok Holdings, Inc.

Brett Shockley
Chief Executive Officer and Chairman,
Journey AI, Inc.

Todd Stein
Co-Investment Manager,
Braeside Investments, LLC

Corporate Officers

Vincent D. Kelly
President and Chief Executive Officer

Michael W. Wallace
Chief Operating Officer, President of Spok, Inc.

Calvin C. Rice
Chief Financial Officer, Chief Accounting Officer

Sharon Woods Keisling
Corporate Secretary and Treasurer

Annual Meeting

A formal notice of the meeting is being mailed to each stockholder. The proxy statement, proxy card, and 2022 Annual Report on Form 10-K are available at www.proxyvote.com.

This annual report contains the 2022 Annual Report on Form 10-K filed with the Securities and Exchange Commission. Spok Holdings, Inc. will provide without charge to each stockholder of record additional copies of the Company's 2022 Annual Report on Form 10-K. Please send your request to:

Investor Relations
Spok Holdings, Inc.
5911 Kingstowne Village Parkway, 6th floor
Alexandria, VA 22315

Investor and Media Information
Inquiries from investors, the financial community, and news organizations should be directed to Investor Relations and Corporate Communications at the address noted above, by calling (800) 611-8488, or by visiting our website at www.spok.com.

Securities Listing
The common stock of Spok Holdings, Inc., trading symbol "SPOK," trades on the NASDAQ National Market®.

Transfer Agent and Registrar
Computershare
P.O. Box 505000
Louisville, KY 40233
Direct: (781) 575-2725
Toll Free: (877) 498-8865
Hearing Impaired: TDD (800) 952-9245
www.computershare.com/investor

Independent Public Accountants
Grant Thornton LLP
1000 Wilson Boulevard, Suite 1400
Arlington, VA 22209

Corporate Counsel
Latham & Watkins LLP
555 Eleventh Street, NW, Suite 1000
Washington, DC 20004-1304



Spok, Inc.
5911 Kingstowne Village Parkway, 6th floor
Alexandria, VA 22315

Telephone (800) 611-8488
Fax (866) 382-1662
www.spok.com

ABOUT SPOK, INC.

Spok, Inc., a wholly owned subsidiary of Spok Holdings, Inc. (NASDAQ: SPOK), headquartered in Alexandria, Virginia, is proud to be a global leader in healthcare communications. We deliver clinical information to care teams when and where it matters most to improve patient outcomes. Top hospitals rely on the Spok Care Connect® platform to enhance workflows for clinicians and support administrative compliance. Our customers send over 100 million messages each month through their Spok® solutions. Spok enables smarter, faster clinical communication.

spok.com

