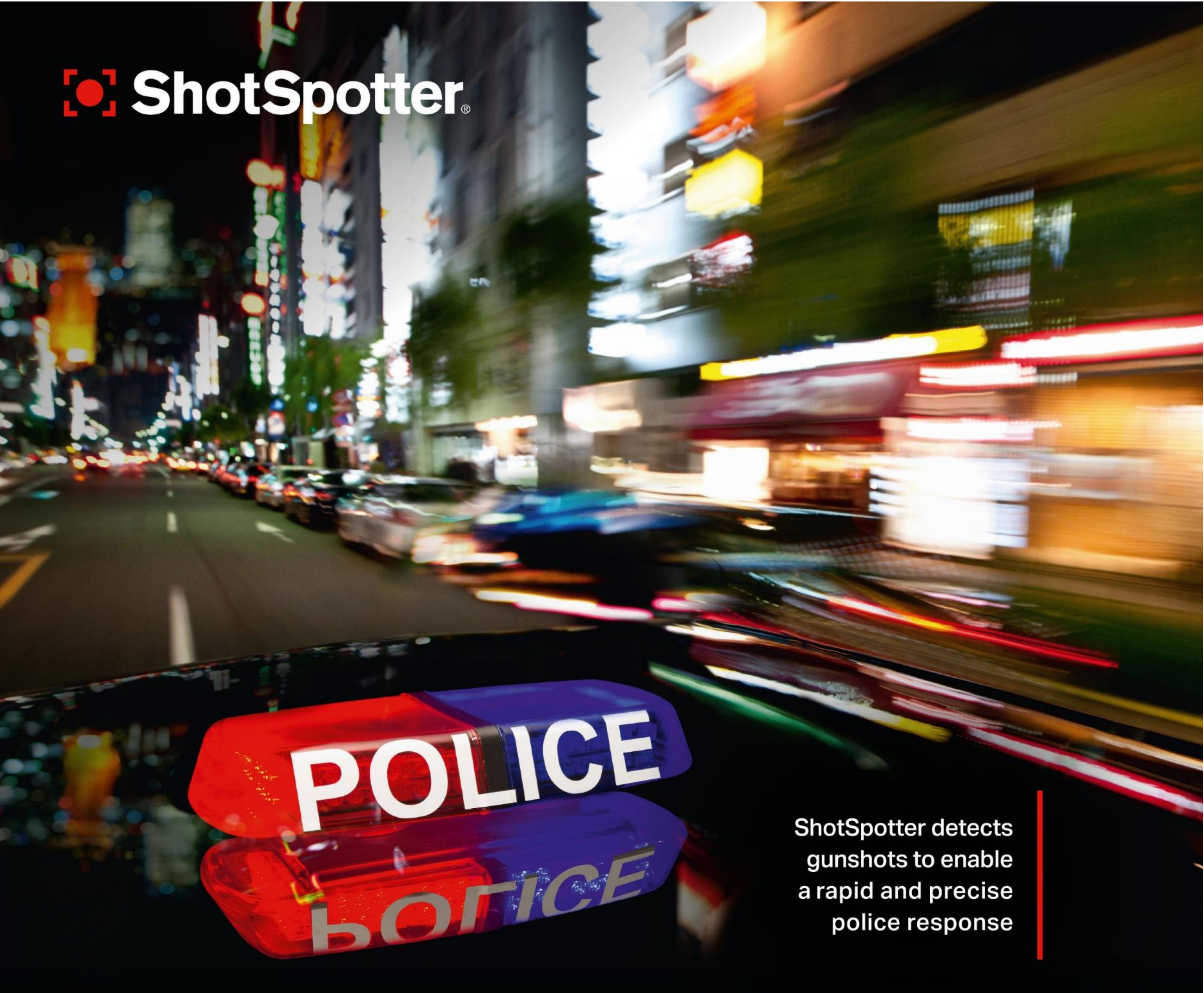
ShotSpotter®



ShotSpotter detects gunshots to enable a rapid and precise police response

Annual Report 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 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, 2019

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 001-38107

ShotSpotter, Inc.
(Exact Name of Registrant as Specified in its Charter)

Delaware	**47-0949915**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
7979 Gateway Blvd., Suite 210 Newark, California	**94560**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (510) 794-3100

Securities registered pursuant to Section 12(b) of the Act: Common Stock, $0.005 par value per share; Common Stock traded on the Nasdaq Capital Market; trading symbol SSTI.

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 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, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

If an emerging growth company, indicate by check mark if the Registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on a closing price of $44.20 per share of the Registrant's common stock as reported on the Nasdaq Capital Market on June 28, 2019 was $360,807,561.

The number of shares of Registrant's common stock outstanding as of March 6, 2020 was 11,346,538.

Portions of the Registrant's Definitive Proxy Statement relating to the Annual Meeting of Stockholders, scheduled to be held on June 10, 2020, are incorporated by reference into Part III of this Report. Such Proxy Statement will be filed with the Securities and Exchange Commission no later than 120 days following the end of the Registrant's fiscal year ended December 31, 2019.

Table of Contents

SPECIAL NOTE REGARDING FORWARD LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements that involve substantial risks and uncertainties. The forward-looking statements are contained principally in the sections of this Annual Report on Form 10-K entitled "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Business," but are also contained elsewhere in this Annual Report on Form 10-K. Often, you can identify forward-looking statements by the words "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "objective," "ongoing," "plan," "predict," "project," "potential," "should," "will," or "would," or the negative of these terms, or other comparable terminology intended to identify statements about the future. Forward-looking statements include statements about:

- our ability to continue to increase revenues, secure customer renewals and expand coverage areas of existing public safety customers;
- our ability to continue to add new customers for our public safety and security solutions;
- our ability to grow both domestically and internationally;
- our ability to effectively manage or sustain our growth;
- our ability to maintain, increase or strengthen awareness of our solutions;
- our ability to achieve and maintain service level agreement standards (SLAs) in our customer contracts;
- future revenues, hiring plans, expenses, capital expenditures, capital requirements and stock performance;
- our ability to service outstanding debt, if any, and satisfy covenants associated with outstanding debt facilities;
- our ability to attract and retain qualified employees and key personnel and further expand our overall headcount;
- our ability to comply with new or modified laws and regulations that currently apply or become applicable to our business both in the United States and internationally; and
- our ability to maintain, protect and enhance our intellectual property.

We caution you that the foregoing list may not contain all of the forward-looking statements made in this Annual Report on Form 10-K.

These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this Annual Report on Form 10-K, we caution you that these statements are based on a combination of facts and factors currently known by us and our expectations of the future, about which we cannot be certain. You should refer to the "Risk Factors" section of this Annual Report on Form 10-K for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this Annual Report on Form 10-K will prove to be accurate. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. You should read this Annual Report on Form 10-K and the documents that we reference in this Annual Report on Form 10-K completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

PART I.

Item 1. BUSINESS

Overview

We provide precision-policing and security solutions for law enforcement and security personnel to help deter gun violence and make cities, campuses and facilities safer. Our flagship public safety solution, ShotSpotter Flex, is the leading outdoor gunshot detection, location and alerting system. Our patrol management software, ShotSpotter Missions (formerly HunchLab), creates crime forecasts designed to enable more precise and effective use of patrol resources to deter crime. In 2019, we created a new technology innovation unit, ShotSpotter Labs, to expand our efforts supporting innovative uses of our technology to help protect wildlife and the environment. Our security solutions, ShotSpotter SecureCampus and ShotSpotter SiteSecure, are designed to help law enforcement and security personnel serving universities, corporate campuses and key infrastructure or transportation centers mitigate risk and enhance security by notifying authorities of a potential outdoor gunfire incident, saving critical minutes for first responders to arrive. Our gunshot detection solutions are trusted by law enforcement agencies in over 100 cities as of December 31, 2019.

Our gunshot detection solutions consist of highly-specialized, cloud-based software integrated with proprietary, internet-enabled sensors designed to detect outdoor gunfire. The speed and accuracy of our gunfire alerts enable law enforcement and security personnel to reduce their response times to shooting events, which can increase the chances of apprehending the shooter, providing timely aid to victims, and identifying witnesses before they scatter, as well as aid in evidentiary collection and serve as an overall deterrent. When a potential gunfire incident is detected by our sensors, our system applies machine classification combined with human review to analyze and validate the incident and precisely locate where the incident occurred. An alert containing a location on a map and critical information about the incident is sent directly to subscribing law enforcement or security personnel through any internet-connected computer and to iPhone or Android mobile devices.

Our software sends validated gunfire data along with the audio of the triggering sound to our Incident Review Center (“IRC”), where our trained acoustic experts are on duty 24 hours a day, seven days a week, 365 days a year to screen and confirm actual gunfire incidents. Our acoustic experts can supplement alerts with additional tactical information, such as the potential presence of multiple shooters or the use of high-capacity weapons. Gunshot incidents reviewed by our IRC result in alerts typically sent within 45 seconds of the receipt of the gunfire incident.

We generate annual subscription revenues from the deployment of ShotSpotter Flex on a per-square-mile basis. Our security solutions, ShotSpotter SecureCampus and ShotSpotter SiteSecure, are typically sold on a subscription basis, each with a customized deployment plan. Our ShotSpotter Missions solution is also sold on a subscription basis. As of December 31, 2019, we had ShotSpotter Flex, ShotSpotter SecureCampus and ShotSpotter SiteSecure coverage areas under contract for approximately 760 square miles, of which 730 square miles had gone live. Coverage areas under contract included over 100 cities and 12 campuses/sites across the United States, South Africa and the Bahamas, including three of the ten largest cities in the United States. Most of our revenues are attributable to customers based in the United States.

We are a mission-driven organization focused on earning the trust of law enforcement to help them provide equal protection to all and strengthen the police-community relationship, ultimately reducing gun violence. Our inspiration comes from our principal founder, Dr. Bob Showen, who believes that the highest and best use of technology is to promote social good. We are committed to developing comprehensive, respectful and engaged partnerships with law enforcement agencies, elected officials and communities focused on making a positive difference in our society.

Industry Background: The Problem of Gun Violence

According to the Federal Bureau of Investigation (the “FBI”), an estimated 1.2 million violent crimes occurred in the United States in 2018. Of those violent crimes, it is estimated that firearms were used in 72.7% of murders, 38.2% of robberies and 26.1% of aggravated assaults.

There is a staggering economic cost associated with gun violence. A 2019 study commissioned by the U.S Congress Joint Economic Committee Democratic Staff found that gun violence costs the American economy at least $229 billion every year.

The Challenge of Urban Gun-Related Crime

The majority of urban gunfire goes unreported. A report published by The Brookings Institute analyzing data collected from ShotSpotter Flex and our customers suggests that approximately 90% of the gunshots detected by our public safety solution are not reported to 911 by residents. Even in the instances when 911 calls are made, the information reported by the caller is often incomplete or inaccurate as to the time and location of the gunshot. Furthermore, in many cases it is often difficult for the caller to authenticate the incident as gunfire. In addition, we believe that in communities plagued by gun violence, there is often a lack of trust between the community's residents and its police force, which can exacerbate the underreporting of gunfire and create a vicious cycle of underreporting, lack of response and increased mistrust due to continued unaddressed gun violence in the community. When gunfire is not reported or is reported inaccurately, law enforcement and medical personnel cannot address injuries nor effectively investigate and solve related crimes or prevent future incidents.

The communities in which gun violence occurs suffer significant economic loss. A 2016 report by the Urban Institute, which studied the effect of gun violence in Minneapolis, Minnesota, Oakland, California and Washington, D.C., noted that the perceived risk of gun violence imposed heavy social, psychological and monetary damages in communities, including fewer jobs and lower economic vitality. The study concluded:

- In Minneapolis, one fewer gun homicide in a given year was statistically associated with the creation of 80 jobs and an additional $9.4 million in sales across all business establishments in the next year.
- In Oakland, every additional gun homicide in a given year was statistically associated with five fewer job opportunities in contracting businesses in the next year.
- In Washington, D.C., every additional gun homicide in a given year was statistically associated with two fewer retail and service establishments the next year.

In addition, several studies have suggested that property values are inversely correlated with violent crime. For example, the Center for American Progress conducted a study of changes in homicide incidents and housing prices in Boston, Massachusetts; Seattle, Washington; Chicago, Illinois; Philadelphia, Pennsylvania and Milwaukee, Wisconsin and found that a reduction in a given year of one homicide in a ZIP code causes a 1.5% increase in housing values in that same ZIP code the following year.

The Rise of Active-Shooter Events

In addition to the problem of localized, persistent gun violence, there has been an increasing number of high-profile mass shootings and terror events over the past several years. According to a 2016 report by the FBI, the number of active-shooter events in the United States in 2014 and 2015 was among the highest for any two-year average period in the preceding 16 years and nearly six times as many as the period between 2000 and 2001, the first two years that the FBI began tracking active-shooter events.

Unlike gunfire incidents occurring in high-crime areas, active-shooter events often result in a high volume of telephone reports to 911. However, each caller may provide untimely, inaccurate or incomplete information, causing confusion or delays in first responders' ability to react quickly and accurately. Response time is critical as nearly 70% of active-shooter events last five minutes or less with over one third ending in two minutes or less according to a 2013 study conducted by the FBI of active-shooter events.

Our Market

We believe there is significant demand for advanced gunfire detection and location notification solutions that accurately and quickly report instances of gunfire, based on two primary use cases:

- law enforcement— for domestic and international law enforcement serving communities plagued by persistent, localized gun violence, in order to identify, locate and deter gun violence; and
- security— for security personnel (which may include law enforcement personnel) serving universities, corporate campuses, key infrastructure, transportation centers and other areas in which authorities desire to prepare for and mitigate risks related to an active-shooter event, and desire to provide a zone of detection coverage surrounding the respective campus or secured area.

Based on data from the 2018 FBI Uniform Crime Report, we estimate that the domestic market for our public safety solution consists of the approximately 1,400 cities that had four or more homicides per 100,000 residents in 2015. The Uniform Crime Report includes information reported directly to the FBI on a voluntary basis by 18,000 city, university and college, county, state, tribal and federal law enforcement agencies. We believe that four or more homicides per 100,000 residents represents a significant gun violence problem. We estimate that a customer in this market could invest an average of approximately $400,000 per year for ShotSpotter Flex.

Outside of the United States, we estimate that the market for ShotSpotter Flex includes approximately 200 cities in the European Union, Central America, the Caribbean, South America and southern Africa that have at least 500,000 residents. We estimate that a customer in this market could invest an average of approximately $1.0 million per year for our public safety solution.

We estimate the average investment amounts for prospective customers based on our experience with existing customers, our anticipated demand for our solutions and the corresponding coverage areas that we expect prospective customers would elect to cover with our solutions.

Based on data made available by the National Center for Education Statistics and the Federal Aviation Administration, we believe that the domestic market for our security solutions includes approximately 5,000 college campuses and airports. We estimate that, on average, a customer in this market could invest approximately $50,000-$75,000 per year for one of our security solutions. In addition, we believe that there exists a broader market for our security solutions that include, primarily the outdoor areas of college campuses and airports outside of the United States as well as large corporate campuses, train stations and other highly-trafficked areas worldwide.

We also believe there is demand for ShotSpotter Missions within our existing ShotSpotter Flex customers and within police departments in the same cities we target for our gunshot detection solutions, as it designed to help police departments strategically plan patrol directed missions and tactics for more effective crime deterrence. We estimate that the market for our ShotSpotter Missions solution includes approximately 1,500 cities, based on cities that have a population above 25,000 people. We expect that, on average, a customer could invest approximately $50,000 per year for our ShotSpotter Missions solution.

The ShotSpotter Solutions

All of our solutions are based on our highly-specialized, cloud-based software. In the case of our gunshot detection solutions, ShotSpotter Flex, ShotSpotter SecureCampus and ShotSpotter SiteSecure, the software is integrated with our proprietary, internet-enabled sensors and connected through third-party communication networks. We brand our solutions based on particular use cases and target customers as follows:

- **ShotSpotter Flex.** ShotSpotter Flex, a public safety solution, serves cities and municipalities seeking to identify, locate and deter persistent, localized gun violence by incorporating a real-time gunshot detection system into their policing systems.
- **ShotSpotter Missions.** This cloud-based patrol management solution uses artificial intelligence-driven analysis to help police departments strategically plan directed patrol missions and tactics for more effective crime deterrence. The system provides: crime forecasting and mission planning to enable more precise deployment of patrol resources and reports on mission activity and tactics for command staff.

- **ShotSpotter SecureCampus.** ShotSpotter SecureCampus helps the law enforcement and security personnel serving universities, colleges and other educational institutions mitigate risk and enhance security by notifying authorities and first responders of an active-shooter event, involving outdoor gunfire, almost immediately, and provide "dome of protection" outside the campus where our coverage areas extends.
- **ShotSpotter SiteSecure.** ShotSpotter SiteSecure is designed to serve customers such as corporations trying to safeguard their facilities and public agencies focused on protecting critical infrastructure, including train stations, airports and freeways.
- **ShotSpotter Labs.** ShotSpotter Labs houses our advanced technology efforts to adapt and extend our commercial technology to address significant wildlife and environmental issues. Our current focus is on combating rhino poaching in Kruger National Park, South Africa and blast fishing that threatens coral reefs and food security in Southeast Asia. The company has been able to collect revenues from philanthropic entities to cover direct and indirect costs. Innovations have made their way back into our commercial business such as the development of solar-powered sensor from the Kruger deployment, presenting that technologies similar to those now being used for our freeway deployment.

The key features of our gunshot detection solutions are:

- ***Comprehensive Coverage.*** We believe that we sell the only public safety solution that provides comprehensive outdoor coverage for gunshot detection over large and complex acoustic environments. Our outdoor acoustic sensors are strategically placed in an array of 20 to 25 sensors per square mile and can easily be expanded to cover any size area. In addition to providing acoustic surveillance over wide areas, our solutions operate on a continuous basis—24 hours a day, seven days a week, 365 days a year—to provide immediate notification of gunfire at any time of day.
- ***Real-Time, Precise Alerts.*** Our solutions typically notify users within 45 seconds of a gunshot, providing data on the time and location of the shooting and the number of shots fired. An alert is sent depicting a dot on a map that corresponds to a specific address or latitudinal and longitudinal coordinates. In addition, our alerts provide valuable additional information about the scene of the incident, such as the potential presence of multiple shooters or the use of fully automatic and high-capacity weapons. This enhanced tactical awareness can help protect first responders in dangerous and unpredictable situations.
- ***Forensically-Sound Data.*** Because our solutions provide an exact time, location and audio recording of a gunshot, we can provide authorities with critical evidence for investigations and prosecutions. Our Detailed Forensic Reports ("DFRs") provide law enforcement personnel and prosecutors with comprehensive, court-admissible analysis of a shooting incident including the gunfire audio. We also offer expert witness testimony to introduce the forensic analysis of the DFRs at trial and to provide technical expertise regarding our technology. During the year ended December 31, 2019, we completed and delivered 266 DFRs for outdoor gunshot incidents, and our evidence was presented in form of expert witness testimony in 33 state and Federal trials. In 2019 we introduced a new automated, machine generated forensic report, called an Investigative Lead Summary ("ILS"), which fills the need for a significant percentage of DFRs in a more cost effective, timely manner. During 2019, over 45,000 ILS reports were generated by our customers and used for investigative purposes.
- ***Annual Subscription to a Cloud-Based Solution.*** We provide each of our gunshot detection solutions as an annual subscription-based service in which we design, deploy, own, manage and maintain the acoustic sensors, host the software and gunshot data and operate our IRC with trained acoustic experts. Occasionally we receive customer requests for direct purchase of our sensors in conjunction with the purchase of a subscription service. We evaluate each of these requests on a case by case basis.

The key benefits provided by these features of our gunshot detection solutions include:

- ***Expedited Response to Gunfire.*** In 2019, we issued over 140,000 gunshot alerts to our customers. In areas where gun violence is persistent, we believe most gunshots are not otherwise reported. Even when calls are made, many callers are unable to provide a location of the gunshot or other relevant details. Human response time to unfolding violence often delays calls for several minutes in circumstances where response time can be critical. By contrast, our solutions typically alert emergency dispatch centers and field personnel within 45 seconds of confirmed gunfire and provide an exact location, enabling them to respond faster and to a specific location. The ability to respond more quickly increases the chances of apprehending the shooter and assisting victims of violence, in addition to aiding in evidence collection.

- ***Prevention and Deterrence of Gun Violence.*** We believe increasing the speed and accuracy of law enforcement responses to gunfire can act as a long-term deterrent that can decrease the overall prevalence of gunfire. We also believe that knowledge of the existence of our solutions may have a deterrent effect on localized gun violence. When elected officials and law enforcement have an enhanced awareness of gun violence activity and patterns, they have tools to facilitate a rapid and accurate response to gunfire incidents and improve relations between law enforcement and these communities, potentially increasing crime reporting and community cooperation with investigations, which can result in improved public safety.

- ***Improved Community Relations and Collaboration.*** We believe that persistent gun violence limits the ability of police and other community leaders to serve their constituents and improve their communities. Many cities struggle to establish and foster a cooperative and trusting relationship between their police department and the communities they serve. Our public safety solution provides cities with the ability to react quickly to gun violence, thus providing the ability to improve their responses and residents' perception of their responses. This provides our customers with the opportunity to foster improved community relations and collaboration with their residents.

- ***Improved Police Officer Safety.*** We believe that our solutions provide additional and valuable information regarding gunshot incidents as the alerts we provide give additional insight and situational awareness, including, in the case shots fired outdoors, round count, potential multiple shooters and use of an automatic weapon, that allow the responders to be better prepared to respond appropriately.

- ***Ease to Procure and Use.*** By delivering our solution as a cloud- and subscription-based service, our customers do not need to design, install or maintain their own complex infrastructure or hire or train acoustic experts to continuously manage such a solution. We offer consultative ongoing on-boarding, best practices and tactical training support to our customers to insure they derive the full value of implementing our solution.

- ***Integration Capability.*** We can customize the integration of our solutions with existing customer systems, including video management systems, computer-aided dispatch, records management systems, video analytics, automated license plate number readers, camera management systems, crime analysis and statistics packages (including the COMPSTAT software tools commonly used by police departments) and common operating picture software. Interfacing with our alerts can enhance the effectiveness of these customer tools by providing information such as precise latitude and longitude (geolocation), timestamps, incident audio and situational context. For example, police in Minneapolis, Minnesota used our alerts to trigger video recordings of certain key intersections in high crime areas and capture the image of a suspect fleeing the scene of a shooting. Similarly, in Boston, Massachusetts, police correlate our data with surveillance cameras and parolee ankle bracelet tracking data to monitor parolees who may be violating parole terms by committing crimes or consorting with criminals.

- ***Gun Violence Data Collection.*** We believe that we have amassed the world's largest and most accurate collection of urban gunshot data. We provide our public safety customers with detailed gun crime pattern analysis for their coverage areas as well as access to additional data that can assist them with further analytics. This information provides an awareness of gunshot activity that may otherwise go unreported. For example, by collecting information regarding the time and location of otherwise unreported gunfire, our customers can become aware of patterns of violence in the community. This increased awareness can help our customers create policy, allocate appropriate resources and help to address pervasive problems in high gun-activity areas.

The key features and key benefits of our ShotSpotter Missions solution include:

- ***Crime Forecasting and Mission Planning.*** ShotSpotter Missions provides crime forecasting and mission planning to enable more precise deployment of patrol resources and reports on mission activity and tactics for command staff. ShotSpotter Missions also provides agencies the flexibility to select which crime types to forecast and to weight them based on police and community priorities.
- ***Tactical Mission Confirmation.*** Tactical missions can be configured with police input, and effectively communicate predictions to police staff of discrete areas of high risk for crime types. The key benefit of ShotSpotter Missions is its ability to help police departments strategically plan directed patrol missions and tactics for more effective crime deterrence with focused, directed and visible patrol presence.

Strategy

We intend to drive growth in our business by continuing to build on our position as the leading provider of outdoor gunshot detection, location and alerting solutions. Key elements of our strategy include:

- ***Accelerate Our Acquisition of Public Safety Customers.*** We believe that we continue to be in the early stages of penetrating the markets for our public safety solutions. We count law enforcement agencies in three of the ten largest U.S. cities among our ShotSpotter Flex customers. Over the last few years we expanded our direct sales force and customer success teams and added marketing lead-generation capabilities to accelerate growth in this market. Moreover, as we add new public safety customers, publicity and the number of potential references for our solutions increase, which results in our brand and our solutions becoming more well known. We intend to capitalize on this momentum to drive an increase in sales.
- ***Expand Our International Footprint.*** With only two currently deployed ShotSpotter Flex customers outside of the United States in South Africa and the Bahamas, we believe that we have a significant opportunity to expand internationally. We estimate that the market outside the United States for our public safety solutions includes approximately 200 cities in the European Union, Central America, the Caribbean, South America and southern Africa that have at least 500,000 residents. In addition, we believe that there is a market for our security solutions and ShotSpotter Missions outside the United States that primarily includes the outdoor areas of college campuses and airports, large corporate campuses, train stations and other highly-trafficked areas. We intend to invest in our international sales and marketing efforts to reach these customers.
- ***Expand ShotSpotter Flex Revenue within Our Existing Customer Base.*** As customers realize the benefits of our solutions, we believe that we have a significant opportunity to increase the lifetime value of our customer relationships by expanding coverage within their communities through a "land and expand" strategy. For example, of our ShotSpotter Flex customers, approximately 36% have expanded their coverage areas from their original deployment areas by an average of ten square miles as of December 31, 2019. Our overall revenue retention rate has been over 100% for each of 2019, 2018 and 2017.
- ***Drive Additional Revenue per Customer with the Development or Acquisition of New Products and Services.*** We evaluate opportunities to develop or acquire complementary products and services. For example, our acquisition of HunchLab, renamed ShotSpotter Missions, in 2018 provides an opportunity to increase our revenue per customer with a related and value-added technology that helps deter crime through strategically planned patrol missions. Our current focus is to leverage trusted relationships with current customers to drive initial adoption, and increase revenue and lifetime value per customer.
- ***Maintain Passionate Focus on Customer Success and Net Promoter Score.*** Given the specialized nature of our market, a key component of our strategy is to maintain our passionate focus on customer success and satisfaction. We pride ourselves on our execution of customer on-boarding as well as ongoing consulting and customer support, all of which are critical to ensure not only high customer retention rates, but new customer acquisitions. We implement our customer success initiative early in the sales process in order to ensure that we are aligned with the customer's objectives and can positively impact their defined outcomes. We apply consultative best practices and policy development at the command staff level as well as tactical training for field patrol officers. We also consistently measure our performance with customers through an annual Net Promoter Survey. We have extremely high agency participation rates and our scores the last two years have ranked between "excellent" and "world class" according to our Survey partner benchmarks. All of our efforts are focused on driving positive measurable outcomes on gun violence reduction and prevention, which we know leads to positive word of mouth referrals that can attract new customers and drive an increase in sales.

- ***Integrate with New Technologies that Enhance our Value.*** We believe that integrating our solutions with other tools and technologies enhances the value of our solutions to our customers. For example, our solutions can be used in connection with computer-aided dispatch systems, video surveillance cameras, National Integrated Ballistic Information Network ("NIBIN"), and automated license plate readers used by law enforcement to improve the effectiveness of police response and investigation efforts. We continue to evaluate new technologies that may integrate with our solutions to generate additional value for our customers.

- ***Leverage ShotSpotter Labs to Accelerate the Introduction of Innovations into our Commercial Business.*** Labs allows us to invest in developing innovative extensions to our technology that protect wildlife and the environment while covering our costs through philanthropic partners. These innovations can and have made their way back into our commercial business. For example, the technology behind the solar sensors developed for rhino protection across large swaths of land in Kruger National Park were similar to those used in our freeway deployments where some sensor placements did not have direct access to electricity.

- ***Grow Our Security Business.*** We have developed our ShotSpotter SecureCampus solution for universities and other educational institutions. We have also developed ShotSpotter SiteSecure for customers such as corporations trying to safeguard their facilities, and public agencies focused on protecting critical infrastructure, including train stations, airports and highways. As of December 31, 2019, we had 12 ShotSpotter SecureCampus and ShotSpotter SiteSecure customers. With more than 5,000 target customers in the United States, we believe that these markets represent an opportunity for growth.

- ***Extend Our Market and Product Leadership in Gun Violence Prevention.*** We will continue to invest in improving our acoustic gunshot detection solutions, our sensors, our gunshot detection algorithms, the design and deployment of our network arrays, our mobile applications, and the integration of our platform with third-party technologies, to maintain our technology leadership position. With what we believe is the world's largest collection of loud, impulsive sounds collected over 20 years, we believe we are in a unique position to improve gunshot detection accuracy via machine learning. In addition, we intend to leverage our extensive collection of gunfire data to better understand the facts, trends and circumstances surrounding gun activity in order to maintain our reputation as gun violence experts. In doing so, we hope to contribute to the efforts of the community at large to identify, locate and deter gun violence.

- ***Extend our Platform of Services and the Value of our Data.*** We will continue to invest in research and development to leverage our large and growing database of impulsive acoustic events, which includes those from both gunfire and non-gunfire. We also intend to leverage third-party artificial intelligence ("AI") and our own evolving cognitive and analytical applications to improve the efficiency of our solutions, which may include internal software applications, data analysis, event routing and customer outputs. Certain of these applications and outputs may expand the platform of services that we will be able to offer our customers.

Integrated Platform

Our gunshot detection solutions provide for the complete integration of several complex components- intelligent sensors, networking infrastructure, and enterprise software and computing resources — in an easy-to-adopt and affordable annual subscription that eliminates the need for our customers to design, install or maintain their own complex infrastructure or hire or train acoustic experts to monitor continuously the solution.

We believe that offering these solutions as a service on an annual subscription basis is cost-effective, provides for more resilient, redundant infrastructure and significantly reduces friction during customer adoption by eliminating the complexity and front-loaded capital expenditure associated with perpetual licenses for on-site technology projects. Our sensors operate on machine-to-machine networks and, because we maintain thousands of live sensor connections, we are able to aggregate usage for all of our customers and negotiate lower rates from communications service providers than a single customer would likely be able to procure on their own.

Our hybrid cloud infrastructure is architected to deliver a platform for high availability and elasticity. We partner with an industry leading private cloud vendor that supplies colocation facilities worldwide and with Amazon Web Services the leading vendor of public cloud services. We are able to provide a level of 24/7/365 fault-tolerant hardware and network uptime that few of our customers could afford to procure or maintain on their own.

Gunshot Detection Software

The heart of our gunshot detection solutions is our sophisticated and highly-specialized software. Our software analyzes audio signals for potential gunshots first in our intelligent sensors. Our sensor filters out ambient background noise, such as traffic or wind, and looks for impulsive sounds characteristic of gunfire. If the sensor detects such an impulse, it extracts pulse features of the soundwave, such as sharpness, strength, duration, rise time and decay time. Then, the sensor sends these features to our cloud servers as part of a data packet that includes the location coordinates of the reporting sensor and the precise time-of-arrival and angle-of-arrival of the sound.

When the data reaches our cloud servers, our software assesses whether three or more of our outdoor sensors detected the same sound impulse and, if so, multilaterates the location coordinates of the sound source based on the time of arrival and the angle of arrival of the sound. The software then verifies that the data is mathematically consistent with the sound having originated at a single location. The accuracy of the coordinates derived from our proprietary software is significantly improved when more than three sensors participate, as is typically the case. We deploy our sensor arrays such that, on average, six to eight sensors participate in the detection of a gunshot.

After the software determines the location of the sound source, the machine classifier algorithms analyze the pulse features to determine if the sound is likely to be gunfire. Our algorithms consider pulse features, the distance from the sound source, pattern matching and other heuristic methods to evaluate and classify the sound. The machine classifier is periodically trained and validated against a large database of known gunfire and other community sounds that are impulsive in nature. We continue to add new data to our machine learning database from the incidents reviewed by our acoustic experts in our IRC process. Classification continuously improves as the machine classifiers are re-trained using the expanded data set.

Once an incident is classified as likely gunfire, it is sent to the acoustic experts in our IRC for additional analysis and confirmation. Along with confirming an incident is gunfire, our acoustic experts also annotate the alerts with additional information that may be helpful to first responders, such as whether there are multiple shooters or if a high-capacity or fully automatic weapon is being used. Incident notifications are sent when the incident is confirmed as gunfire by one of our acoustic experts. Alerts are delivered by SMS text and push notifications and also through our mobile applications. The time from outdoor trigger-pull to a notification being sent to our customers is typically 45 seconds or less.

Our patrol management software, ShotSpotter Missions, combines historical crime data ingested through agency computer-aided dispatch (“CAD”) and record management system (“RMS”) feeds along with temporal, location and event-based inputs including ShotSpotter data for cities that use our ShotSpotter Flex solution, to create crime forecasts. The system ingests multiple years’ worth of agency data and is “trained” using machine learning to determine correlations across variables. The models are then tested against recent crime data to calibrate forecast accuracy.

The ShotSpotter Missions system is flexible, enabling agencies to select which crime types to forecast and to weight them based on police and community priorities. Mission duration and suggested tactics are configured with police input. Upon deployment, new missions are created for every patrol shift and beat using colored boxes overlaid on a map to indicate discrete areas of high risk for particular crime types. These mission areas enable focused, directed and visible patrol presence to deter crime.

Intelligent Sensors Used in Gunshot Detection Solutions

Our rugged gunshot detection sensor is an intelligent, internet-enabled device that is specially built to ignore ambient noise and respond to impulsive sounds, accurately time-stamping their arrival times. Advanced digital signal processing algorithms filter out background sounds such as traffic, and extract pulse features from the audio signal that, along with the time and angle of arrival of the sound, are sent to our servers where algorithms compute the location of the sound source.

The sensors do not have the ability to live stream audio. Typically, sounds, noises or voices captured on the secure sensors are cached temporarily but are written over and permanently deleted within 30 hours. When a sensor is triggered by an impulsive sound, it creates a potential gunshot “incident” that contains a recording including no more than one second before the incident and one second after the incident. This audio snippet is preserved indefinitely for potential evidentiary use.

Our sensors are designed and tested against international standards for installation in unprotected outdoor environments. Special consideration is given to minimize the sound of wind, rain and hail, which could otherwise limit the range of detection and produce false results. Environmental condition tests performed on the sensors include temperature cycling, temperature soak, shock, vibration, salt fog and moisture ingress protection.

We typically design and deploy arrays of 20 to 25 sensors per square mile taking into consideration the unique acoustic environment in which we are deploying. The cumulative experience of deploying in various cities with different acoustic properties has provided a distinct advantage in tailoring our sensor arrays to perform at high levels. We have full telemetry to each sensor that provides detailed heartbeat data to our system to monitor each sensor’s health and availability. Sensor firmware is maintained with over-the-air updates. Because we purposely over-deploy our sensor arrays, multiple sensors can be offline at any given time without affecting the overall performance of the system.

Incident Review Center

Our IRC operates 24 hours a day, seven days a week, 365 days a year. When a loud impulsive sound triggers enough of our outdoor sensors that an incident is detected and located, audio from the incident is sent to our IRC via secure, high-speed network connections for real-time confirmation. Within seconds of an incident, one of our acoustic experts analyzes audio data and recordings of the potential gunfire. When gunfire is confirmed, our IRC team sends an alert directly to emergency dispatch centers and field personnel through any computer or mobile device with access to the Internet. This process typically takes less than 45 seconds from the time of the gunshot. Alerts include:

- the precise location of gunfire, including both latitude/longitude and street address;
- the number and exact time of shots fired;
- the number of shooters; and
- if detectable, the use of fully automatic or high-capacity weapons.

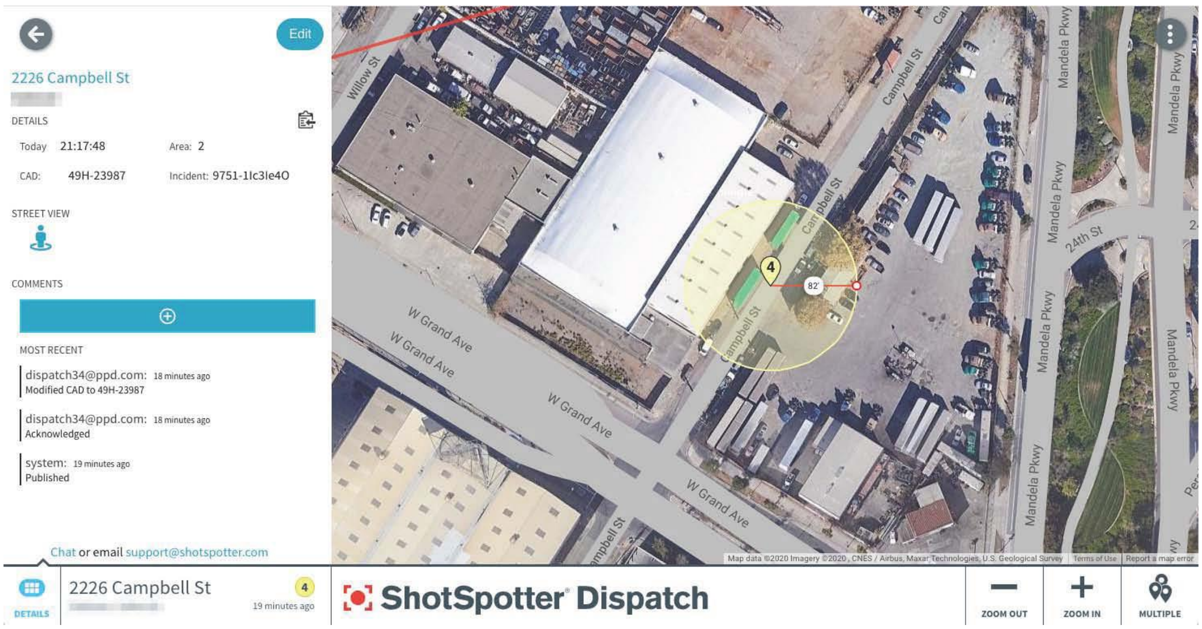
Our IRC operates primarily out of our principal facilities in Newark, California and receives audio from incidents detected by our outdoor sensors regardless of where such incidents occur. Although our IRC currently operates at a single location, our trained personnel can perform IRC functions from any location that has a high-speed internet connection.

Gunshot Detection Alerts

Our alerts are delivered in the following forms:

ShotSpotter Dispatch

Our IRC sends real-time notifications of outdoor gunfire incidents to the ShotSpotter Dispatch application, which is the user interface designed for emergency dispatch centers. In addition, alerts can also be sent directly to field personnel using the ShotSpotter Respond application installed on computers in police cars.



Through the ShotSpotter applications, the alert provides the type of gunfire (single-round or multiple-round), a unique identification number (Flex ID number), a date and time of the muzzle blast (trigger time), nearest address to the precise latitude and longitude of the gunfire, number of shots and police district and beat identification. The alert also includes an audio clip of the incident.

One of our acoustic experts may add other contextual information related to the incident such as the possibility of multiple shooters, high-capacity or fully automatic weapons, and the shooter’s location relative to a building (for example, in the front or back yard or in the street). An audit trail of the time the alert was published to and acknowledged by our customer is also contained in the report. Any notes added by 911 dispatchers are time- and date-stamped and indicate the operator’s identification.

ShotSpotter Respond

We also offer a robust mobile application, for customers using iPhone and Android devices. This application allows field personnel to directly receive immediate alerts of outdoor gunshots and related critical information. The alert provides the type of gunfire (single-round or multiple-round), a unique identification number (Flex ID number), a date and time of the muzzle blast (trigger time), nearest address to the location of the gunfire, number of shots and police district and beat identification. The alert also includes an audio clip of the incident.

Apple Watch®

iPhone® iOS

Android Watch

Android

Real-time alert data with respect to gunshots can also be delivered to customers through email or SMS text messages.

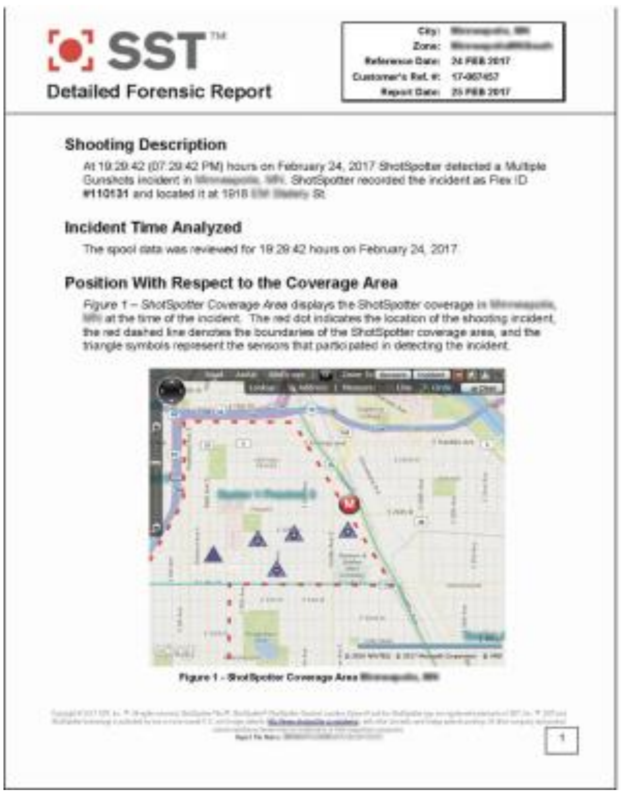
Other Applications and Services

Investigator Portal

All historical incident data in our database can be viewed, searched, sorted, and filtered using the Investigator Portal. The Investigator Portal can create reports for single incidents or groups of incidents. Filter settings may be used to select incidents grouped into a single report. Any predefined reports may be viewed, printed, or the raw data exported for use in third-party applications. The Investigator Portal also includes the ability to save audio clips to any recordable media.

Forensic Reports and Certified Expert Witness Services

Our gunshot data is also useful for detailed forensic analysis that helps reveal and clarify what actually occurred during a gunfire incident, including the identification of certain weapon types, the number and specific time of each individual round fired, the number of shooters involved and the changes in location and direction of shooters in motion. Because our solutions provide an exact time, location and audio recording of a gunshot, we are able to provide authorities with critical evidence for investigations and prosecutions.



SST™

Detailed Forensic Report

Reference Date: 24 FEB 2017
Customer's Ref. #: 17-067457
Report Date: 25 FEB 2017

Shooting Description

At 19:29:42 (07:29:42 PM) hours on February 24, 2017 ShotSpotter detected a Multiple Gunshots incident in . ShotSpotter recorded the incident as Flex ID #110131 and located it at 1918 St.

Incident Time Analyzed

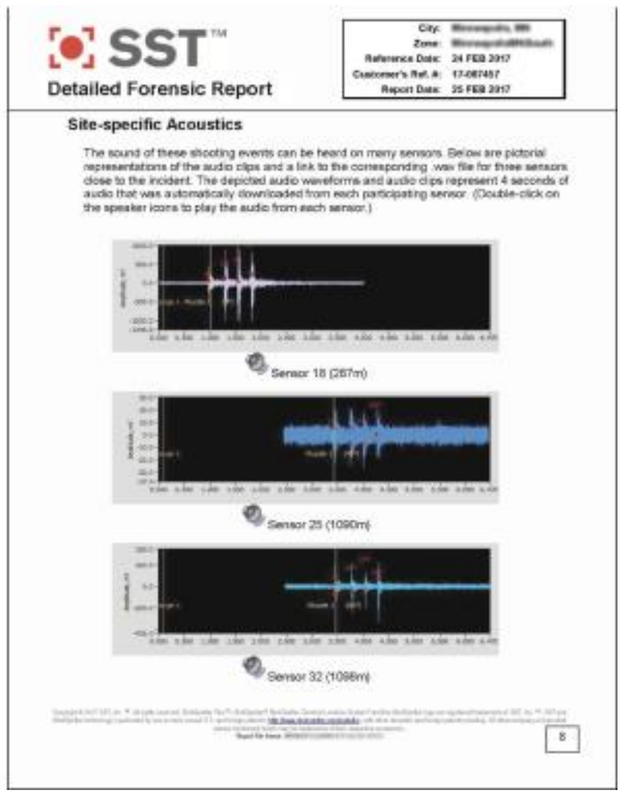
The spool data was reviewed for 19:29:42 hours on February 24, 2017.

Position With Respect to the Coverage Area

Figure 1 – ShotSpotter Coverage Area displays the ShotSpotter coverage in at the time of the incident. The red dot indicates the location of the shooting incident, the red dashed line denotes the boundaries of the ShotSpotter coverage area, and the triangle symbols represent the sensors that participated in detecting the incident.

Figure 1 - ShotSpotter Coverage Area

1



SST™

Detailed Forensic Report

Reference Date: 24 FEB 2017
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Report Date: 25 FEB 2017

Site-specific Acoustics

The sound of these shooting events can be heard on many sensors. Below are pictorial representations of the audio clips and a link to the corresponding .wav file for three sensors close to the incident. The depicted audio waveforms and audio clips represent 4 seconds of audio that was automatically downloaded from each participating sensor. (Double-click on the speaker icons to play the audio from each sensor.)

Sensor 18 (267m)

Sensor 25 (1090m)

Sensor 32 (1098m)

8

As part of our solution, we offer Detailed Forensic Reports (“DFRs”). These provide law enforcement personnel and prosecutors with comprehensive, court-admissible analysis of a shooting incident, including the gunfire audio. We also offer expert witness testimony to introduce the forensic analysis of the DFRs at trial and to provide technical expertise regarding our technology. Our forensic evidence has been admitted in over 100 criminal prosecutions throughout the United States. Our technology and the forensic results achieved from it have been found to be admissible in numerous states, adhering to either the Frye or Daubert expert testimony standard, including Minnesota, Nebraska, Pennsylvania, California, Missouri, New York, Colorado, Indiana and New Jersey.

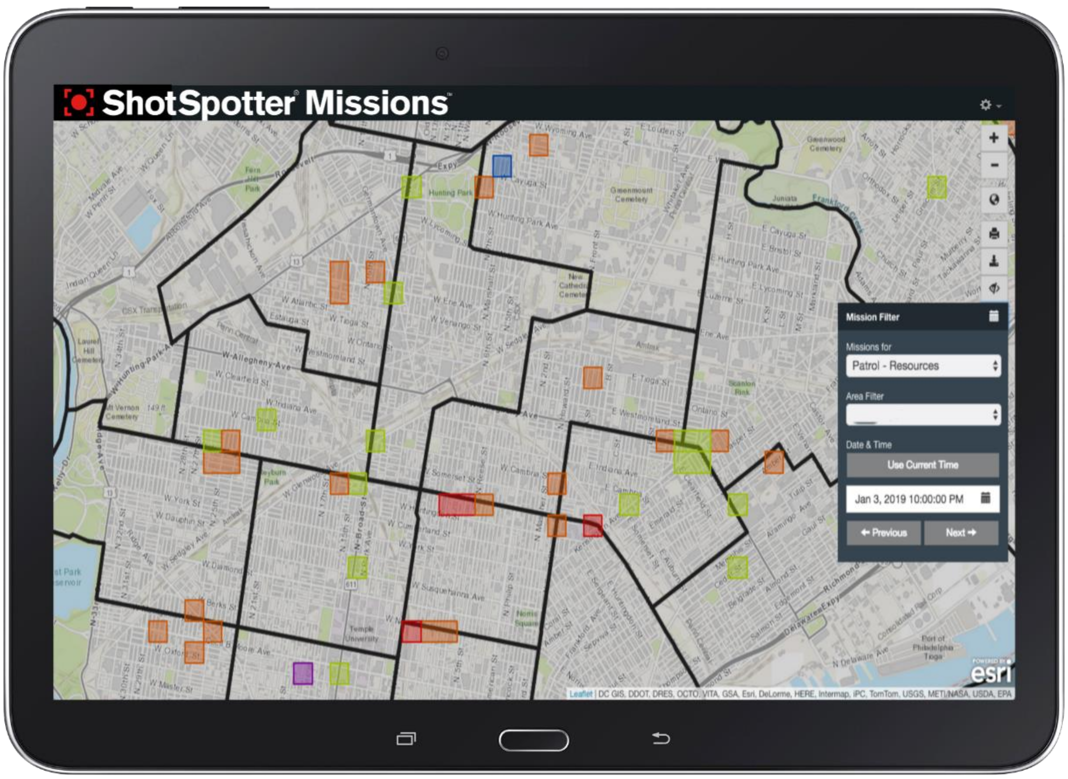
ShotSpotter Missions

In the era where police agencies are constantly asked to do more with less, ShotSpotter Missions helps agencies make their largest cost center – patrol – more efficient and effective in reducing crime. The software-based patrol management system displays AI-driven risk assessments for officers by shift and beat that direct their patrolling and tactics in a more precise, standardized and impactful way. ShotSpotter Missions collects data from all directed patrol sessions that can be analyzed to determine their impact on crime so that operations and tactics can be optimized over time.

ShotSpotter Missions provides:

- crime forecasting and directed patrol planning;
- dosage and tactics guidance by crime type; and
- reports on directed patrol activity and tactics for command staff.

The system combines historical crime data ingested through agency CAD and RMS feeds along with temporal, location and event-based inputs including ShotSpotter data for cities use our ShotSpotter Flex solution, to create crime forecasts. The system ingests multiple years' worth of agency data and is "trained" using machine learning to determine correlations across variables. The models are then tested against recent crime data to calibrate forecast accuracy.



Deployment and Customer Success

When we deploy our ShotSpotter Flex, ShotSpotter SiteSecure and ShotSpotter SecureCampus solutions, we install our outdoor sensors in a specified coverage area according to our contract with the customer. As an initial step, we perform site surveys of the coverage area to design a sensor array, which typically consist of 20 to 25 sensors per square mile. We typically install sensors on the highest buildings in the area, but we may also use existing infrastructure assets such as light poles. Once permission for installation is obtained, we typically engage local electricians to augment our team of field service technicians to install the sensors and perform required maintenance.

Given the specialized nature of our market, a key component of our strategy is to maintain our passionate focus on customer success. We pride ourselves on our execution in customer on-boarding as well as ongoing consulting and customer support, all of which is critical to ensure not only high customer retention rates but new customer acquisitions. We implement our customer success initiative early in the sales process in order to ensure that we are aligned with the customer's objectives and can positively impact their defined outcomes. For example, during deployment, our customer success team, consisting of experienced law enforcement professionals, provides on-site training to the customer's officers, dispatchers and investigators, including training on how to use the solution and best practices for optimal results. We apply consultative best practices and policy development at the command staff level as well as tactical training for field patrol officers. All of our efforts are focused on driving positive measurable outcomes on gun violence reduction and prevention.

Our IRC and customer service organizations provide continuous outdoor incident classification and technical support 24 hours a day, seven days a week, 365 days a year. The nature of our outdoor incident classification process provides ongoing and significant touchpoints with our customers through our published alerts. We also interact with our customers through email, chat and telephone inquiries, and monitor our customers' local news feeds and radio dispatch traffic in order to remain aware of their violence prevention activities.

Our customer success team is responsible for conducting periodic in-person account reviews that detail all aspects of the services provided, including outcomes generated and areas for future improvement. We believe that these account reviews, along with our formalized on-boarding customer success program, are largely responsible for our high net promoter score ("NPS"). We obtain our NPS by conducting surveys to measure customer loyalty and satisfaction. We believe a high NPS indicates a substantial competitive advantage in facilitating customer acquisition and retention and increases customer lifetime value. In 2019, we achieved an NPS score of 53%.

Customers

We generate annual subscription revenues from the deployment of our public safety and security solutions on a per-square-mile basis. As of December 31, 2019, we had coverage areas under contract of approximately 760 square miles in the aggregate, of which 730 miles have gone live, which included 102 cities and 11 campuses and other sites across the United States, South Africa and Bahamas, including three of the ten largest cities in the United States. Since transitioning our public safety business to the ShotSpotter Flex subscription model in 2011, we have added over 70 new ShotSpotter Flex customers, but only ten such customers have terminated service, two of which were terminated due to hurricane damage in 2017, and one of which, Puerto Rico, had returned as a customer at the end of 2019. For the year ended December 31, 2019, our two largest customers, City of Chicago and City of New York accounted for 20% and 14% of our revenues, respectively. For the year ended December 31, 2018, our two largest customers, City of Chicago and City of New York accounted for 22% and 15% of our revenues, respectively. The City of New York and Puerto Rico Housing Administration accounted for 18% and 7%, respectively, of our revenues for the year ended December 31, 2017.

Sales

We sell our solutions through our direct sales teams. Our sales teams focus on both new customer acquisition, customer renewal and coverage expansion. Our public safety solution sales team identifies communities with the opportunity to benefit from our solutions, communicates with key stakeholders, navigates the challenges associated with our customers' complex funding and sales cycles, and establishes a foundation for a successful customer relationship. In addition, our sales team works with customers to identify and procure funds from alternate sources, including state and federal government grants. Our security solutions sales team focuses primarily on college and university campuses, typically with the head of campus security, but also by engaging with boards of regents, budget office personnel and other campus stakeholders. We intend to continue to invest in building a global sales organization as we further penetrate the market for ShotSpotter Flex and expand the customer base for our security solutions.

At times, we may sell our solutions through channel partners as part of "Smart Cities" initiatives. To help integrate our solutions with other services in this space and to take advantage of current and emerging technologies, we seek to enter into alliances with leading companies focused on such initiatives. In August 2018, we entered into an agreement with Verizon, through which they may sell our Flex solutions as a reseller, in addition to the solution bundled with their Light Sensory Network. In October 2019, we entered into an agreement with AT&T, through which they may sell our Flex solutions as a reseller as well.

Marketing

The company continues to expand the scope and capability of the marketing function. The top marketing initiatives include: 1) targeted lead-generation campaigns and events to build sales pipeline; 2) creation of compelling content to educate prospects and build credibility as police agencies go through the buyers' journey; and 3) an active public relations program to increase the overall awareness of our products.

In 2019, we launched a lead-generation initiative to drive additional pipeline for the sales team consisting of a marketing automation technology platform, a series of online campaigns and an outbound calling team of sales development representative ("SDR"s). The campaigns are designed to educated prospects and generate initial interest based on compelling content. The SDR team supports the campaigns with outbound calls to drive further interest and qualify the lead. Over the course of the year the flow of qualified leads that turned into sales opportunities doubled. A key part of the lead generation program is creating a presence at key industry events and conferences where we can personally engage with customers, prospects and influencers such as mayors, city managers, and trauma surgeons. The face-to-face interactions are invaluable for introducing our value proposition, establishing relationships and building trust.

Content creation is focused on leveraging our happy customer base to share their experiences and results with other prospects. We have developed an initial set of video and online assets that share success stories from our customers' point of view and describe how our technology positively impacts their department and community. We are expanding the breadth and depth of our content library significantly for the user, economic buyer and influencers.

In the area of public relations, we increased our social media presence, have expanded the number of spokespeople available to talk to the media and continue to put out a significant number of press releases each year. Due to the high visibility of shootings, the media's interest in covering them, and ShotSpotter's key role in alerting police for a quick response to these events, we benefit from significant television, print and online press that is generated at little to no cost. In 2019, we were mentioned in over 11,000 articles, broadcast TV and radio segments - the majority of which were organically generated. Members of the media have access to a self-serve, comprehensive media kit to easily insert video and photos that depict the service and its benefits in a compelling fashion to enhance broadcast TV segments and print/online articles. This exposure creates awareness for our system and lends credibility to our market leadership position.

Research and Development

We focus our research and development efforts on enhancing our advanced signal processing and classification algorithms, updating our sensor hardware technology, reducing manufacturing costs, developing mobile, web and desktop applications, evolving our cloud-deployed back-end infrastructure and integration with "smart cities" initiatives. ShotSpotter Missions crime forecasting uses machine learning and has led to additional investment in data science resources. As of December 31, 2019, we had 20 employees in our research and development organization. In addition, we engage in research and development activities with manufacturing partners and outsource certain activities to engineering firms to further supplement our internal team. Our research and development team is increasingly focused on exploring the use of our data sets to conduct cognitive analysis and AI integration.

Competition

The markets for public safety and security solutions are highly fragmented and evolving. Whether installed in local communities, on critical infrastructure or on a campus, for a gunfire detection system to be effective, the protection zone must be comprehensive. We believe our gunshot detection solutions represent the most effective public safety and security solutions on the market.

We compete on the basis of a number of factors, including:

- product functionality, including the ability to cover broad outdoor geographic spaces;
- solution performance, including the rapid capture of multiple acoustic incidents and accuracy;
- ease of implementation, use and maintenance;
- total cost of ownership; and
- customer support and customer success initiatives.

ShotSpotter Flex Solution Competitors

Our ShotSpotter Flex solution is unique because it provides scalable wide area gunshot detection over large and geographically diverse areas, provides immediate and precise data on gunfire, helps communities define the scope of illegal gunfire, and provides cities with detailed forensic data for investigation, prosecution and analysis. While we are not aware of any direct competitors offering wide-area solutions comparable to ShotSpotter Flex, we believe the primary competitors in the broader gunfire detection space are Rafael Advanced Defense Systems Ltd., Raytheon Company, V5 Systems, Safety Dynamics, Inc., Wi-fiber, Inc. EAGL Technology, Shooter Detection Systems and Thales Group.

Most of these other outdoor solutions on the market offer limited scope point protection, proximity sensors, or “counter-sniper systems.” These systems are designed primarily for covering small areas, or for defined military or SWAT team applications, where the target is known in advance and it is possible to put a sensor directionally toward the target. However, urban areas and critical infrastructure require a wider system of protection that can cover a large area.

We also compete with other possible uses of the limited funding available to our ShotSpotter Flex customers. Because law enforcement agencies or government entities have limited funds, they may have to choose among resources or solutions that help them to meet their overall mission. Accordingly, we compete not only with our customers’ internal budget decisions, but with numerous companies vying for these limited funds, including Everbridge, Inc. and Axon Enterprises, Inc., among others. We believe that in areas with significant levels of gun activity, ShotSpotter Flex is uniquely positioned to assist customers in interrupting, detecting and preventing gun violence.

Security Solutions Competitors

Our security solutions operate in a highly competitive environment. In addition to other gunfire detection companies, we may face competition from companies offering alternative security technologies, such as video surveillance, access control, alarm and lighting systems. The direct competitors for security solutions include the Guardian system by Shooter Detection Systems LLC, Safety Dynamics Inc., V5 Systems, EAGL, Wi-fiber, and AmberBox, Inc. We believe none of our security solutions competitors is able to offer the comprehensive outdoor coverage we offer.

ShotSpotter Missions Competitors

ShotSpotter Missions operates in a developing and potentially competitive environment. In addition to control management and data analytics customers companies, we may face competition from companies offering alternative solutions as well as solutions developed internally by our customers. The direct competitors to our Missions solution include PredPol, Inc. and may include other CAD/RMS providers and other third-party solutions providers, such as Genetech, Inc., CentralSquare Technologies, Mark 43, and Motorola Solutions, Inc.

Intellectual Property

Our future success and competitive position depend in part on our ability to protect our intellectual property and proprietary technologies. To safeguard these rights, we rely on a combination of patent, trademark, copyright and trade secret laws, and contractual protections in the United States and other jurisdictions.

As of December 31, 2019, we had 34 issued patents, 32 in the United States, one in Israel and one in Mexico, as well as patent applications pending for examination in the United States, Europe and Brazil.

The issued patents expire on various dates from 2022 to 2034. We also license one patent from a third party, which expires in 2023.

We also license software from third parties for integration into our offerings, including open source software and other software available on commercially reasonable terms. We cannot assure you that such third parties will maintain such software or continue to make it available.

Facilities

Our principal facilities consist of office space for our corporate headquarters in Newark, California, where we occupy approximately 12,020 square feet of space under a lease that expires in October 2021.

We lease our facilities and do not own any real property. We may procure additional space as we add employees and expand geographically. We believe that our facilities are adequate to meet our needs for the immediate future and that should it be needed, suitable additional space will be available to accommodate expansion of our operations.

Employees

As of December 31, 2019, we had 108 full-time and four part-time employees, of which 21 were in sales and marketing, 11 were in general and administrative functions, 20 in research and development and 60 in operations, customer support and customer success. None of our employees are represented by a labor union or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Segment and Geographic Information

Information about segment reporting and long-lived assets is set forth in Note 3 of our Notes to Consolidated Financial Statements included in "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K. Total revenues generated outside the United States were derived from our customer located in South Africa and Bahamas and were $1.0 million in the year ended December 31, 2019, and $0.9 million and $0.8 million, in the years ended December 31, 2018 and 2017, respectively. Substantially all of our non-monetary long-lived assets are located in the United States. For a discussion of risks related to our international operations, see the risk factors set forth in Part I, Item 1A of this Annual Report on Form 10-K.

Corporate Information

We were formed as ShotSpotter, Inc., a California corporation, in 2001 and reincorporated as ShotSpotter, Inc., a Delaware corporation, in 2004. We also do business as "SST" pursuant to a registered trade name.

Our principal executive offices are located at 7979 Gateway Boulevard, Suite 210, Newark, California 94560 and our telephone number is (510) 794-3100. Our website address is www.shotspotter.com. The information contained on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K, and you should not consider any information contained on, or that can be accessed through, our website as part of this Annual Report on Form 10-K.

ShotSpotter, the ShotSpotter logo, ShotSpotter Missions, ShotSpotter Flex, ShotSpotter SecureCampus, ShotSpotter SiteSecure, and other trade names, trademarks or service marks of ShotSpotter appearing in this Annual Report on Form 10-K are the property of ShotSpotter, Inc. Trade names, trademarks and service marks of other companies appearing in this Annual Report on Form 10-K are the property of their respective holders.

Where You Can Find More Information

You can read our SEC filings, including this Annual Report on Form 10-K, over the internet at the SEC's website at www.sec.gov. You may also read and copy any document we file with the SEC at its public reference facilities at 100 F Street, N.E., Washington, D.C. 20549. You may also obtain copies of these documents at prescribed rates by writing to the Public Reference Section of the SEC at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference facilities.

We are subject to the information reporting requirements of the Exchange Act, and we are required to file reports, proxy statements and other information with the SEC. These reports, proxy statements and other information are available for inspection and copying at the public reference room and website of the SEC referred to above. We also maintain a website at www.shotspotter.com, at which you may access these materials, free of charge, as reasonably practicable after they are electronically filed with, or furnished to, the SEC. We are not, however, including the information contained on our website, or information that may be accessed through links on our website, as part of, or incorporating such information by reference into, this Annual Report on Form 10-K.

Item 1A. RISK FACTORS.

Investing in our common stock involves a high degree of risk. You should consider carefully the risks and uncertainties described below, together with all of the other information in this report, including our consolidated financial statements and related notes, before deciding whether to purchase shares of our common stock. If any of the following risks is realized, our business, operating results, financial condition and prospects could be materially and adversely affected. In that event, the price of our common stock could decline, and you could lose part or all of your investment. Moreover, the risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also affect our business, operating results, prospects or financial condition. You should carefully consider these risk factors, together with all of the other information included in this Annual Report on Form 10-K as well as our other publicly available filings with the SEC.

Risks Related to Our Business and Industry

Our success depends on maintaining and increasing our sales, which depends on factors we cannot control, including the availability of funding to our customers.

To date, substantially all of our revenues have been derived from contracts with local governments and their agencies, in particular the police departments of major cities in the United States. To a lesser extent, we also generate revenues from federal agencies, foreign governments and higher education institutions. We believe that the success and growth of our business will continue to depend on our ability to add new police departments and other government agencies, domestically and internationally, as customers of our public safety solution and new universities, corporate campuses and key infrastructure and transportation centers as customers of our security solutions. Many of our target customers have restricted budgets, such that we are forced to compete with programs or solutions that offer an alternative use of the same funds. A number of factors could cause current and/or potential customers to: delay or refrain from purchasing our solutions, prevent expansion of, or reduce coverage areas and/ or terminate use of our solutions, including:

- decreases or changes in available funding, including budgetary allocations, government grants and other government funding programs;
- potential delays or changes in appropriations or other funding authorization processes;
- changes in fiscal or contracting policies;
- macro-and/or local economic changes that may affect customer funding;
- changes in elected or appointed officials; and
- changes in laws or public sentiment regarding privacy or surveillance.

The occurrence of any of the foregoing would impede or delay our ability to maintain or increase the amount of revenues derived from these customers, which could have a material adverse effect on our business, operating results and financial condition.

Contracting with government entities can be complex, expensive and time-consuming.

The procurement process for government entities is in many ways more challenging than contracting in the private sector. We must comply with laws and regulations relating to the formation, administration, performance and pricing of contracts with government entities, including U.S. federal, state and local governmental bodies. These laws and regulations may impose added costs on our business or prolong or complicate our sales efforts, and failure to comply with these laws and regulations or other applicable requirements could lead to claims for damages from our customers, penalties, termination of contracts and other adverse consequences. Any such damages, penalties, disruptions or limitations in our ability to do business with government entities could have a material adverse effect on our business, operating results and financial condition.

Government entities often require highly specialized contract terms that may differ from our standard arrangements. For example, if the federal government provides grants to certain state and local governments for our solutions, and such governments do not continue to receive these grants, then these customers have the ability to terminate their contracts with us without penalty. Government entities often impose compliance requirements that are complicated, require preferential pricing or "most favored nation" terms and conditions, or are otherwise time-consuming and expensive to satisfy. Compliance with these special standards or satisfaction of such requirements could complicate our efforts to obtain business or increase the cost of doing so. Even if we do meet these special standards or requirements, the increased costs associated with providing our solutions to government customers could harm our margins. Additionally, even once we have secured a government contract, the renewal process can be lengthy and as time-consuming as the initial sale, and we may be providing our service for months past the contract expiration date without certainty if the renewal agreement will be signed or not.

Changes in the underlying regulatory conditions, political landscape or required procurement procedures that affect these types of customers could be introduced prior to the completion of our sales cycle, making it more difficult or costly to finalize a contract with a new customer or expand or renew an existing customer relationship. For example, customers may require a competitive bidding process with extended response deadlines, review or appeal periods, or customer attention may be diverted to other government matters, postponing the consideration of the purchase of our products. Such delays could harm our ability to provide our solutions efficiently and to grow or maintain our customer base.

If we are unable to maintain and expand coverage of our existing public safety customer accounts and further penetrate the public safety market, our revenues may not grow.

Our ability to increase revenues will depend in large part on our existing public safety solution customers renewing their annual subscriptions and expanding their mileage coverage, or purchasing and implementing our ShotSpotter Missions solutions. Most of our ShotSpotter Flex customers begin using our solution in a limited coverage area. Our experience has been, and we expect will continue to be, that after the initial implementation of our solutions, our new customers typically renew their annual subscriptions, and many also choose to expand their coverage area. If our existing customers do not renew their subscriptions, our revenues may decrease. However, some customers may choose to not renew or reduce their coverage. For example, as a result of widespread destruction caused by hurricanes in Puerto Rico and the U.S. Virgin Islands, in September 2017, we discontinued our service to our customers in coverage areas in those locations and we classified the contracts as expired because the customers were no longer live. At the time, the Housing Authority of Puerto Rico had been one of our largest customers. If other existing customers do not choose to renew or expand their coverage areas, our revenues will not grow as we anticipate.

Our ability to further penetrate the market for our public safety solutions depends on several factors, including: maintaining a high level of customer satisfaction and a strong reputation among law enforcement; increasing the awareness of our ShotSpotter Flex and ShotSpotter Missions solutions and their benefits; the effectiveness of our marketing programs; the availability of funding to our customers; and the costs of our solutions. Some potential public safety customers may be reluctant or unwilling to use our solution for a number of reasons, including concerns about additional costs, unwillingness to expose or lack of concern regarding the extent of gun violence in their community, uncertainty regarding the reliability and security of cloud-based offerings or lack of awareness of the benefits of our public safety solutions. If we are unsuccessful in expanding the coverage of ShotSpotter Flex by existing public safety customers or adding new ShotSpotter Flex and ShotSpotter Missions public safety customers, our revenues and growth prospects would suffer.

If we are unable to sell our solutions into new markets, our revenues may not grow.

Part of our growth strategy depends on our ability to increase sales of our security solutions and add new customers for our public safety solution in markets outside of the United States. Our security solutions include ShotSpotter Missions, ShotSpotter Labs, ShotSpotter SecureCampus and ShotSpotter SiteSecure. We are focused on expanding the sales of these solutions into new markets, but customers in these new markets may not be receptive or sales may be delayed beyond our expectations, causing our revenues growth and growth prospects to suffer.

Our ability to successfully face these challenges depends on several factors, including increasing the awareness of our solutions and their benefits; the effectiveness of our marketing programs; the costs of our solutions; our ability to attract, retain and effectively train sales and marketing personnel; and our ability to develop relationships with communication carriers and other partners. If we are unsuccessful in developing and marketing our solutions into new markets, new markets for our solutions might not develop or might develop more slowly than we expect, either of which would harm our revenues and growth prospects.

Our sales cycle can be lengthy, time-consuming and costly, and our inability to successfully complete sales could harm our business.

Our sales process involves educating prospective customers and existing customers about the use, technical capabilities and benefits of our solutions. Prospective customers, especially government agencies, often undertake a prolonged evaluation process that may last up to nine months or more and that typically involves comparing the benefits of our solutions to alternative uses of funds. We may spend substantial time, effort and money on our sales and marketing efforts without any assurance that our efforts will produce any sales.

Additionally, events affecting our customers' budgets or missions may occur during the sales cycle that could negatively impact the size or timing of a purchase after we have invested substantial time, effort and resources into a potential sale, contributing to more unpredictability in the growth of our business. If we are unable to succeed in closing sales with new and existing customers, our business, operating results and financial condition will be harmed.

Changes in the availability of federal funding to support local law enforcement efforts could impact our business.

Many of our customers rely to some extent on funds from the U.S. federal government in order to purchase and pay for our solutions. Any reduction in federal funding for local law enforcement efforts could result in our customers having less access to funds required to continue, renew, expand or pay for our solutions. For example, changes in policies with respect to "sanctuary cities" may result in a reduction in federal funds available to our current or potential customers. If federal funding is reduced or eliminated and our customers cannot find alternative sources of funding to purchase our solutions, our business will be harmed.

If our business does not grow as we expect, or if we fail to manage our growth effectively, our operating results and business prospects would suffer.

Our ability to successfully grow our business depends on a number of factors including our ability to:

- accelerate our acquisition of new customers;
- further sell expansions of coverage areas to our existing customers;
- expand our international footprint;
- expand into new vertical markets, such as our ShotSpotter Missions, and our security solutions;
- increase awareness of the benefits that our solutions offer; and
- maintain our competitive and technology leadership position.

As usage of our solutions grows, we will need to continue to make investments to develop and implement new or updated solutions, technologies, security features and cloud-based infrastructure operations. In addition, we will need to appropriately scale our internal business systems and our services organization, including the suppliers of our detection equipment and customer support services, to serve our growing customer base. Any failure of, or delay in, these efforts could impair the performance of our solutions and reduce customer satisfaction.

Further, our growth could increase quickly and place a strain on our managerial, operational, financial and other resources, and our future operating results depend to a large extent on our ability to successfully manage our anticipated expansion and growth. To manage our growth successfully, we will need to continue to invest in sales and marketing, research and development, and general and administrative functions and other areas. We are likely to recognize the costs associated with these investments earlier than receiving some of the anticipated benefits, and the return on these investments may be lower, or may develop more slowly, than we expect, which could adversely affect our operating results.

If we are unable to manage our growth effectively, we may not be able to take advantage of market opportunities or develop new solutions or upgrades to our existing solutions, satisfy customer requirements, maintain the quality and security of our solutions or execute on our business plan, any of which could have a material adverse effect on our business, operating results and financial condition.

Our business is dependent upon our ability to deploy and deliver our solutions, and the failure to meet our customers' expectations could harm our reputation, which may have a material adverse effect on our business, operating results and financial condition.

Promoting and demonstrating the utility of our solutions as useful, reliable and important tools for law enforcement and security personnel is critical to the success of our business. Our ability to secure customer renewals and enter into new customer contracts is dependent on our reputation and our ability to deliver our solutions effectively. We believe that our reputation among police departments using ShotSpotter Flex is particularly important to our success. Our ability to meet customer expectations will depend on a wide range of factors, including:

- our ability to continue to offer high-quality, innovative and accurate gunshot detection and gunshot deterrence services, and precision policing software and solutions;
- our ability to maintain continuous monitoring during high outdoor-noise activity periods such as New Year's Day, the Fourth of July and Cinco de Mayo, and Carnival for international deployments;
- our ability to maintain high customer satisfaction, including meeting our SLA standards;
- the perceived value and quality of our solutions;
- differences in opinion regarding the metrics that measure the success of our solutions;
- our ability to successfully communicate the unique value proposition of our solutions;
- our ability to provide high-quality customer support;
- any misuse or perceived misuse of our solutions;
- interruptions, delays or attacks on our platform;
- litigation- or regulation-related developments; and
- damage to or degradation of our sensors or sensor network by third parties.

Furthermore, negative publicity, whether or not justified, relating to events or activities attributable to us, our solutions, our employees, our partners or others associated with any of these parties, may tarnish our reputation. Damage to our reputation may reduce demand for our solutions and would likely have a material adverse effect on our business, operating results and financial condition. Moreover, any attempts to rebuild our reputation may be costly and time-consuming, and such efforts may not ultimately be successful.

Interruptions or performance problems associated with our technology and infrastructure may adversely affect our business and results of operations.

We have in the past experienced, and may in the future experience, performance issues due to a variety of factors, including infrastructure changes, human or software errors, intentional or accidental damage to our technology (including sensors), website or third-party hosting disruptions or capacity constraints due to a number of potential causes including technical failures, natural disasters or security attacks. If our security is compromised, our platform is unavailable or our users are unable to receive our alerts or otherwise communicate with our IRC, within a reasonable amount of time or at all, our business could be negatively affected. In some instances, we may not be able to identify the cause or causes of these performance problems within an acceptable period of time.

In addition, our IRC is located in a single facility. Although the functions of our IRC can be performed remotely, any interruption or delay in service from our IRC, such as from a communications or power outage, could limit our ability deliver our solutions. In addition, it may become increasingly difficult to maintain and improve the performance of our solutions, especially during peak usage times as the capacity of our IRC operations reaches its limits. If there is an interruption or delay in service from our IRC and a gunshot is detected but not reviewed in the allotted time, our software will flag the incident for off line review. This may result in delayed notifications to our customers and as a result, we could experience a decline in customer satisfaction with our solutions and our reputation and growth prospects could be harmed.

We expect to continue to make significant investments to maintain and improve the performance of our solutions. To the extent that we do not effectively address capacity constraints, upgrade our systems as needed and continually develop our technology to accommodate actual and anticipated changes in technology, our business, operating results and financial condition may be adversely affected.

We rely on wireless carriers to provide access to wireless networks through which our acoustic sensors communicate with our cloud-based backend and with which we provide our notification services to customers, and any interruption of such access would impair our business.

We rely on wireless carriers, mainly AT&T and Verizon, to provide access to wireless networks for machine-to-machine data transmissions, which are an integral part of our services. Our wireless carriers may suspend wireless service to expand, maintain or improve their networks. These wireless carriers perform routine maintenance and periodic software and firmware updates that may damage our sensors or make them inoperable. Any suspension or other interruption of services would adversely affect our ability to provide our services to our customers and may adversely affect our reputation. In addition, the terms of our agreements with these wireless carriers provide that either party can cancel or terminate the agreement for convenience with 90 days' notice. If one of our wireless carriers were to terminate its agreement with us, we would need to source a different wireless carrier and/or modify our equipment during the notice period in order to minimize disruption in the performance of our solutions. Price increases or termination by our wireless carriers or changes to existing contract terms could have a material adverse effect on our business, operating results and financial condition.

Natural disasters, infectious disease outbreaks, power outages or other events impacting us or our customers could harm our operating results and financial condition.

We recognize revenue on a subscription basis as our solutions are provided to our customers over time. If our services are disrupted due to natural disasters, power outages or other events that we cannot control, as happened when hurricanes hit Puerto Rico and the U.S. Virgin Islands in 2017, we may not be able to continue providing our solutions as expected.

When we stop providing coverage, we also stop recognizing revenues as a result of the affected subscription agreement. If we are forced to discontinue our services due to natural disasters, power outages and other events outside of our control, our revenues may decline, which would negatively impact our results of operations and financial condition. In addition, we may face liability for damages caused by our sensors in the event of heavy weather or other natural disasters. We may also incur additional costs to repair or replace installed sensor networks damaged by heavy weather, hurricanes or other natural disasters.

Any of our facilities or operations may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes, tornadoes, hurricanes, wildfires, floods, nuclear disasters, acts of terrorism or other criminal activities, infectious disease outbreaks, such as COVID-19, and power outages, which may render it difficult or impossible for us to operate our business for some period of time or decrease productivity. For example, our IRC and a data center that hosts some of our customer services are located in the San Francisco Bay Area, a region known for seismic activity. Our facilities would likely be costly to repair or replace, and any such efforts would likely require substantial time. In addition, like many companies, we have recently implemented a work from home policy as a result of the COVID-19 pandemic. This policy may negatively impact productivity. Any disruptions in our operations could negatively impact our business and operating results, and harm our reputation. In addition, we may not carry business insurance or may not carry sufficient business insurance to compensate for losses that may occur. Any such losses or damages could have a material adverse effect on our business, operating results and financial condition. In addition, the facilities of significant vendors, including the manufacturer of our proprietary acoustic sensor, may be harmed or rendered inoperable by such natural or man-made disasters, which may cause disruptions, difficulties or material adverse effects on our business.

Real or perceived false positive gunshot alerts or failure or perceived failure to generate alerts for actual gunfire could adversely affect our customers and their operations, damage our brand and reputation and adversely affect our growth prospects and results of operations.

A false positive alert, in which a non-gunfire incident is reported as gunfire, could result in an unnecessary rapid deployment of police officers and first responders, which may raise unnecessary fear among the occupants of a community or facility, and may be deemed a waste of police and first responder resources. A failure to alert law enforcement or security personnel of actual gunfire (false negative) could result in a less rapid or no response by police officers and first responders, increasing the probability of injury or loss of life. Both false positive alerts and the failure to generate alerts of actual gunfire (false negative) may result in customer dissatisfaction, potential loss of confidence in our solutions, and potential liabilities to customers or other third parties, any of which could harm our reputation and adversely impact our business and operating results. Additionally, the perception of a false positive alert or of a failure to generate an alert, even where our customers understand that our solutions were utilized correctly, could lead to negative publicity or harm the public perception of our solutions, which could harm our reputation and adversely impact our business and operating results.

Economic uncertainties or downturns, or political changes, could limit the availability of funds available to our customers and potential customers, which could materially adversely affect our business.

Economic uncertainties or downturns could adversely affect our business and operating results. Negative conditions in the general economy both in the United States and abroad, including conditions resulting from changes in gross domestic product growth, financial and credit market fluctuations, political deadlock, natural catastrophes, such as the devastation caused by the hurricanes in Puerto Rico and U.S. Virgin Islands, warfare, terrorist attacks and infectious disease outbreaks, such as COVID-19, in the United States, Europe, the Asia Pacific region or elsewhere, could cause a decrease in funds available to our customers and potential customers and negatively affect the rate of growth of our business.

These economic conditions may make it extremely difficult for our customers and us to forecast and plan future budgetary decisions or business activities accurately, and they could cause our customers to reevaluate their decisions to purchase our solutions, which could delay and lengthen our sales cycles or result in cancellations of planned purchases. Furthermore, during challenging economic times or as a result of political changes, our customers may tighten their budgets and face constraints in gaining timely access to sufficient funding or other credit, which could result in an impairment of their ability to make timely payments to us. In turn, we may be required to increase our allowance for doubtful accounts, which would adversely affect our financial results.

We cannot predict the timing, strength or duration of any economic slowdown, instability or recovery, generally or within any particular industry, or the impact of political changes. If the economic conditions of the general economy or industries in which we operate worsen from present levels, or if recent political changes result in less funding being available to purchase our solutions, our business, operating results, financial condition and cash flows could be adversely affected.

We have not been profitable historically and may not achieve or maintain profitability in the future.

We only reached our first full year of net income in 2019; prior to that, we posted a net loss in each year since inception. As of December 31, 2019, we had an accumulated deficit of $95.6 million. We are not certain whether we will be able to maintain high enough volume of sales of our solutions to sustain or increase our growth or maintain profitability in the future. We also expect our costs to increase in future periods, which could negatively affect our future operating results if our revenues do not increase. In particular, we expect to continue to expend substantial financial and other resources on:

- sales and marketing, including a significant expansion of our sales organization, both domestically and internationally;
- research and development related to our solutions, including investments in our engineering and technical teams;
- acquisition of complementary technologies or businesses, such as our acquisition of HunchLab technology in October 2018;

- continued international expansion of our business; and
- general and administrative expenses, including legal and accounting expenses related to operating as a public company.

These investments may not result in increased revenues or growth in our business. If we are unable to increase our revenues at a rate sufficient to offset the expected increase in our costs, our business, operating results and financial position may be harmed, and we may not be able to maintain profitability over the long term. Additionally, we may encounter unforeseen operating expenses, difficulties, complications, delays and other unknown factors that may result in losses in future periods. If our revenues growth does not meet our expectations in future periods, our financial performance may be harmed, and we may not maintain profitability in the future.

We may require additional capital to fund our business and support our growth, and our inability to generate and obtain such capital on acceptable terms, or at all, could harm our business, operating results, financial condition and prospects.

We intend to continue to make substantial investments to fund our business and support our growth. In addition, we may require additional funds to respond to business challenges, including the need to develop new features or enhance our solutions, improve our operating infrastructure or acquire or develop complementary businesses and technologies. As a result, in addition to the revenues we generate from our business and our existing cash balances, we may need to engage in additional equity or debt financings to provide the funds required for these and other business endeavors. If we raise additional funds through future issuances of equity or convertible debt securities, our existing stockholders could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of holders of our common stock. Any debt financing that we may secure in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities, including potential acquisitions. We may not be able to obtain such additional financing on terms favorable to us, if at all. If we are unable to obtain adequate financing or financing on terms satisfactory to us when we require it, our ability to continue to support our business growth and to respond to business challenges could be significantly impaired, and our business may be adversely affected. In addition, our inability to generate or obtain the financial resources needed may require us to delay, scale back, or eliminate some or all of our operations, which may have a material adverse effect on our business, operating results, financial condition and prospects.

The incurrence of debt may impact our financial position and subject us to additional financial and operating restrictions.

On September 27, 2018, we entered into a $10.0 million senior secured revolving credit facility with Umpqua Bank (the “Umpqua Credit Agreement”), which we intend to use for general working capital purposes. As of December 31, 2019, we had no outstanding amounts due on nor any usage of the Umpqua Credit Agreement.

Under the Umpqua Credit Agreement, we are subject to various negative covenants that limit, subject to certain exclusions, our ability to incur indebtedness, make loans, invest in or secure the obligations of other parties, pay or declare dividends, make distributions with respect to our securities, redeem outstanding shares of our stock, create subsidiaries, materially change the nature of its business, enter into related party transactions, engage in mergers and business combinations, the acquisition or transfer of Company assets outside of the ordinary course of business, grant liens or enter into collateral relationships involving company assets or reincorporate, reorganize or dissolve the Company. These covenants could adversely affect our financial health and business and future operations by, among other things:

- making it more difficult to satisfy our obligations, including under the terms of the Umpqua Credit Agreement;
- limiting our ability to refinance our debt on terms acceptable to us or at all;
- limiting our flexibility to plan for and adjust to changing business and market conditions and increasing our vulnerability;

- limiting our ability to use our available cash flow to fund future acquisitions, working capital, business activities, and other general corporate requirements; and
- limiting our ability to obtain additional financing for working capital to fund growth or for general corporate purposes, even when necessary to maintain adequate liquidity.

We are also required to maintain certain financial covenants tied to our leverage, interest charges and profitability. Our ability to meet such covenants (those negative covenants discussed in the preceding paragraph) or other restrictions can be affected by events beyond our control, and our failure to comply with the financial and other covenants would be an event of default under the Umpqua Credit Agreement. If an event of default under the Umpqua Credit Agreement, has occurred and is continuing, the outstanding borrowings thereunder could become immediately due and payable, and we would then be required to cash collateralize any letters of credit then outstanding, and the lender could refuse to permit additional borrowings under the facility. We cannot assure you that we would have sufficient assets to repay those borrowings and, if we are unable to repay those amounts, the lender could proceed against the collateral granted to them to secure such indebtedness. We have pledged substantially all of our assets as collateral, and an event of default would likely have a material adverse effect on our business.

New competitors may enter the market for our public safety solution.

If cities and other government entities increase their efforts to reduce gun violence or our solutions gain visibility in the market, companies could decide to enter into the public safety solution market and thereby increase the competition we face. In addition to other gunshot detection products, we also compete with other technologies and solutions targeting our public safety customers' resources for law enforcement and crime prevention. Our competitors could benefit from the disclosure of our data or information concerning our techniques and processes due to legal or other obligations (for example, as a result of public-records requests or subpoenas to provide information or to testify in court). Because there are several possible uses for these limited budgetary resources, if we are not able to compete successfully for these limited resources, our business may not grow as we expect, which could adversely impact our revenues and operating results.

The competitive landscape for our security solutions is evolving.

The market for security solutions for university campuses, corporate campuses and transportation and key infrastructure centers includes a number of available options, such as video surveillance and increased human security presence. Because there are several possible uses of funds for security needs, we may face increased challenges in demonstrating or distinguishing the benefits of ShotSpotter SecureCampus and ShotSpotter SiteSecure. In particular, while we have seen growing interest in our security solutions, interest in the indoor gunshot detection offering was limited, and as a result, in June 2018, we made the strategic decision to cease indoor coverage as part of our service offering. While our ShotSpotter Missions may increase sales of our outdoor detection services, we may face challenges in demonstrating or distinguishing the benefits of ShotSpotter Missions' development of crime forecasts and increased effectiveness of patrol resources.

Failure to effectively develop and expand our sales and marketing capabilities could harm our ability to increase our customer base and achieve broader market acceptance of our solutions.

To increase total customers and customer coverage areas and to achieve broader market acceptance of our solutions, we will need to expand our sales and marketing organization and increase our business development resources, including the vertical and geographic distribution of our sales force and our teams of account executives focused on new accounts and responsible for renewal and growth of existing accounts.

Our business requires that our sales personnel have particular expertise and experience in working with law enforcement agencies, other government organizations and higher education institutions. We may not achieve revenues growth from expanding our sales force if we are unable to hire, develop and retain talented sales personnel with appropriate experience, if our new sales personnel are unable to achieve desired productivity levels in a reasonable period of time or if our sales and marketing programs are not effective.

Our strategy includes pursuing acquisitions, and our inability to successfully integrate newly-acquired technologies, assets or businesses may harm our financial results. Future acquisitions of technologies, assets or businesses, which are paid for partially or entirely through the issuance of stock or stock rights, could dilute the ownership of our existing stockholders.

We will evaluate and consider potential strategic transactions, including acquisitions of, or investments in, businesses, technologies, services, products and other assets in the future. For example, in October 2018, we acquired the HunchLab technology and related assets from Azavea Inc. We also may enter into relationships with other businesses to expand our platform and applications, which could involve preferred or exclusive licenses, additional channels of distribution, discount pricing or investments in other companies.

We believe that part of our continued growth will be driven by acquisitions of other companies or their technologies, assets, businesses and teams. The HunchLab acquisition gives rise, and any acquisitions in the future that we complete will give rise, to risks, including:

- incurring higher than anticipated capital expenditures and operating expenses;
- failing to assimilate the operations and personnel or failing to retain the key personnel of the acquired company or business;
- failing to integrate the acquired technologies, or incurring significant expense to integrate acquired technologies, into our platform and applications;
- disrupting our ongoing business;
- diverting our management's attention and other company resources;
- failing to maintain uniform standards, controls and policies;
- incurring significant accounting charges;
- impairing relationships with our customers and employees;
- finding that the acquired technology, asset or business does not further our business strategy, that we overpaid for the technology, asset or business or that we may be required to write off acquired assets or investments partially or entirely;
- failing to realize the expected synergies of the transaction;
- being exposed to unforeseen liabilities and contingencies that were not identified prior to acquiring the company; and
- being unable to generate sufficient revenues and profits from acquisitions to offset the associated acquisition costs.

Fully integrating an acquired technology, asset or business into our operations may take a significant amount of time. We may not be successful in overcoming these risks or any other problems encountered with acquisitions. To the extent that we do not successfully avoid or overcome the risks or problems related to any such acquisitions, our results of operations and financial condition could be harmed. Acquisitions also could impact our financial position and capital requirements, or could cause fluctuations in our quarterly and annual results of operations. Acquisitions could include significant goodwill and intangible assets, which may result in future impairment charges that would reduce our stated earnings. We may incur significant costs in our efforts to engage in strategic transactions and these expenditures may not result in successful acquisitions.

We expect that the consideration we might pay for any future acquisitions of technologies, assets, businesses or teams could include stock, rights to purchase stock, cash or some combination of the foregoing. If we issue stock or rights to purchase stock in connection with future acquisitions, net income per share and then-existing holders of our common stock may experience dilution.

The nature of our business exposes us to inherent liability risks.

Our solutions, including ShotSpotter Flex, ShotSpotter SecureCampus and ShotSpotter SiteSecure, are designed to communicate real-time alerts of gunfire incidents to police officers and first responders. Due to the nature of such applications, we are potentially exposed to greater risks of liability for employee acts or omissions or system failures than may be inherent in other businesses. Although substantially all of our customer agreements contain provisions limiting our liability to our customers, we cannot be certain that these limitations will be enforced or that the costs of any litigation related to actual or alleged omissions or failures would not have a material adverse effect on us even if we prevail. Further, certain of our insurance policies and the laws of some states may limit or prohibit insurance coverage for punitive or certain other types of damages or liability arising from gross negligence, or other issues, such as damages caused due to installation of our sensors on buildings owned by third parties, and we cannot assure you that we are adequately insured against the risks that we face.

The nature of our business may result in undesirable press coverage or other negative publicity.

Our solutions are used to assist law enforcement and first responders in the event that gunfire is detected. Even when our solutions work as intended, the incidents detected by our solutions could lead to injury, loss of life and other negative outcomes, and such events are likely to receive negative publicity. If we fail to detect an incident, or if we detect an incident, such as a terrorist attack or active-shooter event, but the response time of law enforcement or first responders is not sufficiently quick to prevent injury, loss of life, property damage or other adverse outcomes, we may receive negative media attention. At times, our data or information concerning our techniques and processes may become a matter of public record due to legal or other obligations (for example, as a result of public-records requests or subpoenas to provide information or to testify in court), and we may receive negative media attention as a result.

In addition, our solutions require that our customers monitor alerts and respond timely to notifications of gunshots. If our customers do not fully utilize our systems, we may be subject to criticism and unflattering media coverage regarding the effectiveness of our solutions and the cost of our solutions to our customers. Such negative publicity could have an adverse impact on new sales or renewals or expansions of coverage areas by existing customers, which would adversely impact our financial results and future prospects.

Real or perceived errors, failures or bugs in our software could adversely affect our operating results and growth prospects.

Because our software is complex, undetected errors, failures or bugs may occur. Our software is often installed and used with different operating systems, system management software, and equipment and networking configurations, which may cause errors or failures of our software or other aspects of the computing environment into which it is deployed. In addition, deployment of our software into computing environments may expose undetected errors, compatibility issues, failures or bugs in our software. Despite our testing, errors, failures or bugs may not be found in our software until it is released to our customers. Moreover, our customers could incorrectly implement or inadvertently misuse our software, which could result in customer dissatisfaction and adversely impact the perceived utility of our products as well as our brand. Any of these real or perceived errors, compatibility issues, failures or bugs in our software could result in negative publicity, reputational harm, loss of or delay in market acceptance of our software, loss of competitive position or claims by customers for losses sustained by them. In any such event, we may be required, or may choose, for customer relations or other reasons, to expend additional resources in order to correct the problem. Alleviating any of these problems could require significant expenditures of our capital and other resources and could cause interruptions or delays in the use of our solutions, which could cause us to lose existing or potential customers and could adversely affect our operating results and growth prospects.

Interruptions or delays in service from our third-party providers could impair our ability to make our solutions available to our customers, resulting in customer dissatisfaction, damage to our reputation, loss of customers, limited growth and reduction in revenues.

We currently use third-party data center hosting facilities to host certain components of our solutions. Our operations depend, in part, on our third-party providers' abilities to protect these facilities against damage or interruption from natural disasters, power or communications failures, cyber incidents, criminal acts and similar events. In the event that any of our third-party facility arrangements is terminated, or if there is a lapse of service or damage to a facility, we could experience service interruptions in our solutions as well as delays and additional expenses in arranging new facilities and services. Any changes in third-party service levels at our data centers or any errors, defects, disruptions, cyber incidents or other performance problems with our solutions could harm our reputation.

Any damage to, or failure of, the systems of our third-party providers could result in interruptions to our solutions. Despite precautions taken at our data centers, the occurrence of spikes in usage volume, natural disasters, cyber incidents, acts of terrorism, vandalism or sabotage, closure of a facility without adequate notice or other unanticipated problems could result in lengthy interruptions in the availability of our services. Problems faced by our third-party data center locations, with the network providers with whom they contract, or with the systems by which our communications providers allocate capacity among their customers, including us, could adversely affect the experience of our customers. Interruptions in our services might cause us to issue refunds to customers and subject us to potential liability.

Further, our insurance policies may not adequately compensate us for any losses that we may incur in the event of damage or interruption, and therefore the occurrence of any of the foregoing could subject us to liability, cause us to issue credits to customers or cause customers not to renew their subscriptions for our applications, any of which could materially adversely affect our business.

If our security measures or those of our customers or third-party providers are compromised, or if unauthorized access to the data of our customers is otherwise obtained, our solutions may be perceived as not being secure, our customers may be harmed and may curtail or cease their use of our solutions, our reputation may be damaged and we may incur significant liabilities.

Our operations involve the storage and transmission of gunfire incident data, including date, time, address and GPS coordinates, occurring in our customer's coverage area. Security incidents, whether as a result of third-party action, employee or customer error, technology impairment or failure, malfeasance or criminal activity, could result in unauthorized access to, or loss or unauthorized disclosure of, this gunfire incident data, which could result in litigation expenses or damages, indemnity and other contractual obligations and other possible liabilities, including but not limited to government fines and penalties and mitigation expenses, as well as negative publicity, which could damage our reputation, impair our sales and harm our customers and our business. Cyber incidents and malicious internet-based activity continue to increase generally, and providers of cloud-based services have been targeted. If third parties with whom we work, such as vendors or developers, violate applicable laws or our security policies, such violations may also put our gunfire incident data at risk and could in turn have an adverse effect on our business. In addition, such a violation could expose the locations of our sensors, including those sensors for which we obtained third-party consents that include confidentiality obligations. We may be unable to anticipate or prevent techniques used to obtain unauthorized access or to sabotage systems because such techniques change frequently and often are not detected until after an incident has occurred. As we increase our customer base and our brand becomes more widely known and recognized, third parties may increasingly seek to compromise our security controls or gain unauthorized access to customer data or other sensitive information. Further, because of the nature of the services that we provide to our customers, we may be a unique target for attacks.

Many governments have enacted laws requiring companies to notify individuals of data security incidents or unauthorized transfers involving certain types of personal data. In addition, some of our customers contractually require notification of any data security incident. Accordingly, security incidents experienced by our competitors, by our customers or by us may lead to public disclosures, which may lead to widespread negative publicity. Any security compromise in our industry, whether actual or perceived, could harm our reputation, erode customer confidence in the effectiveness of our security measures, negatively impact our ability to attract new customers, cause existing customers to elect not to renew their subscriptions or subject us to third-party lawsuits, regulatory fines or other action or liability, which could materially and adversely affect our business and operating results. Further, the costs of compliance with notification laws and contractual obligations may be significant and any requirement that we provide such notifications as a result of an actual or alleged compromise could have a material and adverse effect on our business.

While we maintain general liability insurance coverage and coverage for errors or omissions, we cannot assure you that such coverage would be adequate or would otherwise protect us from liabilities or damages with respect to claims alleging compromise or loss of data, or that such coverage will continue to be available on acceptable terms or at all.

We rely on the cooperation of customers and third parties to permit us to install our ShotSpotter sensors on their facilities, and failure to obtain these rights could increase our costs or limit the effectiveness of our ShotSpotter Flex solution.

Our ShotSpotter Flex solution requires us to deploy ShotSpotter sensors in our customer coverage areas, which typically entails the installation of approximately 20 to 25 sensors per square mile. The ShotSpotter sensors are mounted on city facilities and third-party buildings, and occasionally on city or utility-owned light poles, and installing the sensors requires the consent of the property owners, which can be time-consuming to obtain and can delay deployment. Generally, we do not pay a site license fee in order to install our sensors, and our contractual agreements with these facility owners provide them the right to revoke permission to use their facility with notice of generally 60 days.

To the extent that required consents delay our ability to deploy our solutions or facility owners do not grant permission to use their facilities, revoke previously granted permissions, or require us to pay a site license fee in order to install our sensors, our business may be harmed. If we were required to pay a site license fee in order to install sensors, our deployment expenses would increase, which would impact our gross margins. If we cannot obtain a sufficient number of sensor mounting locations that are appropriately dispersed in a coverage area, the effectiveness of our ShotSpotter Flex solution would be limited, we may need to reduce the coverage area of the solution, or we may not be able to meet our service level requirements, any of which could result in customer dissatisfaction or have a material adverse impact on our reputation, our business and our financial results.

If we fail to offer high-quality customer support, our business and reputation may suffer.

We offer customer support 24 hours a day, seven days a week, as well as training on best practices, forensic expertise and expert witness services. Providing these services requires that our personnel have specific experience, knowledge and expertise, making it more difficult for us to hire qualified personnel and to scale up our support operations. The importance of high-quality customer support will increase as we expand our business and pursue new customers. We may be unable to respond quickly enough to accommodate short-term increases in customer demand for support services or scale our services if our business grows. Increased customer demand for these services, without corresponding revenues, could increase our costs and harm our operating results. If we do not help our customers use applications within our solutions and provide effective ongoing support, our ability to sell additional applications to, or to retain, existing customers may suffer and our reputation with existing or potential customers may be harmed.

Our reliance on wireless carriers will require updates to our technology, and making such updates could result in disruptions in our service or increase our costs of operations.

Approximately 60% of our installed ShotSpotter sensors use fourth-generation Long-Term Evolution ("LTE") wireless technology and 40% use third-generation ("3G") cellular communications. Our US wireless carriers have advised us that they will discontinue their 3G services in the future and our ShotSpotter sensors will not be able to transmit on these networks. As a result, we will have to upgrade the sensors that use 3G cellular communications at no additional cost to our customers prior to the discontinuation of 3G services. As our wireless carriers phase out their 3G services or make changes to their spectrum allocation, we may experience reduced service performance, which may require us to replace our 3G sensors sooner than planned. Originally, we had expected to start incurring costs to do so mid-2020 through 2022. We have begun plans to replace sensors in certain geographic areas starting in early 2021. Accelerated bandwidth changes by our carriers may require us to continue to accelerate the upgrade of our 3G sensors prior to 2021, which would accelerate the costs associated with the upgrade. These sensor replacements will require significant capital expenditures, which are estimated to be between $4.0 million and $6.0 million in total and may reduce our gross margins and also divert management's attention and other important resources away from our customer service and sales efforts for new customers.

In the future, we may not be able to successfully implement new technologies or adapt existing technologies to changing market demands. If we are unable to adapt timely to changing technologies, market conditions or customer preferences, our business, operating results and financial condition could be materially and adversely affected.

Concerns regarding privacy and government-sponsored surveillance may deter customers from purchasing our solutions.

Governmental agencies and private citizens have become increasingly sensitive to real or perceived government or third-party surveillance and may wrongly believe that our outdoor sensors allow customers to listen to private conversations and monitor private citizen activity. Our sensors are not designed for "live listening" and are triggered only at loud impulsive sounds that may likely be gunfire. However, perceived privacy concerns may result in negative media coverage and efforts by private citizens to persuade municipalities, educational institutions or other potential customers not to purchase our solutions for their communities, campuses or facilities. In addition, laws may exist or be enacted to address such concerns that could impact our ability to deploy our solutions. For example, the City of Toronto, Canada decided against using ShotSpotter solutions because the Ministry of the Attorney General of Ontario indicated that it may compromise Section 8 of Canada's Charter of Rights and Freedoms, which relates to unreasonable search and seizure. If customers choose not to purchase our solutions due to privacy or surveillance concerns, then the market for our solutions may develop more slowly than we expect, or it may not achieve the growth potential we expect, any of which would adversely affect our business and financial results.

We rely on a limited number of suppliers and contract manufacturers, and our proprietary ShotSpotter sensors are manufactured by a single contract manufacturer.

We rely on a limited number of suppliers and contract manufacturers. In particular, we use a single manufacturer, with which we have no long-term contract and from which we purchase on a purchase-order basis, to produce our proprietary ShotSpotter sensors. Our reliance on a sole contract manufacturer increases our risks since we do not currently have any alternative or replacement manufacturers, and we do not maintain a high volume of inventory. In the event of an interruption from a contract manufacturer, we may not be able to develop alternate or secondary sources without incurring material additional costs and substantial delays. Furthermore, these risks could materially and adversely affect our business if our contract manufacturer is impacted by a natural disaster or other interruption at a particular location because each of our contract manufacturers produces our products from a single location. Although our contract manufacturer has alternative manufacturing locations, transferring manufacturing to another location may result in significant delays in the availability of our sensors. Also, many standardized components used broadly in our sensors are manufactured in significant quantities in concentrated geographic regions, particularly in Greater China. As a result, protracted regional crises, such as the recent outbreak of the COVID-19 disease in Greater China, could lead to eventual shortages of necessary components. It could be difficult, costly and time consuming to obtain alternative sources for these components, or to change product designs to make use of alternative components. In addition, difficulties in transitioning from an existing supplier to a new supplier could create delays in component availability that would have a significant impact on our ability to fulfill orders for our products.

Many of the key components used to manufacture our proprietary ShotSpotter sensors also come from limited or sole sources of supply. Our contract manufacturer generally purchases these components on our behalf, and we do not have any long-term arrangements with our suppliers. We are therefore subject to the risk of shortages and long lead times in the supply of these components and the risk that suppliers discontinue or modify components used in our products. In addition, the lead times associated with certain components are lengthy and preclude rapid changes in quantities and delivery schedules. Developing alternate sources of supply for these components may be time-consuming, difficult, and costly, and we or our suppliers may not be able to source these components on terms that are acceptable to us, or at all, which may undermine our ability to fill our orders in a timely manner.

If we experience significantly increased demand, or if we need to replace an existing supplier or contract manufacturer, we may be unable to supplement or replace such supply or contract manufacturing on terms that are acceptable to us, which may undermine our ability to deliver our products to customers in a timely manner. For example, for our ShotSpotter sensors, it may take a significant amount of time to identify a contract manufacturer that has the capability and resources to build the sensors to our specifications. Identifying suitable suppliers and contract manufacturers is an extensive process that requires us to become satisfied with their quality control, technical capabilities, responsiveness and service, financial stability, regulatory compliance, and labor and other ethical practices. Accordingly, the loss of any key supplier or contract manufacturer could adversely impact our business, operating results and financial condition.

Our solutions use third-party software and services that may be difficult to replace or cause errors or failures of our solutions that could lead to a loss of customers or harm to our reputation and our operating results.

We license third-party software and depend on services from various third parties for use in our solutions. In the future, such software or services may not be available to us on commercially reasonable terms, or at all. Any loss of the right to use any of the software or services could result in decreased functionality of our solutions until equivalent technology is either developed by us or, if available from another provider, is identified, obtained and integrated, which could harm our business. In addition, any errors or defects in or failures of the third-party software or services could result in errors or defects in our solutions or cause our solutions to fail, which could harm our business and be costly to correct. Many of these providers attempt to impose limitations on their liability for such errors, defects or failures, and if enforceable, we may have additional liability to our customers or third-party providers that could harm our reputation and increase our operating costs.

We will need to maintain our relationships with third-party software and service providers, and obtain from such providers software and services that do not contain any errors or defects. Any failure to do so could adversely impact our ability to deliver effective products to our customers and could harm our operating results.

If we do not or cannot maintain the compatibility of our platform with applications that our customers use, our business could suffer.

Some of our customers choose to integrate our solutions with certain other systems used by our customers, such as real-time crime center platforms or computer-aided dispatch systems. The functionality and popularity of our solutions depend, in part, on our ability to integrate our solutions these systems. Providers of these systems may change the features of their technologies, restrict our access to their applications or alter the terms governing use of their applications in an adverse manner. Such changes could functionally limit or terminate our ability to use these technologies in conjunction with our solutions, which could negatively impact our customer service and harm our business. If we fail to integrate our solutions with applications that our customers use, we may not be able to offer the functionality that our customers need, and our customers may not renew their agreements, which would negatively impact our ability to generate revenues and adversely impact our business.

We are subject to governmental regulation and other legal obligations, particularly related to privacy, data protection and information security, and our actual or perceived failure to comply with such obligations could harm our business. Compliance with such laws could impair our efforts to maintain and expand our customer base, and thereby decrease our revenues.

Our outdoor sensors are acoustic devices that are designed to recognize impulsive sounds that are likely to be gunfire. ShotSpotter sensors do not use high gain, directional or other specialized microphones.

The sensors do not have the ability to live stream audio. Typically, sounds, noises or voices captured on the secure sensors are cached temporarily but are written over and permanently deleted within 30 hours. When a sensor is triggered by an impulsive sound, it creates a potential gunshot “incident” that contains a recording, which includes no more than one second before the incident and one second after the incident. This incident audio snippet is preserved indefinitely for potential evidentiary use.

There is the potential to include human voices that occur at the same time as the gunshot in these incident audio snippets. We retain incident audio snippets indefinitely as evidence. We also use information collected to support, expand and improve our software algorithms as well as our gunfire detection and notification methods. Sensors are often installed in densely populated urban areas. They are not designed or tuned to capture human voices, but it is possible they could pick up a human voice. Human voices are not impulsive and do not typically trigger the sensors, and unless accompanied by an impulsive sound no audio snippet would be transmitted out of the sensor and preserved as an incident audio snippet. The human voice would be temporarily cached on the sensor for 30 hours and would then be written over and permanently deleted. Information collected from loud impulsive sounds ("incidents") is used to provide information to our customers regarding those incidents, but shared information is limited, by both our technology and our privacy policies, to the audit snippet containing the incident.

Our handling and storage of data is subject to a variety of laws and regulations, including regulation by various government agencies and various state, local and foreign agencies. The U.S. federal and various state and foreign governments have adopted or proposed legislation that regulates the monitoring and collection of personal information of individuals and that mandates security requirements with respect to certain personally identifiable information. In the United States, the Federal Trade Commission and numerous state attorneys general are imposing standards for the online collection, distribution, use and storage of data by applying federal and state consumer protection laws. The lack of a clear and universal standard for protecting such information means, however, that these obligations may be interpreted and applied in a manner that is inconsistent from one jurisdiction to another and may conflict with other requirements or our practices. Any failure or perceived failure by us to comply with privacy or security laws, policies, legal obligations or industry standards or any security incident that results in the unauthorized release or transfer of sensitive corporate information, personally identifiable information or other customer data may result in governmental enforcement actions, litigation, fines and penalties and/or adverse publicity, and could cause our customers to lose trust in us, which could have an adverse effect on our reputation and business.

California enacted the California Consumer Privacy Act (the “CCPA”), which became operative on January 1, 2020. The CCPA requires covered companies to, among other things, provide new disclosures to California consumers, and affords such consumers new abilities to opt-out of certain sales of personal information. The CCPA is the subject of proposed regulations of the California Attorney General that were released on October 10, 2019 but have yet to be finalized. Aspects of the CCPA and its interpretation remain unclear at this time. We cannot fully predict the impact of the CCPA on our business or operations, but it may require us to modify our data processing practices and policies and to incur substantial costs and expenses in an effort to comply.

Some proposed laws or regulations concerning privacy, data protection and information security are in their early stages, and we cannot yet determine how these laws and regulations may be interpreted nor can we determine the impact these proposed laws and regulations, may have on our business. Such proposed laws and regulations may require companies to implement privacy and security policies, permit users to access, correct and delete personal information stored or maintained by such companies, inform individuals of security breaches that affect their personal information, and, in some cases, obtain individuals’ consent to use personal information for certain purposes. In addition, a foreign government could require that any personal information collected in a country not be disseminated outside of that country, and we may not be currently equipped to comply with such a requirement. Our failure to comply with federal, state and international data privacy laws and regulators could harm our ability to successfully operate our business and pursue our business goals.

Our quarterly results of operations may fluctuate significantly due to a wide range of factors, which makes our future results difficult to predict.

Our revenues and results of operations could vary significantly from quarter to quarter as a result of various factors, many of which are outside of our control, including:

- the expansion or contraction of our customer base;
- the renewal or nonrenewal of subscription agreements with, and expansion of coverage areas by, existing customers;
- the size, timing, terms and deployment schedules of our sales to both existing and new customers;
- the introduction of products or services that may compete with us for the limited funds available to our customers, and changes in the cost of such products or services;
- changes in our customers' and potential customers' budgets;
- our ability to control costs, including our operating expenses;
- our ability to hire, train and maintain our direct sales force;
- the timing of satisfying revenues recognition criteria in connection with initial deployment and renewals;
- fluctuations in our effective tax rate; and
- general economic and political conditions, both domestically and internationally.

Any one of these or other factors discussed elsewhere in this report may result in fluctuations in our revenues and operating results, meaning that quarter-to-quarter comparisons of our revenues, results of operations and cash flows may not necessarily be indicative of our future performance.

Because of the fluctuations described above, our ability to forecast revenues is limited and we may not be able to accurately predict our future revenues or results of operations. In addition, we base our current and future expense levels on our operating plans and sales forecasts, and our operating expenses are expected to increase in the short term. Accordingly, we may not be able to reduce our costs sufficiently to compensate for an unexpected shortfall in revenues, and even a small shortfall in revenues could disproportionately and adversely affect our financial results for that quarter. The variability and unpredictability of these and other factors could result in our failing to meet or exceed financial expectations for a given period.

Because we generally recognize our subscription revenues ratably over the term of our contract with a customer, fluctuations in sales will not be fully reflected in our operating results until future periods.

Our revenues are primarily generated from subscriptions to our solutions. With the exception of a small number of legacy customers, our customers do not have the right to take possession of our equipment or software platform. Revenues from subscriptions to our software platform is recognized ratably over the subscription period beginning on the date that the subscription is made available to the customer, which we refer to as the "go-live" date. Our agreements with our customers typically range from one to five years. As a result, much of the revenues that we report in each quarter are attributable to agreements entered into during previous quarters. Consequently, a decline in sales, customer renewals or market acceptance of our solutions in any one quarter would not necessarily be fully reflected in the revenues in that quarter, and would negatively affect our revenues and profitability in future quarters. This ratable revenues recognition also makes it difficult for us to rapidly increase our revenues through additional sales in any period, as revenues from new customers generally are recognized over the applicable agreement term. Our subscription-based approach may result in uneven recognition of revenues.

We recognize subscription revenues over the term of a subscription agreement. Once we enter into a contract with a customer, there is a delay until we begin recognizing revenues while we survey the coverage areas, obtain any required consents for installation, and install our sensors, which together can take up to several months or more. We begin recognizing revenues from a sale only when all of these steps are complete and the solution is live.

While most of our customers elect to renew their subscription agreements following the expiration of a term, in some cases, they may not be able to obtain the proper approvals or funding to complete the renewal prior to such expiration. For these customers, we stop recognizing subscription revenues at the end of the current term, even though we may continue to provide services for a period of time while the renewal process is completed. Once the renewal is complete, we then recognize subscription revenues for the period between the expiration of the term of the agreement and the completion of the renewal process.

The variation in the timeline for deploying our solutions and completing renewals may result in fluctuations in our revenues, which could cause our results to differ from projections. Additionally, while we generally invoice for 50% of the contract cost upon a customer's go-live date, our cash flows may be volatile and will not match our revenues recognition.

We are in the process of expanding our international operations, which exposes us to significant risks.

We currently operate in limited number of locations outside the United States. A key component to our business strategy is to expand our international operations to increase our revenues from customers outside of the United States as part of our growth strategy. Operating in international markets requires significant resources and management attention and will subject us to regulatory, economic and political risks in addition to those we already face in the United States. In addition, we will need to invest time and resources in understanding the regulatory framework and political environments of our potential customers overseas in order to focus our sales efforts. Because such regulatory and political considerations are likely to vary across jurisdictions, this effort will require additional time and attention from our sales team and could lead to a sales cycle that is longer than our typical process for sales in the United States. We also may need to hire additional employees and otherwise invest in our international operations in order to reach new customers. Because of our limited experience with international operations as well as developing and managing sales in international markets, our international expansion efforts may be delayed or may not be successful.

In addition, we face and will continue to face risks in doing business internationally that could adversely affect our business, including:

- the potential impact of currency exchange fluctuations;
- the need to comply with local data residency requirements;
- the availability and reliability of local data centers and internet bandwidth providers;
- the difficulty of staffing and managing international operations and the increased operations, travel, shipping and compliance costs associated with having customers in numerous international locations;
- potentially greater difficulty collecting accounts receivable and longer payment cycles;
- the availability of coverage by wireless carriers in international markets;
- higher or more variable costs associated with wireless carriers and other service providers;
- the need to offer customer support in various languages;
- challenges in understanding and complying with local laws, regulations and customs in foreign jurisdictions, including laws regarding privacy and government surveillance;
- export controls and economic sanctions administered by the Department of Commerce Bureau of Industry and Security and the Treasury Department's Office of Foreign Assets Control;
- compliance with various anti-bribery and anti-corruption laws such as the Foreign Corrupt Practices Act and United Kingdom Bribery Act of 2010;
- tariffs and other non-tariff barriers, such as quotas and local content rules;
- more limited protection for our intellectual property in some countries;
- adverse or uncertain tax consequences as a result of international operations;
- currency control regulations, which might restrict or prohibit our conversion of other currencies into U.S. dollars;

- restrictions on the transfer of funds;
- deterioration of political relations between the United States and other countries; and
- political or social unrest or economic instability in a specific country or region in which we operate, which could have an adverse impact on our operations in that location.

Also, we expect that due to costs related to our international expansion efforts and the increased cost of doing business internationally, we will incur higher costs to secure sales to international customers than the comparable costs for domestic customers. As a result, our financial results may fluctuate as we expand our operations and customer base worldwide.

Our failure to manage any of these risks successfully could harm our international operations, and adversely affect our business, operating results and financial condition.

We are dependent on the continued services and performance of our senior management and other key personnel, the loss of any of whom could adversely affect our business.

Our future success depends in large part on the continued contributions of our senior management and other key personnel. In particular, the leadership of key management personnel is critical to the successful management of our company, the development of our products, and our strategic direction. We also depend on the contributions of key technical personnel.

We do not maintain "key person" insurance for any member of our senior management team or any of our other key employees. Our senior management and key personnel are all employed on an at-will basis, which means that they could terminate their employment with us at any time, for any reason and without notice. The loss of any of our key management personnel could significantly delay or prevent the achievement of our development and strategic objectives and adversely affect our business.

If we are unable to attract, integrate and retain additional qualified personnel, including top technical talent, our business could be adversely affected.

Our future success depends in part on our ability to identify, attract, integrate and retain highly skilled technical, managerial, sales and other personnel. We face intense competition for qualified individuals from numerous other companies, including other software and technology companies, many of whom have greater financial and other resources than we do. Some of these characteristics may be more appealing to high-quality candidates than those we have to offer. In addition, new hires often require significant training and, in many cases, take significant time before they achieve full productivity. We may incur significant costs to attract and retain qualified personnel, including significant expenditures related to salaries and benefits and compensation expenses related to equity awards, and we may lose new employees to our competitors or other companies before we realize the benefit of our investment in recruiting and training them. Moreover, new employees may not be or become as productive as we expect, as we may face challenges in adequately or appropriately integrating them into our workforce and culture. If we are unable to attract, integrate and retain suitably qualified individuals who are capable of meeting our growing technical, operational and managerial requirements, on a timely basis or at all, our business will be adversely affected.

Volatility or lack of positive performance in our stock price may also affect our ability to attract and retain our key employees. Many of our senior management personnel and other key employees have become, or will soon become, vested in a substantial amount of stock or stock options. Employees may be more likely to leave us if the shares they own or the shares underlying their vested options have significantly appreciated in value relative to the original purchase prices of the shares or the exercise prices of the options, or, conversely, if the exercise prices of the options that they hold are significantly above the market price of our common stock. If we are unable to appropriately incentivize and retain our employees through equity compensation, or if we need to increase our compensation expenses in order to appropriately incentivize and retain our employees, our business, operating results and financial condition would be adversely affected.

We may be subject to additional obligations to collect and remit certain taxes, and we may be subject to tax liability for past activities, which could harm our business.

State, local and foreign jurisdictions have differing rules and regulations governing sales, use, value added and other taxes, and these rules and regulations are subject to varying interpretations that may change over time, particularly with respect to software-as-a-service products like our solutions. Further, these jurisdictions' rules regarding tax nexus are complex and vary significantly. If one or more jurisdictions were to assert that we have failed to collect taxes for sales of our solutions, we could face the possibility of tax assessments and audits. A successful assertion that we should be collecting additional sales, use, value added or other taxes in those jurisdictions where we have not historically done so and do not accrue for such taxes could result in substantial tax liabilities and related penalties for past sales or otherwise harm our business and operating results.

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

As of December 31, 2019, we had federal net operating loss carryforwards ("NOLs") of approximately $85.6 million, of which $80.6 million will expire between 2026 through 2038, if not utilized. As of December 31, 2019, we also had state NOLs of approximately $55.1 million, which will expire, if not utilized, in 2019 through 2038. These federal and state NOLs may be available to reduce future income subject to income taxes. In general, under Section 382 of the Internal Revenue Code of 1986, as amended ("the Code"), a corporation that undergoes an "ownership change" is subject to limitations on its ability to utilize its NOLs to offset future taxable income. Past or future changes in our stock ownership, some of which are outside of our control, may have resulted or could result in an ownership change. State NOLs generated in one state cannot be used to offset income generated in another state.

We may be subject to litigation for a variety of claims or to other legal requests, which could adversely affect our results of operations, harm our reputation or otherwise negatively impact our business.

We may be subject to litigation for a variety of claims arising from our normal business activities. These may include claims, suits, and proceedings involving labor and employment, wage and hour, commercial and other matters. The outcome of any litigation, regardless of its merits, is inherently uncertain. Any claims and lawsuits, and the disposition of such claims and lawsuits, could be time-consuming and expensive to resolve, divert management attention and resources, and lead to attempts on the part of other parties to pursue similar claims. Any adverse determination related to litigation could adversely affect our results of operations, harm our reputation or otherwise negatively impact our business. In addition, depending on the nature and timing of any such dispute, a resolution of a legal matter could materially affect our future operating results, our cash flows or both.

An unfavorable outcome on any litigation matters could require us to pay substantial damages, or, in connection with any intellectual property infringement claims, could require us to pay ongoing royalty payments or could prevent us from selling certain of our products. As a result, a settlement of, or an unfavorable outcome on, any of the matters referenced above or other litigation matters could have a material adverse effect on our business, operating results, financial condition and cash flows.

We, or our customers, may be subject to requests for our data or information concerning our techniques and processes, pursuant to state or federal law (for example, public-records requests or subpoenas to provide information or to testify in court). This data and information, some of which we may deem to be confidential or trade secrets, could therefore become a matter of public record and also become accessible by competitors, which could negatively impact our business.

Changes in financial accounting standards may cause adverse and unexpected revenues fluctuations and impact our reported results of operations.

The accounting rules and regulations that we must comply with are complex and subject to interpretation by the Financial Accounting Standards Board ("FASB"), the Securities and Exchange Commission and various bodies formed to promulgate and interpret appropriate accounting principles. In addition, many companies' accounting disclosures are being subjected to heightened scrutiny by regulators and the public. Further, the accounting rules and regulations are continually changing in ways that could impact our financial statements.

Changes to accounting principles or our accounting policies on our financial statements going forward are difficult to predict, could have a significant effect on our reported financial results, and could affect the reporting of transactions completed before the announcement of the change. In addition, were we to change our critical accounting estimates, including the timing of recognition of subscription and professional services revenues and other revenues sources, our results of operations could be significantly impacted.

Risks Related to Our Intellectual Property

Failure to protect our intellectual property rights could adversely affect our business.

Our success depends, in part, on our ability to protect proprietary methods and technologies that we develop or license under patent and other intellectual property laws of the United States, as well as our brands, so that we can prevent others from them. We rely on a combination of contractual and intellectual property rights, including non-disclosure agreements, patents, trade secrets, copyrights and trademarks, to establish and protect our intellectual property rights in our names, services, innovations, methodologies and related technologies. If we fail to protect our intellectual property rights adequately, our competitors might gain access to our technology and our business might be adversely affected.

As of December 31, 2019, we had 32 U.S. patents directed to our technologies, as well as one granted patent in Israel and one granted patent in Mexico. The issued patents expire on various dates from 2022 to 2034. We also license one patent from a third party, which expires in 2023. We have patent applications pending for examination in the United States, Europe, Mexico and Brazil, but we cannot guarantee that these patent applications will be granted. We also license one other U.S. patent from one third party. The patents that we own or those that we license from others (including those that may be issued in the future) may not provide us with any competitive advantages or may be challenged by third parties.

The process of obtaining patent protection is expensive and time-consuming, and we may not be able to prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. Even if issued, there can be no assurance that these patents will adequately protect our intellectual property, as the legal standards relating to the validity, enforceability and scope of protection of patent and other intellectual property rights are uncertain.

Any patents that are issued may subsequently be invalidated or otherwise limited, allowing other companies to develop offerings that compete with ours, which could adversely affect our competitive business position, business prospects and financial condition. In addition, issuance of a patent does not guarantee that we have a right to practice the patented invention. Patent applications in the United States are typically not published until 18 months after their earliest priority date or, in some cases, not at all, and publications of discoveries in industry-related literature lag behind actual discoveries. We cannot be certain that third parties do not have blocking patents that could be used to prevent us from marketing or practicing our software or technology.

Effective patent, trademark, copyright and trade secret protection may not be available to us in every country in which our software is available. The laws of some foreign countries may not be as protective of intellectual property rights as those in the United States (in particular, some foreign jurisdictions do not permit patent protection for software), and mechanisms for enforcement of intellectual property rights may be inadequate. Additional uncertainty may result from changes to intellectual property legislation enacted in the United States, including the recent America Invents Act, or to the laws of other countries and from interpretations of the intellectual property laws of the United States and other countries by applicable courts and agencies. Accordingly, despite our efforts, we may be unable to prevent third parties from infringing upon or misappropriating our intellectual property.

We rely in part on trade secrets, proprietary know-how and other confidential information to maintain our competitive position. Although we endeavor to enter into non-disclosure agreements with our employees, licensees and others who may have access to this information, we cannot assure you that these agreements or other steps we have taken will prevent unauthorized use, disclosure or reverse engineering of our technology. Moreover, third parties may independently develop technologies or products that compete with ours, and we may be unable to prevent this competition. Third parties also may seek access to our trade secrets, proprietary know-how and other confidential information through legal measures (for example, public-records requests or subpoenas to provide information or to testify in court) and it could be expensive to defend against those requests. Disclosure of our trade secrets, proprietary know-how and other confidential information could negatively impact our business.

We might be required to spend significant resources to monitor and protect our intellectual property rights. We may initiate claims or litigation against third parties for infringement of our proprietary rights or to establish the validity of our proprietary rights. Litigation also puts our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing. Additionally, we may provoke third parties to assert counterclaims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially viable. Any litigation, whether or not resolved in our favor, could result in significant expense to us and divert the efforts of our technical and management personnel, which may adversely affect our business, operating results, financial condition and cash flows.

We may be subject to intellectual property rights claims by third parties, which are extremely costly to defend, could require us to pay significant damages and could limit our ability to use certain technologies.

Companies in the software and technology industries, including some of our current and potential competitors, own large numbers of patents, copyrights, trademarks and trade secrets and frequently enter into litigation based on allegations of infringement or other violations of intellectual property rights. In addition, many of these companies have the capability to dedicate substantially greater resources to enforce their intellectual property rights and to defend claims that may be brought against them. The litigation may involve patent holding companies or other adverse patent owners that have no relevant product revenues and against which our patents may therefore provide little or no deterrence. We may have previously received, and may in the future receive, notices that claim we have misappropriated, misused, or infringed other parties' intellectual property rights, and, to the extent we gain greater market visibility, we face a higher risk of being the subject of intellectual property infringement claims.

There may be third-party intellectual property rights, including issued or pending patents that cover significant aspects of our technologies or business methods. Any intellectual property claims, with or without merit, could be very time-consuming, could be expensive to settle or litigate and could divert our management's attention and other resources. These claims could also subject us to significant liability for damages, potentially including treble damages if we are found to have willfully infringed patents or copyrights. These claims could also result in our having to stop using technology found to be in violation of a third party's rights. We might be required to seek a license for the intellectual property, which may not be available on a timely basis, on reasonable terms or at all. We also may be required to modify our products, services, internal systems or technologies. Even if a license were available, we could be required to pay significant royalties, which would increase our operating expenses. As a result, we may be required to develop alternative non-infringing technology, which could require significant effort and expense. If we cannot license or develop technology for any infringing aspect of our business, we would be forced to limit or stop sales of our software and may be unable to compete effectively. Any of these results would adversely affect our business, operating results, financial condition and cash flows.

Our use of open source software could subject us to possible litigation.

A portion of our technologies incorporates open source software, and we expect to continue to incorporate open source software into our platform in the future. Few of the licenses applicable to open source software have been interpreted by courts, and their application to the open source software integrated into our proprietary technology platform may be uncertain. If we fail to comply with these licenses, then pursuant to the terms of these licenses, we may be subject to certain requirements, including requirements that we make available the source code for our software that incorporates the open source software. We cannot assure you that we have not incorporated open source software in our software in a manner that is inconsistent with the terms of the applicable licenses or our current policies and procedures. If an author or other third party that distributes such open source software were to allege that we had not complied with the conditions of one or more of these licenses, we could incur significant legal expenses defending against such allegations. Litigation could be costly for us to defend, have a negative effect on our operating results and financial condition or require us to devote additional research and development resources to change our technology platform.

Risks Related to the Ownership of Our Common Stock

Our stock price may be volatile or may decline regardless of our operating performance, resulting in substantial losses for investors.

The market price of our common stock has fluctuated and may continue to fluctuate significantly in response to numerous factors, many of which are beyond our control, including the factors listed below and other factors described in this "Risk Factors" section:

- actual or anticipated fluctuations in our operating results;
- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections;
- failure of securities analysts to initiate or maintain coverage of our company, changes in financial estimates by any securities analysts who follow our company, or our failure to meet these estimates or the expectations of investors;
- ratings changes by any securities analysts who follow our company;
- changes in the availability of federal funding to support local law enforcement efforts, or local budgets;
- announcements by us of significant technical innovations, acquisitions, strategic partnerships, joint ventures or capital commitments;
- changes in operating performance and stock market valuations of other software companies generally;
- price and volume fluctuations in the overall stock market, including as a result of trends in the economy as a whole;
- changes in our board of directors or management;
- sales of large blocks of our common stock, including sales by our executive officers, directors and significant stockholders;
- lawsuits threatened or filed against us;
- short sales, hedging and other derivative transactions involving our capital stock;
- general economic conditions in the United States and abroad;
- other events or factors, including those resulting from war, incidents of terrorism or responses to these events; and
- media misperception of our sales and customer relationships, including press announcements or media mentions of future sales that may be misleading or inaccurate.

In addition, stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many software companies. Stock prices of many software companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. Broad market and industry fluctuations, as well as general economic, political, regulatory and market conditions, may negatively impact the market price of our common stock. In the past, stockholders have instituted securities action litigation following periods of market volatility. If we were to become involved in securities litigation, it could subject us to substantial costs, divert resources and the attention of management from our business and adversely affect our business, operating results, financial condition and cash flows.

Substantial future sales of shares of our common stock could cause the market price of our common stock to decline.

Certain holders of our shares of common stock have the right, subject to various conditions and limitations, to include their shares of our common stock in registration statements relating to our securities, including approximately 3.3 million shares that were registered in connection with the Registration Statement on Form S-3 that became effective on July 27, 2018, of which approximately 136,000 were sold in an underwritten registered secondary offering in March 2019. If the offer and sale of these shares are registered, they will be freely tradable without restriction under the Securities Act. In addition, non-affiliates have the ability to sell shares of our common stock in the open market or through block trades without subject to volume restrictions under Rule 144 of the Securities Act. In addition, in the future we may issue common stock or other securities if we need to raise additional capital. The number of new shares of our common stock issued in connection with raising additional capital could constitute a material portion of the then outstanding shares of our common stock. In the event a large number of shares of common stock are sold in the public market, such share sales could reduce the trading price of our common stock.

Stock repurchases could increase the volatility of the trading price of our common stock and diminish our cash reserves, and we cannot guarantee that our stock repurchase program will enhance long-term stockholder value.

In May 2019, our board of directors adopted a stock repurchase program for up to $15 million of our common stock. Although our board of directors has authorized the stock repurchase program, it does not obligate us to repurchase any specific dollar amount or number of shares, there is no expiration date for the stock repurchase program, and the stock repurchase program may be modified, suspended or terminated at any time and for any reason. The timing and actual number of shares repurchased under the stock repurchase program will depend on a variety of factors, including the acquisition price of the shares, our liquidity position, general market and economic conditions, legal and regulatory requirements and other considerations. Our ability to repurchase shares may also be limited by restrictive covenants in our existing credit agreement or in future borrowing arrangements we may enter into from time to time.

Repurchases of our shares could increase the volatility of the trading price of our stock, which could have a negative impact on the trading price of our stock. Similarly, the future announcement of the termination or suspension of the stock repurchase program, or our decision not to utilize the full authorized repurchase amount under the stock repurchase program, could result in a decrease in the trading price of our stock. In addition, the stock repurchase program could have the impact of diminishing our cash reserves, which may impact our ability to finance our growth, complete acquisitions and execute our strategic plan. There can be no assurance that any shares repurchases we do elect to make will enhance stockholder value because the market price of our common stock may decline below the levels at which we repurchased our shares. Although our stock repurchase program is intended to enhance long-term stockholder value, we cannot guarantee that it will do so and short-term stock price fluctuations could reduce the effectiveness of the stock repurchase program.

If securities or industry analysts do not publish research or reports about our business, or publish negative reports about our business, our share price and trading volume could decline.

The trading market for our common stock depends in part on the research and reports that securities or industry analysts publish about us or our business, our market and our competitors. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our shares of common stock or change their opinion of our shares of common stock, our share price would likely decline. If one or more of these analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

We are an "emerging growth company" and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act (the "JOBS Act"), and we take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not "emerging growth companies" including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We will remain an "emerging growth company" for up to five years, although we will cease to be an "emerging growth company" upon the earliest of (i) the last day of fiscal year 2022, (ii) the last day of the first fiscal year in which our annual gross revenues are $1.07 billion or more, (iii) the date on which we have, during the previous rolling three-year period, issued more than $1 billion in non-convertible debt securities or (iv) the date on which we are deemed to be a "large accelerated filer" as defined in the Securities Exchange Act of 1934, or the Exchange Act. We cannot predict if investors will find our common stock less attractive or our company less comparable to certain other public companies because we will rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We incur substantial costs as a result of being a public company.

As a public company, we are incurring significant levels of legal, accounting, insurance and other expenses that we did not incur as a private company. We are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Act, the listing requirements of the Nasdaq Capital Market, and other applicable securities rules and regulations. Compliance with these rules and regulations increases our legal and financial compliance costs, makes some activities more difficult, time-consuming or costly and increases demand on our systems and resources as compared to when we operated as a private company. The Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. In order to maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. As a result, management's attention may be diverted from other business concerns, which could adversely affect our business and operating results. Although we have already hired additional corporate employees to comply with these requirements, we may need to hire more corporate employees in the future or engage outside consultants, which would increase our costs and expenses.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs and making some activities more time-consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be adversely affected.

As a result of disclosure of information in this report and in the filings that we are required to make as a public company, our business, operating results and financial condition have become more visible, which has resulted in, and may in the future result in threatened or actual litigation, including by competitors and other third parties. If any such claims are successful, our business, operating results and financial condition could be adversely affected, and even if the claims do not result in litigation or are resolved in our favor, these claims, and the time and resources necessary to resolve them, could divert the resources of our management and adversely affect our business, operating results and financial condition.

We do not intend to pay dividends for the foreseeable future.

We have never declared or paid any cash dividends on our common stock and do not intend to pay any cash dividends in the foreseeable future. We anticipate that we will retain all of our future earnings for use in the development of our business and for general corporate purposes. Any determination to pay dividends in the future will be at the discretion of our board of directors. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investments.

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

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

- establish a classified board of directors so that not all members of our board of directors are elected at one time;
- permit the board of directors to establish the number of directors and fill any vacancies and newly-created directorships;
- provide that directors may only be removed for cause;
- require super-majority voting to amend some provisions in our certificate of incorporation and bylaws;
- authorize the issuance of "blank check" preferred stock that our board of directors could use to implement a stockholder rights plan;
- eliminate the ability of our stockholders to call special meetings of stockholders;
- prohibit stockholder action by written consent, which requires all stockholder actions to be taken at a meeting of our stockholders;
- provide that the board of directors is expressly authorized to make, alter or repeal our bylaws; and
- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at annual stockholder meetings.

In addition, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits stockholders owning 15% or more of our outstanding voting stock from merging or otherwise combining with us for a period of three years following the date on which the stockholder became a 15% stockholder without the consent of our board of directors. These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management, and otherwise discourage management takeover attempts.

Our certificate of incorporation designates the Court of Chancery of the State of Delaware as the exclusive forum for certain litigation that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us.

Pursuant to our certificate of incorporation, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws or (4) any action asserting a claim governed by the internal affairs doctrine. Our certificate of incorporation further provides that any person or entity purchasing or otherwise acquiring any interest in shares of our common stock is deemed to have notice of and consented to the foregoing provision. The forum selection clause in our certificate of incorporation may limit our stockholders' ability to obtain a favorable judicial forum for disputes with us.

Our certificate of incorporation further provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. However, on December 19, 2018, the Delaware Chancery Court issued an opinion invalidating this provision in the certificates of incorporation of Delaware corporations. The Chancery Court held that a Delaware corporation can only use its constitutive documents to bind a plaintiff to a particular forum where the claim involves rights or relationships established by or under Delaware's corporate law. This case may be appealed to the Delaware Supreme Court. In light of this recent court decision, on December 21, 2018 we announced that we do not currently intend to enforce the foregoing federal forum selection provision unless the relevant court decision is appealed and the Delaware Supreme Court reverses the decision. If there is no appeal or if the Delaware Supreme Court affirms the Chancery Court's decision, then we intend to seek approval by our stockholders to amend our certificate of incorporation at our next regularly-scheduled annual meeting of stockholders to remove the invalid provision.

Item 1B. UNRESOLVED STAFF COMMENTS

Not Applicable.

Item 2. PROPERTIES

Our principal facilities consist of office space for our corporate headquarters in Newark, California, where we occupy approximately 12,020 square feet of space under a lease that expires in October 2021.

We lease our facilities and do not own any real property. We may procure additional space as we add employees and expand geographically. We believe that our facilities are adequate to meet our needs for the immediate future and that should it be needed, suitable additional space will be available to accommodate expansion of our operations.

Item 3. LEGAL PROCEEDINGS

On August 28, 2018, Silvon S. Simmons (the "Plaintiff") amended a complaint against the City of Rochester, New York and various city employees, filed in the United States District Court, Western District of New York, to add us and employees as a defendant. The amended complaint alleges conspiracy to violate the Plaintiff's civil rights, denial of the right to a fair trial, and malicious prosecution. The Plaintiff claims that we colluded with the City of Rochester to fabricate and create gunshot alert evidence to secure Plaintiff's conviction. On the basis of the allegations, the Plaintiff has petitioned for compensatory and punitive damages and other costs and expenses, including attorney's fees. We believe that the Plaintiff's claims are without merit and are disputing them vigorously.

We may become subject to legal proceedings, as well as demands and claims that arise in the normal course of our business, including claims of alleged infringement of third-party patents and other intellectual property rights, breach of contract, employment law violations, and other matters and matters involving requests for information from us or our customers under federal or state law. Such claims, even if not meritorious, could result in the expenditure of significant financial and management resources. We make a provision for a liability relating to legal matters when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These provisions are reviewed and adjusted to include the impacts of negotiations, estimated settlements, legal rulings, advice of legal counsel, and other information and events pertaining to a particular matter.

An unfavorable outcome on any litigation matters could require payment of substantial damages, or, in connection with any intellectual property infringement claims, could require us to pay ongoing royalty payments or could prevent us from selling certain of our products. As a result, a settlement of, or an unfavorable outcome on, any of the matters referenced above or other litigation matters or legal proceedings could have a material adverse effect on our business, operating results, financial condition and cash flows.

Item 4. MINE SAFETY DISCLOSURES

Not Applicable.

PART II

Item 5. MARKET FOR REGISTRANT'S COMMON STOCK, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES.

Market Information of Common Stock

Our common stock has been listed on the Nasdaq Capital Market under the symbol "SSTI" since June 7, 2017. Prior to that date, there was no public trading market for our common stock.

On February 28, 2020, the last reported sale price of our common stock as reported on the Nasdaq Capital Market was $35.60 per share. As of February 28, 2020, we had approximately 90 holders of record of our common stock. The actual number of stockholders is greater than this number of record holders, and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Dividend Policy

We have never declared or paid any dividends on our capital stock. We currently intend to retain all available funds and any future earnings for the operation and expansion of our business and, therefore, we do not anticipate declaring or paying cash dividends in the foreseeable future. The payment of dividends will be at the discretion of our board of directors and will depend on our results of operations, capital requirements, financial condition, prospects, contractual arrangements, any limitations on payment of dividends present in our future debt agreements, and other factors that our board of directors may deem relevant.

Sale of Unregistered Securities and Use of Proceeds

(a) Unregistered Sales of Equity Securities

None.

(b) Issuer Purchases of Equity Securities

The following table sets forth stock repurchases of our common stock during the quarter ended December 31, 2019.

	Total Number of Shares Purchased[1]	Average Price Paid per Share	Total Number of Shares Purchased as part of Publicly Announced Program	Dollar Value of Shares that May Yet Be Purchased Under the Program (in thousands)
October 1, 2019- October 31, 2019	—	—	—	$ 11,534
November 1, 2019- November 30, 2019	137,824	$ 23.58	137,824	$ 8,282
December 1, 2019- December 31, 2019	—	—	—	$ 8,282
Total	137,824		137,824	

(1) All repurchases were made as part of our publicly announced stock repurchase program. In May 2019, we announced that our board of directors approved a stock repurchase program, under which we were authorized to repurchase up to $15 million of our common stock. The repurchase program has no expiration date and may be modified, suspended or discontinued at any time. For further information regarding our stock repurchase program, see Note 13 of the accompanying notes to the consolidated financial statements.

(c) Use of Proceeds from Public Offering of Common Stock

Our initial public offering of common stock (the "IPO") was effected through a Registration Statement on Form S-1 (File No. 333-217603), which was declared effective on June 6, 2017. There has been no material change in the planned use of proceeds from our IPO as described in our final prospectus filed with the SEC pursuant to Rule 424(b) and other periodic reports previously filed with the SEC.

We used $13.7 million of the net proceeds from our IPO to repay outstanding indebtedness of $13.5 million, including early termination fees of $0.2 million, during the quarter ending September 30, 2017. On October 3, 2018, we used $1.7 million of our IPO proceeds to fund the acquisition of HunchLab.

Securities Authorized for Issuance under Equity Compensation Plans

Information about securities authorized for issuance under our equity compensation plan is incorporated herein by reference to Item 12 of Part III of this Annual Report on Form 10-K.

Item 6. SELECTED CONSOLIDATED FINANCIAL AND OTHER DATA.

The following selected consolidated financial data should be read together with our consolidated financial statements and related notes, as well as the information found under the sections titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this Annual Report on Form 10-K. We derived the selected consolidated financial data as of and for the years ended December 31, 2019, 2018, and 2017 from our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K. Our historical results are not necessarily indicative of the results to be expected in the future.

	Year Ended December 31,		
	2019	2018	2017
	(in thousands, except per share data)		
Consolidated Statements of Operations Data:			
Revenues	$ 40,752	$ 34,753	$ 23,763
Costs			
Cost of revenues (1)	16,409	14,846	11,370
Impairment of property and equipment	—	686	793
Total costs	16,409	15,532	12,163
Gross profit	24,343	19,221	11,600
Operating expenses			
Sales and marketing (1)	9,989	8,377	6,179
Research and development (1)	5,344	4,987	4,159
General and administrative (1)	7,415	8,425	5,595
Total operating expenses	22,748	21,789	15,933
Income (loss) from operations	1,595	(2,568)	(4,333)
Other income (expense), net			
Remeasurement of convertible preferred stock warrant liability	—	—	(3,725)
Loss on early extinguishment of debt	—	—	(479)
Interest income (expense), net	440	82	(1,114)
Other expense, net	(278)	(252)	(169)
Income (loss) before income taxes	1,757	(2,738)	(9,820)
Provision for (benefit from) income taxes	(41)	(13)	160
Net income (loss)	$ 1,798	$ (2,725)	$ (9,980)
Net income (loss) per share, basic	$ 0.16	$ (0.26)	$ (1.61)
Net income (loss) per share, diluted	$ 0.15	$ (0.26)	$ (1.61)
Weighted average shares used in computing net income (loss) per share, basic	11,302,780	10,569,007	6,197,775
Weighted average shares used in computing net income (loss) per share, diluted	11,846,348	10,569,007	6,197,775

(1) Includes stock-based compensation expense and depreciation and amortization expense as follows:

	Year Ended December 31,		
	2019	2018	2017
		(in thousands)	
Stock-based compensation expense:			
Cost of revenues	$ 670	$ 316	$ 75
Sales and marketing	955	770	133
Research and development	365	272	69
General and administrative	1,067	1,110	351
Total stock-based compensation expense	$ 3,057	$ 2,468	$ 628
Depreciation and amortization expense:			
Cost of revenues	$ 4,787	$ 3,752	$ 3,027
Sales and marketing	61	65	37
Research and development	88	63	35
General and administrative	46	37	22
Total depreciation and amortization expense	$ 4,982	$ 3,917	$ 3,121

	As of December 31,	
	2019	2018
	(in thousands)	
Select Consolidated Balance Sheets Data:		
Cash and cash equivalents	$ 24,550	$ 10,218
Accounts receivable and contract assets	$ 13,883	$ 15,267
Total assets	$ 60,571	$ 47,119
Deferred revenue, current and non-current	$ 26,958	$ 24,162
Working capital (deficit)	$ 7,773	$ (1,764)
Total stockholders' equity	$ 27,251	$ 17,147

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

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and accompanying notes included in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). These statements are often identified by the use of words such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" or the negative or plural of these words or similar *expressions or variations. Such forward-looking statements are subject to a number of risks, uncertainties, assumptions and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified herein, and those discussed in the section titled "Risk Factors", set forth in Part I, Item 1A of this Annual Report on Form 10-K and in our other SEC filings. You should not rely upon forward-looking statements as predictions of future events. Furthermore, such forward-looking statements speak only as of the date of this report. Except as required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements.*

Overview

We provide precision-policing and security solutions for law enforcement and security personnel to help deter gun violence and make cities, campuses and facilities safer. Our flagship public safety solution, ShotSpotter Flex, is the leading outdoor gunshot detection, location and alerting system. Our patrol management software, ShotSpotter Missions (formerly HunchLab), creates crime forecasts designed to enable more precise and effective use of patrol resources to deter crime. In 2019, we created a new technology innovation unit, ShotSpotter Labs, to expand our efforts supporting innovative uses of our technology to help protect wildlife and the environment. Our security solutions, ShotSpotter SecureCampus and ShotSpotter SiteSecure, are designed to help law enforcement and security personnel serving universities, corporate campuses and key infrastructure or transportation centers mitigate risk and enhance security by notifying authorities of a potential outdoor gunfire incident, saving critical minutes for first responders to arrive. Our gunshot detection solutions are trusted by law enforcement agencies in over 100 cities as of December 31, 2019.

Our gunshot detection solutions consist of highly-specialized, cloud-based software integrated with proprietary, internet-enabled sensors designed to detect outdoor gunfire. The speed and accuracy of our gunfire alerts enable law enforcement and security personnel to reduce their response times to shooting events, which can increase the chances of apprehending the shooter, providing timely aid to victims, and identifying witnesses before they scatter, as well as aid in evidentiary collection and serve as an overall deterrent. When a potential gunfire incident is detected by our sensors, our system applies machine classification combined with human review to analyze and validate the incident and precisely locate where the incident occurred. An alert containing a location on a map and critical information about the incident is sent directly to subscribing law enforcement or security personnel through any internet-connected computer and to iPhone or Android mobile devices.

Our software sends validated gunfire data along with the audio of the triggering sound to our Incident Review Center ("IRC"), where our trained acoustic experts are on duty 24 hours a day, seven days a week, 365 days a year to screen and confirm actual gunfire incidents. Our acoustic experts can supplement alerts with additional tactical information, such as the potential presence of multiple shooters or the use of high-capacity weapons. Gunshot incidents reviewed by our IRC result in alerts typically sent within 45 seconds of the receipt of the gunfire incident.

We generate annual subscription revenues from the deployment of ShotSpotter Flex on a per-square-mile basis. Our security solutions, ShotSpotter SecureCampus and ShotSpotter SiteSecure, are typically sold on a subscription basis, each with a customized deployment plan. Our ShotSpotter Missions solution is also sold on a subscription basis. As of December 31, 2019, we had ShotSpotter Flex, ShotSpotter SecureCampus and ShotSpotter SiteSecure coverage areas under contract for approximately 760 square miles, of which 730 square miles had gone live. Coverage areas under contract included 104 cities and 12 campuses/sites across the United States, South Africa and the Bahamas, including three of the ten largest cities in the United States. During the year ended December 31, 2019, one ShotSpotter SiteSecure customer became ShotSpotter Flex customer. For the year ended December 31, 2019, substantially all of our revenues are attributable to customers based in the United States.

While we intend to continue to devote resources to increase sales of our ShotSpotter SecureCampus, ShotSpotter SiteSecure, ShotSpotter Labs and ShotSpotter Missions solutions, we expect that revenues from our ShotSpotter Flex solution will continue to comprise a substantial majority of our revenues for the foreseeable future. ShotSpotter Labs projects are generally conducted in coordination with a sponsoring charitable organization. These projects may or may not be revenue-producing. When they are revenue-producing, they will generally be sold on a cost-plus basis. As such, ShotSpotter Labs projects will normally produce gross margins significantly lower than our Flex solutions.

We enter into subscription agreements on a term basis that typically range from one to five years in duration, with the majority having a contract term of one year. Substantially all of our sales are to governmental agencies and universities, which often undertake a prolonged contract evaluation process that affects the size or the timing of our sales contracts and may likewise increase our customer acquisition costs. For a discussion of the risks associated with our sales cycle, see risks entitled "Our sales cycle can be unpredictable, time-consuming and costly, and our inability to successfully complete sales could harm our business" and "Because we generally recognize our subscription revenues ratably over the term of our contract with a customer, fluctuations in sales will not be fully reflected in our operating results until future periods" in Item 1A, *Risk Factors*, included in this Annual Report on Form 10-K.

We rely on a limited number of suppliers and contract manufacturers to produce components of our solutions. We have no long-term contracts with these manufacturers and purchase from them on a purchase-order basis. Our outsourced manufacturers generally procure the components directly from third-party suppliers. Although we use a limited number of suppliers and contract manufacturers, we believe that we could find alternate suppliers or manufacturers if circumstances required us to do so, in part because a significant portion of the components required by our solutions is available off the shelf. For a discussion of the risks associated with our limited number of suppliers, see risk entitled "We rely on a limited number of suppliers and contract manufacturers, and our proprietary ShotSpotter sensors are manufactured by a single contract manufacturer" in Item 1A, *Risk Factors*, included in this Annual Report on Form 10-K.

We generated revenues of $40.8 million, $34.8 million and $23.8 million for the years ended December 31, 2019, 2018, and 2017, respectively, representing a year-over-year increases of 17% and 46%. For 2019, 2018, and 2017, revenues from ShotSpotter Flex represented approximately 96%, 97% and 98% of total revenues, respectively. Our two current largest customers, The City of Chicago and the City of New York, each accounted for 20% and 14%, respectively, of our total revenues for the year ended December 31, 2019. The City of Chicago and the City of New York, each accounted for 22% and 15%, respectively, of our total revenues for the year ended December 31, 2018. The City of New York and Puerto Rico Housing Administration accounted for 18% and 7%, respectively, of our total revenues for the year ended December 31, 2017. Substantially all of our revenues for the years ended December 31, 2019, 2018, and 2017 were derived from customers within the United States (including Puerto Rico and the U.S. Virgin Islands).

We had net income of $1.8 million for the year ended December 31, 2019, and had net losses of $2.7 million and $10.0 million for the years ended December 31, 2018, and 2017, respectively. Our accumulated deficit was $95.6 million and $97.4 million as of December 31, 2019 and 2018, respectively.

In September 2017, we used $13.7 million from the net proceeds of our initial public offering to voluntarily repay outstanding indebtedness of $13.5 million and $0.2 million in prepayment fees under a promissory note (the "2015 Term Note"). In connection with this early extinguishment of debt, we wrote off $0.3 million of unamortized debt issuance costs.

During the years ended December 31, 2019, 2018, and 2017, we went "live" on 82, 168 and 114 net new square miles of coverage, respectively. In each case, the increase in coverage was achieved through a combination of new customers and expansions with existing customers. During the year ended December 31, 2018, 71 miles out of 168 miles were due to expansion from a single customer. During the year ended December 31, 2017, the 114 net new square miles included the impact of a 33 coverage mile reduction as a result of our discontinuation in service of Puerto Rico and the U.S Virgin Islands due to devastation caused by hurricanes.

In connection with the cessation of our service with Puerto Rico and the U.S. Virgin Islands, we classified our contracts with them expired, stopped recognizing revenues and accelerated the deferred revenues related to setup fees under these contracts. Puerto Rico has returned as a customer with 16 miles already gone live at the end of 2019.

We have focused on rapidly growing our business and believe that its future growth is dependent on many factors, including our ability to increase our customer base, expand the coverage of our solutions among our existing customers, expand our international presence and increase sales of our security solutions. Our future growth will primarily depend on the market acceptance for outdoor gunshot detection solutions. Challenges we face in this regard include our target customers not having access to adequate funding sources, the fact that contracting with government entities can be complex, expensive, and time-consuming and the fact that our typical sales cycle is often very long, difficult to estimate accurately and can be costly. We expect international sales cycles to be even longer than our domestic sales cycles. To combat these challenges, we invest in research and development, increase awareness of our solutions, invest in new sales and marketing campaigns, often in different languages for international sales, and hire additional sales representatives to drive sales in order to continue to maintain our position as a market leader. In addition, we believe that entering into strategic partnerships with other service providers to cities and municipalities offers another potential avenue for expansion, particularly for our ShotSpotter Flex solution.

We will also focus on expanding our business by introducing new products and services to existing customers such as ShotSpotter Missions and gaining new customers for ShotSpotter Labs. We believe that developing and acquiring products for law enforcement in adjacent categories is a path for additional growth given our large and growing installed base of police departments who trust ShotSpotter's products, support and way of doing business. The ability to cross-sell new products provides an opportunity to grow revenues per customer and lifetime value. Challenges we face in this area include ensuring our new products are reliable, integrated well with other ShotSpotter solutions and priced and serviced appropriately. In some cases, we will need to bring in new skills sets to properly develop, market, sell or service these new products depending on the categories they represent.

In October 2018, we acquired the HunchLab technology and related assets that underline our ShotSpotter Missions solution. ShotSpotter Missions applies risk modeling and artificial intelligence to help forecast when and where crimes are likely to emerge and recommends specific patrol missions and tactics that can deter these events. The HunchLab technology provides a proven, high-value, and complementary solution we can immediately offer to our existing law enforcement customers. We believe our investment will democratize the sharing of important intelligence with patrol officers who currently have limited direct access to crime analysts.

With respect to international sales, we believe that we have the potential to expand our coverage within South Africa and the Bahamas, and to pursue opportunities in Latin America and other regions of the world. By adding additional sales resources in strategic locations, we believe we will be better positioned to reach these markets. However, we recognize that we have limited international operational experience and currently operate in a limited number of regions outside of the United States. Operating successfully in international markets will require significant resources and management attention and will subject us to additional regulatory, economic and political risks. We may face additional challenges that may delay contract execution related to negotiating with governments in transition, the use of third-party integrations and consultants. Moreover, we anticipate that different political and regulatory considerations that vary across different jurisdictions could extend or make more difficult to predict the length of what is already a lengthy sales cycle.

Initial Public Offering

In June 2017, we completed our IPO in which we sold 3,220,000 shares of our common stock at a price of $11.00 per share. We received net proceeds of $32.4 million, excluding underwriting discounts and commissions, which was recorded to additional paid-in capital.

As a result of the IPO:

- all outstanding Series B-1 convertible preferred stock warrants were remeasured at fair value using the Black-Scholes model, resulting in a loss of $3.7 million, which was recorded in other expense, net.
- the entire balance of $5.7 million in convertible preferred stock warrant liability was reclassified to additional paid-in capital. All preferred stock warrants were converted into common stock warrants. In addition, we issued to the lead underwriter in the IPO a warrant to purchase up to 84,000 shares of our common stock. See Note 15, *Convertible Preferred Stock Warrants and Common Stock Warrants*, to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K for further details regarding the warrants.
- all shares of the then-outstanding convertible preferred stock were converted into 4,689,753 shares of common stock. This resulted in a reclassification of $42.1 million to additional paid-in capital.
- offering costs incurred by us were approximately $1.9 million, excluding underwriting commissions and discounts, which was recorded to additional paid-in capital.

Key Business Metrics

We focus primarily on three key business metrics in order to measure our operational performance and inform strategic decisions. Revenue retention rate and sales and marketing spend per $1.00 of new annualized contract value are each calculated annually. Net new "go-live" square miles is calculated on a quarterly basis. All of these metrics are delivered using internal data and may be calculated in a manner different than similar metrics used by other companies.

	Year Ended December 31,		
	2019	**2018**	**2017**
		(in thousands)	
Revenue retention rate	111%	139%	141%
Sales and marketing spend per $1.00 of new annualized contract value	$ 0.43	$ 0.30	$ 0.34
Net new "go-live" square miles	82	168	114

Revenue Retention Rate

We calculate our revenue retention rate annually by dividing the (a) total revenues for such year from those customers who were customers during the corresponding prior year by (b) the total revenues from all customers in the corresponding prior year. For the purposes of calculating our revenue retention rate, we count as customers all entities with which we had contracts in the applicable year. Revenue retention rate for any given period does not include revenues attributable to customers first acquired during such period. We focus on our revenue retention rate because we believe that this metric provides insight into revenues related to and retention of existing customers. If our revenue retention rate for a year exceeds 100%, as it did in the years presented above, this indicates a low churn and means that the revenues retained during the year, including from customer expansions, more than offset the revenues that we lost from customers that did not renew their contracts during the year. As further evidence of our low churn, since transitioning our public safety business to the ShotSpotter Flex model in 2011, we have added over 70 new ShotSpotter Flex customers, but only ten such customers have terminated service, two of which were terminated due to hurricane damage. One of the two customers who terminated due to hurricane damage has returned as a customer with 16 miles already gone live at the end of 2019. We do not anticipate maintaining our revenue retention rate at the levels observed in 2018 and 2017. For example, in 2018, our revenue retention rate excluding our largest customer, Chicago, for which we had a large expansion deployment in 2018, would have been 118%.

Sales and Marketing Spend per $1.00 of New Annualized Contract Value

We calculate sales and marketing spend annually as the total sales and marketing expense during a year divided by the first 12 months of contract value for contracts entered into during the same year. We use this metric to measure the efficiency of our sales and marketing efforts in acquiring customers, renewing customer contracts and expanding their coverage areas.

Net New "Go-Live" Miles

Net new "go-live" square miles represent the square miles covered by deployments that were formally approved by customers during the quarter, both from initial and expanded customer deployments, net of square miles that ceased to be "live" during the quarter due to customer cancellations. New square miles include deployed square miles that may have been sold, or booked, in prior quarters. We focus on net new "go-live" miles as a key business metric to measure our operational performance and inform strategic decisions.

Components of Results of Operations

Presentation of Financial Statements

Our consolidated financial statements include the accounts of our wholly-owned Colombian and South African subsidiaries, ShotSpotter Colombia S.A.S. and ShotSpotter (Pty) Ltd. All intercompany balances and transactions have been eliminated in consolidation.

Revenues

We derive substantially all of our revenues from subscription services. We recognize subscription fees ratably, on a straight-line basis, over the term of the subscription, which for new customers is typically initially one to three years in length. Customer contracts include one-time set-up fees for the set-up of our sensors in the customer's coverage areas, training and third-party integration licenses. If the set-up fees are deemed to be a material right, they are recognized ratably over three years. Training and third-party integration license fees are recognized upon delivery.

For ShotSpotter Flex, we generally invoice customers for 50% of the total contract value when the contract is fully executed and for the remaining 50% when the subscription service is operational and ready to go live – that is, when the customer has acknowledged the completion of all the deliverables in the signed customer acceptance form. All fees billed in advance of services being delivered are recorded as deferred revenue. The timing of when new miles go live can be uncertain and, as a result, can have a significant impact on the levels of revenues and deferred revenue from quarter to quarter. For our ShotSpotter Flex solution, our pricing model is based on a per-square-mile basis. For our ShotSpotter Missions solution, pricing is currently customized, generally tied to the number of sworn police officers in a particular city. For ShotSpotter SecureCampus and ShotSpotter SiteSecure, our pricing model is on a customized-site basis. We may also offer discounts or other incentives in conjunction with ShotSpotter Missions sales in an effort to introduce the product and accelerate sales. As a result of our process for invoicing contracts and renewals upon execution, our cash flow from operations and accounts receivable can fluctuate due to timing of contract execution and timing of deployment.

We generally invoice subscription service renewals for 100% of the total contract value when the renewal contract is executed. Renewal fees are recognized ratably over the term of the renewal, which is typically one year. While most of our customers elect to renew their agreements, in some cases, they may not be able to obtain the proper approvals or funding to complete the renewal prior to expiration. For these customers, we stop recognizing subscription revenues at the end of the current contract term, even though we may continue to provide services for a period of time until the renewal process is completed. Once the renewal is complete, we then recognize subscription revenues for the period between the expiration of the term of the agreement and the completion of the renewal process in the month in which the renewal is executed. If a customer declines to renew its subscription prior to the end of three years, then the remaining setup fees are immediately recognized.

ShotSpotter Labs projects may or may not be revenue-producing. When they are revenue-producing, they will generally be sold on a cost-plus basis.

It is likely that international deployments may have different payment and billing terms due to their local laws, restrictions or other customary terms and conditions.

Costs

Costs include the cost of revenues and charges for impairment of property and equipment. Cost of revenues primarily includes depreciation expense associated with capitalized customer acoustic sensor networks, communication expenses, costs related to hosting our service applications, costs related to operating our Incident Review Center (the "IRC"), providing remote and on-site customer support and maintenance and forensic services, certain personnel and related costs of operations, stock-based compensation and allocated overheads, which includes IT, facility and equipment depreciation costs.

Impairment of property and expense is primarily attributable to our write-off of the remaining book value of indoor sensor inventory and indoor sensor networks installed in certain security customers during the year ended December 31, 2018 and write-off for deployed equipment in Puerto Rico and U.S. Virgin Islands that was destroyed by the hurricanes in September 2017.

We will have to upgrade our sensors that use third-generation ("3G") cellular communications to the fourth-generation Long-Term Evolution wireless technology, which will increase our cost of revenues. Originally, we had expected to start incurring costs in 2021 through 2022. We have begun plans to replace sensors in certain geographic areas starting in early 2021. Accelerated bandwidth changes by our carriers may require us to accelerate the upgrade of our 3G sensors prior to 2021, which would accelerate the costs associated with the upgrade, which are estimated to be between $4.0 million and $6.0 million in total. We may to re-use and re-deploy the old 3G sensors that have a remaining serviceable life where it makes sense to do so.

In the near term, we expect our cost of revenues to increase as our installed base increases, although certain of our costs of revenues are fixed and do not need to increase commensurate with increases in revenues. In addition, depreciation expense associated with deployed equipment is recognized only over the first five years from the go-live date. We also expect cost of revenues to increase as we continue to invest in our customer success capabilities to drive growth and value for our customers.

Operating Expenses

Operating expenses consist of sales and marketing, research and development, and general and administrative expenses. Salaries, bonuses, stock-based compensation expense and other personnel costs are the most significant components of each of these expense categories. We include stock-based compensation expense incurred in connection with the grant of stock options and restricted stock units to the applicable operating expense category based on the equity award recipient's functional area.

We are focused on executing on our growth strategy. As a result, in the near term we expect our total operating expenses to increase in absolute dollars as we incur additional expenses due to growth and as a result of operating as a public company. Although our operating expenses will fluctuate, we expect that over time, they will generally decrease as a percentage of revenues.

Sales and Marketing

Sales and marketing expenses primarily consist of personnel-related costs attributable to our sales and marketing personnel, commissions earned by our sales personnel, marketing expenses for trade shows, conferences and conventions, consulting fees, travel and facility-related costs and allocated overhead.

In the near term, we expect our sales and marketing expenses to increase in absolute dollars primarily due to planned growth in our sales and marketing organization. This growth will include adding sales and marketing personnel and expanding our marketing activities to continue to generate additional leads. Sales and marketing expense may fluctuate from quarter to quarter based on the timing of commission expense, marketing campaigns and tradeshows.

Research and Development

Research and development expenses primarily consist of personnel-related costs attributable to our research and development personnel, consulting fees and allocated overhead. We have devoted our product development efforts primarily to develop new lower-cost sensor hardware, develop new features including a mobile application, improve functionality of our solutions and adapt to new technologies or changes to existing technologies.

We are investing in engineering resources to support further development of the ShotSpotter Missions crime forecasting software. The focus of this effort will be in the areas of data science modeling, user experience, core application functionality and backend infrastructure improvements, including integration of ShotSpotter gunshot data to enhance forecasting of gun violence.

We are also investing research and development resources in conjunction with our ShotSpotter Labs projects and initiatives. The initial focus of these efforts is to develop new underwater sensor applications as well as to test and expand the functionality of our outdoor sensors in challenging environmental conditions.

In the near term, we expect our research and development expenses to increase in absolute dollars as we increase our research and development headcount to further strengthen our software and invest in the development of our service.

We will continue to invest in research and development to leverage our large and growing database of acoustic events, which includes those from both gunfire and non-gunfire. We also intend to leverage third-party AI and our own evolving cognitive and analytical applications to improve the efficiency of our solutions, which may include internal software applications, data analysis, event routing and customer outputs. Certain of these applications and outputs may expand the platform of services that we will be able to offer our customers.

General and Administrative

General and administrative expenses primarily consist of personnel-related costs attributable to our executive, finance, and administrative personnel, legal, accounting and other professional services fees, other corporate expenses and allocated overhead. We have recently incurred additional expenses in expanding our operations, including increased personnel, legal, insurance and accounting expenses, and the additional costs of achieving and maintaining compliance with Section 404 of the Sarbanes-Oxley Act and other regulations.

In the near term, we expect our general and administrative expenses to increase significantly in absolute dollars as we grow our business, support our operations as a public company and increase our headcount.

Other Income (Expense), Net

Other income (expense), net, consisted primarily of interest income and local and franchise tax expenses. In addition, in 2017, it included expense on our outstanding debt, and losses from the remeasurement of our convertible preferred stock warrant liability and losses from early extinguishment of debt.

Income Taxes

Our income taxes are based on the amount of our taxable income and enacted federal, state and foreign tax rates, adjusted for allowable credits, deductions and the valuations allowance against deferred tax assets, as applicable.

Results of Operations

Comparison of Years Ended December 31, 2019 and 2018

The following table sets forth our consolidated statements of operations data for the years ended December 31, 2019 and 2018 (in thousands):

	2019	As a % of Revenues	2018	As a % of Revenues	Change $	Change %
Revenues	$ 40,752	100%	$ 34,753	100%	$ 5,999	17%
Costs						
Cost of revenues	16,409	40%	14,846	43%	1,563	11%
Impairment of property and equipment	—	—	686	2%	(686)	(100%)
Total costs	16,409	40%	15,532	45%	877	6%
Gross profit	24,343	60%	19,221	55%	5,122	27%
Operating expenses:						
Sales and marketing	9,989	25%	8,377	24%	1,612	19%
Research and development	5,344	13%	4,987	14%	357	7%
General and administrative	7,415	18%	8,425	24%	(1,010)	(12%)
Total operating expenses	22,748	56%	21,789	63%	959	4%
Income (loss) from operations	1,595	4%	(2,568)	(7%)	4,163	(162%)
Other income (expense), net	162	—	(170)	(1%)	332	(195%)
Benefit (provision) for income taxes	41	—	13	—	28	215%
Net income (loss)	$ 1,798	4%	$ (2,725)	(8%)	$ 4,523	(166%)

Revenues

The increase of $6.0 million in revenues was primarily attributable to $2.3 million of new customer deployments that went live during 2019, $0.8 million from expansions of existing customer coverage areas that went live during 2019, and $4.4 million related primarily to customer deployments that went live in 2018 and for which we recognized a full year of revenues in 2019. These increases were partially offset by lost customers and the timing of renewals from certain customers resulting in deferred revenues. We went live with 82 net new square miles in 2019.

Costs

The increase in costs of $0.9 million was due primarily to a $1.2 million increase in overhead expenses resulting from an increase in employee headcount, a $0.9 million increase in depreciation expense associated with new customer deployment and expansions in existing customer coverage area, and a $0.1 million increase in software amortization, offset by a $0.6 million decrease in operating costs, which includes costs incurred in providing remote and on-site customer support and maintenance services, infrastructure hosting for our service application and costs related to operating our IRC and $0.7 million in impairment charges taken in 2018 that were not repeated in 2019. During 2018, we recognized impairment expense of $0.7 million for the impairment of property and equipment primarily related to the remaining book value of indoor sensor inventory and indoor sensor networks installed at certain security customers.

Gross margin for 2019 increased five percentage points from gross margin for 2018 because certain costs of revenues are fixed and did not increase commensurate with the increase in subscription revenues.

Operating Expenses

Sales and Marketing Expense

The increase in sales and marketing expense of $1.6 million was primarily due to a $1.3 million increase in personnel expense resulting from increased headcount, and a $0.3 million increase in consulting and travel expenses associated with the growth of our sales and marketing organization.

Research and Development Expense

The increase in research and development expense of $0.4 million was primarily due to an increase in personnel and consulting expenses related to the development of our mobile applications and next-generation sensors.

General and Administrative Expense

The decrease in general and administrative expense of $1.0 million was primarily due to a $1.5 million decrease in legal expenses resulting from litigation that settled in 2018 and our HunchLab acquisition in 2018, partially offset by $0.5 million increase in personnel and consulting expenses during the year ended December 31, 2019.

Other Income (Expense), Net

The increase in other income (expense), net of $0.3 million was due to a $0.4 million increase in interest income partially offset by a decrease in local and state income taxes.

Income Taxes

Our income taxes are based on the amount of our taxable income and enacted federal, state and foreign tax rates, adjusted for allowable credits, deductions and the valuations allowance against deferred tax assets, as applicable. For the years ended December 31, 2019 and 2018, our provision for income taxes consisted of a benefit (provision) for foreign income taxes only.

Comparison of Years Ended December 31, 2018 and 2017

The following table sets forth our selected consolidated statements of operations data for the years ended December 31, 2018 and 2017 (in thousands):

	2018	As a % of Revenues	2017	As a % of Revenues	Change $	Change %
Revenues	$34,753	100%	$23,763	100%	$10,990	46%
Costs						
Cost of revenues	14,846	43%	11,370	48%	3,476	31%
Impairment of property and equipment	686	2%	793	—	(107)	100%
Total costs	15,532	45%	12,163	51%	3,369	28%
Gross profit	19,221	55%	11,600	49%	7,621	66%
Operating expenses:						
Sales and marketing	8,377	24%	6,179	26%	2,198	36%
Research and development	4,987	14%	4,159	18%	828	20%
General and administrative	8,425	24%	5,595	24%	2,830	51%
Total operating expenses	21,789	63%	15,933	67%	5,856	37%
Loss from operations	(2,568)	(7%)	(4,333)	(18%)	1,765	(41%)
Other expense, net	(170)	(0%)	(5,487)	(23%)	5,317	(97%)
Provision for income taxes	13	0%	(160)	—	173	(100%)
Net loss	$ (2,725)	(8%)	$ (9,980)	(42%)	$ 7,255	(73%)

Revenues

The increase of $11.0 million in revenues was primarily attributable to $5.2 million from expansions of existing customer coverage areas, $1.9 million of new customer solutions that went live during 2018, and $4.8 million related primarily to customer deployments that went live in 2017 and for which we recognized a full year of revenues in 2018.

Costs

The increase in costs of $3.4 million was due primarily to a $1.4 million increase in overhead expenses resulting from an increase in employee headcount, a $0.8 million increase in operating costs, which includes costs incurred in providing remote and on-site customer support and maintenance services, infrastructure hosting for our service application and costs related to operating our IRC, and a $0.6 million increase in depreciation offset by $0.4 million decrease in telecommunication fees and $0.1 million in lower impairment charges. During 2018, we recognized impairment expense of $0.7 million for the impairment of property and equipment primarily related to the remaining book value of indoor sensor inventory and indoor sensor networks installed at certain security customers. During 2017, we recognized impairment expense of $0.8 million for the impairment of property and equipment primarily related to the remaining net book value for deployed equipment that was presumed destroyed by hurricanes in September 2017.

Gross margin for 2018 increased six percentage points from gross margin for 2017 because certain costs of revenues are fixed and did not increase commensurate with the increase in subscription revenues.

Operating Expenses

Sales and Marketing Expense

The increase in sales and marketing expense of $2.2 million was primarily due to an increase of $1.3 million in salaries, commissions, recruiting, and stock-based compensation expense, and a $0.7 million increase in consulting and outside services associated with expansion of our sales, marketing and customer success organization.

Research and Development Expense

The increase in research and development expense of $0.8 million was due primarily due to a $0.7 million increase in salaries, benefits and bonuses for research and development personnel, and stock-based compensation expense and a $0.1 million increase in consulting fees related to the development of our mobile applications and next-generation sensors.

General and Administrative Expense

The increase in general and administrative expense of $2.8 million from 2017 to 2018 was due to a $2.0 million increase in legal, accounting and other outside services fees associated with litigation and settlement expenses, business acquisition expenses, and operating as a public company, a $0.4 million increase in non-employee director compensation, and a $0.4 million increase in personnel expense primarily due to stock-based compensation expense.

Other Expense, Net

The decrease in other expense, net of $5.3 million was due to a $3.7 million decrease in expense related to the remeasurement of the preferred stock warrant liability due to a final remeasurement upon our IPO in the second quarter of 2017, a $1.6 million decrease in interest expense due to the termination of debt in the third quarter of 2017, a $0.2 million in prepayment fees in connection with the early extinguishment of debt, and a write-off of $0.3 million of unamortized debt issuance costs due to the termination of debt in the third quarter on 2017.

Income Taxes

Our income taxes are based on the amount of our taxable income and enacted federal, state and foreign tax rates, adjusted for allowable credits, deductions and the valuations allowance against deferred tax assets, as applicable. For the years ended December 31, 2018 and 2017, our provision for income taxes consisted of a benefit (provision) for foreign income taxes only.

Liquidity and Capital Resources

Sources of Funds

Our operations have been financed primarily through net proceeds from the sale of equity, debt financing arrangements and cash from operating activities. Our principal source of liquidity is cash and cash equivalents totaling $24.6 million as of December 31, 2019. We also have a $10.0 million credit facility, of which no amounts were outstanding as of December 31, 2019.

In March 2019, we issued and sold 250,000 shares of our common stock in an underwritten public offering, for which we received net proceeds of $10.6 million after deducting offering expenses.

We believe our existing cash and cash equivalent balances, our available credit facility and cash flow from operations will be sufficient to meet our working capital and capital expenditure requirements for at least the next 12 months. Our future capital requirements may vary materially from those currently planned and will depend on many factors, including our rate of revenues growth, the timing and extent of spending on sales and marketing, the expansion of sales and marketing activities, the timing of new product introductions, market acceptance of our products and overall economic conditions. We may also seek additional capital to fund our operations, including through the sale of equity or debt financings. To the extent that we raise additional capital through the future sale of equity, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing common stockholders. The incurrence of debt financing would result in debt service obligations and the instruments governing such debt could provide for operating and financing covenants that would restrict our operations.

Use of Funds

Our historical uses of cash have primarily consisted of cash used for operating activities, such as expansion of our sales and marketing operations, research and development activities and other working capital needs, and cash used in investing activities, such as property and equipment expenditures to install infrastructure in customer cities in order to deliver our solutions.

On October 3, 2018, we acquired certain technology, referred to as HunchLab, and related assets from Azavea Inc. The purchase consideration totaled $2.5 million, consisting of $1.7 million in cash and a contingent earnout payable in cash for up to $750,000 based on HunchLab's revenues generated over the three-year period following the acquisition date.

In September 2017, we voluntarily repaid our outstanding borrowing of $13.5 million under the 2015 Term Note. This resulted in a loss on early extinguishment of debt of $0.2 million for prepayment fees and other miscellaneous fees, and $0.3 million for the write-off of a portion of our unamortized debt issuance costs.

Stock Repurchase Program

In May 2019, we announced that our Board of Directors had approved a stock repurchase program for up to $15 million of our common stock. The shares may be repurchased from time to time in open market transactions, in privately negotiated transactions or by other methods in accordance with federal securities laws. The actual timing, number and value of shares repurchased under the program will be determined by management in its discretion and will depend on a number of factors, including the market price of our common stock, general market and economic conditions and applicable legal requirements. The stock repurchase program does not obligate us to purchase any particular amount of common stock and may be suspended or discontinued at any time.

During the year ended December 31, 2019, we repurchased 257,824 shares of our common stock at an average price of $26 per share for $6.7 million. The repurchases were made in open market transactions using cash on hand, and all of the shares repurchased were retired.

Credit Facility

On September 27, 2018, we entered into the Umpqua Credit Agreement, which allows us to borrow up to $10.0 million under a revolving loan facility. We intend to use the revolving loan facility for general working capital purposes.

Prior to the repayment of all our outstanding indebtedness under the 2015 Term Note in September 2017, we were a party to a Loan and Security Agreement with Orix Growth Capital, LLC (the "Orix Loan Agreement"), which allowed us to borrow up to $15.0 million. In September 2017, our credit facility with Orix Growth Capital, LLC pursuant to the Orix Loan Agreement was terminated in connection with such repayment.

Cash Flows

Comparison of Years Ended December 31, 2019, 2018 and 2017

The following table presents a summary of our cash flows for the years ended December 31, 2019, 2018 and 2017:

	Year Ended December 31,		
	2019	2018	2017
		(in thousands)	
Net cash provided by (used in):			
Operating activities	$ 13,692	$ (1,386)	$ 3,387
Investing activities	(4,909)	(10,203)	(6,506)
Financing activities	5,482	2,437	18,751
Net change in cash and cash equivalents	$ 14,265	$ (9,152)	$ 15,632

As of December 31, 2019, 2018 and 2017, $0.8 million, $1.1 million and $1.0 million in cash was held by our consolidated foreign subsidiaries. In the year ended December 31, 2017, we used $0.5 million of these funds to pay our U.S. parent company for services delivered in the year ended December 31, 2016 under an intercompany license agreement.

Operating Activities

For standard customer deployments, we typically achieve cash flow breakeven, on a direct variable cost-basis, in less than a year from the date of execution of the contract. Our net income (loss) and cash flows provided by operating activities are significantly influenced by our increase in headcount to support our growth, increase in legal, outside services fees, and sales and marketing expenses, and our ability to bill and collect in a timely manner.

Operating activities provided $13.7 million in 2019, used $1.4 million in 2018, and provided $3.4 million in 2017.

The net cash provided by operating activities in the year ended December 31, 2019 was primarily driven by higher collections of accounts receivable driven by new customer contracts and expansions of existing customer coverage.

The use of cash for 2018 was primarily driven by changes in accounts receivable and our net loss of $2.7 million and offset by changes in deferred revenue, stock-based compensation, and depreciation and amortization.

The generation of cash for 2017 was primarily driven by changes in accrued expenses and deferred revenue, depreciation and amortization and remeasurement of warrant liability, partially offset by changes in accounts receivable and our net loss of $10.0 million.

Investing Activities

Our investing activities consist primarily of capital expenditures to install our solutions in customer coverage areas, purchases of property and equipment, and investment in intangible assets.

Investing activities used $4.9 million, $10.2 million, and $6.5 million in the years ended December 31, 2019, 2018 and 2017, respectively, primarily for property and equipment expenditures to install our solutions in customer coverage areas. We completed our acquisition of the HunchLab assets for approximately $1.7 million in cash at closing during the year ended December 31, 2018.

Financing Activities

Cash generated by financing activities includes proceeds from our secondary offering, net proceeds from the exercise of stock options and warrants, proceeds from the employee stock purchase plan, offset by payment for repurchases of our common stock, payment of indebtedness, and debt issuance and financing costs.

Financing activities provided $5.5 million in cash during the year ended December 31, 2019 from $10.8 million in net proceeds from the issuance of common stock upon our secondary offering, $0.9 million proceeds from ESPP purchase and $0.5 million in proceeds from the exercise of options and warrants, partially offset by $6.7 million in payments for repurchases of our common stock.

Financing activities provided $2.4 million in the year ended December 31, 2018, primarily from $1.5 million from the exercise of stock options and warrants, and $0.9 million proceeds from employee stock purchase plan.

Financing activities provided $18.8 million in the year ended December 31, 2017, primarily from $32.4 million in net proceeds, excluding underwriting discounts and commissions, from our IPO and $1.5 million in borrowing under our 2015 Term Note (see Note 10, *Financing Arrangements*, to our consolidated financial statements included elsewhere in this Annual Report in Form 10-K, for details regarding the 2015 Term Note), offset in part by $13.5 million in repayment of our 2015 Term Note and $1.9 million in payments for costs associated with our IPO.

Contractual Obligations and Commitments

The following table summarizes our commitments to settle contractual obligations as of December 31, 2019.

	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years	Total
			(in thousands)		
Operating lease (1)	$ 328	$ 304	$ —	$ —	$ 632
Data center arrangements (2)	$ 76	$ —	$ —	$ —	$ 76

(1) Operating lease payments include total future minimum rent payments under a non-cancelable operating lease agreement as described in Note 19, *Commitments and Contingencies.*

(2) Data center arrangements include total future minimum payments under the non-cancelable contracts as described in Note 19, *Commitments and Contingencies.*

The commitment amounts in the table above are associated with contracts that are enforceable and legally binding and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions and the approximate timing of the actions under the contracts. The table does not include purchase obligations that we can cancel without a significant penalty. These purchase obligations are cancellable at any time, however, we may be required to pay costs incurred through the cancellation date. Historically, we have rarely cancelled these agreements.

Off-Balance Sheet Arrangements

As of December 31, 2019, we did not have any relationships with unconsolidated organizations or financial partnerships, such as structured finance or special purpose entities, that were established for the purpose of facilitating off-balance sheet arrangements. We do not engage in off-balance sheet financing arrangements. In addition, we do not engage in trading activities involving non-exchange traded contracts.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with United States Generally Accepted Accounting Principles ("GAAP"). The preparation of our consolidated financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of revenues, assets, liabilities, costs and expenses. We base our estimates and assumptions on historical experience and other factors that we believe to be reasonable under the circumstances. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates. Our most critical accounting policies are summarized below. See Note 3, *Basis of Presentation and Summary of Significant Accounting Policies*, to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K for a description of our other significant accounting policies.

Revenue Recognition — We generate substantially all of our revenues from the sale of gunshot detection subscription services, in which gunshot data generated by company-owned sensors and software is sold to customers through a cloud-based hosting application for a specified contract period. Typically, the initial contract period is one to five years in length. The subscription contract is generally noncancelable without cause. Generally, these service arrangements do not provide the customer with the right to take possession of the hardware or software supporting the subscription service at any time. A small portion of our revenues are generated from the delivery of setup services to install company-owned sensors in the customer's coverage area and other services including training and license to integrate with third-party applications.

We generally invoices customers for 50% of the total contract value when the contract is fully executed and for the remaining 50% when the subscription service is operational and ready to go live – that is, when the customer has acknowledged the completion of all the deliverables in the signed customer acceptance form. We generally invoices subscription service renewals for 100% of the total contract value when the renewal contract is executed. For the public safety solution, the pricing model is based on a per-square-mile basis. For security solutions, the pricing model is on a customized-site basis. As a result of the process for invoicing contracts and renewals upon execution, cash flows from operations and accounts receivable can fluctuate due to timing of contract execution and timing of deployment.

We recognize revenues upon the satisfaction of performance obligations. At contract inception, we assess the services promised in its contracts with customers and identifies a performance obligation for each promise to transfer to the customer a good or service (or bundle of services) that is distinct. To identify the performance obligations, we consider all of the services promised in the contract regardless of whether they are explicitly stated or are implied by customary business practices. We determined that the subscription services, training, and licenses to integrate with third-party applications are each distinct services that represent separate performance obligations. The setup activities are not distinct from the subscription service and are combined into the subscription service performance obligation. However, setup fees may provide a material right to the customer that has influence over the customers' decision to renew. All setup fees are assessed on a quantitative and qualitative basis to determine whether they represent a distinct performance obligation. The total contract value is allocated to each performance obligation identified based on the standalone selling price of the service. Discounts are allocated pro-rata to the identified performance obligations. For contracts that have an original duration of one year or less, we use the practical expedient applicable to such contracts and does not consider the time value of money.

Revenues from subscription services are recognized ratably, on a straight-line basis, over the term of the subscription. Revenues from material rights are recognized ratably over the period in which they are determined to provide a material right to the customer, which is generally three years. Revenues from training and licenses to integrate with third-party applications are recognized upon delivery which generally occurs when the subscription service is operational and ready to go live and these amounts are immaterial.

Subscription renewal fees are recognized ratably over the term of the renewal, which is typically one year. While most customers elect to renew their agreements, in some cases, they may not be able to obtain the proper approvals or funding to complete the renewal prior to expiration. For these customers, we stop recognizing subscription revenues at the end of the current contract term, even though services may continue to be provided for a period of time until the renewal process is completed. Once the renewal is complete, we recognize subscription revenues for the period between the expiration of the term of the agreement and the completion of the renewal process in the month in which the renewal is executed. If a customer declines to renew its subscription, then the remaining fees from material rights, if any, are immediately recognized.

Stock-Based Compensation — We recognize stock-based compensation expense for stock-based compensation awards granted to our employees, directors, and consultants that can be settled in shares of our common stock. Compensation expense for stock-based compensation awards granted is based on the grant date fair value estimate for each award as determined by our board of directors. We recognize these compensation costs on a straight-line basis over the requisite service period of the award, which is generally four years.

Restricted stock unit awards are valued using the last reported stock price on the date of grant.

We estimate the fair value of stock option awards at the date of grant using the Black-Scholes option pricing model, which was developed for use in estimating the value of traded options that have no vesting restrictions and are freely transferable. The fair values generated by the model may not be indicative of the actual fair values of our awards as it does not consider other factors important to those stock-based payment awards, such as continued employment, periodic vesting requirements and limited transferability.

Business Acquisition — We allocate the fair value of purchase consideration to the tangible assets acquired, liabilities assumed and intangible assets acquired based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets. Critical estimates in valuing such intangible assets include, but not limited to, future expected cash flows from customer relationships and developed technology; and discount rates.

Goodwill — Goodwill is tested for impairment at the reporting unit level (operating segment or one level below an operating segment) on an annual basis (October 1) and between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. These events or circumstances could include a significant change in the business climate, legal factors, operating performance indicators, competition, or sale or disposition of a significant portion of a reporting unit. Application of the goodwill impairment test requires judgment, including the identification of reporting units and determination of the fair value of each reporting unit. The fair value of each reporting unit is estimated primarily through the use of a discounted cash flow methodology. This analysis requires significant judgments, including estimation of future cash flows, which is dependent on internal forecasts, estimation of the long-term rate of growth for our business, estimation of the useful life over which cash flows will occur, and determination of our weighted average cost of capital. The estimates used to calculate the fair value of a reporting unit change from year to year based on operating results, market conditions, and other factors. Changes in these estimates and assumptions could materially affect the determination of fair value and goodwill impairment. We performed our annual test for goodwill and long-lived assets impairment as of October 1, 2019 and concluded that no impairment charge was necessary.

Recently Adopted Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases* (Topic 842). There have been further amendments, including practical expedients, with the issuance of ASU 2018-01 in January 2018, ASU 2018-11 in July 2018 and ASU 2018-20 in December 2018. The amended guidance requires the recognition of lease assets and lease liabilities on the balance sheet for those leases with terms in excess of 12 months and currently classified as operating leases. Disclosure of key information about leasing arrangements is required. Effective January 1, 2019, we adopted Topic 842. We elected the optional transition method which allows entities to continue to apply historical accounting guidance in the comparative periods presented in the year of adoption.

At transition, lessees and lessors may elect to apply a package of practical expedients permitting entities not to reassess: (i) whether any expired or existing contracts are or contain leases; (ii) lease classification for any expired or existing leases and (iii) whether initial direct costs for any expired or existing leases qualify for capitalization under the amended guidance. These practical expedients must be elected as a package and consistently applied. We have elected to apply the package of practical expedients upon adoption.

Our operating lease for our corporate headquarters office is impacted by the new standard and upon adoption, we recognized a right-of-use asset of $0.9 million and related lease liabilities totaling $0.9 million. See Note 18, *Leases.*

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480), Derivatives and Hedging (Topic 815)*. The amendments in Part I of ASU 2017-11 change the classification analysis of certain equity-linked financial instruments (or embedded features) with down round features. When determining whether certain financial instruments should be classified as liabilities or equity instruments, a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity's own stock. The amendments also clarify existing disclosure requirements for equity-classified instruments. We adopted this ASU as of January 1, 2019 and the adoption did not have any impact on the consolidated financial statements.

Item 7A. QUALITATIVE AND QUANTITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily the result of fluctuations in interest rates and foreign exchange rates as well as, to a lesser extent, inflation.

Interest Rate Risk

We are exposed to interest rate risk in the ordinary course of our business. Our cash includes cash in readily available checking and money market accounts. These securities are not dependent on interest rate fluctuations that may cause the principal amount of these assets to fluctuate.

We had cash of $24.6 million as of December 31, 2019, which consists entirely of bank deposits. To date, fluctuations in interest income have not been significant.

We do not enter into investments for trading or speculative purposes and have not used any derivative financial instruments to manage our interest rate risk exposure.

Foreign Currency Exchange Risk

We have foreign currency risks related to our revenues and operating expenses denominated in currencies other than our functional currency, the U.S. dollar, principally the South African Rand. Movements in foreign currencies in which we transact business could significantly affect future net earnings. For example, if the average value of the South African Rand had been 10% higher relative to the U.S. dollar during 2019, 2018 or 2017, it would not have resulted in a significant impact to our results of operations for the years ended December 31, 2019, 2018 or 2017. To date, we have not engaged in any hedging strategies. As our international operations grow, we will continue to reassess our approach to manage our risk relating to fluctuations in foreign currency rate.

Inflation Risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. If our costs were to become subject to significant inflationary pressures, we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could harm our business, financial condition and results of operations.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of ShotSpotter, Inc.:

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of ShotSpotter, Inc. (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), convertible preferred stock and stockholders' equity/(deficit), and cash flows, for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("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 consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Baker Tilly Virchow Krause, LLP

We have served as the Company's auditor since 2016.

Minneapolis, Minnesota
March 12, 2020

ShotSpotter, Inc.

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

	December 31,	
	2019	**2018**
Assets		
Current assets		
Cash and cash equivalents	$ 24,550	$ 10,218
Accounts receivable and contract asset	13,883	15,267
Prepaid expenses and other current assets	1,764	1,527
Restricted cash	—	60
Total current assets	40,197	27,072
Property and equipment, net	16,556	16,504
Operating lease right-of-use asset	556	—
Goodwill	1,379	1,379
Intangible assets, net	249	242
Other assets	1,634	1,922
Total assets	$ 60,571	$ 47,119
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 1,179	$ 1,307
Deferred revenue, short-term	26,360	23,102
Accrued expenses and other current liabilities	4,885	4,427
Total current liabilities	32,424	28,836
Deferred revenue, long-term	598	1,060
Other liabilities	298	76
Total liabilities	33,320	29,972
Commitments and contingencies (Note 19)		
Stockholders' equity		
Common stock: $0.005 par value; 500,000,000 shares authorized; 11,314,150 and 10,864,722 shares issued and outstanding as of December 31, 2019 and 2018, respectively	57	55
Additional paid-in capital	122,907	114,618
Accumulated deficit	(95,579)	(97,377)
Accumulated other comprehensive loss	(134)	(149)
Total stockholders' equity	27,251	17,147
Total liabilities and stockholders' equity	$ 60,571	$ 47,119

See accompanying notes to consolidated financial statements.

ShotSpotter, Inc.

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

	Year Ended December 31,		
	2019	2018	2017
Revenues	$ 40,752	$ 34,753	$ 23,763
Costs			
Cost of revenues	16,409	14,846	11,370
Impairment of property and equipment	—	686	793
Total costs	16,409	15,532	12,163
Gross profit	24,343	19,221	11,600
Operating expenses			
Sales and marketing	9,989	8,377	6,179
Research and development	5,344	4,987	4,159
General and administrative	7,415	8,425	5,595
Total operating expenses	22,748	21,789	15,933
Operating loss	1,595	(2,568)	(4,333)
Other income (expense), net			
Remeasurement of convertible preferred stock warrant liability	—	—	(3,725)
Loss on early extinguishment of debt	—	—	(479)
Interest income (expense), net	440	82	(1,114)
Other expense, net	(278)	(252)	(169)
Total other income (expense), net	162	(170)	(5,487)
Income (loss) before income taxes	1,757	(2,738)	(9,820)
Provision (benefit) for income taxes	(41)	(13)	160
Net income (loss)	$ 1,798	$ (2,725)	$ (9,980)
Net income (loss) loss per share, basic	$ 0.16	$ (0.26)	$ (1.61)
Net income (loss) loss per share, diluted	$ 0.15	$ (0.26)	$ (1.61)
Weighted average shares used in computing net income (loss) per share, basic	11,302,780	10,569,007	6,197,775
Weighted average shares used in computing net income (loss) per share, diluted	11,846,348	10,569,007	6,197,775

See accompanying notes to consolidated financial statements.

ShotSpotter, Inc.

Consolidated Statements of Comprehensive Income (Loss)
(In thousands)

	Year Ended December 31,		
	2019	2018	2017
Net income (loss)	$ 1,798	$ (2,725)	$ (9,980)
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	15	(150)	3
Comprehensive income (loss)	$ 1,813	$ (2,875)	$ (9,977)

See accompanying notes to consolidated financial statements.

ShotSpotter, Inc.

Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity/(Deficit)
(In thousands, except share data)

	Series B-1 Convertible Preferred Stock		Series A-2 Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity/ (Deficit)
	Shares	Amount	Shares	Amount	Shares	Par Value				
Balance at December 31, 2016	3,848,023	$ 22,075	1,176,423	$ 20,000	1,616,996	$ 8	$ 30,403	$ (87,615)	$ (2)	$ (57,206)
Issuance of common stock upon IPO, net $3.0 million in commissions and discounts	—	—	—	—	3,220,000	16	32,410	—	—	32,426
IPO costs							(1,870)	—	—	(1,870)
Conversion of convertible preferred stock of common stock upon IPO	(3,848,023)	(22,075)	(1,176,423)	(20,000)	4,689,753	23	42,052	—	—	42,075
Reclassification of preferred stock warrant liability into additional paid in capital upon IPO	—	—	—	—	—	—	5,711	—	—	5,711
Exercise of stock options	—	—	—	—	74,984	—	55	—	—	55
Issuance of common stock in connection with cashless exercise of warrants	—	—	—	—	191,263	1	—	—	—	1
Issuance of common stock from ESPP purchase	—	—	—	—	34,133	—	319	—	—	319
Stock-based compensation	—	—	—	—	—	—	628	—	—	628
Foreign currency translation gain	—	—	—	—	—	—	—	—	3	3
Net loss	—	—	—	—	—	—	—	(9,980)	—	(9,980)
Balance at December 31, 2017	—	—	—	—	9,827,129	$ 48	$ 109,708	$ (97,595)	$ 1	$ 12,162
Exercise of stock options	—	—	—	—	609,985	3	547	—	—	550
Issuance of common stock in connection with exercise of warrants	—	—	—	—	296,691	1	987	—	—	988
Issuance of common stock from ESPP purchase	—	—	—	—	83,605	—	909	—	—	909
Issuance of common stock from RSU's vested	—	—	—	—	47,312	3	(1)	—	—	2
Stock-based compensation	—	—	—	—	—	—	2,468	—	—	2,468
Foreign currency translation loss	—	—	—	—	—	—	—	—	(150)	(150)
Cumulative effect of change in accounting principle	—	—	—	—	—	—	—	2,943	—	2,943
Net loss	—	—	—	—	—	—	—	(2,725)	—	(2,725)
Balance at December 31, 2018	—	—	—	—	10,864,722	$ 55	$ 114,618	$ (97,377)	$ (149)	$ 17,147
Exercise of stock options	—	—	—	—	307,365	2	452	—	—	454
Issuance of common stock in connection with exercise of warrants	—	—	—	—	26,098	—	71	—	—	71
Issuance of common stock upon secondary offering, net of costs	—	—	—	—	250,000	1	10,553	—	—	10,554
Repurchase of common stock and retirement		—	—	—	(257,824)	(2)	(6,716)	—	—	(6,718)
Issuance of common stock from ESPP purchase	—	—	—	—	65,639	1	872	—	—	873
Issuance of common stock from RSU's vested	—	—	—	—	58,150	—	—	—	—	-
Stock-based compensation	—	—	—	—	—	—	3,057	—	—	3,057
Foreign currency translation gain	—	—	—	—	—	—	—	—	15	15
Net income	—	—	—	—	—	—	—	1,798	—	1,798
Balance at December 31, 2019	—	$ —	—	$ —	11,314,150	$ 57	$ 122,907	$ (95,579)	$ (134)	$ 27,251

See accompanying notes to consolidated financial statements.

ShotSpotter, Inc.

Consolidated Statements of Cash Flows
(In thousands)

	Year Ended December 31, 2019	2018	2017
Cash flows from operating activities:			
Net income (loss)	$ 1,798	$ (2,725)	$ (9,980)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	4,982	3,917	3,121
Impairment of property and equipment	—	686	793
Stock-based compensation	3,057	2,468	628
Amortization of debt issuance costs	—	—	132
Remeasurement of convertible preferred stock warrant liability	—	—	3,725
Loss on early extinguishment of debt	—	—	479
Loss on disposal of property and equipment	—	4	—
Changes in operating assets and liabilities:			
Accounts receivable and contract asset	1,383	(11,224)	(1,518)
Prepaid expenses and other assets	(192)	(766)	(247)
Accounts payable	(243)	(346)	291
Accrued expenses and other current liabilities	108	(246)	1,535
Deferred revenue	2,799	6,846	4,428
Net cash provided by (used in) operating activities	13,692	(1,386)	3,387
Cash flows from investing activities:			
Purchase of property and equipment	(4,823)	(8,444)	(6,430)
Investment in intangible and other assets	(86)	(48)	(76)
Business acquisition	—	(1,711)	—
Net cash used in investing activities	(4,909)	(10,203)	(6,506)
Cash flows from financing activities:			
Proceeds from initial public offering, net of commissions and discounts	—	—	32,426
Proceeds from notes payable	—	—	1,500
Repayment of notes payable	—	—	(13,500)
Payment of debt issuance costs	—	—	(30)
Payment on debt extinguishment costs	—	—	(149)
Payment of line of credit costs	—	(10)	—
Payments of initial public offering costs	—	—	(1,870)
Proceeds from issuance of common stock upon secondary offering	11,247	—	—
Payments of secondary offering costs	(445)	—	—
Proceeds from exercise of stock options	454	550	55
Repurchases of common stock	(6,718)	—	—
Proceeds from exercise of warrants	71	988	—
Proceeds from employee stock purchase plan	873	909	319
Net cash provided by financing activities	5,482	2,437	18,751
Increase (decrease) in cash, cash equivalents and restricted cash	14,265	(9,152)	15,632
Effect of exchange rate on cash and cash equivalents	7	(167)	70
Cash, cash equivalents and restricted cash at beginning of year	10,278	19,597	3,895
Cash, cash equivalents and restricted cash at end of year	$ 24,550	$ 10,278	$ 19,597
Supplemental cash flow disclosures:			
Cash paid for income taxes	$ 51	$ 79	$ —
Cash paid for interest	$ —	$ —	$ 1,235
Supplemental disclosure of non-cash financing activities:			
Property and equipment purchases included in accounts payable	$ 311	$ 205	$ 227
Estimated fair value of contingent consideration	$ —	$ 750	$ —
Conversion of convertible preferred stock into common stock	$ —	$ —	$ 42,075
Reclassification of convertible preferred stock warrant liability into additional paid-in capital	$ —	$ —	$ 5,711
Deferred offering costs included in other assets	$ —	$ 249	$ —
Line of credit costs included in other assets	$ —	$ 91	$ —
Issuance of warrants in connection with the issuance of notes payable	$ —	$ —	$ 111

See accompanying notes to consolidated financial statements.

ShotSpotter, Inc.
Notes to Consolidated Financial Statements

Note 1. Organization and Description of Business

ShotSpotter, Inc. (the "Company") provides precision-policing solutions for law enforcement to help deter gun violence and make cities, campuses and facilities safer. The company's flagship product, ShotSpotter Flex, is the leading outdoor gunshot detection, location and forensic system trusted by over 100 cities. ShotSpotter Missions uses machine learning-driven analysis to help strategically plan directed patrol missions and tactics for maximum crime deterrence. ShotSpotter Labs is the Company's effort to support innovative uses of its technology to help protect wildlife and the environment. The Company offers its solutions on a SaaS-based subscription model to its customers.

The Company's principal executive offices are located in Newark, California. The Company has two wholly-owned subsidiaries, ShotSpotter (Pty) Ltd. formed in South Africa and ShotSpotter Colombia S.A.S. which was formed in Colombia in March 2019.

Note 2. Initial Public Offering

In June 2017, the Company completed its initial public offering ("IPO") in which the Company sold 3,220,000 shares of its common stock at a price of $11.00 per share. The Company received net proceeds of $32.4 million, excluding underwriting discounts and commissions, which was recorded to additional paid-in capital. The Company's common stock commenced trading on the Nasdaq Capital Market on June 7, 2017 under the trading symbol "SSTI."

- Immediately prior to the IPO, all outstanding Series B-1 convertible preferred stock warrants were remeasured at fair value using the Black-Scholes model, resulting in a loss of $3.7 million, which was recorded in other expense, net.
- Upon the closing of the IPO, the entire balance of $5.7 million in convertible preferred stock warrant liability was reclassified to additional paid-in capital. All preferred stock warrants were converted into common stock warrants. In addition, the Company issued to the lead underwriter in the IPO a warrant to purchase up to 84,000 shares of its common stock. See Note 15, *Convertible Preferred Stock Warrants and Common Stock Warrants*, for further details regarding the warrants.
- Upon the closing of the IPO, all shares of the then-outstanding convertible preferred stock were converted into 4,689,753 shares of common stock. This resulted in a reclassification of $42.1 million to additional paid-in capital.
- Offering costs incurred by the Company were approximately $1.9 million, excluding underwriting commissions and discounts, which was recorded to additional paid-in capital.

Note 3. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States of America ("U.S. GAAP") and applicable rules and regulations of the Securities and Exchange Commission ("SEC") regarding financial reporting. The consolidated financial statements include the results of the Company and its wholly-owned subsidiary, ShotSpotter (Pty) Ltd and ShotSpotter Colombia S.A.S. All significant intercompany transactions have been eliminated during consolidation.

In the opinion of management, the accompanying consolidated financial statements reflect all normal recurring adjustments necessary to present fairly the financial position, results of operations, comprehensive loss, equity statement and cash flows for the full year 2019.

June 2017 Amended and Restated Certificate of Incorporation

Prior to the IPO, the Company's Board of Directors (the "Board") and stockholders approved an amendment (the "Charter Amendment") to the Pre-IPO Certificate (as defined below) and an amended and restated certificate of incorporation ("Post-IPO Certificate") that became effective on June 12, 2017. The Charter Amendment increased the number of authorized shares of common stock from 8,600,000 to 500,000,000. Under the Post-IPO Certificate, the Company is authorized to issue two classes of stock to be designated Common Stock and Preferred Stock. See Note 13, *Capital Stock*, for further details regarding these classes of stock.

March 2017 Amendment and Restatement of Certificate of Incorporation

On March 27, 2017, the Company's Board and stockholders approved an amendment and restatement of the Company's then-existing certificate of incorporation (as so amended and restated, the "Pre-IPO Certificate") to provide, among other changes, that each share of Series A-2 convertible preferred stock would automatically convert into 0.715548 shares of common stock upon the consummation of an initial public offering of the Company's capital stock. All share and per share data related to balance sheet and net loss information in the accompanying consolidated financial statements and their related notes have been retroactively adjusted to give effect to the application of this conversion feature when presenting the Series A-2 convertible preferred stock on an as-converted basis.

The Pre-IPO Certificate also provided for (1) an increase in the total number of authorized shares to 14,550,000 and (2) an increase in the number of authorized shares of common stock to 8,600,000, in each case to accommodate the new conversion feature for the outstanding shares of Series A-2 convertible preferred stock.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and reported amounts of revenues and expenses during the reporting period. On an ongoing basis, management evaluates its significant estimates including the valuation of accounts receivable, the lives and realization of tangible and intangible assets, stock-based compensation expense, accounting for revenue recognition, and income taxes. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions it believes to be reasonable under the circumstances. Actual results could differ from those estimates and such differences could be material to the Company's financial position and results of operations.

Revenue Recognition

The Company generates substantially all of its revenues from the sale of gunshot detection subscription services, in which gunshot data generated by Company-owned sensors and software is sold to customers through a cloud-based hosting application for a specified contract period. Typically, the initial contract period is one to five years in length. The subscription contract is generally noncancelable without cause. Generally, these service arrangements do not provide the customer with the right to take possession of the hardware or software supporting the subscription service at any time. A small portion of the Company's revenues are generated from the delivery of setup services to install Company-owned sensors in the customer's coverage area and other services including training and license to integrate with third-party applications.

The Company generally invoices customers for 50% of the total contract value when the contract is fully executed and for the remaining 50% when the subscription service is operational and ready to go live – that is, when the customer has acknowledged the completion of all the deliverables in the signed customer acceptance form. The Company generally invoices subscription service renewals for 100% of the total contract value when the renewal contract is executed. For the public safety solution, the pricing model is based on a per-square-mile basis. For security solutions, the pricing model is on a customized-site basis. As a result of the process for invoicing contracts and renewals upon execution, cash flows from operations and accounts receivable can fluctuate due to timing of contract execution and timing of deployment.

The Company recognizes revenues upon the satisfaction of performance obligations. At contract inception, the Company assesses the services promised in its contracts with customers and identifies a performance obligation for each promise to transfer to the customer a good or service (or bundle of services) that is distinct. To identify the performance obligations, the Company considers all of the services promised in the contract regardless of whether they are explicitly stated or are implied by customary business practices. The Company determined that the subscription services, training, and licenses to integrate with third-party applications are each distinct services that represent separate performance obligations. The setup activities are not distinct from the subscription service and are combined into the subscription service performance obligation. However, setup fees may provide a material right to the customer that has influence over the customers' decision to renew. All setup fees are assessed on a quantitative and qualitative basis to determine whether they represent a distinct performance obligation. The total contract value is allocated to each performance obligation identified based on the standalone selling price of the service. Discounts are allocated pro-rata to the identified performance obligations. For contracts that have an original duration of one year or less, the Company uses the practical expedient applicable to such contracts and does not consider the time value of money.

Revenues from subscription services are recognized ratably, on a straight-line basis, over the term of the subscription. Revenues from material rights are recognized ratably over the period in which they are determined to provide a material right to the customer, which is generally three years. Revenues from training and licenses to integrate with third-party applications are recognized upon delivery which generally occurs when the subscription service is operational and ready to go live and these amounts are immaterial.

Subscription renewal fees are recognized ratably over the term of the renewal, which is typically one year. While most customers elect to renew their agreements, in some cases, they may not be able to obtain the proper approvals or funding to complete the renewal prior to expiration. For these customers, the Company stops recognizing subscription revenues at the end of the current contract term, even though services may continue to be provided for a period of time until the renewal process is completed. Once the renewal is complete, the Company recognizes subscription revenues for the period between the expiration of the term of the agreement and the completion of the renewal process in the month in which the renewal is executed. If a customer declines to renew its subscription, then the remaining fees from material rights, if any, are immediately recognized.

The Company capitalizes certain incremental costs of obtaining a contract, which includes sales commissions. As there are not commensurate commissions earned on renewals of the subscription services, the Company capitalizes commissions related to subscription services provided under both the initial contract and renewal periods and amortizes the capitalized commissions on a straight-line basis over the customer life, which is determined to be five years. For commissions that are earned on renewal contracts with an original duration of one year or less, the Company uses the practical expedient applicable to such commissions and recognizes the commissions immediately as expense instead of capitalizing. Amortization of capitalized commissions was $0.5 million for the year ended December 31, 2019 and was included in sales and marketing expense in the consolidated statements of operations.

Costs

Costs include the cost of revenues and charges for impairment of property and equipment. Cost of revenues primarily includes depreciation expense associated with capitalized customer acoustic sensor networks, communication expenses, costs related to hosting our service application, costs related to operating our Incident Review Center (the “IRC”), providing remote and on-site customer support and maintenance and forensic services, certain personnel and related costs of operations, stock-based compensation and allocated overhead, which includes information technology, facility and equipment depreciation costs.

Advertising and Promotion Costs

Advertising and promotion costs are expensed as incurred. Advertising and promotion costs were $0.5 million, $0.6 million and $0.5 million for the year ended December 31, 2019, 2018 and 2017, and were included in sales and marketing expense in the consolidated statements of operations.

Research and Development Costs

Research and development costs are expensed as incurred and consisted primarily of salaries and benefits, consultant fees, certain facilities costs, and other direct costs associated with the continued development of the Company's solutions.

Cash and Cash Equivalents

Cash and cash equivalents include all cash and highly liquid investments with an original maturity of three months or less.

At December 31, 2019 and 2018, the Company's cash and cash equivalents consisted of cash deposited in financial institutions.

Foreign Currency

The functional currency for the Company's foreign subsidiaries, ShotSpotter (Pty) Ltd. and ShotSpotter Colombia S.A.S, is the local currency (South African Rand and Colombian Peso respectively). The assets and liabilities of the subsidiary are translated into U.S. dollars using the exchange rate at the end of each balance sheet date. Revenues and expenses are translated at the average exchange rates for the period. Gains and losses from translations are recognized in foreign currency translation included in accumulated other comprehensive income (loss) in the accompanying consolidated balance sheets. Foreign currency exchange gains and losses that are realized are recorded in other expense, net, in the accompanying consolidated statements of operations.

Accounts Receivable, net and Contract Asset

Accounts receivable, net consist of trade accounts receivables from the Company's customers, net of allowance for doubtful accounts if deemed necessary. Accounts receivable are recorded as the invoiced amount. The Company does not require collateral or other security for accounts receivable. Contract asset consist of revenues recognized in advance of invoicing the customer.

The Company periodically evaluates the collectability of its accounts receivable and provides an allowance for potential credit losses based on the Company's historical experience. At December 31, 2019 and 2018, the Company did not have an allowance for potential credit losses as there were no estimated credit losses.

Concentrations of Risk

Credit Risk — Financial instruments that potentially subject the Company to concentration of credit risk consisted primarily of restricted cash, cash and cash equivalents and accounts receivable from trade customers. The Company maintains its cash deposits at three domestic and two international financial institutions. The Company is exposed to credit risk in the event of default by a financial institution to the extent that cash and cash equivalents are in excess of the amount insured by the Federal Deposit Insurance Corporation. The Company generally places its cash and cash equivalents with high-credit quality financial institutions. To date, the Company has not experienced any losses on its cash and cash equivalents.

Concentration of Accounts Receivable — At December 31, 2019, one customer accounted for 55% of the Company's total accounts receivable. At December 31, 2018 one customer accounted for 77%, of the Company's account receivable. Fluctuations in accounts receivable result from timing of the Company's execution of contracts and collection of related payments.

Concentration of Revenues — For the year ended December 31, 2019, two customers accounted for 20% and 14% of the Company's revenues, For the year ended December 31, 2018, two customers accounted for 22% and 15% of the Company's revenues. For the year ended December 31, 2017, one customer accounted for 18% of the Company's revenues.

Concentration of Suppliers — The Company relies on a limited number of suppliers and contract manufacturers. In particular, a single supplier is currently the sole manufacturer of the Company's proprietary sensors.

Business Acquisitions

The Company allocates the fair value of purchase consideration to the tangible assets acquired, liabilities assumed and intangible assets acquired based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets. Acquisition-related expenses are recognized separately from the business combination and are recognized as general and administrative expense as incurred.

Goodwill

Following the acquisition of HunchLab (see Note 8, *Business Acquisitions*), the Company recorded goodwill for the first time in October 2018. Goodwill is tested for impairment at the reporting unit level (operating segment or one level below an operating segment) on an annual basis (October 1) and between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. These events or circumstances could include a significant change in the business climate, legal factors, operating performance indicators, competition, or sale or disposition of a significant portion of a reporting unit. We performed our first annual test for goodwill impairment as of October 1, 2019 and concluded that no goodwill impairment charge was necessary. Since inception through December 31, 2019, the Company did not have any goodwill impairment.

Intangible Assets

Intangible assets consisted of acquired patents and capitalized legal fees related to obtaining patents, as well as customer relationships as a result from the Company's acquisition of HunchLab in 2018 (see Note 8, *Business Acquisitions*). Patent assets are stated at costs, less accumulated amortization. Customer relationships are recorded at fair value as of the date of the acquisition. Intangible assets are amortized on a straight-line basis, over their expected useful lives, which range from three years for patents and seven years for customer relationships.

Property and Equipment, net

Property and equipment, net, is stated at cost, less accumulated depreciation and amortization. The Company depreciates property and equipment using the straight-line method over their estimated useful lives, ranging from three to five years. Leasehold improvements are amortized over the shorter of the asset's useful life or the remaining lease term. Costs incurred to develop software for internal use and for the Company's solutions are capitalized and amortized over such software's estimated useful life. Internally developed software costs capitalized during all periods presented have not been material. Property and equipment, net also includes software technology resulting from the Company's acquisition of HunchLab, which is recorded at fair value as of the date of the acquisition, amortized on the straight-line basis over five years.

Impairment of Long-Lived Assets

The Company annually reviews long-lived assets for impairment or whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability is measured by comparing the carrying amount of the asset to the future undiscounted net cash flows which the asset is expected to generate. If such assets are determined to be impaired, the impairment to be recognized is measured as the amount by which the carrying amount of the assets exceeds the future undiscounted net cash flows arising from the assets. Assets to be disposed of are reported at the lower of their carrying amounts or fair value less cost to sell.

Royalty Expense

In 2009, the Company entered into a license agreement with a third party relating to a patented gunshot digital imaging system that facilitates integration with certain third-party systems. The terms of the license agreement require the Company to pay a one-time fee of $5,000 for each license sold to a customer allowing the customer to integrate their ShotSpotter service with a third-party application, such as a video management system, with a minimum annual amount due of $75,000. In 2019, 2018, and 2017, the Company incurred only the $75,000 minimum amount. The license agreement renews automatically on each subsequent year unless it is terminated in accordance with the agreement.

The royalty fee due for each license sold to a customer is capitalized as property and equipment and amortized over the estimated useful life. The difference in royalty fees capitalized in property and equipment and the minimum annual payment is classified as general and administrative expense in the consolidated statements of operations and was $30,000, $35,000 and $60,000 for the years ended December 31, 2019, 2018, and 2017, respectively.

Convertible Preferred Stock Warrants

The Company issued warrants exercisable for shares of Series B-1 convertible preferred stock, or for shares of common stock upon the automatic conversion of all outstanding series of preferred stock into common stock. These warrants were classified as a preferred stock warrant liability in the consolidated balance sheets, rather than stockholders' equity, as they met the criteria to be classified as a derivative liability. The convertible preferred stock warrants were subject to remeasurement to fair value at each balance sheet date and any change in fair value is recognized as a component of other expense, net, in the consolidated statements of operations. The Company estimated the fair value of the warrants using an option pricing method ("OPM") or probability weighed expected return method ("PWERM") that incorporates the use of OPM, to allocate the estimated value of the Company. Upon the closing of the IPO in 2017, the convertible preferred stock warrant liability was reclassified to additional paid-in capital. All preferred stock warrants were converted into common stock warrants.

Fair Value Measurements

The Company uses a three-level hierarchy for fair value measurements based on the nature of inputs used in the valuation of an asset or liability as of the measurement date. The three-level hierarchy prioritizes, within the measurement of fair value, the use of market-based information over entity-specific information. Fair value focuses on an exit price and is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The inputs or methodology used for valuing financial instruments are not necessarily an indication of the risks associated with investing in those financial instruments. The three-level hierarchy for fair value measurements is defined as follows:

Level I — Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level II — Inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.

Level III — Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

An asset's or a liability's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

Stock-Based Compensation

The Company generally grants options to purchase shares of its common stock to its employees, directors and non-employees for a fixed number of shares with an exercise price equal to the fair value of the underlying shares at the grant date. Fair value is determined by the Board. All stock option grants are accounted for using the fair value method, and stock-based compensation expense is recognized as the underlying options vest which is the requisite service period. The Company uses the Black-Scholes option pricing model to measure the fair value of its stock options.

Prior to the IPO, given the absence of a public trading market for the Company's common stock, the Board considered numerous objective and subjective factors to determine the fair value of the Company's common stock each time stock option grants were approved. The factors include, but are not limited to: (i) the valuation of the Company's common stock by an unrelated third party; (ii) the Company's results of operations, financial position and capital resources; (iii) current economic indicators and outlook; (iv) competition for the Company's solutions; and (v) the Company's marketing methods.

The Company estimated the grant date fair value of its common stock options using the following assumptions:

Expected Term — The expected term represents the period that the stock-based compensation awards are expected to be outstanding. Since the Company did not have sufficient historical information to develop reasonable expectations about future exercise behavior, the Company used the simplified method to compute expected term, which reflects the weighted-average of time-to-vesting.

Risk-Free Interest Rate — The risk-free interest rate is based on the yield on U.S. Treasury yield curve in effect at the grant date.

Expected Volatility —The expected volatility is based on the historical volatility of the Company's stock.

Dividend Yield — Expected dividend yield is based on our dividend policy at the time the options were granted. We do not plan to pay any dividends in the foreseeable future. Consequently, we have historically used an expected dividend yield of zero.

Subsequent to the IPO, the Company uses the market closing price of its common stock as traded on the Nasdaq Capital Market to determine fair value.

The Company generally grants unvested restricted stock unit awards to non-employee directors and executive management for a fixed number of shares and a fixed vesting schedule. The restricted stock unit awards are valued using the closing price on the date of grant.

Forfeitures are recognized as and when they occur.

Segment Information

The Company has one operating segment with one business activity, providing gunshot detection systems. The Company's chief operating decision maker is its Chief Executive Officer, who manages operations on a consolidated basis for purposes of allocating resources.

Income Taxes

The Company records income taxes in accordance with the liability method of accounting. Deferred taxes are recognized for the estimated taxes ultimately payable or recoverable based on enacted tax law. The Company establishes a valuation allowance to reduce the deferred tax assets when it is more likely than not that a deferred tax asset will not be realizable. Changes in tax rates are reflected in the tax provision as they occur.

In accounting for uncertainty in income taxes, the Company recognizes the financial statement benefit of a tax position only after determining that the relevant tax authority would more likely than not sustain the position following an audit. For tax positions meeting the more likely than not threshold, the amount recognized in the consolidated financial statements is the largest benefit that has a greater than 50 percent likelihood of being realized upon ultimate settlement with the relevant tax authority. The Company recognizes interest and penalties accrued on any unrecognized tax benefits as a component of income tax expense.

Net Income (Loss) per Share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted-average number of common shares outstanding during the period. Diluted net income (loss) per share is computed by dividing net income (loss) by the weighted-average number of common shares and common stock equivalents outstanding during the period. Common stock equivalents are only included when their effect is dilutive. Common stock equivalents and unvested restricted stock units are potentially dilutive securities and include convertible preferred stock, warrants and outstanding stock options. These potentially dilutive securities are excluded from the computation of diluted net income (loss) per share if their inclusion would be anti-dilutive.

Accounting Pronouncements Recently Adopted

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842). There have been further amendments, including practical expedients, with the issuance of ASU 2018-01 in January 2018, ASU 2018-11 in July 2018 and ASU 2018-20 in December 2018. The amended guidance requires the recognition of lease assets and lease liabilities on the balance sheet for those leases with terms in excess of 12 months and currently classified as operating leases. Disclosure of key information about leasing arrangements is required. Effective January 1, 2019, the Company adopted Topic 842. The Company elected the optional transition method which allows entities to continue to apply historical accounting guidance in the comparative periods presented in the year of adoption.

At transition, lessees and lessors may elect to apply a package of practical expedients permitting entities not to reassess: (i) whether any expired or existing contracts are or contain leases; (ii) lease classification for any expired or existing leases and (iii) whether initial direct costs for any expired or existing leases qualify for capitalization under the amended guidance. These practical expedients must be elected as a package and consistently applied. The Company has elected to apply the package of practical expedients upon adoption.

The Company determines if an arrangement is a lease at inception. The Company's operating lease for its corporate headquarters office is impacted by the new standard and upon adoption, the Company recognized a right-of-use asset of $0.9 million and related lease liabilities totaling $0.9 million. See Note 18, *Leases.*

In July 2017, the FASB issued ASU 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480), Derivatives and Hedging (Topic 815).* The amendments in Part I of ASU 2017-11 change the classification analysis of certain equity-linked financial instruments (or embedded features) with down round features. When determining whether certain financial instruments should be classified as liabilities or equity instruments, a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity's own stock. The amendments also clarify existing disclosure requirements for equity-classified instruments. The Company adopted this ASU as of January 1, 2019 and the adoption did not have any impact on the consolidated financial statements.

Recent Accounting Pronouncements Not Yet Effective

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740),* simplifying the accounting for income taxes by removing certain exceptions to the general principles. The guidance will be effective at the beginning of our first quarter of fiscal 2022. Early adoption of the amendments is permitted. We do not expect the adoption of this ASU to have any impact on the consolidated financial statements.

Note 4. Revenue Related Disclosures

As of December 31, 2018, the Company had total short-term and long-term deferred revenue of $24.2 million. During the year ended December 31, 2019, the Company recognized $23.1 million in revenue from the beginning deferred revenue balance and $17.2 million from new billings, and added $43.1 million to total short-term and long-term deferred revenue from new billings.

As of January 1, 2018, upon the adoption of Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("Topic 606"), the Company had total short-term and long-term deferred revenue of $17.3 million. During the year ended December 31, 2018, the Company recognized $9.7 million in revenue from the beginning deferred revenue balance and $24.8 million from new billings, and added $41.4 million to total short-term and long-term deferred revenue from new billings.

As of December 31, 2019, the Company has estimated remaining performance obligations for contractually committed revenues of $34.9 million, $21.6 million, $5.5 million, and $0.7 million that will be recognized during the year ending December 31, 2020, 2021, 2022, and 2023 through 2025, respectively. The timing of revenue recognition includes estimates of go-live dates for contracts not yet live. Contractually committed revenue includes deferred revenue as of December 31, 2019 and amounts under contract that will be invoiced after December 31, 2019.

During the year ended December 31, 2019, the Company recognized revenues of $39.7 million from customers in the United States, and $1.0 million from customers in South Africa and the Bahamas.

During the year ended December 31, 2018, the Company recognized revenues of $33.9 million from customers in the United States and $0.9 million from a customer in South Africa.

Note 5. Fair Value Measurements

Prior to the IPO, the Company's convertible preferred stock warrant liability was measured on a recurring basis and was classified within Level III of the fair value hierarchy because some of the inputs used in its measurement were neither directly or indirectly observable. The valuation methodology and underlying assumptions in the fair value determination are discussed in Note 3, *Basis of Presentation and Summary of Significant Accounting Policies*, and Note 15, *Convertible Preferred Stock Warrants and Common Stock Warrants*.

Immediately prior to the IPO, the convertible preferred stock warrant liability was remeasured to fair value, resulting in a loss of $3.7 million which was recorded in other expense, net. Upon the closing of the IPO, the entire balance of $5.7 million in convertible preferred stock warrant liability was reclassified to additional paid-in capital.

There were no transfers into or out of Level III during the year ended December 31, 2019. The changes in the fair value of the convertible preferred stock warrant liability and changes in the fair value of contingent consideration are summarized below (in thousands):

	Fair Value Measurements at Reporting Date Using Level III Inputs
Fair value at December 31, 2016	$ 1,875
Issuance of convertible preferred stock warrants	111
Change in fair value recorded in other expense, net	3,725
Reclassification of unexercised warrant into additional paid-in capital upon the IPO	(5,711)
Fair value at December 31, 2017	$ —
Contingent consideration from business combination	750
Fair value at December 31, 2018 and December 31, 2019	$ 750

As of the acquisition date of HunchLab (see Note 8, *Business Acquisitions*) and as of December 31, 2018, the Company estimated, based on (i) the probability of achieving the relevant revenues targets and (ii) the timing of achieving such targets, that the fair value of the contingent consideration approximates the maximum amount payable. There was no change in fair value during the year ended December 31, 2019. In February 2020, subsequent to December 31, 2019, the Company made its first payment of $0.3 million to Azavea, Inc.

Note 6. Intangible Assets, net

Intangible assets, net, consisted of the following (in thousands):

	December 31, 2019		
	Gross	Accumulated Amortization	Net
Patents	$ 1,092	$ (974)	$ 118
Customer relationship	160	(29)	131
	$ 1,252	$ (1,003)	$ 249

	December 31, 2018		
	Gross	Accumulated Amortization	Net
Patents	$ 997	$ (909)	$ 88
Customer relationship	160	(6)	154
	$ 1,157	$ (915)	$ 242

Amortization expense during the years ended December 31, 2019, 2018 and 2017 was $88,000, $61,000 and $47,000, respectively.

The following table presents future intangible asset amortization as of year-end 2019 (in thousands):

2020	$ 85
2021	63
2022	38
2023	23
2024	23
Thereafter	17
Total	$ 249

Note 7. Details of Certain Consolidated Balance Sheet Accounts

Prepaid expenses and other current assets (in thousands):

	December 31,	
	2019	2018
Prepaid software and licenses	$ 321	$ 388
Prepaid insurance	473	275
Other prepaid expenses	94	169
Deferred commissions	753	629
Other	123	66
	$ 1,764	$ 1,527

Other assets (in thousands):

	December 31,	
	2019	2018
Deferred commissions	$ 1,579	$ 1,560
Other	55	362
	$ 1,634	$ 1,922

Property and equipment, net (in thousands):

	December 31, 2019	December 31, 2018
Deployed equipment	$ 28,930	$ 24,767
Computer equipment	1,141	1,272
Software	1,314	1,239
Furniture and fixtures	169	210
Leasehold improvements	234	234
Vehicles	124	—
Construction in progress	1,209	953
	$ 33,121	$ 28,675
Accumulated depreciation and amortization	(16,565)	(12,171)
	$ 16,556	$ 16,504

Depreciation expense during the years ended December 31, 2019, 2018 and 2017 was $4.9 million, $3.9 million and $3.1 million, respectively.

Accrued expenses and other current liabilities (in thousands):

	December 31, 2019	December 31, 2018
Personnel-related accruals	$ 2,883	$ 2,603
Royalties payable	115	130
Professional fees	317	396
Sales/ use tax payable	91	273
Contingent consideration	750	750
Operating lease liability	302	—
Deferred rent	—	25
Other	427	250
	$ 4,885	$ 4,427

Note 8. Business Acquisitions

On October 3, 2018, the Company acquired certain technology, referred to as HunchLab, and related assets from Azavea Inc. The acquisition provides an opportunity to increase the Company's revenue per customer with a related and value-added technology that helps deter crime through strategically planned patrol missions. The purchase consideration totaled $2.5 million, consisting of $1.7 million in cash and a contingent earnout payable in cash for up to $750,000 based on HunchLab's revenues generated over the three-year period following the acquisition date. The Company determined the acquisition-date fair value of the contingent consideration liability based on the likelihood of meeting revenues forecasts.

The following table presents the purchase price allocation (in thousands):

Accounts receivable	$	114
Prepaid expense		4
Deferred revenue, short term		(120)
Accounts payable		(26)
Software technology		950
Customer relationships		160
Goodwill		1,379
Total purchase consideration	$	2,461

Goodwill primarily represents the value of cash flows from future customers. The Company expects to deduct goodwill and identifiable technology and intangible assets for tax purposes, a portion of which will commence upon settlement of contingent consideration and contingent liabilities.

The following table presents the components of the identifiable technology and intangible assets and the estimated useful lives (in thousands):

		Fair Value	Useful Life
Software technology	$	950	5 years
Customer relationships		160	7 years
Total identifiable technology and intangible assets	$	1,110	

The Company valued customer relationships and the software technology using the income approach. Significant assumptions include forecasts of revenues, cost of revenues, research and development expense, sales and marketing expense, general and administrative expense and estimated customer attrition rates. The Company discounted the cash flows at 25.5%, reflecting the risk profile of the assets.

Acquisition-related expenses totaled $0.2 million, which were included in general and administrative expense for the year ended December 31, 2018.

The Company has not presented separate results of operations since closing or combined pro forma financial information of the Company and HunchLab since the beginning of fiscal 2017, as results of operations for HunchLab are immaterial.

Note 9. Impairment of Property and Equipment

During the year ended December 31, 2019, the Company did not recognize any impairment.

During the year ended December 31, 2018, the Company recognized impairment expense of $0.7 million for the impairment of property and equipment primarily related to the remaining book value of indoor sensor inventory and indoor sensor networks installed at certain security customers. Management concluded that the impairment charges were required because the Company made the strategic decision to no longer include indoor coverage as part of its service offering.

During the year ended December 31, 2017, the Company recognized impairment expense of $0.8 million for the impairment of property and equipment primarily relating to the remaining net book value of deployed equipment in Puerto Rico and the U.S. Virgin Islands. Management concluded that the impairment charges were required because the equipment was presumed destroyed by the hurricanes in September 2017.

Note 10. Financing Arrangements

Credit Agreement

On September 27, 2018, the Company entered into a Credit Agreement with Umpqua Bank (the “Umpqua Credit Agreement”), which allows the Company to borrow up to $10.0 million under a revolving loan facility (the “Revolving Facility”). The Company intends to use the Revolving Facility for general working capital purposes. Borrowings under the Umpqua Credit Agreement are secured by substantially all of the assets of the Company. The Umpqua Credit Agreement includes a letter of credit subfacility of up to $3.0 million. Any amounts outstanding under the letter of credit subfacility reduce the amount available for the Company to borrow under the Revolving Facility.

Borrowings under the Umpqua Credit Agreement bear interest, at the Company’s option, at a rate equal to either (1) a base rate, which fluctuates daily and is the greater of (a) the prime rate in effect as of any date of determination and (b) the daily LIBOR rate as of such date of determination plus 1.0% per annum, or (2) a LIBOR rate, which can be for a period of 30, 60 or 90 days at the Company’s option and is equal to the published rate in the Wall Street Journal for such 30-, 60- or 90-day period two business days prior to the commencement of such period, in each case plus 2.0% per annum. The Company will be required to repay all amounts outstanding under the Umpqua Credit Agreement on September 27, 2020 or earlier if the Umpqua Credit Agreement is terminated prior to such date. The Umpqua Credit Agreement also includes an uncommitted incremental facility provision that would allow the Company, subject to satisfaction of certain conditions, including approval by Umpqua Bank, to increase the Revolving Facility up to a total of $25.0 million.

Under the Umpqua Credit Agreement, the Company is subject to various negative covenants that limit, subject to certain exclusions, the Company’s ability to incur indebtedness, make loans, invest in or secure the obligations of other parties, pay or declare dividends, make distributions with respect to the Company’s securities, redeem outstanding shares of the Company’s stock, create subsidiaries, materially change the nature of its business, enter into related party transactions, engage in mergers and business combinations, the acquisition or transfer of Company assets outside of the ordinary course of business, grant liens or enter into collateral relationships involving company assets or reincorporate, reorganize or dissolve the Company.

There were no borrowings outstanding as of December 31, 2019 and 2018.

Notes Payable- 2015 Term Note

Borrowings under the 2015 Term Note bore interest at the greater of: (i) the average prime rate in effect during each month or (ii) the average three-month LIBOR rate during such month, plus 2.5% per annum, plus 7.5% with a minimum rate of 11%, with interest only payments through October 2017, followed by 36 equal monthly installments of principal and interest through October 2020, the maturity date. The weighted average interest rate during the year ended December 31, 2017 was and 11.54%.

For the year ended December 31, 2017 the Company recognized interest expense of $1.1 million, based on the outstanding balance during the period.

During the year ended December 31, 2017, amortization of debt issuance costs was $132,000. Amortization of debt issuance costs is recorded in interest expense in the consolidated statements of operations.

Borrowings under the 2015 Term Note were secured by substantially all of the assets of the Company. Additionally, the terms of the 2015 Term Note included certain financial covenants and various negative covenants.

In March 2017, the Company amended the 2015 Term Note. In connection with the amendment of the 2015 Term Note, the Company issued a warrant to purchase 76,704 shares of Series B-1 preferred stock at an exercise price of $5.8667 per share; however, the terms of the warrant provided that upon the completion of a public offering in which the Company raises at least $25.0 million in net proceeds, the number of shares underlying the warrant would be reduced to 61,363 shares. Consistent with these terms, upon the closing of the IPO, the number of shares underlying this warrant was reduced to 61,363 shares, and the warrant became exercisable for common stock.

In September 2017, the Company voluntarily repaid all outstanding borrowings under the 2015 Term Note. The Company recorded to other expense, net, a loss of $0.2 million, consisting of prepayment fees and miscellaneous fees, and wrote-off $0.3 million of unamortized debt issuance costs from the early extinguishment of debt.

Note 11. Related Party Transactions

During the year ended December 31, 2019, the Company recognized $0.6 million in revenues, from ShotSpotter Labs projects with charitable organizations that have received donations from one of the Company's directors and one of the Company's significant shareholders. During the year ended December 31, 2018, the Company did not have any related party transactions. During the year ended December 31, 2017, the Company recognized approximately $0.7 million, in revenues from a reseller who was also an investor. As of December 31, 2017, the amount of accounts receivable due from this reseller was immaterial.

Note 12. Income Taxes

The domestic and foreign components of net income (loss) before income tax expense were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Domestic	$ 1,743	$ (3,083)	$ (10,125)
Foreign	14	345	305
Net income (loss)	$ 1,757	$ (2,738)	$ (9,820)

The provision (benefit) for income tax consists of the following (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Current:			
Federal	$ —	$ —	$ —
State	—	—	—
Foreign	7	(13)	160
Total	7	(13)	160
Deferred:			
Federal	—	—	—
State	—	—	—
Foreign	(48)	—	—
Total	(48)	—	—
Total tax expense (benefit)	$ (41)	$ (13)	$ 160

A reconciliation of income taxes at the statutory federal income tax rate to net income (loss) taxes included in the accompanying consolidated statements of operations is as follows (in thousands):

	December 31, 2019	2018	2017
Income tax at statutory rate	$ 369	$ (575)	$ (3,339)
Change in valuation allowance	(17)	1,595	(8,354)
Change in tax rate	—	—	9,788
Change in deferreds	100	7	(39)
State tax	(133)	(309)	536
Mark-to-market on warrants	—	—	1,267
Stock-based compensation	(420)	(615)	84
Research and development credit	(82)	(220)	(62)
Foreign rate differential	(43)	(86)	56
Subpart F - GILTI	17	81	—
Subpart F- transition tax	—	—	68
Lobbying	102	78	79
Other	66	31	76
Total	$ (41)	$ (13)	$ 160

Temporary differences that gave rise to significant portions of the Company's deferred tax assets and liabilities as of December 31, 2019 and 2018 were as follows (in thousands):

	Year Ended December 31, 2019	2018
Deferred tax assets:		
Net operating losses	$ 21,556	$ 21,461
Credits	2,055	1,969
Accruals and reserves	767	285
Deferred revenue and contract costs	116	458
Gross deferred tax assets	24,494	24,173
Valuation allowance	(23,693)	(23,710)
Net deferred tax assets	801	463
Deferred tax liabilities:		
Fixed assets and intangibles	(836)	(545)
Total deferred tax liabilities, net	$ (35)	$ (82)

Realization of deferred tax assets is dependent upon future taxable income, if any, the timing and amount of which are uncertain. Management has determined that the deferred tax assets are not realizable on a more likely than not basis. Accordingly, deferred tax assets have been fully offset by a valuation allowance. The valuation allowance increased by $17,000 during the year ended December 31, 2019.

As of December 31, 2019, the Company had federal net operating loss carryforwards of approximately $85.6 million, of which $80.6 million will expire between 2026 through 2038, if not utilized, and $5.0 million which do not expire. As of December 31, 2019, the Company also had state NOLs of approximately $55.1 million, which will expire, if not utilized, in 2019 through 2038.

As of December 31, 2019, the Company had available for carryover research and experimental credits for federal and California income tax purposes of approximately $1.4 million and $1.7 million, respectively, which are available to reduce future income taxes. The federal research and experimental tax credits will begin to expire, if not utilized, in 2026. The California research and experimental tax credits carry forward indefinitely until utilized.

Section 382 of the Internal Revenue Code of 1986 (the "Code"), as amended, and similar California regulations impose substantial restrictions on the utilization of net operating losses and tax credits in the event of an "ownership change" of a corporation. Accordingly, the Company's ability to utilize net operating losses and credit carryforwards may be limited as the result of such an "ownership change" as defined in the Code.

Uncertain Tax Positions

The Company applied FASB ASC 740-10-50, *Accounting for Uncertainty in Income Tax,* which prescribes a recognition threshold and measurement attributes for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The Company classifies interest and penalties as a component of tax expense as a result of the full valuation allowance.

The Company had unrecognized tax benefits of approximately $0.8 million as of December 31, 2019, all of which was offset by a full valuation allowance. No interest or penalties have been accrued as of December 31, 2019.

A reconciliation of the beginning and ending amounts of unrecognized tax benefits is as follows (in thousands):

Balance as of December 31, 2017	$ 620
Increases for current year tax positions	114
Increases for prior year tax positions	—
Balance as of December 31, 2018	734
Increases for current year tax positions	75
Decrease for prior year tax positions	(37)
Balance as of December 31, 2019	$ 772

Unrecognized tax benefits may change during the next 12 months for items that arise in the ordinary course of business. The Company does not anticipate a material change to its unrecognized tax benefits over the next 12 months that would affect the Company's effective tax rate as a result of the full valuation allowances.

The Company files income tax returns in federal, various state and U.S. territory jurisdictions, and South Africa. The statute of limitations remains open for fiscal years 2005 through 2019 in the United States and the various state and the U.S. territory jurisdictions. Years beyond the normal statute of limitations remain open to audit by tax authorities due to tax attributes generated in earlier years which are being carried forward and may be audited in subsequent years when utilized.

In January 2018, the FASB released guidance on the accounting for tax on the global intangible low-taxed income ("GILTI") provisions of the Act. The GILTI provisions impose a tax on foreign income in excess of a deemed return on tangible assets of foreign corporations. The guidance indicates that either accounting for deferred taxes related to GILTI inclusions or treating any taxes on GILTI inclusions as period cost are both acceptable methods subject to an accounting policy election. For the year ended December 31, 2019, the Company has elected to treat any potential GILTI inclusions as a period cost.

Note 13. Capital Stock

Convertible Preferred Stock

Immediately prior to the IPO, the Company had the following outstanding convertible preferred stock:

	Shares Authorized	**Shares Issued and Outstanding**	**Aggregate Liquidation Preference (in thousands)**
Series B-1	4,773,000	3,848,023	$ 22,575
Series A-2	1,177,000	1,176,423	20,000
			$ 42,575

Upon the closing of the IPO, all shares of convertible preferred stock then outstanding were automatically converted into an aggregate of 4,689,753 shares of common stock, resulting in the reclassification of the related redeemable convertible preferred stock into $23,000 of common stock and $42.1 million into additional paid-in capital.

Since the closing of the IPO in 2017, there were no shares of convertible preferred stock outstanding.

Common Stock

The Company is authorized to issue 500,000,000 shares of common stock with a par value of $0.005 per share. At December 31, 2019 and 2018, there were 11,314,150 and 10,864,722 shares of common stock issued and outstanding, respectively. Holders of common stock have voting rights equal to one vote per share of common stock held and are entitled to receive any dividends as may be declared from time to time by the Board.

Prior to the IPO, common stock was subordinate to Series B-1 convertible preferred stock with respect to dividend rights and subordinate to Series B-1 and A-2 convertible preferred stock with respect to rights upon certain deemed liquidation events of the Company.

At December 31, 2019, shares of common stock reserved for future issuance were as follows:

	December 31, 2019
Options outstanding	617,493
Shares available for future grant	1,632,636
Unvested restricted stock units	114,996
Warrants to purchase common stock	134,716
Total	2,499,841

Preferred Stock

The Company is authorized to issue 20,000,000 shares of preferred stock, with a par value of $0.005, as provided in the Post-IPO Certificate. Since the closing of the IPO, there were no shares of preferred stock issued and outstanding.

Stock Repurchase Program

In May 2019, our board of directors adopted a stock repurchase program for up to $15 million of our common stock. Although our board of directors has authorized the stock repurchase program, it does not obligate us to repurchase any specific dollar amount or number of shares, there is no expiration date for the stock repurchase program, and the stock repurchase program may be modified, suspended or terminated at any time and for any reason.

During the year ended December 31, 2019, we repurchased 257,824 shares of our common stock at an average price of $26 per share for $6.7 million. The repurchases were made in open market transactions using cash on hand, and all of the shares repurchased were retired.

Note 14. Net Income (Loss) per Share

The following table summarizes the computation of basic and diluted net loss per share (in thousands, except share and per share data):

	Year Ended December 31,		
	2019	2018	2017
Numerator:			
Net income (loss)	$ 1,798	$ (2,725)	$ (9,980)
Denominator:			
Weighted-average shares outstanding, basic	11,302,780	10,569,007	6,197,775
Weighted-average shares outstanding, diluted	11,846,348	10,569,007	6,197,775
Net income (loss) per share, basic	$ 0.16	$ (0.26)	$ (1.61)
Net income (loss) per share, diluted	$ 0.15	$ (0.26)	$ (1.61)

The following potentially dilutive shares outstanding at the end of the periods presented were excluded in the calculation of diluted net income (loss) per share as the effect would have been anti-dilutive:

	Year Ended December 31,		
	2019	2018	2017
Options to purchase common stock	269,202	820,186	1,294,128
Unvested restricted stock units	54,620	110,764	47,312
Warrants to purchase Series B-1 convertible preferred or common stock	—	163,713	468,278
Total	323,822	1,094,663	1,809,718

Note 15. Convertible Preferred Stock Warrants and Common Stock Warrants

Immediately prior to the Company’s IPO, all outstanding Series B-1 convertible preferred stock warrants were remeasured to their fair value, using the Black-Scholes model. Refer to Note 3, *Basis of Presentation and Summary of Significant Accounting Policies*, for a description of the valuation method. The final remeasurement of the convertible preferred stock warrant liability resulted in a $3.7 million loss which was recorded to other expense, net.

Upon the closing of the IPO, the entire balance of $5.7 million in convertible preferred stock warrant liability was reclassified to additional paid-in capital. All convertible preferred stock warrants were converted into common stock warrants. In addition, the Company issued to the lead underwriter in the IPO a warrant to purchase up to 84,000 shares of its common stock.

During the year ended December 31, 2019, certain warrants were exercised on a cashless basis and converted into 13,865 shares of common stock.

At December 31, 2019, 2018 and 2017, the Company had the following common stock warrants issued and outstanding:

	Shares					
Warrant Class	2019	2018	2017	Issuance Date	Price per Share	Expiration Date
Common stock warrant	—	3,766	165,925	July 2012	$ 5.8667	July 2019
Common stock warrant	—	25,231	61,502	August 2012	$ 5.8667	August 2019
Common stock warrant	50,716	50,716	156,851	February 2014	$ 0.1700	February 2021
Common stock warrant (1)	84,000	84,000	84,000	June 2017	$13.2000	June 2020
	134,716	163,713	468,278			

(1) This warrant was issued to the Company’s lead underwriter in connection with the IPO.

In March 28, 2017, in connection with the amendment of the 2015 Term Note (see Note 10, *Financing Arrangements* for details regarding the amendment of the 2015 Term Note), the Company issued a warrant to purchase 76,704 shares of Series B-1 preferred stock at an exercise price of $5.8667 per share which was reduced to 61,363 shares upon the completion of the Company's IPO because greater than $25 million in proceeds were raised. The Company determined the fair value of the warrants on the date of issuance to be $111,000. The warrants were immediately exercisable.

In June 2017, in connection with its public offering, the Company issued a warrant to purchase 84,000 shares of common stock to its lead underwriter (the "June 2017 Warrant"). The Company determined the fair value of the June 2017 Warrant on the date of issuance to be $0.3 million. The June 2017 Warrant was immediately exercisable.

Note 16. Equity Incentive Plans

2017 Equity Incentive Plan

In May 2017, the Board and the Company's stockholders approved the 2017 Equity Incentive Plan (the "2017 Plan"), which became effective in connection with the IPO. The 2017 Plan provides for the issuance of stock options, restricted stock units and other awards to employees, directors and consultants of the Company. A total of 2,413,659 shares of the Company's common stock were initially reserved for issuance under the 2017 Plan, which is the sum of (1) 900,000 shares, (2) the number of shares reserved for issuance under the 2005 Plan at the time the 2017 Plan became effective and (3) shares subject to stock options or other stock awards under the 2005 Plan that would have otherwise been returned to the 2005 Plan (up to a maximum of 1,314,752 shares). The number of shares of common stock reserved for issuance under the 2017 Plan will automatically increase on January 1 of each year, beginning on January 1, 2018 by the lesser of (1) 5% of the number of shares of the Company's capital stock outstanding on December 31st of the preceding calendar year or (2) such number of shares as determined by the Board. In accordance with the evergreen provision, the number of shares of common stock reserved for issuance under our 2017 Plan was automatically increased on January 1, 2019 by 543,236 shares, which was equal to 5% of the total number of shares of capital stock outstanding on December 31, 2018. As a result of the adoption of the 2017 Plan, no further grants may be made under the 2005 Plan.

Incentive Stock Options may only be granted to Company employees and may only be granted with an exercise price not less than the fair value of the common stock, or not less than 110% of fair value when the grant is issued to a person who, at the time of grant, owns stock representing more than 10% of the voting power of all classes of stock. Non-statutory stock options may be granted to Company employees, directors and consultants, and may be granted at a price per share not less than fair value on the date of the grant. The Board determines the fair value of the Company's common stock.

Options granted under the 2005 Plan and 2017 Plan generally vest over four years and expire no later than 10 years from the grant date. The 2005 Plan and 2017 Plan grants the Board discretion to determine when the options granted will become exercisable. The 2005 Plan and 2017 Plan allows for the exercise of unvested options with repurchase rights over the restricted common stock issued. The Company records proceeds from early exercises as a liability and reclassifies the amount to equity as the repurchase right lapses. At December 31, 2019, 2018, and 2017, there were no unvested options resulting from early exercises.

Aggregate intrinsic value represents the difference between the Company's estimated or actual fair value of its common stock and the exercise price of outstanding "in-the-money" options. The aggregate intrinsic value of options exercised was $12.1 million, $12.6 million and $0.8 million during the years ended December 31, 2019, 2018 and 2017, respectively. Based on the fair market value of the Company's common stock at December 31, 2019, 2018 and 2017, the total intrinsic value of all outstanding options was $7.8 million, $19.3 million and $15.9 million, respectively.

At December 31, 2019, 2018 and 2017, total unrecognized stock-based compensation cost related to unvested stock options was $4.4 million, $3.3 million and $0.8 million, respectively, which will be recognized ratably over a weighted-average period of 2.9 years, 3.3 years and 3.2 years for each period.

Cash received from the exercise of stock options during the years ended December 31, 2019, 2018 and 2017 was $0.5 million, $0.6 million and $55,000, respectively.

No income tax benefits from stock-based compensation arrangements have been recognized in the consolidated statements of operations.

The fair value of stock option grants is set forth below and was determined using the Black-Scholes option pricing model with the following assumptions:

	Year Ended December 31,		
	2019	**2018**	**2017**
Fair value of common stock	\$20.07-\$44.95	\$23.72-\$47.39	\$3.06-\$19.56
Expected term (in years)	6	6	5-6
Risk-free interest rate	1.71%-2.49%	2.60%-3.00%	1.85%-2.29%
Expected volatility	64%-67%	64%-67%	55%
Expected dividend yield	—	—	—

In February 2005, the Company adopted the 2005 Stock Plan, as amended in January 2010 and November 2012 (the "2005 Plan"). Under the 2005 Plan provisions, the Company was authorized to grant incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock units, and shares of restricted stock.

Following the effectiveness of the 2017 Plan in connection with the IPO, no further grants will be made under the 2005 Plan.

A summary of stock option activities under the 2005 Plan and 2017 Plan during 2017, 2018 and 2019 is as follows:

	Number of Options Outstanding	Weighted Average Exercise Price
Outstanding at December 31, 2016	1,130,141	\$ 0.86
Granted	261,476	\$ 5.52
Exercised	(74,984)	\$ 0.74
Canceled	(22,505)	\$ 1.52
Outstanding at December 31, 2017	1,294,128	\$ 1.79
Granted	157,078	\$ 33.70
Exercised	(609,985)	\$ 0.90
Canceled	(21,035)	\$ 6.78
Outstanding at December 31, 2018	820,186	\$ 8.44
Granted	138,200	\$ 35.76
Exercised	(307,365)	\$ 1.47
Canceled	(33,528)	\$ 24.80
Outstanding at December 31, 2019	617,493	\$ 17.13

Stock options outstanding, exercisable and vested were as follows:

Outstanding at December 31, 2019	Weighted-average Remaining Contractual Life (years)	Exercisable and Vested as of December 31, 2019	Weighted-average Remaining Contractual Life (years)	Weighted-average Exercise Price
617,493	7.36	308,217	6.22	8.06

Outstanding at December 31, 2018	Weighted-average Remaining Contractual Life (years)	Exercisable and Vested as of December 31, 2018	Weighted-average Remaining Contractual Life (years)	Weighted-average Exercise Price
820,186	7.17	439,927	5.99	1.66

Outstanding at December 31, 2017	Weighted-average Remaining Contractual Life (years)	Exercisable and Vested as of December 31, 2017	Weighted-average Remaining Contractual Life (years)	Weighted-average Exercise Price
1,294,128	6.22	883,959	5	0.85

During the year ended December 31, 2019, the company granted non-employee directors restricted stock unit ("RSU") awards totaling 14,755 shares of common stock, with vesting terms of approximately 2 months to 12 months. The weighted average fair value of $41.90 per unit was calculated using the closing stock price on the date of grants.

During the year ended December 31, 2018, the company granted non-employee RSU awards totaling 17,881 shares of common stock, with vesting terms of approximately 12 months. The fair value of $28.45 per unit was calculated using the closing stock price on the date of grants.

During the year ended December 31, 2019, the Company granted executive management RSU awards totaling 39,597 shares of common stock, with vesting terms of 6.25% vest quarterly for the next four years. The fair value of $44.95 per unit was calculated using the closing stock price on the grant dates.

During the year ended December 31, 2018, the Company granted executive management RSU awards totaling 92,883 shares of common stock, with vesting terms of 35% upon the first anniversary and 21.667% on each of the three subsequent anniversaries. The weighted average fair value of $17.87 per unit was calculated using the closing stock price on the grant dates.

During the year ended December 31, 2017, the company granted non-employee directors RSU awards totaling 47,312 shares of common stock, with vesting terms of approximately seven to ten months. The fair value of $11.50 to $16.96 per unit was calculated using the closing stock price on the date of grants.

The following table summarizes the activity of RSU awards during 2019:

	Number of Restricted Stock Units	Weighted Average Grant Date Fair Value
Unvested RSUs at December 31, 2018	110,764	$ 19.58
Granted	54,351	$ 44.12
Vested	(58,150)	$ 24.75
Unvested RSUs at December 31, 2019	106,965	$ 29.24

During the year ended December 31, 2019, the Company granted certain executive management RSU awards, subject to certain financial milestones, totaling 8,031 shares of common stock, with vesting terms 100% upon the first anniversary, if the Compensation Committee of the Board of Directors of the Company believes that the associated financial milestones were met. The weighted average fair value of $43.58 per unit was calculated using the closing stock price on the grant date. At the end of the year the associated milestones were not met and the expense was reversed.

At December 31, 2019, 2018 and 2017, total unrecognized stock-based compensation cost related to RSUs was $2.4 million, $1.4 million, and $0.3 million, respectively, which will be recognized ratably over a weighted-average period of 2.6 years, 2.7 years and 0.4 years, respectively. The fair values of RSUs that vested during the years ended December 31, 2019 and 2018 totaled $1.4 million and $0.6 million respectively. No RSUs vested during the year ended December 31, 2017.

Our equity-based incentive plans include stock options, restricted stock units and other stock awards. The number of shares available for grant under these plans was 1,632,636 as of December 31, 2019.

2017 Employee Stock Purchase Plan

In May 2017, the Board and the Company's stockholders adopted the 2017 Employee Stock Purchase Plan ("2017 ESPP"), which became effective in connection with the Company's IPO. The 2017 ESPP allows eligible employees to purchase shares of the Company's common stock in an offering at a discount of the then-current trading price, up to the lesser of (1) 85% of the fair market value of the common stock on the first day of the IPO or (2) 85% of the fair market value of the common stock on the purchase date. The 2017 ESPP permits the maximum discounted purchase price permitted under U.S. tax rules, including a "lookback."

The 2017 ESPP initial offering period runs for approximately 24 months in length, and contains four 6-month purchase periods. An employee's purchase rights terminate immediately upon termination of employment or other withdrawal from the 2017 ESPP. No participant will have the right to purchase shares of common stock in an amount that has a fair market value of more than $25,000 determined as of the first day of the applicable purchase period, for each calendar year.

There are 200,000 shares of common stock reserved for issuance under the 2017 ESPP. In addition, the 2017 ESPP contains a provision which provides for an automatic annual share increase on January 1 of each year, in an amount equal to the lesser of (1) 2% of the total number of shares of common stock outstanding on December 31st of the preceding calendar year, (2) 150,000 shares or (3) such number of shares as determined by the Board. In accordance with the evergreen provision, the number of shares of common stock reserved for issuance under our 2017 ESPP was automatically increased on January 1, 2019 by 150,000 shares.

The Company accounts for employee stock purchases made under its 2017 ESPP using the estimate grant date fair value of accounting in accordance with ASC 718, *Stock Compensation*. The Company values ESPP shares using the Black-Scholes model.

There were 65,639 shares issued during 2019 and 316,623 shares available under the 2017 ESPP as of December 31, 2019.

Total stock-based compensation expense associated with the 2005 Plan, 2017 Plan and 2017 ESPP is recorded in the consolidated statements of operations and was allocated as follows (in thousands):

	Year Ended December 31,		
	2019	**2018**	**2017**
Cost of revenues	$ 670	$ 316	$ 75
Sales and marketing	955	770	133
Research and development	365	272	69
General and administrative	1,067	1,110	351
Total	$ 3,057	$ 2,468	$ 628

Stock-based compensation expense is recognized over the award's expected vesting schedule. Forfeitures are recognized as and when they occur.

Note 17. Benefit Plan

The Company sponsors a 401(k) plan to provide defined contribution retirement benefits for all eligible employees. Participants may contribute a portion of their compensation to the plan, subject to the limitations under the Internal Revenue Code. The Company is allowed to make 401(k) matching contributions as defined in the plan and as approved by the Board. The Company matched 50% of employee contributions made during 2019 up to a maximum of 2% of compensation; the match will be deposited to the employees' 401(k) accounts in 2020. During the year ended December 31, 2019, the Company recorded $0.2 million of matching contribution expense. These matching contributions are subject to additional vesting criteria. The Company did not make any contributions to the plan during the years ended December 31, 2018 and 2017.

Note 18. Leases

The Company leases its principal executive offices in Newark, California, under a non-cancelable operating lease which expires in October 2021. This lease does not have significant rent escalation holidays, concessions, leasehold improvement incentives, or other build-out clauses. Further, the lease does not contain contingent rent provisions or renewal options. Our lease includes both lease (e.g., fixed monthly rent payments) and non-lease components (e.g., common-area or other maintenance costs) which are accounted for as a single lease component as we have elected the practical expedient to group lease and non-lease components for all leases. Upon adoption of ASC 842 on January 1, 2019, the Company recognized an operating lease right-of-use asset of $0.9 million and a corresponding lease lability of $0.9 million, using a discount rate of 6% which reflects the Company's incremental borrowing rate for a similar asset and similar term as of the date of adoption. The operating lease cost recognized for the year ended December 31, 2019 was $0.3 million. Rent expense recognized for the years ended December 31, 2018 and 2017 was $0.6 million and $0.4 million, respectively.

Supplemental information related to the operating lease as follows (in thousands):

	As of December 31, 2019
Assets	
Operating lease right-of-use asset	$ 556
Liabilities	
Lease liability (short-term) *(presented within Accrued expenses and other current liabilities)*	$ 302
Lease liability (long-term) *(presented within Other liabilities)*	296
Total operating lease liability	$ 598

	Year ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities *(presented within Operating cash flows)*	$ 347

Maturities of the lease liability at December 31, 2019 are as follows (in thousands):

2020	$ 328
2021	304
Total lease payments, undiscounted	632
Less: imputed interest	(34)
Total	$ 598

The Company does not have any finance leases.

The following table is shown for comparative purposes only. The future minimum lease payments under the non-cancelable lease at December 31, 2018 are as follows (in thousands):

2019	$	352
2020		357
2021		304
Total	$	1,013

Note 19. Commitments and Contingencies

The company has non-cancelable data center arrangements in which the original term exceeds one year.

The following is a schedule of future minimum payments under the non-cancelable data center arrangements at December 31, 2019 (in thousands):

	Data Center Arrangements	
2020	$	76
2021		—
Total	$	76

Contingencies

On November 6, 2017 three individuals, Ken Fisher, Kevin Baxter and Fred Holmes (the “Contractors”), filed a complaint with the Superior Court of California, County of Alameda, alleging breach of contract, a breach of the implied covenant of good faith and fair dealing and violation of Section 17200 et seq. of the California Business and Professions Code, purportedly predicated on an alleged breach of Section 10b-5 of the Securities Exchange Act of 1934. On October 4, 2018, the parties reached a binding settlement.

On August 28, 2018, Silvon S. Simmons (the "Plaintiff") amended a complaint against the City of Rochester, New York and various city employees, filed in the United States District Court, Western District of New York, to add the Company and employees as a defendant. The amended complaint alleges conspiracy to violate plaintiff's civil rights, denial of the right to a fair trial, and malicious prosecution. The Plaintiff claims that ShotSpotter colluded with the City of Rochester to fabricate and create gunshot alert evidence to secure Plaintiff's conviction. On the basis of the allegations, the Plaintiff has petitioned for compensatory and punitive damages and other costs and expenses, including attorney's fees. The Company believes that the Plaintiff's claims are without merit and are disputing them vigorously. No amounts have been accrued as of December 31, 2019 or 2018.

The Company may become subject to legal proceedings, as well as demands and claims that arise in the normal course of business. Such claims, even if not meritorious, could result in the expenditure of significant financial and management resources. The Company makes a provision for a liability relating to legal matters when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These provisions are reviewed and adjusted to include the impacts of negotiations, estimated settlements, legal rulings, advice of legal counsel, and other information and events pertaining to a particular matter.

An unfavorable outcome on any litigation matters could require payment of substantial damages, or, in connection with any intellectual property infringement claims, could require the Company to pay ongoing royalty payments or could prevent the Company from selling certain of our products. As a result, a settlement of, or an unfavorable outcome on, any of the matters referenced above or other litigation matters could have a material adverse effect on the Company’s business, operating results, financial condition and cash flows.

Note 20. Subsequent Events

For the audited consolidated financial statements, management evaluated subsequent events through March 12, 2020, which is the date these consolidated financial statements were issued.

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

None.

Item 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management has evaluated, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, the effectiveness of our disclosure controls and procedures (as defined in Rules 13-a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of December 31, 2019, our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Exchange Act Rule 13a-15(f)) during the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our principal executive officer and principal financial officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been detected. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions, or the degree of compliance with the policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

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 Rule 13a-15(f) and Rule 15d-15(f) of the Exchange Act. Internal control over financial reporting consists of policies and procedures that: (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (2) are designed and operated to provide reasonable assurance regarding the reliability of our financial reporting and our process for the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (3) 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. Our management evaluated the effectiveness of our internal control over financial reporting using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control - Integrated Framework (2013). Based on the results of our evaluation, our management has concluded that our internal control over financial reporting was effective as of December 31, 2019.

Item 9B. OTHER INFORMATION

None.

PART III.

We will file a definitive Proxy Statement for our Annual Meeting (our "Proxy Statement") with the SEC, pursuant to Regulation 14A, not later than 120 days after the end of our fiscal year. Accordingly, certain information required by Part III has been omitted under General Instruction G(3) to Form 10-K. Only those sections of the Proxy Statement that specifically address the items set forth herein are incorporated by reference.

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10 is incorporated herein by reference to the sections of our Proxy Statement under the captions "Information Regarding the Board of Directors and Corporate Governance", "Executive Officers".

Item 11. EXECUTIVE COMPENSATION

The information required by this Item 11 is incorporated herein by reference to the sections of our Proxy Statement under the caption "Executive and Director Compensation".

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

The information required by this Item 12 is incorporated herein by reference to the sections of our Proxy Statement under the caption "Security Ownership of Certain Owners and Management".

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

The information required by this Item 13 is incorporated herein by reference to the sections of our Proxy Statement under the captions "Transactions with Related Persons and Indemnification", "Information Regarding The Board of Directors and Corporate Governance".

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 is incorporated herein by reference to the section of our Proxy Statement under the caption "Principal Accountant Fees and Services".

PART IV.

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)(1) Consolidated Financial Statements

We have filed the consolidated financial statements listed in the Index to Consolidated Financial Statements, Schedules, and Exhibits included in Part II, Item 8, “Financial Statements and Supplementary Data” of this Annual Report on Form 10-K.

(a)(2) Financial Statements Schedules

All financial statements schedules have been omitted because they are not applicable, not material, or the required information is shown in the Index to Consolidated Financial Statements included in Part II, Item 8, “Financial Statements and Supplementary Data” of this Annual Report on Form 10-K.

(a)(3) Exhibits

See the Exhibit Index below in this Annual Report on Form 10-K. The exhibits listed in the Exhibit Index below are filed or incorporated by reference as part of this Annual Report on Form 10-K.

Item 16. FORM 10-K SUMMARY

None.

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Shotspotter, Inc. is the leader in gunshot detection solutions that help law enforcement officials and security personnel identify, locate and respond to gun violence.