Identiv, Inc.
Form 10-K
March 15, 2019

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

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 0-29440

IDENTIV, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware (State or other jurisdiction of Incorporation or organization)	77-0444317 (I.R.S. Employer Identification Number)
2201 Walnut Avenue, Suite 100, Fremont, California (Address of Principal Executive Offices)	94538 (Zip Code)

Registrant’s telephone number, including area code:

(949) 250-8888

Securities Registered Pursuant to Section 12(b) of the Act:

None

Securities Registered Pursuant to Section 12(g) of the Act:

Common Stock, $0.001 par value, and associated Preferred Share Purchase Rights

(Title of Class)

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

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

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

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements or any amendment to this Form 10-K.

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

Large accelerated filer	Accelerated filer
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

Based on the closing sale price of the Registrant's Common Stock on the Nasdaq National Market System on June 30, 2018, the last business day of the Registrant's most recently completed second fiscal quarter, the aggregate market value of Common Stock held by non-affiliates of the Registrant was $51,267,400.

At March 6, 2019, the Registrant had outstanding 16,424,911 shares of Common Stock, excluding 1,072,748 shares held in treasury.

DOCUMENTS INCORPORATED BY REFERENCE

Designated portions of the Company’s Proxy Statement to be filed within 120 days after the Registrant’s fiscal year end of December 31, 2018 are incorporated by reference into Part II, Item 5 and Part III of this Report.

Identiv, Inc.

Form 10-K

For the Fiscal Year Ended December 31, 2018

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PART I

ITEM 1. BUSINESS

Statement Regarding Forward Looking Statements

This Annual Report on Form 10-K (“Annual Report”), including the documents incorporated by reference in this Annual Report, contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. For example, statements, other than statements of historical facts regarding our strategy, future operations and growth, financial position, projected results, estimated revenues or losses, projected costs, prospects, plans, market trends, product attributes and benefits, competition, objectives of management, management judgements and estimates, and the expected impact of changes in laws or accounting pronouncements constitute forward-looking statements. In some cases, you can identify forward-looking statements by terms such as “will,” “believe,” “could,” “should,” “would,” “may,” “anticipate,” “intend,” “plan,” “estimate,” “expect,” “project” or the negative of these terms or other similar expressions. Although we believe that our expectations reflected in or suggested by the forward-looking statements that we make in this Annual Report are reasonable, we cannot guarantee future results, performance or achievements. You should not place undue reliance on these forward-looking statements. All forward-looking statements speak only as of the date of this Annual Report. While we may elect to update forward-looking statements at some point in the future, we specifically disclaim any obligation to do so, even if our expectations change, whether as a result of new information, future events or otherwise. We also caution you that such forward-looking statements are subject to risks, uncertainties and other factors, not all of which are known to us or within our control, and that actual events or results may differ materially from those indicated by these forward-looking statements. We disclose some of the factors that could cause our actual results to differ materially from our expectations discussed elsewhere in this Annual Report. These cautionary statements qualify all of the forward-looking statements included in this Annual Report that are attributable to us or persons acting on our behalf.

Identiv and the Identiv logo are trademarks of Identiv, Inc., registered in many jurisdictions worldwide. Certain product and service brands are also trademarks or registered trademarks of the Company, including HIRSCH, ScramblePad, TouchSecure, Velocity, Freedom, Enterphone MESH, 3VR, VisionPoint, Thursby Software, and Thursby SubRosa. Other product and brand names not belonging to Identiv that appear in this document may be trademarks or registered trademarks of their respective owners.

Each of the terms the “Company,” “Identiv,” “we” and “us” as used herein refers collectively to Identiv, Inc. and its wholly-owned subsidiaries, unless otherwise stated.

Overview

Identiv, Inc. is a global provider of physical security and secure identification. Our products, software, systems, and services address the markets for physical and logical access control, video analytics and a wide range of Radio Frequency Identification (“RFID”)-enabled applications. Customers in government, enterprise, consumer, education, healthcare, banking, retail, transportation and other sectors rely on our security and identification solutions. Our mission is to make the physical world digital and secure. Our platform to deliver on our mission can be deployed through Internet of Things (“IoT”) devices, mobile, client/server, cloud, web, dedicated hardware and software-defined architectures. Our solutions encompass what we believe to be the most complete set of technologies in the industry. We are a one-stop shop for software delivering physical security management, video surveillance, logical access, analytics and identities; and devices spanning access readers, panels, processing appliances, and identity cards. We provide services to deliver optimized total solutions, serving as a single-point provider for our customers rather than several separate vendors that the customer would otherwise have to coordinate and manage.

The foundation of our business is our deep technical expertise across RFID, smart card technology, and physical security technologies from hardware to software. Our close customer relationships and analytics platforms allow us to develop customer-relevant products and applications. This is all underpinned by our core value of uncompromising quality.

To deliver these solutions, we have organized our operations into two reportable business segments, principally by solution families: Premises and Identity.

In the fourth quarter of 2018, we realigned the way in which we organize our operating segments in making operating decisions and assessing financial performance by combining our Identity and Credentials segments. The combined segment is now referred to as the Identity segment. All comparative segment information for fiscal 2017 has been combined to conform to the fiscal 2018 presentation.

Premises

The Premises segment includes our solutions to address the premises security market for government and enterprise, including access control, video surveillance, analytics, customer experience and other applications.

Our physical security platform is anchored by the Hirsch Velocity management software, our line of controllers including the advanced MX line, our TouchSecure access readers, a wide range of integrations and our Identiv Global Services team that develops optimized solutions for our customers' total business and security environment, incorporating our products and partner products that together best serve our customers' goals. We have further extended our physical access platform with our Identiv Connected Physical Access Manager ("ICPAM") software, derived from Cisco's Physical Access Manager ("CPAM") system.

In February 2018, we acquired 3VR Security, Inc. ("3VR"), a video technology and analytics company. With the acquisition, we added the 3VR video security and analytics platform, which is a natural complement to our physical access offering. Nearly all customers for access control are customers for video security, and vice versa. Additionally, the events and data generated by both platforms combine to create what we believe to be uniquely valuable information for our customers to provide frictionless yet robust security. 3VR's platform is architected as an analytics system, proven across applications in the retail, banking, and other vertical markets, and valuable to our physical security markets in government, education, critical infrastructure, transportation and others. In addition to technology, 3VR brought deep market presence, across over 170 banks, installations with over 50,000 cameras under our software's management, top-tier retailers, and a 100% U.S.-made platform.

In January 2019, we acquired substantially all assets of the Freedom, Liberty, and Enterphone™ MESH products and services of Viscount Systems, Inc. ("Viscount"). The web-based Freedom and Liberty access control and Enterphone MESH IP telephone entry solutions are known for their early adoption of a web, API-based, cloud-ready architecture, creating an IT-centric software-focused and hardware-light platform. Scaling from small- and medium-sized businesses ("SMB") up to enterprise scale for government and commercial markets, Freedom and the entry-level Liberty product line are complementary to our other products. With Freedom, customers can build integrated access control and video management systems under one centrally managed or distributed network, seamlessly integrating physical security devices such as card readers, ID management, Active Directory/LDAP, visitor entry, alarm points, and video applications and analytics. We believe the combination creates one of the most-advanced, IT-centric solutions for physical security, delivering a seamless evolution from traditional physical access models to next-generation, cloud and web-based, and mobile-enabled systems. Our TouchSecure ("TS") readers, TS Cards, VMS platform, mobile logical access and our Identiv Global Services ("IGS") services are applicable to nearly all Freedom and Liberty customers.

We sell either individual components or complete bundled solutions which can include any or all among software, edge controllers, IoT devices, multi-door panels, access readers, access cards, 3VR appliances and other components or services, some of which are detailed below:

Premises Software — Our software platform for premises security ranges from physical access to video analytics and business intelligence. The Hirsch Velocity software platform enables centralized management of access and security operations across an organization, including control of doors, gates, turnstiles, elevators and other building equipment, monitoring users as they move around a facility, preventing unwanted access, maintaining compliance and providing a robust audit trail. Velocity continues to be especially successful with federal and state government customers. The Freedom and Liberty platforms present an IT-centric and highly scalable alternative, specifically for the SMB market. We believe our ICPAM software platform is ideal for the Cisco and wider IT channel, and is tightly integrated with Cisco's VSM video management system as well as their IP telephony infrastructure. We believe our 3VR VisionPoint™ VMS (Video Management System) for real-time search is an ideal video management software for forensic search, case management and business intelligence. Available in both a Standard and Pro version, with an optional enterprise server for large and remote deployments, VisionPoint VMS provides tools to gather intelligence from video, speed up searches and easily develop cases. VisionPoint VMS can be installed on commercial off-the-shelf hardware, on certified partner hardware, and is included on any of 3VR's powerful NVR/HVR appliances.

Controllers — Our modular Hirsch MX controllers are designed to be scalable, allowing customers to start with a small system and expand over time. Hirsch MX controllers can operate autonomously, whether as a single controller or as part of a networked system with Velocity software. Our Freedom Crypto and IoT Bridges provide hardware-light solutions, providing low-cost implementations and building a bridge to fully software-defined, hardware-light (or hardware-free) access platforms.

FICAM — We believe our Velocity, MX and TS Reader solution is the highest performance, lowest per-door cost access control system for the U.S. federal government security mandate known as the Federal Identity, Credential and Access Management ("FICAM") architecture. Our solution brings all of the advantages above into the next generation of physical security for the U.S. government departments and agencies to achieve Federal Information Processing Standard ("FIPS") 201 compliance. Similar to our leading Hirsch Velocity solution for the U.S. government market, the Freedom platform acquired from Viscount is also FICAM-compliant and allows customers to choose an evolutionary, alternative architecture going forward. Within FICAM, the most infrastructure-efficient architecture is a specification known as 13.02. With Freedom and Velocity, we now are the only vendor providing two 13.02-compliant solutions, and we represent half of the four 13.02 approved solutions at this time.

Access Readers — Our TS readers feature multiple layers of security based on a certified hardware security element. These door readers provide unique features to support a wide range of security standards. We support the majority of legacy cards with a robust next-generation platform that can help companies migrate to more secure credentials and technologies, including smart cards, near field communication ("NFC") and government-issued credentials including Common Access Card (“CAC”), Personal Identification Verification (“PIV”), Personal Identification Verification – Interoperable (“PIV-I”) and others. Additionally, our Scramblepad readers employ numerical scrambling on the keypad to protect access codes from being stolen as they are entered, and providing both secure two-factor authentication and convenient alternative-factor access.

Identiv Global Services — Identiv Global Services provides a comprehensive catalog of end-to-end services that facilitates customer success, drives deeper adoption of our product portfolio and encourages long-term customer engagement. IGS supports customers throughout their premises security lifecycle from system design, to integration, deployment and managed services. IGS experts enable customers to address today’s complex security and IT systems interoperability requirements, and helps them achieve a tailor-made solution.

Identity

The Identity segment includes our products and solutions enabling secure access to information serving the logical access and cyber security market and protecting assets and objects in the IoT with RFID.

Information security solutions range from securing enterprise information access and secure transactions across PCs, networks, mobile devices, email, login, secure payments, and printers via delivery of smart card reader products and applications.

Our information security products include smart card readers, which includes a broad range of contact, contactless, portable and mobile smart card readers, tokens and terminals that are utilized around the world to enable logical access (i.e., PC, network or data access) and security and identification applications, such as national ID, payment, e-Health and e-Government. Through our acquisition of Thursby Software Systems (“TSS”) in November of 2018, as well as our internal product development, we provide mobile apps, software and systems to enable secure and convenient logical access across smart cards and derived credentials on Apple iOS and Android mobile devices. Our solutions include:

Mobile Security — TSS’ software solutions provide strong security for enterprise and personal mobility, supporting bring-your-own-device (“BYOD”) and two-factor authentication (“2FA”) on mobile devices. We enable Department of Defense (“DoD”) issued CAC, federally issued PIV cards, derived credentials, and commercially issued PIV-I cards to access, sign, encrypt, and decrypt information and emails from Apple iOS and Android mobile phones or tablet devices. These capabilities have allowed over a hundred thousand DoD and federal employees, including the U.S. Navy Reserve, via the Ready-2-Serve (“R2S”) mobile application, to use personal and government-furnished mobile devices to access needed information on-the-go. Prior to the acquisition, TSS had sold more than one million software licenses to a range of customers and industries, including government, healthcare, finance, energy, education, research, Fortune 500, Global 2000, and original equipment manufacturers (“OEMs”).

We have established a leading position as a trusted provider of convenient high-security solutions to government and enterprise customers. Our products are customizable to specific customer preferences, providing both high security and excellent end-user convenience. TSS’ seamless support of both government-grade smart card deployments and derived credentials reflects our philosophy of supporting customers' adoption of technologies at their own pace, optimized for their own use cases.

Smart Card Readers — With over 20 years of smart card reader, application and token experience, and over 40 million smart card readers and modules deployed, we are known for our expertise in this complex ecosystem. We combine our deep technical expertise with an optimized supply chain, to provide what we believe to be the most optimal, cost-effective and high-quality smart card-based reader products. Whether Identiv branded products, OEM branded, or embedded chips or modules, we are a trusted business solution provider for users and issuers of smart cards and embedded-chip applications.

Our RFID based solutions address a wide range of applications from access control to asset tracking, product authenticity, brand protection, customer engagement, tamper detection, product instrumentation, transportation access and other IoT applications. The RFID devices enable frictionless interaction with the physical world and are grouped into transponders and access cards.

Transponders — Our transponder products span the full range of high frequency (“HF”) and ultra-high frequency (“UHF”) technologies. Our differentiation is analogous to application-specific integrated circuits (“ASICS”) in the semiconductor market. We leverage our flexible platform, our deep technical expertise and our infrastructure and supply chain to deliver solutions optimized for our customers’ business goals. We believe we are more responsive, more flexible, more experienced in business-optimized solutions and have a better track record of sustained delivery of solution-specific, high-quality RFID devices than our competitors. These products are manufactured in our state-of-the-art facility in Singapore and are used in diverse physical applications, including electronic entertainment such as virtual reality (“VR”), games, loyalty cards, mobile payment systems, transit and event ticketing, brand authenticity from pharmaceuticals to consumer goods, hospital resource management, cold-chain management and many others.

Access Cards — Our uTrust cards encompass contactless single-technology, multi-technology, or credentials with a contact chip, including uTrust Proximity Credentials, uTrust Smart ID Secure Credentials, uTrust MIFARE Classic Credentials, and our uTrust TS Cards. This gives our customers easy access to RFID technology for reliable data exchange of physical access control system (PACS) data, up to options for versatile, high-frequency, interoperable, MIFARE-compatible smart cards. Our uTrust TS Cards address emerging security requirements while maintaining compatibility with existing low-security standards such as prox. We believe they offer the first complete solution to allow customers to pay only for the most basic low-frequency proximity access technology while having the ability to evolve to the higher-security high-frequency and highest-security public key infrastructure ("PKI") based credentials. This product line exemplifies our values: we place no burden on our customers, instead providing what we believe to be the most cost-effective solution to their basic needs; and then delivering within this platform the ability for them to move to higher-level needs and capabilities, when they want, when they are ready and when they will realize economic and experience benefits.

Leveraging our expertise in RFID, physical access and physical authentication, we are developing new solutions to extend our platforms across a wide variety of physical use cases. The next major opportunity in our connected world is the IoT, which fundamentally is about physical things. We believe our core strength in physical access and physical instrumentation markets, our well-established platforms and our deep knowledge of the relevant technologies, position us well in this growth market.

Market Strategy

Our strategy is to drive growth by leveraging our core technology expertise delivered as the industry's most complete single-vendor solution. We deliver current-architecture solutions to our mainstream customers, while providing cutting-edge capabilities to our early adopter customer. The result is a long term, trusted partnership with enduring customer relationships and therefore a high lifetime value with our customers.

We build on our experience addressing solutions across multiple markets, including government, transportation, healthcare, education, banking, retail, critical infrastructure and others. Our common advantages across all of our segments, in addition to a shared set of technologies and supply chain, is our more than 30 years of expertise and sustained reputation as the go-to source for what we believe to be the top-quality, most reliable, most cost-effective solution. We drive an intense commitment to our customers, to ensure we are delivering business-supporting solutions to them and honoring a straightforward, respectful, trustworthy and business-based relationship at all times, and for a long time. In each of our segments we have a long track-record within the industry, and this positions us as a trusted advisor, supplier and business partner.

In our Premises segment, we believe that our more than 30 years' experience delivering physical security solutions to U.S. Government customers has provided us with significant expertise and a quality reputation. Our products enable compliance with federal directives and standards implemented over the past decade, including Homeland Security Presidential Directive ("HSPD") 12 and FIPS 201, which defines a common standard known as the PIV credential, used by all U.S. Government employees and contractors. We are a leading supplier of physical access control solutions to both federal and state government customers, including agencies within the Department of Justice, Department of the Treasury, the FBI, U.S. Marshall and many others. As a pioneering adopter of physical security technologies and protocols employed on a large scale, the U.S. Government continues to demand the best of breed, which we have been delivering to an increasing range of agencies and departments.

Since the acquisition of 3VR, our video intelligence solutions provide a single platform for real-time security and customer insights, enabling organizations to protect employees, customers and assets as well as improve store operations and shopping experiences. Our new open, pluggable platform leverages existing customer infrastructure and allows customers to expand their systems' capabilities seamlessly.

We develop and sell integrated physical security solutions to government and enterprise customers worldwide. Our systems integrate access control, video surveillance and analytics, intrusion detection, building management and other network-based systems using a wide range of access cards, including PIV cards, smart cards, RFID cards and biometrics in order to successfully secure facilities and resources.

Physical Security and Analytics

Our analytics platform is core to our overall strategy. Security technologies are generating vast amounts of real-time data, which in practice has often been unmanageable. That has meant a limited capability to show risks in advance, and that manual processing of vast amounts of data has relegated responses to post-facto, forensic uses. Even those uses have been limited because of the scale of the security data and the limitations of the existing platforms to effectively manage and turn it into useful, actionable information.

Our systems solve these problems for specific security applications, retail loss prevention, ATM fraud, loitering and other security risks. The same analytics are being used to turn this security data into business improvement applications. Since the infrastructure investment has been made for security purposes, costs for incremental systems to apply the data can be limited. We are doing this in such applications as queue line management, heat mapping, customer service, personnel training and other areas, which we believe will expand both within vertical applications and horizontally.

Since virtually all access control customers deploy video security, we believe the opportunity for a combined product with robust feature sets represents a substantial portion of the overall market, and makes the system more effective. Access control systems manage the most critical event in a security system: Access granted or access denied. Access control systems are based on rigorous identification of trusted people within an organization or a community. This provides the two critical ingredients for successful video security: A list of already-trusted people, as well as alarms and events to focus video attention and analytics where they are most relevant. Without this leverage, video is a massive data stream that is often unmanageable in real-time and cumbersome to sort through forensically.

As the market understands this need, some of the most progressive video companies have developed their own access control systems. And vice versa, some access control companies have developed video capabilities. We believe this approach of extending from one solution to the other has resulted in solutions with limited capabilities.

By combining access control and video security solutions, which developed and competed successfully as standalone products in each market, we believe we are establishing a comprehensive solution for our customers. First, our 3VR platform has been architected from the beginning as an analytics and forensics platform, not just as a video streaming and viewing system. Second, by deeply combining access authorization databases and events with video insights and events, a much narrower solution set is created, since authorized events and people are pre-known, and the remaining events are much easier to tag and respond to as possible security issues.

In addition to our core products, we have a range of product initiatives, partnerships and integrations designed to leverage leading technology advances across mobile, biometric, machine-learning and other areas, to provide convenient, frictionless, low-cost yet highly secure physical access. We invest independently and in partnership with other leading technology companies in these emerging aspects of physical security and analytics platforms.

Connecting the Complete Benefits of a Digitized Physical World: Secure Logical Access, Mobility and RFID

In addition to providing secure and frictionless premises solutions, in our Identity segment, we provide a broad range of smart card readers, tokens and terminals that enable security applications, including national ID cards, payment and eHealth and eGovernment. We have supplied millions of smart card readers to the Department of Defense and other federal agencies. Our mobile applications and readers allow users to securely authenticate on iOS™ or Android™ devices, using their CAC or PIV credentials. Through the acquisition of Thursby, we envision a growing number of government employees, military service personnel and commercial users with a complete and convenient BYOD secure mobile information access solution.

We also design and manufacture a broad range of NFC and RFID products across HF and UHF technologies, and from secure transactional devices to high-end microprocessor-based devices. We have expanded our solutions by incorporating advanced flexible, rechargeable battery technology to bring active-device capabilities to the Cold Chain market and opening the potential of active sensor-enabled applications. Our products are used in diverse applications, including electronic entertainment, loyalty schemes, mobile payment, transit and event ticketing, and others.

We believe that the know-how across RFID, NFC as well as smart card technology positions us to be the go-to provider for RFID and mobile applications utilizing NFC, HF, or UHF technology. We believe the capabilities we are developing in our engineering and research center in Germany provides a differentiator particularly in the advanced, microprocessor-enabled applications that are key to bringing digital benefits to physical things. Brand authenticity, counterfeiting and consumer engagement applications especially demand compliance with a high level of technical requirements as well as specific expectations around the appearance of the product, user experience and reliability. We believe our ability to provide high-quality pilot projects in small batches with rapid turnaround provides a substantial competitive advantage.

Positioned for Growth in Growing Markets

Leveraging our RFID, NFC and mobility expertise, we are bringing the benefits of the IoT to a wide range of physical, connected items. Market analysts estimate that by 2020 the number of physical things connected to the Internet will grow into the tens of billions. These will include household appliances, vehicles, medicines, home security systems, books, luggage, jewelry, toys and a host of other objects. We believe the growth of the IoT creates significant opportunities to provide physical access, authentication and identity into nearly every industry, worldwide. We are leveraging our physical access, video and analytics solutions as well as our RFID-based physical device-management expertise to provide leading solutions as our customers, and our customers' customers, embrace the IoT.

Customers

We sell to customers worldwide in a range of markets, including government, enterprise, consumer, financial services, healthcare and transportation. Sales to our ten largest customers accounted for 28% of total net revenue in 2018 and 33% of total net revenue in 2017. A significant amount of revenue is sourced from sales of products and systems to our OEM partners and an indirect sales network who sell to various entities within the U.S. federal government sector. U.S. federal government sales are primarily delivered through our OEM partners and an indirect sales network or are priced using published General Service Administration schedules.

Sales and Marketing

We primarily conduct our own sales and marketing activities in each of the markets in which we compete, utilizing our own sales and marketing organization to solicit prospective channel partners and customers, provide technical advice and support with respect to products, systems and services, and manage relationships with customers, distributors and/or OEMs. We sell our smart card readers and RFID/NFC products directly to end users and utilize indirect sales channels that may include OEMs, dealers, systems integrators, value added resellers, resellers or Internet sales. We sell our physical access control solutions and access card services primarily through systems integrators, dealers and value added partners, although we also sell directly to end users. In support of our sales efforts, we participate in trade shows and conduct sales training courses, targeted marketing programs, and ongoing customer, channel partner and third-party communications programs.

Competition

The market for security solutions is competitive and characterized by rapidly changing technology and evolving standards in the industry as a whole and within specific markets. We believe that competition for security solutions is likely to intensify as a result of an ongoing increase in demand for solutions that help converge physical and logical access control systems and RFID and NFC products to enable expansion of the connected world. The increase in competition will come from two additional factors. First, the vast growth of data being generated by high bandwidth security devices, especially video, as well as the increasing number of electronic-access doors. As data volumes become increasingly unmanageable with classic systems relying on monitoring by guards, real-time analytics and purpose-built forensic platforms will deliver these critical security results. Second, technically advanced hardware is moving into commercial markets, driven by volume cost curves as disruptive consumer and small and medium business focused startups launch commercial-scale capabilities into these high volume markets.

We believe we mitigate competitive risks with several strategies:

- Providing more complete solutions than many of our physical security competitors;
- Focusing on microprocessor-enabled applications of RFID technology further enhanced by our close partnerships with the major RFID microprocessor vendors;
- Our network of partnerships and integrations;
- Our broad IP base, including approximately 50 patents granted or pending;
- A trusted relationship with our customers, including a product range that permits us to build business around their preferred adoption rate, whether slow or fast. We believe many of our competitors do not proactively facilitate customers’ progression to newer technologies, while other competitors seek to drive customers to abandon installed systems and leap to new platforms. We support our customers, with our own solutions, throughout this spectrum.

Competition for our smart card readers primarily comes from Gemalto NV and OMNIKEY/HID Global (a division of ASSA ABLOY AB), as well as from a number of smaller suppliers in Asia. Competition for our RFID products comes from a small number of competitors including SMARTRAC NV and a number of inlay conversion companies in Asia.

Access control and video solutions are available from multiple suppliers in a very fragmented market, where the top 7 providers represent under a third of the market. We primarily compete with Lenel Systems International, Software House, Gallagher Group Ltd., Honeywell International Inc., Exacq, Genetec and Milestone Systems.

We believe that the principal competitive factors affecting the market for our products, systems and solutions include:

- technical features;
- the ability of channel partners to effectively integrate multiple products and systems in order to address customer requirements including full system capabilities, cost of ownership and ease of use;

- quality and reliability;
- the ability of suppliers to quickly develop new products and integrated solutions to satisfy new customer requirements;
- ease of use;
- strength of sales and distribution channels; and
- price and total cost of system ownership.

We believe that we compete favorably within our market environment, our ability to continue to successfully compete is subject to a variety of factors, as further discussed below in “Item 1A. Risk Factors” in this Annual Report on Form 10-K.

Backlog

We typically do not maintain a significant level of backlog and revenue in any quarter significantly depends on contracts entered into or orders received and shipped in that quarter. The majority of our sales are made primarily pursuant to purchase orders for current delivery or agreements covering purchases over a period of time. While our customer contracts generally do not require fixed long-term purchase commitments, from time to time we do enter into customer contracts where delivery of products, systems or services is ongoing or is scheduled over multiple quarters or years. In view of our order and shipment patterns, and because of the possibility of customer changes in delivery schedules or cancellation of orders, we do not believe that the ongoing arrangements we enter into provide meaningful backlog figures or are necessarily indicative of actual sales for any succeeding period.

Research and Development

We have made and continue to make significant investments in research and development. Research and development expenses were $7.2 million in 2018 and $6.1 million in 2017. We capitalized payroll related expenses related to development of our card issuance services of approximately $29,000 and $209,000 in 2018 and 2017, respectively. In addition, we capitalized $401,000 of software development costs in 2017 for costs incurred subsequent to a product achieving technological feasibility and prior to the product’s general release to customers. No software development costs were capitalized in 2018.

Proprietary Technology and Intellectual Property

One of our core advantages is our proprietary technology. We currently rely on a combination of patent, copyright and trademark laws, trade secrets, confidentiality agreements and contractual provisions to protect our proprietary rights. Although we may seek to protect our proprietary technology through patents, it is possible that no new patents will be issued, that our proprietary products or technologies are not patentable, and that any issued patent will fail to provide us with any competitive advantages. The core of our proprietary technology advantage is the combination of our advanced technical expertise combined with our intimate customer knowledge, enabling us to develop bring to market and sometimes patent products uniquely positioned to deliver benefits to customers. This is an intellectual property advantage characterized both by trade secrets and unique relationships as well as formal patents.

We have a portfolio of approximately 30 patent families (designs, patents, utility models, patents pending and exclusive licenses) in individual or regional filings, covering products, electrical and mechanical designs, software systems and methods and manufacturing process ideas for our various businesses. Our issued patents expire between 2023 and 2038. We also submitted and have pending U.S. and foreign patent filings in RFID tags, converged access readers and systems, smart card manufacturing methods, authentication and NFC offerings. Additionally, we leverage our own ASIC designs for smart card interface in some of our reader devices.

Manufacturing and Sources of Supply

We utilize a combination of our own manufacturing facilities and the services of contract manufacturers in various countries around the world to manufacture our products and components. Our physical access keypads, controllers and software are manufactured primarily in California, using locally sourced components. Our video appliances are manufactured primarily in Wisconsin and Arizona. The majority of our smart card reader products and components are manufactured in Singapore, Cambodia and South Korea. Our RFID and NFC inlays and inlay-based products such as labels and tags are predominantly manufactured and assembled by our own internal manufacturing teams in Singapore primarily using locally sourced components and are certified to the ISO 9001:2015 and ISO 14001:2015 quality manufacturing standard.

We have implemented formal quality control programs to satisfy customer requirements for high quality and reliable products. To ensure that products manufactured by third parties are consistent with internal standards, our quality control programs include management of all key aspects of the production process, including establishing product specifications, selecting the components to be used to produce products, selecting the suppliers of these components and negotiating the prices for certain of these components. In addition, we may work with suppliers to improve process control and product design.

For the majority of our product manufacturing, we utilize a global sourcing strategy that serves all business solution areas within the company, which allows us to achieve economies of scale and uniform quality standards for our products and support higher gross margins.

On an ongoing basis, we analyze the need to add alternative sources for both our products and components. For example, we currently utilize the foundry services of external suppliers to produce our ASICs for smart cards readers and inlays, and we use chips and antenna components from third-party suppliers in our RFID and NFC inlays and contactless smart card readers. Wherever possible, we have qualified additional sources of supply for components.

Employees

As of December 31, 2018, we had 273 employees, of which 71 were in research and development, 86 were in sales and marketing, 34 were in general and administrative and 82 were in manufacturing and related functions. We are not subject to any collective bargaining agreements and, to our knowledge, none of our employees are currently represented by a labor union. To date, we have experienced no work stoppages and believe that our employee relations are generally good.

Corporate Information

Our corporate headquarters are located in Fremont, California. We maintain research and development facilities in California and Texas; Chennai, India; Munich, Germany; and local operations and sales facilities in Germany, the United Kingdom, Hong Kong, Singapore, India and the United States. We were founded in 1990 in Munich, Germany and incorporated in 1996 under the laws of the State of Delaware.

Legal Proceedings

On January 1, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the United States District Court for the Northern District of California, entitled Oswald v. Humphreys, et al., Case No. 16-cv-00241-CRB, alleging breach of fiduciary duty and waste claims. On January 25, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the Superior Court of the State of California, County of Alameda, entitled Chopra v. Hart, et al., Case No. RG16801379, alleging breach of fiduciary duty claims. On February 9, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the Superior Court of the State of California, County of Alameda, entitled Wollnik v. Wenzel, et al., Case No. HG16803342, alleging breach of fiduciary duty, corporate waste, gross mismanagement, and unjust enrichment claims. These lawsuits generally allege that we made false and/or misleading statements and/or failed to disclose information in certain public filings and disclosures between 2013 and 2015. Each of the lawsuits seeks one or more of the following remedies: unspecified compensatory damages, unspecified exemplary or punitive damages, restitution, declaratory relief, equitable and injunctive relief, and reasonable costs and attorneys' fees. On May 2, 2016, the court in the Chopra lawsuit entered an order staying proceedings in the Chopra lawsuit in favor of the Oswald lawsuit, based on a stipulation to that effect filed by the parties in the Chopra lawsuit on April 28, 2016. Similarly, on June 28, 2016, the court in the Wollnik lawsuit entered a stipulated order staying proceedings in the Wollnik lawsuit in favor of the Oswald lawsuit. On June 17, 2016, the plaintiff in the Oswald lawsuit filed an amended complaint. On August 1, 2016, we filed a motion to dismiss for failure by plaintiff to make a pre-lawsuit demand on our board of directors, which motion was heard on October 14, 2016. The judge in the Oswald lawsuit issued an order on November 7, 2016 granting our motion to dismiss, without prejudice. In addition, the court stayed the case so that plaintiff could exercise whatever rights he had under Section 220 of the Delaware General Corporation Law. On or around November 30, 2016, the plaintiff purported to serve a books and records demand under Section 220 of the Delaware General Corporation Law. We responded to that demand. On March 21, 2017, we and the plaintiff in the Oswald lawsuit filed a stipulation and proposed order lifting the stay of the case, granting the plaintiff leave to amend, and setting a briefing schedule. The plaintiff in the Oswald lawsuit filed his second amended complaint on April 10, 2017. We then filed a motion to dismiss that second amended complaint on May 12, 2017. After further briefing and argument, on October 22, 2017, the court issued its written order denying the motion to dismiss on the basis of demand futility. On January 3, 2018, the court entered a stipulated order setting a response and briefing schedule for defendants to the second amended complaint.

Defendants filed motions to dismiss the second amended complaint in the Oswald action under Rule 12(b)(6) on January 16, 2018. After further briefing and argument, on April 13, 2018, the court entered an order granting defendants' motions to dismiss. On April 19, 2018, Plaintiff Oswald filed a motion for leave to file a third amended complaint. On that same date, Plaintiff Chopra, a plaintiff in a related and stayed derivative action in state court, filed a motion to intervene in the Oswald action. After further briefing and argument, on July 16, 2018, the court entered an order granting the Chopra motion to intervene and denying the Oswald motion for leave to file a third amended complaint. After the filing of an unopposed administrative motion for entry of judgment by defendants, on October 1, 2018, the court entered an order granting administrative motion for entry of final judgment and entered final judgment in favor of all named defendants and against plaintiffs Oswald and Chopra. On October 23, 2018, plaintiff Oswald filed a notice of appeal with the Ninth Circuit. Oswald's opening appellate brief was filed on March 4, 2019. In the interim, the state court Chopra and Wollnik actions have remained stayed with periodic status conferences. The next status conferences have been scheduled in the Chopra and Wollnik cases on November 5, 2019 before Judge Seligman. We intend to vigorously defend against these lawsuits. We cannot currently predict the impact or resolution of each of these lawsuits or reasonably estimate a range of possible loss, if any, which could be material, and the resolution of these lawsuits may harm our business and have a material adverse impact on our financial condition.

From time to time, we could become subject to claims arising in the ordinary course of business or could be named a defendant in additional lawsuits. The outcome of such claims or other proceedings cannot be predicted with certainty and may have a material effect on our financial condition, results of operations or cash flows.

Availability of SEC Filings

We make available through our website our Annual Reports on Form 10-K,Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and amendments to those reports free of charge as soon as reasonably practicable after we electronically file such reports with the Securities and Exchange Commission ("SEC"). Our Internet address is www.identiv.com. The content on our website is not, nor should it be deemed to be, incorporated by reference into this Annual Report. Our filings with the SEC are also available to the public through the SEC's website at www.sec.gov.

Item 1A. Risk Factors

The following discussion of risk factors contains forward-looking statements. These risk factors may be important to understanding any statement in this Form 10-K or elsewhere. The following information should be read in conjunction with Part II, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and related notes in Part II, Item 8, "Financial Statements and Supplementary Data" of this Form 10-K.

Because of the following factors, as well as other factors affecting our financial condition and operating results, past financial performance should not be considered to be an indicator of future performance, and investors should not use historical trends to anticipate results or trends in future periods.

Our revenues and operating results are subject to significant fluctuations and such fluctuations may lead to a reduced market price for our stock.

Our revenues and operating results have varied in the past and will likely continue to fluctuate in the future. We believe that period-to-period comparisons of our operating results are not necessarily meaningful, but securities analysts and investors often rely upon these comparisons as indicators of future performance. If our operating results in any future period fall below the expectations of securities analysts and investors, or the guidance that we provide, the market price of our stock would likely decline.

Factors that have caused our results to fluctuate in the past and which are likely to affect us in the future include the following:

- business and economic conditions overall and in our markets;
- the timing and size of customer orders that may be tied to annual or other budgetary cycles, seasonal demand, product plans or program roll-out schedules;
- the effects of the U.S. Government shut downs, spending cuts and other changes in budget allocation or availability that create uncertainty for customers in certain parts of our business;
- the absence of significant backlog in our business;
- cancellations or delays of customer orders or the loss of a significant customer;
- the length of sales cycles associated with our product or service offerings;
- variations in the mix of products and services we sell;

- reductions in the average selling prices that we are able to charge due to competition or other factors;
- our ability to obtain an adequate supply of quality components and to deliver our products on a timely basis;
- our inventory levels and the inventory levels of our customers and indirect sales channels;
- the extent to which we invest in development, sales and marketing, and other expense categories;
- acquisitions, dispositions or organizational restructuring;
- fluctuations in the value of foreign currencies against the U.S. dollar;
- the cost or impact of litigation; and
- the write-off of investments.

Estimating the amount and mix of future revenues is difficult, and our failure to do so accurately could affect our ability to be profitable or reduce the market price for our stock.

Accurately estimating future revenues is difficult because the purchasing patterns of our customers can vary depending upon a number of factors. We sell our smart card readers primarily through a channel of distributors who place orders on an ongoing basis depending on their customers' requirements. As a result, the size and timing of these orders can vary from quarter to quarter. Market demand for RFID and NFC technology is resulting in larger program deployments of these products and components, as well as increasing competition for these solutions. Across our business, the timing of closing larger orders increases the risk of quarter-to-quarter fluctuation in revenues. If orders forecasted for a specific group of customers for a particular quarter are not realized or revenues are not otherwise recognized in that quarter, our operating results for that quarter could be materially adversely affected. In addition, from time to time, we may experience an unexpected increase or decrease in demand for our products resulting from fluctuations in our customers' budgets, purchasing patterns or deployment schedules. These occurrences are not always predictable and can have a significant impact on our results in the period in which they occur.

Failure to accurately forecast customer demand may result in excess or obsolete inventory, which if written down might adversely impact our cost of revenues and financial condition.

In addition, our expense levels are based, in significant part, upon our expectations as to future revenues and are largely fixed in the short term. We may be unable to adjust spending in a timely manner to compensate for any unexpected shortfall in revenues. Any significant shortfall in revenues in relation to our expectations could have an immediate and significant effect on our operating results for that quarter and may lead to a reduced market price for our stock.

Our loan covenants may affect our liquidity or limit our ability to incur debt, make investments, sell assets, merge or complete other significant transactions.

On February 8, 2017, we entered into a Loan and Security Agreement with East West Bank ("EWB"). The Loan and Security Agreement, as amended, with EWB provides for a $20.0 million revolving loan facility (the "Revolving Loan Facility"). Our obligations under the agreement are secured by substantially all of our assets. The Revolving Loan Facility contains customary representations and warranties and customary affirmative and negative covenants, including, limits or restrictions on our ability to incur liens, incur indebtedness, make certain restricted payments, merge or consolidate and dispose of assets. The Revolving Loan Facility also contains various financial covenants. In addition, the Revolving Loan Facility contains customary events of default that entitle EWB to cause any or all of our indebtedness under the Revolving Loan Facility to become immediately due and payable. The events of default (some of which are subject to applicable grace or cure periods), include, among other things, non-payment defaults, covenant defaults, cross-defaults to other material indebtedness, bankruptcy and insolvency defaults and material judgment defaults. Upon the occurrence and during the continuance of an event of default, EWB may terminate their lending commitments and/or declare all or any part of the unpaid principal of all loans, all interest accrued and unpaid thereon and all other amounts payable under the Loan and Security Agreement to be immediately due and payable. If repayment of the indebtedness is accelerated, we could face a substantial liquidity problem and may be forced to dispose of material assets or operations, seek to obtain equity capital, or restructure or refinance our indebtedness.

Such alternative measures may not be available or successful. Also, our loan covenants may limit our ability to dispose of material assets or operations or to restructure or refinance our indebtedness. Even if we are able to restructure or refinance our indebtedness, the economic terms may not be favorable to us. Any of the foregoing could have a material adverse effect on our financial condition and results of operations. Our ability to make periodic interest payments and to repay our debt when due depends on our financial and operating performance, which in turn, is subject to prevailing economic and competitive conditions and other factors. If our cash flow and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and may be forced to dispose of material assets or operations, seek to obtain equity capital, or restructure or refinance our indebtedness. Such alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations.

If we are not able to secure additional capital when needed, our business could be adversely affected.

We may seek or need to raise additional funds for general corporate and commercial purposes or for acquisitions. Our ability to obtain financing depends on our historical and expected future operating and financial performance, and is also subject to prevailing economic conditions and to financial, business and other factors beyond our control. If we are unable to secure additional financing when desired, our ability to fund our business operations, make capital expenditures, pursue additional expansion or acquisition opportunities, or have resources available to capitalize on other opportunities could be limited, and this could adversely impact our financial results. There can be no assurance that additional capital will be available to us on favorable terms or at all. The sale of additional debt or equity securities may cause dilution to existing stockholders. Any debt or equity securities issued may also provide for rights, preferences or privileges senior to those of our common stock and could impose significant restrictions on our operations. In addition, any capital we raise may be restricted with respect to use.

Acquisitions and strategic investments require substantial resources, expose us to significant risks and may adversely impact our business.

As part of our growth strategy, we seek to acquire or make investments in companies, products or technologies that we believe complement or augment our existing business, product offerings or technology portfolio. For example, on February 14, 2018, we acquired 3VR Security, Inc., or 3VR, a video technology and analytics company for $6.2 million in cash, subordinated unsecured promissory notes and common stock . In addition, in the event that 3VR achieves specified levels of product shipments in 2018, we will be obligated to issue further earn-out consideration of $3.5 million payable in shares of our common stock (subject to certain conditions) with a potential maximum earn-out value of $7.0 million in the event that such shipments exceed $48.2 million. Further, in calendar year 2019, we may also be obligated to pay, in cash, and subject to certain conditions, contingent consideration equal to the lesser of (A) 35% of the gross margin of certain products sold and services rendered by 3VR in 2018 pursuant to a supply arrangement and (B) $25.0 million, each subject to adjustments.

In addition, on November 2, 2018, we acquired Thursby Software Systems, Inc., or Thursby, for $3.1 million in cash, net of cash acquired, and common stock . Additionally, in the event that revenue from Thursby products is greater than $8.0 million, $11.0 million, or $15.0 million in product shipments in 2019, we will be obligated to issue earn-out consideration of up to a maximum of $7.5 million payable in shares of our common stock, subject to certain conditions. In the event that such revenue is less than $15.0 million in 2019, but 2020 revenue from Thursby products exceeds $15.0 million, we will be obligated to issue an additional $2.5 million in earn-out consideration payable in shares of our common stock. The maximum total earn-out consideration payable for all periods is $7.5 million in the aggregate, payable in shares of our common stock.

On January 2, 2019, we completed the purchase of substantially all the assets of the Freedom, Liberty, and Enterphone™ MESH products and services of Viscount Systems, Inc., or VSI, and the assumption of certain liabilities for $3.2 million in cash and common stock. Additionally, in the event that revenue from the assets purchased under the agreement in 2019 is greater than certain specified revenue targets, we will be obligated to issue earn-out consideration of up to a maximum of $3.5 million payable in shares of our common stock. In the event that such revenue targets are not met in 2019, but 2020 revenue from the assets purchased exceeds certain higher targets for 2020, then we will be obligated to issue up to a maximum of $2.25 million in earn-out consideration payable in shares of our common stock.

Acquiring and integrating acquired businesses and assets into our business exposes us to certain risks.

Executing acquisition or investment transactions and assimilating personnel and operations from an acquired business may require significant attention and resources, which may divert the attention of our management and employees from day-to-day operations and disrupt our business. This may adversely impact our results of operations. In addition, there can be no assurances that the expected benefits of any acquisitions will be achieved.

The costs associated with an acquisition may be significant, whether or not the acquisition transaction is successfully concluded. As a result, acquisition activities may reduce the amount of capital available to fund our business. To purchase another company or assets, we may be required to issue additional equity securities, which would result in additional dilution to our stockholders. Acquisitions may result in the assumption of additional liabilities or debt, including unanticipated liabilities, or charges to earnings for such items as amortization of purchased intangibles or in-process research and development expenses. Such liabilities, indebtedness or charges could have a material and adverse impact on our financial condition and results of operations. Acquisitions and strategic investments may also lead to substantial increases in non-current assets, including goodwill. Write-downs of these assets due to unforeseen business developments may materially and adversely impact our financial condition and results of operations.

Additionally, we have in the past acquired companies that we have subsequently divested, in some cases for less than we paid to acquire the companies. Such divestitures involve risks, such as difficulty separating out portions of or entire businesses, distracting our management and employees, potential loss of revenue and potentially disrupting customer relationships. We have and may again in the future incur significant costs associated with exit or disposal activities, related impairment charges, or both, if we exit or divest a business or product line. If we are not able to successfully integrate or divest products, technologies, or personnel from businesses that we acquire or divest, or if we are not able to realize the expected benefits of our acquisitions, divestitures, or strategic investments, our business and financial results could be adversely affected.

Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition.

We record goodwill and intangible assets at fair value upon the acquisition of a business. Goodwill represents the excess of amounts paid for acquiring businesses over the fair value of the net assets acquired. Goodwill and indefinite-lived intangible assets are evaluated for impairment annually, or more frequently if conditions warrant, by comparing the carrying value of a reporting unit to its estimated fair value. Intangible assets with definite lives are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. Declines in operating results, divestitures, sustained market declines and other factors that impact the fair value of a reporting unit could result in an impairment of goodwill or intangible assets and, in turn, a charge to net income. Any such charges could have a material adverse effect on our results of operations or financial condition.

Our business and reputation may adversely affected by information technology system failures or network disruptions.

We may be subject to information technology system failures and network disruptions. These may be caused by natural disasters, accidents, power disruptions, telecommunications failures, acts of terrorism or war, computer viruses, physical or electronic break-ins, or other events or disruptions. System redundancy may be ineffective or inadequate, and our disaster recovery planning may not be sufficient for all eventualities. Such failures or disruptions could compromise company or customer data and result in delayed or cancelled orders and expose us to liability. System failures and disruptions could also impede the manufacturing and shipping of products, delivery of online services, processing of transactions and reporting of financial results. In addition, any such failures or disruptions could harm our reputation.

Our success depends largely on the continued service and availability of key personnel.

Our future success depends on our ability to continue to attract, retain, and motivate our senior management as well as qualified technical personnel, particularly software engineers. Competition for these employees is intense and many of our competitors may have greater name recognition and significantly greater financial resources to better compete for these employees. If we are unable to retain our existing personnel, or attract and train additional qualified personnel, our growth may be limited. All of our key employees are employed on an “at will” basis, meaning either we or the employee may terminate their employment with us at any time. The loss of key employees could slow our product development processes and sales efforts or harm our reputation. Also, our low stock price may result in difficulty attracting and retaining personnel as equity incentives generally comprise a significant portion of our employee compensation. Further, restructurings and reductions in force that we have recently experienced may have a negative effect on employee morale and the ability to attract and retain qualified personnel.

Our business could be adversely affected by reductions or delays in the purchase of our products or services for government security programs in the United States and globally.

We derive a substantial portion of our revenues from indirect sales to U.S. federal, state and local governments and government agencies, as well as from subcontracts under federal government prime contracts. Large government programs are an important market for our business, as high-security systems employing physical access, smart card, RFID or other access control technologies are increasingly used to enable applications ranging from authorizing building and network access for federal employees to paying taxes online, to citizen identification, to receiving health care. We believe that the success and growth of our business will continue to be influenced by our successful procurement of government business either directly or through our indirect sales channels. Accordingly, changes in government purchasing policies or government budgetary constraints, including government shutdowns, could directly affect our financial performance. Sales to government agencies and customers primarily serving the U.S. Government, including further sales pursuant to existing contracts, may be adversely affected by factors outside our control, such as the sequester, federal government shutdowns or other Congressional actions to reduce federal spending, and by adverse economic, political or market conditions. A reduction in current or future anticipated sales to the U.S. Government sector could harm our results of operations.

Additionally, we anticipate that an increasingly significant portion of our future revenues will come from government programs outside the U.S., such as electronic national identity, eGovernment and eHealth programs. We currently supply smart card readers, RFID products and credential provisioning and management solutions for various government programs in Europe, Asia and Australia and are actively targeting additional programs in these and other geographic areas. However, the allocation and availability of funding for such programs are often impacted by economic or political factors over which we have no control, and which may cause delays in program implementation, which could negatively impact our sales and results of operations.

Our revenues may decline if we cannot compete successfully in an intensely competitive market.

We target our products at the rapidly evolving market for security technologies. Many of our current and potential competitors have significantly greater financial, technical, marketing, purchasing and other resources than we do. As a result, our competitors may be able to respond more quickly to new or emerging technologies or standards and to changes in customer requirements. Our competitors may also be able to devote greater resources to the development, promotion and sale of products or solutions and may be able to deliver competitive products or solutions at a lower end user price.

We also experience indirect competition from certain of our customers who currently offer alternative products or solutions or are expected to introduce competitive offerings in the future. For example, in our Premises business, many of our dealer channel partners act as system integrators, providing installation and service, and therefore carry competitive lines of products and systems. This is a common practice within the industry as the integrators need access to multiple lines in order to support all potential service and user requirements. Depending on the technical competence of their sales forces, the comfort level of their technical staff with our systems and price pressures from customers, these integrators may choose to offer a competitor’s product. There is also business pressure to provide some level of sales to all vendors to maintain access to a range of products and systems.

We believe that the principal competitive factors affecting the markets for our products and solutions include:

- the extent to which products and systems must support evolving industry standards and provide interoperability;
- the extent to which products are differentiated based on technical features, quality and reliability, ease of use, strength of distribution channels and price;
- the ability to quickly develop new products and solutions to satisfy new market and customer requirements; and
- the total cost of ownership including installation, maintenance and expansion capability of systems.

Increased competition and increased market volatility in our industry could result in lower prices, reduced margins or the failure of our product and service offerings to achieve or maintain market acceptance, any of which could have a serious adverse impact on our business, financial condition and results of operations.

Our percentage of revenue and customer concentration is significant in certain of our businesses.

Sales to our ten largest customers accounted for 28% of total net revenue in 2018 and 33% of total net revenue in 2017. No customer accounted for 10% or more of our total net revenue in 2018 or 2017. A significant amount of revenue is sourced from sales of products and systems to our original equipment manufacturer partners and an indirect sales network who sell to various entities within the U.S. federal government sector. We cannot guarantee that future reductions in U.S. Government budgets will not impact our sales to these government entities or that the terms of existing contracts will not be subject to renegotiation. Our loss of one or more significant customers could have a significant adverse impact on our business, financial condition and results of operations.

Our business will not be successful if we do not keep up with the rapid changes in our industry.

The market for security products and related services is characterized by rapid technological developments, frequent new product introductions and evolving industry standards. To be competitive, we have to continually improve the performance, features and reliability of our products and services, particularly in response to competitive offerings, and quickly demonstrate the value of new products and services or enhancements to existing products and services. Our failure to develop and introduce new products and services successfully on a timely basis and to achieve market acceptance for such products and services could have a significant adverse impact on our business, financial condition and results of operations.

Security breaches, whether or not related to our products, could result in the disclosure of sensitive government information or private personal information that could result in the loss of clients and negative publicity.

Many of the systems we sell manage private personal information or protect sensitive information related to our customers in the government or commercial markets. A well-publicized actual or perceived breach of network or computer security in one of these systems, regardless of whether such a breach is attributable to our products, could adversely affect the market's perception of us and our products, and could result in the loss of customers, have an adverse effect on our reputation and reduce demand for our products.

As part of our technical support services, we agree, from time to time, to possess all or a portion of the security system database of our customers. This service is subject to a number of risks. For example, despite our security measures our systems may be vulnerable to cyber-attacks by hackers, physical break-ins and service disruptions that could lead to interruptions, delays or loss of data. If any such compromise of our security were to occur, it could be very expensive to correct, could damage our reputation and result in the loss of customers, and could discourage potential customers from using our services. We could also be liable for damages and penalties. Although we have not experienced attempted cyber or physical attacks, we may experience such attempts in the future. Our systems also may be affected by outages, delays and other difficulties. Our insurance coverage may be insufficient to cover losses and liabilities that may result from such events.

Sales of our products could decline and we could be subject to legal claims for damages if our products are found to have defects.

Despite our testing efforts, our products may contain defects that are not detected until after the products have been shipped. The discovery of defects or potential defects may result in damage to our reputation, delays in market acceptance of our products and additional expenditures to resolve issues related to the products' implementation. If we are unable to provide a solution to actual or potential product defects that is acceptable to our customers, we may be required to incur substantial costs for product recall, repair and replacement, or costs related to legal or warranty claims made against us.

The global nature of our business exposes us to operational and financial risks and our results of operations could be adversely affected if we are unable to manage them effectively.

We market and sell our products and solutions to customers in many countries around the world. To support our global sales, customer base and product development activities, we maintain offices and/or business operations in several locations around the world, including Germany, Hong Kong, India, Japan, Singapore and the U.S. We also maintain manufacturing facilities in Singapore and California and engage contract manufacturers in multiple countries outside the U.S. Managing our global development, sales, administrative and manufacturing operations places a significant burden on our management resources and our financial processes and exposes us to various risks, including:

- longer accounts receivable collection cycles;
- changes in foreign currency exchange rates;
- compliance with and changes in foreign laws and regulatory requirements;
- changes in political or economic conditions and stability, particularly in emerging markets;
- difficulties managing widespread sales and manufacturing operations;
- export controls;
- less effective protection of our intellectual property; and
- potentially adverse tax consequences.

Any failure to effectively mitigate these risks and effectively manage our global operations could have a material adverse effect on our business, financial condition or operating results.

A significant portion of our revenue is through an indirect sales channel, and the loss of dealers, systems integrators, resellers, or other channel partners could result in decreased revenue.

We currently use an indirect sales channel that includes dealers, systems integrators, value added resellers and resellers to sell a significant portion of our products and solutions, primarily into markets or to customers where the channel partner may have closer customer relationships or greater access than we do. Some of these channel partners also sell our competitors' products, and if they favor our competitors' products for any reason, they may fail to market our products as effectively or to devote necessary resources that result in sales of our products, which would cause our sales to suffer. Indirect selling arrangements are intended to benefit both us and the channel partner, and may be long- or short-term relationships, depending on market conditions, competition in the marketplace and other factors. If we are unable to maintain effective indirect sales channels, there could be a reduction in the amount of product we are able to sell, and our revenues could decrease.

We depend upon third-party manufacturers and a limited number of suppliers, and if we experience disruptions in our supply chain or manufacturing, our business may suffer.

We rely upon a limited number of suppliers for some key components of our products which exposes us to various risks, including whether or not our suppliers will provide adequate quantities with sufficient quality on a timely basis and the risk that supplier pricing may be higher than anticipated. In addition, some of the basic components used in some of our products, such as semiconductors, may at any time be in great demand. This could result in components not being available to us in a timely manner or at all, particularly if larger companies have ordered significant volumes of those components, or in higher prices being charged for components we require. Disruption or termination of the supply of components or software used in our products could delay shipments of our products, which could have a material adverse effect on our business and operating results and could also damage relationships with current and prospective customers.

Many of our products are manufactured outside the U.S. by contract manufacturers. Our reliance on these manufactures poses a number of risks, including lack of control over the manufacturing process and ultimately over the quality and timing of delivery of our products. If any of our contract manufacturers cannot meet our production requirements, we may be required to rely on other contract manufacturing sources or identify and qualify new contract manufacturers, and we may not be able to do this in a timely manner or on reasonable terms. Additionally, we may be subject to currency fluctuations, potentially adverse tax consequences, unexpected changes in regulatory requirements, tariffs and other trade barriers, export controls, or political and economic instability. Any significant delay in our ability to obtain adequate supplies of our products from our current or alternative manufacturers could materially and adversely affect our business and operating results. In addition, if we are not successful at managing the contract manufacturing process, the quality of our products could be jeopardized or inventory levels could be inadequate or excessive, which could result in damage to our reputation with our customers and in the marketplace, as well as possible shortages of products or write-offs of excess inventory.

Our U.S. Government business depends upon the continuance of regulations that require federal agencies to implement security systems such as ours, and upon our ability to receive certain government approvals or certifications and demonstrate compliance in government audits or investigations. A failure to receive these government approvals or certifications or a negative audit result could result in a material adverse impact on our business, financial condition and results of operations.

While we are not able to quantify the amount of sales made to end customers in the U.S. Government market due to the indirect nature of our selling process, we believe that orders from U.S. Government agencies represent a significant portion of our revenues. The U.S. Government, suppliers to the U.S. Government and certain industries in the public sector currently fall, or may in the future fall, under particular regulations that require federal agencies to implement security systems that utilize physical and logical access control products and solutions such as ours. These regulations include, but are not limited to HSPD 12 and FIPS 201 produced by the National Institute of Standards and Technology (“NIST”). Discontinuance of, changes in, or lack of adoption of laws or regulations pertaining to security related to sales to end customers in the U.S. Government market could adversely affect our sales.

Our U.S. Government business is also dependent upon the receipt of certain governmental approvals or certifications and failure to receive such approvals or certifications could have a material adverse effect on our sales in those market segments for which such approvals or certifications are customary or required. Government agencies in the U.S. and other countries may audit our business as part of their routine audits and investigations of government procurement programs. Based on the outcome of any such audit, if any of our costs are found to be improperly allocated to a specific order, those costs may not be reimbursed and any costs already reimbursed for such order may have to be refunded. If a government agency audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions. A negative audit could materially affect our competitive position and result in a material adverse impact on our business, financial condition and results of operations.

Fluctuations in foreign exchange rates between the U.S. dollar and other major currencies in which we do business may adversely affect our business, financial condition and results of operations.

A significant portion of our business is conducted in foreign currencies, principally the euro and Indian Rupee. Fluctuations in the value of foreign currencies relative to the U.S. dollar will result in currency exchange gains and losses in our reported results. If a significant portion of operating expenses are incurred in a foreign currency such as the euro or Indian Rupee, and revenues are generated in U.S. dollars, exchange rate fluctuations might have a positive or negative net financial impact on these transactions, depending on whether the value of the U.S. dollar decreases or increases compared to that currency. In addition, the valuation of current assets and liabilities that are denominated in a currency other than the functional currency can result in currency exchange gains and losses. For example, when one of our subsidiaries uses the euro as the functional currency, and this subsidiary has a receivable in U.S. dollars, a devaluation of the U.S. dollar against the euro of 10% would result in a foreign exchange loss to the reporting entity of 10% of the value of the underlying U.S. dollar receivable. We cannot predict the effect of exchange rate fluctuations upon future operating results. The effect of currency exchange rate changes may increase or decrease our costs and/or revenues in any given period, and we may experience currency losses in the future. To date, we have not adopted a hedging program to protect against the risks associated with foreign currency fluctuations.

We may not be able to protect our intellectual property rights, which could make us less competitive and cause us to lose market share.

Our future success will depend, in part, upon our intellectual property rights and our ability to protect these rights. We rely on a combination of patent, copyright, trademark and trade secret laws, nondisclosure agreements and other contractual provisions to establish, maintain and protect our proprietary rights. From time to time we may be required to use litigation to protect our proprietary technology. This may result in our incurring substantial costs and we may not be successful in any such litigation. Despite our efforts to protect our proprietary rights, unauthorized third parties may copy aspects of our products, obtain and use information that we regard as proprietary, or infringe upon our patents. In addition, the laws of some foreign countries do not protect proprietary and intellectual property rights to the same extent as do the laws in the U.S. Because many of our products are sold and a significant portion of our business is conducted outside the U.S., our exposure to intellectual property risks may be higher. Our efforts to protect our proprietary and intellectual property rights may not be adequate. Additionally, there is a risk that our competitors will independently develop similar technology or duplicate our products or design around patents or other intellectual property rights. If we are unsuccessful in protecting our intellectual property or our products or technologies are duplicated by others, our competitive position could be harmed and we could lose market share.

We face risks from future claims of third parties and litigation, which could have an adverse effect on our results of operations.

From time to time, we may be subject to claims of third parties, possibly resulting in litigation, which could include, among other things, claims regarding infringement of the intellectual property rights of third parties, product defects, employment-related claims, and claims related to acquisitions, dispositions or restructurings. Addressing any such claims or litigation may be time-consuming and costly, divert management resources, cause product shipment delays, require us to redesign our products, require us to accept returns of products and to write-off inventory, or result in other adverse effects to our business. Any of the foregoing could have a material adverse effect on our results of operations and could require us to pay significant monetary damages.

We expect the likelihood of intellectual property infringement and misappropriation claims may increase as the number of products and competitors in the security market grows and as we increasingly incorporate third-party technology into our products. As a result of infringement claims, we could be required to license intellectual property from a third party or redesign our products. Licenses may not be offered when required or on acceptable terms. If we do obtain licenses from third parties, we may be required to pay license fees or royalties or we may be required to license some of our intellectual property to others in return for such licenses. If we are unable to obtain a license necessary for us or our third-party manufacturers to manufacture our allegedly infringing products, we could be required to suspend the manufacture of products or stop our suppliers from using processes that may infringe the rights of third parties. We may also be unsuccessful in redesigning our products. Our suppliers and customers may be subject to infringement claims based on intellectual property included in our products. We have historically agreed to indemnify our suppliers and customers for patent infringement claims relating to our products. The scope of this indemnity varies, but may, in some instances, include indemnification for damages and expenses, including attorney’s fees. We may periodically engage in litigation as a result of these indemnification obligations. Our insurance policies exclude coverage for third-party claims for patent infringement.

Our stock price has been and is likely to remain volatile.

Over the past few years, The Nasdaq Capital Market has experienced significant price and volume fluctuations that have particularly affected the market prices of the stocks of technology companies. Volatility in our stock price may result from a number of factors, including, among others:

- low volumes of trading activity in our stock;
- technical trading patterns of our stock;

- variations in our or our competitors’ financial and/or operational results;
- the fluctuation in market value of comparable companies in any of our markets;
- expected or announced news about partner relationships, customer wins or losses, product announcements or organizational changes;
- comments and forecasts by securities analysts;
- litigation developments; and
- general market downturns.

In the past, companies that have experienced volatility in the market price of their stock have been the object of securities class action litigation.

We have been named as a defendant in putative securities class action and derivative lawsuits. These lawsuits and other litigation could cause us to incur substantial expenses and divert our attention and resources.

Securities class action lawsuits have often been brought against a company following periods of volatility in the market price of its securities. Companies such as ours in the technology industry are particularly vulnerable to this kind of litigation due to the volatility of their stock prices. We and a number of our current and former officers and directors were defendants in a putative class action lawsuit that was dismissed without prejudice in March 2018 and are defendants in derivative litigation, which is discussed in the Section entitled "Legal Proceedings." Any litigation to which we are a party has and may continue to result in the diversion of management attention and resources from our business and business strategy. In addition, any litigation to which we are a party may result in onerous or unfavorable judgments that may not be reversed upon appeal and that may require us to pay substantial monetary damages or fines, or we may decide to settle lawsuits on similarly unfavorable terms, which could have a material adverse effect our business, financial condition or results of operations.

You may experience dilution of your ownership interests due to the future issuance of additional shares of our stock, and future sales of shares of our common stock could adversely affect our stock price.

We have issued a significant number of shares of our common stock, together with warrants to purchase shares of our common stock and convertible preferred stock, in connection with a number of financing transactions and acquisitions in recent years. In the future, from time to time we may issue additional previously authorized and unissued securities, resulting in additional dilution of the ownership interests of our current stockholders.

In addition, we have reserved shares of common stock for potential future issuance including stock issuable pursuant to our equity incentive plans, as contingent consideration related to previous acquisitions, the conversion of our preferred stock and warrants issued in connection with previous capital raises and other transactions. As of March 6, 2019, 1,975,041 shares of common stock are reserved for future grants and outstanding equity awards under our equity incentive plans and an additional 9,619,370 shares of common stock are reserved for future issuance in connection with other potential issuances. We may issue additional shares of common stock or other securities that are convertible into or exercisable for shares of common stock in connection with the hiring of personnel, future acquisitions, future financings or for other business purposes. If we issue additional securities, the aggregate percentage ownership of our existing stockholders will be reduced. In addition, any new securities that we issue may have rights senior to those of our common stock.

The issuance of additional shares of common stock or preferred stock or other securities, or the perception that such issuances could occur, may create downward pressure on the trading price of our common stock.

If current or future export laws limit or otherwise restrict our business, we could be prohibited from shipping our products to certain countries, which could cause our business, financial condition and results of operations to suffer.

Some of our products are subject to export controls or other laws restricting the sale of our products under the laws of the U.S., the European Union ("EU") and other governments. The export regimes and the governing policies applicable to our business are subject to change. We cannot be certain that such export authorizations will be available to us or for our products in the future. In some cases, we rely upon the compliance activities of our prime contractors, and we cannot be certain they have taken or will take all measures necessary to comply with applicable export laws. If we or our prime contractor partners cannot obtain required government approvals under applicable regulations, we may not be able to sell our products in certain international jurisdictions.

Changes in tax laws or the interpretation thereof, adverse tax audits and other tax matters may adversely affect our future results.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act (the “Tax Act”), which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. Accounting for these provisions in fiscal 2017 required the use of provisional estimates in our financial statements, and the exercise of significant judgment in accounting for the Tax Act's provisions. As regulations and guidance evolve with respect to the Tax Act, and as we gather more information and perform more analysis, our results may materially differ from previous estimates, and those differences may materially affect our financial position. The net impact of such changes are uncertain, and could adversely affect our tax rate and cash flow in future years.

A number of other factors may impact our tax position as well, including:

- the jurisdictions in which profits are determined to be earned and taxed;
- the resolution of issues arising from tax audits with various tax authorities;
- changes in the valuation of our deferred tax assets and liabilities;

- adjustments to estimated taxes upon finalization of various tax returns;
- increases in expenses not deductible for tax purposes; and
- the repatriation of non-U.S. earnings for which we have not previously provided for U.S. taxes.

Any of these factors could make it more difficult for us to project or achieve expected tax results. An increase or decrease in our tax liabilities due to these or other factors could adversely affect our financial results in future periods.

We had a material weakness in our internal controls over financial reporting, and if we fail to maintain adequate internal control over financial reporting, our business could be materially and adversely affected.

Under the Sarbanes-Oxley Act, our management must establish, maintain and make certain assessments and certifications regarding our disclosure controls and internal controls over financial reporting. We have dedicated significant resources to comply with these requirements, including significant actions to develop, evaluate, and test our internal controls. A failure to maintain adequate internal controls could result in inaccurate or late reporting of our financial results, an investigation by regulatory authorities, a loss of investor confidence, a decrease in the trading price of our common stock and exposure to costly litigation or regulatory proceedings.

In connection with the audit of our financial statements as of and for the year ended December 31, 2015, we identified a material weakness in internal control over financial reporting during 2015. Management determined that the design and operating effectiveness of our controls over the financial statement close process related to the application of our accounting policies and the presentation of disclosures in the financial statements had been inadequate. Specifically, this material weakness arose from insufficient review and oversight of the recording of complex and non-routine transactions, including revenue transactions, due to an insufficient number of accounting personnel with appropriate knowledge, experience or training in U.S. GAAP. A similar material weakness was previously identified and disclosed in our Annual Reports on Form 10-K for the year ended December 2012 and 2013, and a remediation plan was implemented.

In 2016, a number of remediation actions and organizational changes were enacted to address specific control weaknesses identified, but the material weakness had not been fully remediated as of December 31, 2016. During the course of 2016, as part of our restructuring initiatives announced in the first quarter of 2016, we streamlined our global operations, transitioned to a single accounting system across substantially all our businesses, and strengthened our global accounting and finance function in Orange County, California. In 2017, we implemented procedures and controls over the financial statement close process, reallocated worldwide accounting resources, and continued to strengthen our accounting and finance team by hiring additional personnel with U.S. GAAP experience. Management has determined that with the remediation measures undertaken in 2016 and through June 30, 2017, the material weakness was fully remediated as of June 30, 2017. However, we may in the future identify additional internal control deficiencies that could rise to the level of a material weakness or uncover errors in our financial reporting, and any such material weaknesses in our internal controls could have a material adverse effect on the accuracy, timeliness and reliability of our financial reporting, which may have an adverse effect on our financial condition and results of operations as well as the price of our common stock.

Provisions in our charter documents and Delaware law may delay or prevent our acquisition by another company, which could decrease the value of your shares.

Our certificate of incorporation and bylaws and Delaware law contain provisions that could make it more difficult for a third party to acquire us or enter into a material transaction with us without the consent of our board of directors. These provisions include a classified board of directors and limitations on actions by our stockholders by written consent. Delaware law imposes some restrictions on mergers and other business combinations between us and any holder of 15% or more of our outstanding common stock. In addition, our board of directors has the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer. These provisions will apply even if the offer were to be considered adequate by some of our stockholders. Because these provisions may be deemed to discourage a change of control, they may delay or prevent the acquisition of our company, which could decrease the value of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate headquarters are located in Fremont, California and we maintain operational headquarters in Santa Ana, California. We lease additional facilities to house our engineering, sales and marketing, administrative and manufacturing functions. At December 31, 2018, our major facilities consisted of the following:

Location	Function	Square Feet	Lease Expiration
Fremont, California	Corporate headquarters	5,678	November 2020
Santa Ana, California	Administration; manufacturing; research and development	34,599	January 2023
Arlington, Texas	Administration; sales	5,700	October 2023
Sauerlach, Germany	European operations; research and development; sales	5,156	April 2020
Chennai, India	Research and development	17,500	October 2020
Singapore	RFID/NFC product manufacturing	16,060	May 2020

ITEM 3. LEGAL PROCEEDINGS

On January 1, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the United States District Court for the Northern District of California, entitled Oswald v. Humphreys, et al., Case No. 16-cv-00241-CRB, alleging breach of fiduciary duty and waste claims. On January 25, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the Superior Court of the State of California, County of Alameda, entitled Chopra v. Hart, et al., Case No. RG16801379, alleging breach of fiduciary duty claims. On February 9, 2016, certain of our present and former officers and directors were named as defendants, and we were named as nominal defendant, in a shareholder derivative lawsuit filed in the Superior Court of the State of California, County of Alameda, entitled Wollnik v. Wenzel, et al., Case No. HG16803342, alleging breach of fiduciary duty, corporate waste, gross mismanagement, and unjust enrichment claims. These lawsuits generally allege that we made false and/or misleading statements and/or failed to disclose information in certain public filings and disclosures between 2013 and 2015. Each of the lawsuits seeks one or more of the following remedies: unspecified compensatory damages, unspecified exemplary or punitive damages, restitution, declaratory relief, equitable and injunctive relief, and reasonable costs and attorneys' fees. On May 2, 2016, the court in the Chopra lawsuit entered an order staying proceedings in the Chopra lawsuit in favor of the Oswald lawsuit, based on a stipulation to that effect filed by the parties in the Chopra lawsuit on April 28, 2016. Similarly, on June 28, 2016, the court in the Wollnik lawsuit entered a stipulated order staying proceedings in the Wollnik lawsuit in favor of the Oswald lawsuit. On June 17, 2016, the plaintiff in the Oswald lawsuit filed an amended complaint. On August 1, 2016, we filed a motion to dismiss for failure by plaintiff to make a pre-lawsuit demand on our board of directors, which motion was heard on October 14, 2016. The judge in the Oswald lawsuit issued an order on November 7, 2016 granting our motion to dismiss, without prejudice. In addition, the court stayed the case so that plaintiff could exercise whatever rights he had under Section 220 of the Delaware General Corporation Law. On or around November 30, 2016, the plaintiff purported to serve a books and records demand under Section 220 of the Delaware General Corporation Law. We responded to that demand. On March 21, 2017, we and the plaintiff in the Oswald lawsuit filed a stipulation and proposed order lifting the stay of the case, granting the plaintiff leave to amend, and setting a briefing schedule. The plaintiff in the Oswald lawsuit filed his second amended complaint on April 10, 2017. We then filed a motion to dismiss that second amended complaint on May 12, 2017. After further briefing and argument, on October 22, 2017, the court issued its written order denying the motion to dismiss on the basis of demand futility. On January 3, 2018, the court entered a stipulated order setting a response and briefing schedule for defendants to the second amended complaint.

Defendants filed motions to dismiss the second amended complaint in the Oswald action under Rule 12(b)(6) on January 16, 2018. After further briefing and argument, on April 13, 2018, the court entered an order granting defendants' motions to dismiss. On April 19, 2018, Plaintiff Oswald filed a motion for leave to file a third amended complaint. On that same date, Plaintiff Chopra, a plaintiff in a related and stayed derivative action in state court, filed a motion to intervene in the Oswald action. After further briefing and argument, on July 16, 2018, the court entered an order granting the Chopra motion to intervene and denying the Oswald motion for leave to file a third amended complaint. After the filing of an unopposed administrative motion for entry of judgment by defendants, on October 1, 2018, the court entered an order granting administrative motion for entry of final judgment and entered final judgment in favor of all named defendants and against plaintiffs Oswald and Chopra. On October 23, 2018, plaintiff Oswald filed a notice of appeal with the Ninth Circuit. Oswald's opening appellate brief was filed on March 4, 2019. In the interim, the state court Chopra and Wollnik actions have remained stayed with periodic status conferences. The next status conferences have been scheduled in the Chopra and Wollnik cases on November 5, 2019 before Judge Seligman. We intend to vigorously defend against these lawsuits. We cannot currently predict the impact or resolution of each of these lawsuits or reasonably estimate a range of possible loss, if any, which could be material, and the resolution of these lawsuits may harm our business and have a material adverse impact on our financial condition.

From time to time, we could become subject to claims arising in the ordinary course of business or could be named a defendant in additional lawsuits. The outcome of such claims or other proceedings cannot be predicted with certainty and may have a material effect on our financial condition, results of operations or cash flows.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

Executive Officers of the Registrant

Information concerning our executive officers as of March 1, 2019 is as follows:

Steven Humphreys, 57, has served as our Chief Executive Officer since September 9, 2015 and as a director of the Company since July 1996. Mr. Humphreys previously served as Chairman of the Board from September 2013 until September 9, 2015. Previously, he also served as Lead Director from May 2010 until April 2013 and as Chairman of the Board from April 2000 to March 2007. Mr. Humphreys also served as an executive officer of the Company, as President from July 1996 to December 1996 and as President and Chief Executive Officer from January 1997 to July 1999. From November 2011 to December 2014, Mr. Humphreys served as chief executive officer of Flywheel Software, Inc., a venture-backed, location-based mobile solutions company. From October 2008 until its acquisition by SMSC in February 2011, Mr. Humphreys served as Chief Executive Officer and President of Kleer Corporation, a venture-backed provider of wireless audio technology. From October 2001 to October 2003, he served as Chairman of the Board and Chief Executive Officer of ActivIdentity, a provider of digital identity solutions, a publicly-listed company until its acquisition by HID Global in December 2010. He also served as a director of ActivIdentity from March 2008 until December 2010. Previously, Mr. Humphreys was President of Caere Corporation, a publicly-listed optical character recognition software company. Prior to Caere, he spent ten years with General Electric in a variety of factory automation and information technology positions, most recently leading the Information Delivery Services business unit of GE Information Services. Philanthropically, Mr. Humphreys has been an elected public school board trustee and a contributor to a range of education-oriented charities. He also serves on the board of Summit Public Schools, a charter school system with schools across the West Coast, and developer of the Summit Learning System, developed in cooperation with Facebook and deployed in over 1,000 schools nationwide. Mr. Humphreys holds a B.S. degree from Yale University and M.S. and M.B.A. degrees from Stanford University.

Sandra Wallach, 54, has served as our Chief Financial Officer since February 16, 2017. Ms. Wallach previously served as VP Finance for MiaSole, a thin film solar technology company, from May 2011 to January 2013. For a six month period from January 2013 to June 2013, she served as Chief Financial Officer of UBM Tech, a wholly-owned subsidiary of UBM LLC. In June 2013, she returned to MiaSole and served as their VP Finance until February 2017. Prior to that, she served as VP Finance at Juniper Networks (from 2008-2011) as well as holding different financial management positions with Intuit (2003-2007). Before joining Intuit, Ms. Wallach served as Chief Financial Officer of General Electric’s (GE) Industrial Systems, Drives & Controls division. Previously she held a range of financial and management positions at General Electric since joining GE in 1986. Ms. Wallach holds a B.A. in Economics and Public Policy from the University of California at Berkeley.

PART II

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

Our common stock is traded on The Nasdaq Capital Market under the symbol "INVE." According to data available at March 6, 2019, we had 140 registered holders of our common stock. Not represented in this figure are individual stockholders in Germany whose custodian banks do not release stockholder information to us.

We have never declared or paid cash dividends on our common stock. We currently anticipate that we will retain all of our future earnings for use in the expansion and operation of our business and do not anticipate paying any cash dividends in the foreseeable future. In addition, our loan agreements with our lenders prohibit the payment of dividends.

The disclosure required by Item 201(d) of Regulation S-K is included in Item 12 of this Annual Report on Form 10-K.

During the years ended December 31, 2018 and 2017, we repurchased 141,670 shares and 178,207 shares, respectively, of common stock surrendered to us to satisfy tax withholding obligations in connection with the vesting of RSUs issued to employees.

ITEM 6. SELECTED FINANCIAL DATA

Not applicable.

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

This Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and other parts of this Annual Report on Form 10-K ("Annual Report") contain forward-looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995, that involve risks and uncertainties. Forward-looking statements reflect current expectations of future events based on certain assumptions and include any statement that does not directly relate to any historical or current fact. Forward-looking statements can also be identified by words such as "will," "believe," "could," "should," "would," "may," "anticipate," "intend," "plan," "estimate," "expect," "project" or the neg terms or other similar expressions. Forward-looking statements are not guarantees of future performance and our actual results may differ significantly from the results discussed in the forward-looking statements. Factors that might cause such differences include, but are not limited to, those discussed in Part I, Item 1A of this Annual Report under the heading "Risk Factors," which are incorporated herein by reference. The following discussion should be read in conjunction with the consolidated financial statements and notes thereto included in Part II, Item 8 of this Annual Report. We assume no obligation to revise or update any forward-looking statements for any reason, except as required by law.

Each of the terms the "Company," "Identiv," "we" and "us" as used herein refers collectively to Identiv, Inc. and its wholly-owned subsidiaries, unless otherwise stated.

Overview

Identiv, Inc. is a global provider of physical security and secure identification. Our products, software, systems, and services address the markets for physical and logical access control, video analytics and a wide range of Radio Frequency Identification ("RFID")-enabled applications. Customers in government, enterprise, consumer, education, healthcare, banking, retail, transportation and other sectors rely on our security and identification solutions. Our mission is to make the physical world digital and secure. Our platform to deliver on our mission can be deployed through Internet of Things ("IoT") devices, mobile, client/server, cloud, web, dedicated hardware and software-defined architectures. Our solutions encompass what we believe to be the most complete set of technologies in the industry. We are a one-stop shop for software delivering physical security management, video surveillance, logical access, analytics and identities; and devices spanning access readers, panels, processing appliances, and identity cards. We provide services to deliver optimized total solutions, serving as a single-point provider for our customers rather than several separate vendors that the customer would otherwise have to coordinate and manage.

We have organized our operations into two reportable business segments, principally by solution families: Premises and Identity. In the fourth quarter of 2018, we realigned the way in which we organize our operating segments in making operating decisions and assessing financial performance by combining our Identity and Credentials segments. The combined segment is now referred to as the Identity segment. All comparative segment information for fiscal 2017 has been reclassified to conform to the fiscal 2018 presentation.

Premises

The Premises segment includes our solutions to address the premises security market for government and enterprise, including access control, video surveillance, analytics, customer experience and other applications.

Our physical security platform is anchored by the Hirsch Velocity management software, our line of controllers including the advanced MX line, our TouchSecure access readers, a wide range of integrations and our Identiv Global Services team that develops optimized solutions for our customers' total business and security environment, incorporating our products and partner products that together best serve our customers' goals. We have further extended our physical access platform with our Identiv Connected Physical Access Manager ("ICPAM") software, derived from Cisco's Physical Access Manager ("CPAM") system.

In February 2018, we acquired 3VR Security, Inc. ("3VR"), a video technology and analytics company. With the acquisition, we added the 3VR video security and analytics platform, which is a natural complement to our physical access offering. Nearly all customers for access control are customers for video security, and vice versa. Additionally, the events and data generated by both platforms combine to create what we believe to be uniquely valuable information for our customers to provide frictionless yet robust security. 3VR's platform is architected as an analytics system, proven across applications in the retail, banking, and other vertical markets, and valuable to our physical security markets in government, education, critical infrastructure, transportation and others. In addition to technology, 3VR brought deep market presence, across over 170 banks, installations with over 50,000 cameras under our software's management, top-tier retailers, and a 100% U.S.-made platform.

In January 2019, we acquired substantially all assets of the Freedom, Liberty, and Enterphone™ MESH products and services of Viscount Systems, Inc. (“Viscount”). The web-based Freedom and Liberty access control and Enterphone MESH IP telephone entry solutions are known for their early adoption of a web, API-based, cloud-ready architecture, creating an IT-centric software-focused and hardware-light platform. Scaling from small- and medium-sized businesses (“SMB”) up to enterprise scale for government and commercial markets, Freedom and the entry-level Liberty product line are complementary to our other products. With Freedom, customers can build integrated access control and video management systems under one centrally managed or distributed network, seamlessly integrating physical security devices such as card readers, ID management, Active Directory/LDAP, visitor entry, alarm points, and video applications and analytics. We believe the combination creates one of the most-advanced, IT-centric solutions for physical security, delivering a seamless evolution from traditional physical access models to next-generation, cloud and web-based, and mobile-enabled systems. Our TouchSecure (“TS”) readers, TS Cards, VMS platform, mobile logical access and our Identiv Global Services (“IGS”) services are applicable to nearly all Freedom and Liberty customers.

We sell either individual components or complete bundled solutions which can include any or all among software, edge controllers, IoT devices, multi-door panels, access readers, access cards, 3VR appliances and other components or services, some of which are detailed below:

Premises Software — Our software platform for premises security ranges from physical access to video analytics and business intelligence. The Hirsch Velocity software platform enables centralized management of access and security operations across an organization, including control of doors, gates, turnstiles, elevators and other building equipment, monitoring users as they move around a facility, preventing unwanted access, maintaining compliance and providing a robust audit trail. Velocity continues to be especially successful with federal and state government customers. The Freedom and Liberty platforms present an IT-centric and highly scalable alternative, specifically for the SMB market. We believe our ICPAM software platform is ideal for the Cisco and wider IT channel, and is tightly integrated with Cisco’s VSM video management system as well as their IP telephony infrastructure. We believe our 3VR VisionPoint™ VMS (Video Management System) for real-time search is an ideal video management software for forensic search, case management and business intelligence. Available in both a Standard and Pro version, with an optional enterprise server for large and remote deployments, VisionPoint VMS provides tools to gather intelligence from video, speed up searches and easily develop cases. VisionPoint VMS can be installed on commercial off-the-shelf hardware, on certified partner hardware, and is included on any of 3VR’s powerful NVR/HVR appliances.

Controllers — Our modular Hirsch MX controllers are designed to be scalable, allowing customers to start with a small system and expand over time. Hirsch MX controllers can operate autonomously, whether as a single controller or as part of a networked system with Velocity software. Our Freedom Crypto and IoT Bridges provide hardware-light solutions, providing low-cost implementations and building a bridge to fully software-defined, hardware-light (or hardware-free) access platforms.

FICAM — We believe our Velocity, MX and TS Reader solution is the highest performance, lowest per-door cost access control system for the U.S. federal government security mandate known as the Federal Identity, Credential and Access Management (“FICAM”) architecture. Our solution brings all of the advantages above into the next generation of physical security for the U.S. government departments and agencies to achieve Federal Information Processing Standard (“FIPS”) 201 compliance. Similar to our leading Hirsch Velocity solution for the U.S. government market, the Freedom platform acquired from Viscount is also FICAM-compliant and allows customers to choose an evolutionary, alternative architecture going forward. Within FICAM, the most infrastructure-efficient architecture is a specification known as 13.02. With Freedom and Velocity, we now are the only vendor providing two 13.02-compliant solutions, and we represent half of the four 13.02 approved solutions at this time.

Access Readers — Our TS readers feature multiple layers of security based on a certified hardware security element. These door readers provide unique features to support a wide range of security standards. We support the majority of legacy cards with a robust next-generation platform that can help companies migrate to more secure credentials and technologies, including smart cards, near field communication ("NFC") and government-issued credentials including

Common Access Card ("CAC"), Personal Identification Verification ("PIV"), Personal Identification Verification – Interoperable ("PIV-I") and others. Additionally, our Scramblepad readers employ numerical scrambling on the keypad to protect access codes from being stolen as they are entered, and providing both secure two-factor authentication and convenient alternative-factor access.

Identiv Global Services — Identiv Global Services provides a comprehensive catalog of end-to-end services that facilitates customer success, drives deeper adoption of our product portfolio and encourages long-term customer engagement. IGS supports customers throughout their premises security lifecycle from system design, to integration, deployment and managed services. IGS experts enable customers to address today's complex security and IT systems interoperability requirements, and helps them achieve a tailor-made solution.

Identity

The Identity segment includes our products and solutions enabling secure access to information serving the logical access and cyber security market and protecting assets and objects in the IoT with RFID.

Information security solutions range from securing enterprise information access and secure transactions across PCs, networks, mobile devices, email, login, secure payments, and printers via delivery of smart card reader products and applications.

Our information security products include smart card readers, which includes a broad range of contact, contactless, portable and mobile smart card readers, tokens and terminals that are utilized around the world to enable logical access (i.e., PC, network or data access) and security and identification applications, such as national ID, payment, e-Health and e-Government. Through our acquisition of Thursby Software Systems (“TSS”) in November of 2018, as well as our internal product development, we provide mobile apps, software and systems to enable secure and convenient logical access across smart cards and derived credentials on Apple iOS and Android mobile devices. Our solutions include:

Mobile Security — TSS’ software solutions provide strong security for enterprise and personal mobility, supporting bring-your-own-device (“BYOD”) and two-factor authentication (“2FA”) on mobile devices. We enable Department of Defense (“DoD”) issued CAC, federally issued PIV cards, derived credentials, and commercially issued PIV-I cards to access, sign, encrypt, and decrypt information and emails from Apple iOS and Android mobile phones or tablet devices. These capabilities have allowed over a hundred thousand DoD and federal employees, including the U.S. Navy Reserve, via the Ready-2-Serve (“R2S”) mobile application, to use personal and government-furnished mobile devices to access needed information on-the-go. Prior to the acquisition, TSS had sold more than one million software licenses to a range of customers and industries, including government, healthcare, finance, energy, education, research, Fortune 500, Global 2000, and original equipment manufacturers (“OEMs”).

We have established a leading position as a trusted provider of convenient high-security solutions to government and enterprise customers.   Our products are customizable to specific customer preferences, providing both high security and excellent end-user convenience. TSS’ seamless support of both government-grade smart card deployments and derived credentials reflects our philosophy of supporting customers' adoption of technologies at their own pace, optimized for their own use cases.

Smart Card Readers — With over 20 years of smart card reader, application and token experience, and over 40 million smart card readers and modules deployed, we are known for our expertise in this complex ecosystem. We combine our deep technical expertise with an optimized supply chain, to provide what we believe to be the most optimal, cost-effective and high-quality smart card-based reader products. Whether Identiv branded products, OEM branded, or embedded chips or modules, we are a trusted business solution provider for users and issuers of smart cards and embedded-chip applications.

Our RFID based solutions address a wide range of applications from access control to asset tracking, product authenticity, brand protection, customer engagement, tamper detection, product instrumentation, transportation access and other IoT applications. The RFID devices enable frictionless interaction with the physical world and are grouped into transponders and access cards.

Transponders — Our transponder products span the full range of high frequency (“HF”) and ultra-high frequency (“UHF”) technologies. Our differentiation is analogous to application-specific integrated circuits (“ASICS”) in the semiconductor market. We leverage our flexible platform, our deep technical expertise and our infrastructure and supply chain to deliver solutions optimized for our customers’ business goals. We believe we are more responsive, more flexible, more experienced in business-optimized solutions and have a better track record of sustained delivery of solution-specific, high-quality RFID devices than our competitors. These products are manufactured in our state-of-the-art facility in Singapore and are used in diverse physical applications, including electronic entertainment such as virtual reality ("VR"), games, loyalty cards, mobile payment systems, transit and event ticketing, brand authenticity from pharmaceuticals to consumer goods, hospital resource management, cold-chain management and many others.

Access Cards — Our uTrust cards encompass contactless single-technology, multi-technology, or credentials with a contact chip, including uTrust Proximity Credentials, uTrust Smart ID Secure Credentials, uTrust MIFARE Classic Credentials, and our uTrust TS Cards. This gives our customers easy access to RFID technology for reliable data exchange of physical access control system (PACS) data, up to options for versatile, high-frequency, interoperable, MIFARE-compatible smart cards. Our uTrust TS Cards address emerging security requirements while maintaining compatibility with existing low-security standards such as prox. We believe they offer the first complete solution to allow customers to pay only for the most basic low-frequency proximity access technology while having the ability to evolve to the higher-security high-frequency and highest-security public key infrastructure ("PKI") based credentials. This product line exemplifies our values: we place no burden on our customers, instead providing what we believe to be the most cost-effective solution to their basic needs; and then delivering within this platform the ability for them to move to higher-level needs and capabilities, when they want, when they are ready and when they will realize economic and experience benefits.

Leveraging our expertise in RFID, physical access and physical authentication, we are developing new solutions to extend our platforms across a wide variety of physical use cases. The next major opportunity in our connected world is the IoT, which fundamentally is about physical things. We believe our core strength in physical access and physical instrumentation markets, our well-established platforms and our deep knowledge of the relevant technologies, position us well in this growth market.

For a discussion of our net revenue by segment and geographic location, see Note 13, Segment Reporting and Geographic Information, in the accompanying notes to our consolidated financial statements.

Trends in our Business

Geographic net revenue, based on each customer's ship-to location, for the years ended December 31, 2018 and 2017 is as follows (in thousands):

	Year Ended December 31,			
	2018		2017	
Americas	$60,153		$40,018	
Europe and the Middle East	9,943		7,887	
Asia-Pacific	8,046		12,314	
Total	$78,142		$60,219	
Americas	77	%	67	%
Europe and the Middle East	13	%	13	%
Asia-Pacific	10	%	20	%
Total	100	%	100	%

Net Revenue Trends

Net revenue in 2018 was $78.1 million, an increase of 30% compared with $60.2 million in 2017. Net revenue in our Premises segment, which accounted for 44% of our net revenue, was $34.6 million in 2018, an increase of 43% compared with $24.2 million in 2017. Net revenue in our Identity segment, which represented 56% of our net revenue, was $43.6 million in 2018, an increase of 21% compared with $36.1 million in 2017.

Net revenue in the Americas

Net revenue in the Americas was $60.2 million in 2018, accounting for 77% of total net revenue, an increase of 50% compared with $40.0 million in 2017. Net revenue from our Premises solution for security programs within various U.S. government agencies, as well as RFID and NFC products, inlays and tags represented approximately 51% of our net revenue in the Americas region.

Net revenue in our Premises segment in the Americas in 2018 increased 43% compared with 2017 primarily due to additional sales of video technology and analytics hardware and software products and related support services following the acquisition of 3VR in February 2018, as well as higher sales of physical access control solutions and products and higher software product sales. Net revenue from our Identity segment increased 59% in 2018 compared with 2017 primarily due to additional sales of mobile security solution products, including a large bulk order of readers in the fourth quarter of 2018 to the U.S. Air Force following the acquisition of TSS in November 2018, and higher sales of smart card readers, access cards, and RFID and NFC transponder products.

As a general trend, U.S. Federal agencies continue to be subject to security improvement mandates under programs such as Homeland Security Presidential Directive ("HSPD") 12 and reiterated in memoranda from the Office of Management and Budget (OMB M-11-11). We believe that our solution for trusted physical access is an attractive offering to help federal agency customers move towards compliance with federal directives and mandates. To expand our sales opportunities in the United States in general and with orders sourced from U.S. Government agencies in particular, we have strengthened our U.S. sales organization and our sales presence in Washington D.C.

Net revenue in Europe, the Middle East, and Asia-Pacific

Net revenue in Europe, the Middle East, and Asia-Pacific was approximately $18.0 million in 2018, accounting for 23% of total net revenue, a decrease of 11% compared with 2017 primarily as a result of lower sales in the Asia-Pacific, partially offset by higher sales in the Europe and the Middle East regions. Net revenue in these regions are dependent on the completion of large projects and the timing of orders placed by some of our larger customers. Sales of Identity readers and RFID and NFC products and tags comprise a significant proportion of our net revenue in these regions.

Net revenue from our Premises products increased 49% in 2018 compared with 2017 due to higher sales of physical access control solutions in both the Europe and Middle East and the Asia-Pacific regions. Net revenue from our Identity products decreased approximately 20% in 2018 compared with 2017 primarily due to lower transponder product sales in the Asia-Pacific region and the effect of sales of smart card readers for a government project in the Asia-Pacific region in 2017. These decreases were partially offset by higher access card sales across both regions, and higher transponder product sales in the Europe and Middle East region. Identity reader sales in 2018 and 2017 comprised approximately 35% and 49% of the net revenue in the Europe and Middle East and the Asia-Pacific regions, respectively.

Seasonality and Other Factors

In our business overall, we may experience significant variations in demand for our offerings from quarter to quarter, and typically experience a stronger demand cycle in the second half of our fiscal year. Sales of our premises solutions to U.S. Government agencies are subject to annual government budget cycles and generally are highest in the third quarter of each year. However, the usual seasonal trend can be negatively impacted by actions such as government shutdowns and the passing of continuing resolutions which can act to delay the completion of certain projects. Sales of our identity reader chips, many of which are sold to government agencies worldwide, are impacted by testing and compliance schedules of government bodies as well as roll-out schedules for application deployments, both of which contribute to variability in demand from quarter to quarter. Further, this business is typically subject to seasonality based on differing commercial and global government budget cycles. Lower sales are expected in the U.S. in the first half, and in particular the first quarter of the year, with higher sales typically in the second half of each year. In Asia and Australia, with fiscal year-ends in March and June, order demand can be high in the first half as customers attempt to complete projects before the end of their fiscal year. Accordingly, our net revenue levels in the first quarter and first half each year often depend on the relative strength of project completions and sales mix between our U.S. customer base and our international customer base.

In addition to the general seasonality of demand, overall U.S. Government expenditure patterns have a significant impact on demand for our products due to the significant portion of revenues that are typically sourced from U.S. Government agencies. Therefore, any significant reduction in U.S. Government spending could adversely impact our financial results and could cause our operating results to fall below any guidance we provide to the market or below the expectations of investors or security analysts.

Operating Expense Trends

Base Operating Expenses

Our base operating expenses (i.e., research and development, selling and marketing, and general and administrative) increased 28% in 2018 compared with 2017. Research and development expense increased by 18% in 2018 compared with 2017 resulting from additional headcount and external contractor costs associated with the acquisition of 3VR in the first quarter of 2018. Selling and marketing expense in 2018 increased by 22% compared with 2017, due to the additional headcount and related costs, higher external services and contractor costs, and the amortization of acquired intangibles associated with the acquisition of 3VR in the first quarter of 2018. General and administrative spending in 2018 increased by 49% compared with 2017 primarily due to higher transaction related costs associated with the acquisition of 3VR in February of 2018, and the effect of reimbursements received in 2017 from our insurance provider for legal fees incurred in connection with matters related to a complaint by a former employee, related investigations, the class and derivative litigation and related proceedings.

Results of Operations

The following table includes segment net revenue and segment net profit information by business segment and reconciles gross profit to results of operations before income taxes and noncontrolling interest.

	Year Ended December 31,	
	2018	2017
Premises:		
Net revenue		