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

FORM 10-K

(Mark One)

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

For the fiscal year ended June 30, 2019

or

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

For the transition period from to

Commission file number: 001-34720

TELENAV, INC.
(Exact name of registrant as specified in its charter)

Delaware	**77-0521800**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

4655 Great America Parkway, Suite 300
Santa Clara, California 95054
(Address of principal executive offices) (Zip Code)

(408) 245-3800
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 Par Value per Share	TNAV	The NASDAQ Global Market

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

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

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

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

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

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

Large accelerated filer	☐	Accelerated filer	☒

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 Act). Yes ☐ No ☒

The aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant as of December 31, 2018, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $111 million (based on the closing sale price of $4.06 per share as reported on the NASDAQ Global Market) on December 31, 2018. For purposes of this calculation, shares of common stock held by officers and directors and shares of common stock held by persons who hold more than 10% of the outstanding common stock of the registrant have been excluded from this calculation because such persons may be deemed to be affiliates. This determination of executive officer or affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares of the registrant's Common Stock, $0.001 par value per share, outstanding as of July 31, 2019 was 47,223,144.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement relating to its 2019 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K where indicated. Such Proxy Statement will be filed with the United States Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

TELENAV, INC.
FORM 10-K

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Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K, or this Form 10-K, contains forward-looking statements that are based on our management's beliefs and assumptions and on information currently available to our management. The forward-looking statements are contained principally in the sections entitled “Risk Factors,” “Management's Discussion and Analysis of Financial Condition and Results of Operations,” and “Business.” Forward-looking statements include information concerning our possible or assumed future results of operations, use of cash, accounting for and future sources of revenue, expectations regarding expenses, business strategies, financing plans, competitive position, industry environment, potential growth opportunities and areas of decline, regulatory environment and the effects of competition. Forward-looking statements include statements that are not historical facts and can be identified by terms such as “anticipates,” “believes,” “could,” “seeks,” “estimates,” “expects,” “intends,” “may,” “plans,” “potential,” “predicts,” “projects,” “should,” “will,” “would” or similar expressions and the negatives of those terms.

Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. We discuss these risks in greater detail in “Risk Factors” and elsewhere in this Form 10-K. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Also, forward-looking statements represent our management's beliefs and assumptions only as of the date of this Form 10-K.

Except as required by law, we assume no obligation to update these forward-looking statements, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future. You should read this Form 10-K completely and with the understanding that our actual future results may be materially different from what we expect.

Corporate Information

Our predecessor company, TeleNav, Inc., incorporated in the State of Delaware in 1999 and we incorporated in the State of Delaware in 2009 as TNAV Holdings, Inc. Pursuant to stockholder approvals received in December 2009, our predecessor company merged with and into us on April 15, 2010. As the entity surviving the merger, upon completion of the merger, we changed our name to TeleNav, Inc. In November 2012, we changed our name to Telenav, Inc. Our executive offices are located at 4655 Great America Parkway, Suite 300, Santa Clara, California 95054, and our telephone number is (408) 245-3800. Our website address is www.telenav.com. The information on, or that can be accessed through, our website is not part of this Form 10-K.

We file or furnish periodic reports, including our annual reports on Form 10-K, our quarterly reports on Form 10-Q and our current reports on Form 8-K, our proxy statements and other information with the Securities and Exchange Commission, or the SEC. The SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements and other information regarding issuers that file electronically. Our reports, proxy statements and other information are also made available, free of charge, on our investor relations website at http://investor.telenav.com/financials.cfm as soon as reasonably practicable after we electronically file such information with the SEC. The information posted on our website is not incorporated into this Form 10-K.

In this Form 10-K, "Telenav," “we,” “us” and “our” refer to Telenav, Inc. and its subsidiaries.

The names Chatbaka™, Geolink™, HopOver™, LivingMap™, ONMYWAY®, OpenTerra™, RealReach™, RoadSense™, Scout®, Scout GPS Link™, Sipity®, skobbler®, Telenav®, Telenav GPS Navigator™, Telenav Navigator™, Telenav Scout™, TrueDelta™, and TurnStream™, as well as the Telenav, Scout and skobbler logos are our trademarks. All other trademarks and trade names appearing in this Form 10-K are the property of their respective owners.

PART I.

ITEM 1. BUSINESS

Overview

Telenav is a leading provider of location-based products and services for connected cars. We utilize our connected car platform to deliver these products and services. Our connected car platform allows us to deliver enhanced location-based navigation services to automobile manufacturers and tier one suppliers, or tier ones. In addition, as discussed below, until August 2019, we utilized our advertising platform, which we refer to as our Ads Business, to deliver highly targeted advertising services to advertisers and advertising agencies by leveraging our location expertise. We reported results through June 30, 2019 in three business segments: automotive, advertising and mobile navigation. Our fiscal year ends June 30. In this Form 10-K, we refer to the fiscal years ended June 30, 2017, 2018 and 2019 and ending June 30, 2020 as fiscal 2017, fiscal 2018, fiscal 2019 and fiscal 2020, respectively. Our total revenue was $209.7 million in fiscal 2017, $218.5 million in fiscal 2018 and $220.9 million in fiscal 2019. Our net loss was $29.5 million in fiscal 2017, $40.8 million in fiscal 2018 and $32.5 million in fiscal 2019.

We derive revenue primarily from automobile manufacturers and tier ones whose vehicles or systems incorporate our proprietary personalized navigation software and services. These manufacturers and tier ones generally do not provide us with any volume or revenue guarantees.

Our legacy mobile navigation business has declined steadily since fiscal 2013, and we expect it to continue to decline and represent less than 10% of our consolidated revenue in fiscal 2020. Our mobile navigation business generates revenue from our partnerships with wireless carriers who sell our navigation services to their subscribers either as a standalone service or in a bundle with other data or services. The mobile navigation business has declined both in absolute dollars and as a percentage of revenue from $116.4 million, or 61% of our revenue, in fiscal 2013 to $9.8 million, or 4% of our revenue, in fiscal 2019, as subscriptions for paid navigation services declined in favor of free or freemium navigation services offered by our competitors with greater resources and name recognition, such as Google and Apple. We have experienced and anticipate that we will continue to experience the non-renewal of our agreements for these services by our wireless carrier customers as demand from their subscribers declines. In the event our mobile navigation business ceases to be profitable, we may ultimately elect to terminate our legacy wireless carrier mobile navigation business to the extent allowable under our contractual arrangements.

We offer four variations of our connected car products and services to our automobile manufacturer and tier one customers for distribution with their vehicles and systems. First, we offer on-board navigation systems that are built into vehicles with all key elements of the system residing in the vehicle as a self-contained application along with the related software and content. Our on-board navigation products do not require access to the Internet or wireless networks to function. Second, we offer advanced navigation solutions that contain on-board functionality and also add cloud functionality such as cloud search, cloud routing, map updates and “live” data. We refer to these solutions as hybrid navigation. Third, we offer mobile phone-based navigation solutions that run on the phone and provide an interactive map and navigation instructions to the vehicle's video screen and audio system, which we refer to as brought-in navigation. Finally, we offer a Navigation Software Development Kit, or SDK, that enables our customers to add mapping and location capabilities to their cloud, mobile and on-board automotive applications. We believe our history as a supplier of cloud-based navigation services combined with our proven track record of delivering navigation solutions to three of the top five global automobile manufacturers provides a unique advantage in the automotive navigation marketplace over our competitors.

We provide our connected car products and services directly to automobile manufacturers such as Ford Motor Company and affiliated entities, or Ford, which represented 55% of our revenue in fiscal 2019, General Motors Holdings and its affiliates, or GM, which represented 18% of our revenue in fiscal 2019, and Toyota Motor Corporation, or Toyota. We also provide our products and services indirectly through tier ones such as Xevo, Inc., or Xevo, for certain Toyota solutions; LG Electronics, Inc., or LG, for certain Opel solutions; and Panasonic Automotive Systems Company of America, or Panasonic, for certain Fiat Chrysler Automobiles, or FCA, solutions.

In August 2019, we sold the Ads Business to inMarket Media, LLC, or inMarket, a provider of digital advertising services (the "inMarket Transaction"). Upon the terms and subject to the conditions of the Asset Purchase Agreement, inMarket acquired substantially all of the assets and assumed certain liabilities related to and used in the Ads Business. In exchange, inMarket issued to Telenav units of inMarket representing a 14.5% member interest in inMarket at the time of closing of the transaction. In addition, inMarket granted to Telenav a perpetual, non-exclusive, irrevocable, royalty-free, license back to the software and other intellectual property rights being assigned to inMarket as part of the inMarket Transaction. We will report the operating results of the Ads Business as discontinued operations in our condensed consolidated financial statements for the first quarter of fiscal 2020 and for all prior comparative periods.

In August 2019, we entered into certain agreements with affiliates of Grab Holdings, Inc., which, collectively with certain of its affiliates, we refer to as Grab, including: (i) a services agreement pursuant to which we agreed that we will provide certain services to Grab through certain of our employees designated to work on our OpenTerra location-based services platform, which we refer to as our OpenTerra Platform; (ii) a license agreement pursuant to which we have granted to Grab a perpetual license to certain intellectual property associated with the OpenTerra Platform; and (iii) an asset purchase agreement pursuant to which we will sell certain intellectual property associated with the OpenTerra Platform to Grab and facilitate the making of offers for employment or consulting arrangements by Grab of certain of our OpenTerra employees. The transactions contemplated by the services agreement, license agreement and asset purchase agreement together comprise the "Grab Transaction." The consideration for the services agreement, license agreement and asset purchase agreement is a mix of cash and Grab Holdings, Inc. ordinary shares. The asset purchase component of the Grab Transaction is subject to customary closing conditions and is expected to close before June 30, 2020.

Automotive Navigation

Industry background

The automotive industry is going through a significant transformation due to the convergence of connectivity, autonomy, shared mobility and electrification, or CASE. In addition, due to high consumer expectations set by mobile phones, consumers are demanding user friendly products that are well integrated, always up-to-date and easy to use. Our market research has shown that in-vehicle infotainment is one of the features that drivers value most when purchasing a new car.

We believe, and market studies by Strategy Analytics, a leading automotive market research firm, indicate, navigation has been and will continue to be one of the highest demanded features within in-vehicle infotainment systems. With the current CASE trends, navigation and the navigation platform will become increasingly important because the services used for in-vehicle infotainment either stem from or must work with the navigation system. Therefore, navigation will become integral to providing a seamless infotainment experience. For example, driver safety continues to be a key priority for government regulators and automobile manufacturers globally, and the European New Car Assessment Program, or NCAP gives safety incentive points to vehicles with Speed Assist Systems, or SAS features, some of which require mapping and navigation software. Due to these pressures, automobile manufacturers are adding navigation as a standard feature on more vehicles.

In addition, navigation is an essential aspect of autonomous vehicles, as mapping and navigation are required to localize the vehicle and guide it to its destination. For shared mobility, finding the nearest vehicle to a rider and routing the vehicle requires mapping and navigation. For electric vehicles, range planning, optimization of energy use and finding charging stations along the route are enabled by mapping and navigation. For these reasons, navigation is becoming increasingly important and a key element of future vehicle infotainment and safety systems.

Industry challenges

The automotive industry is experiencing increasing pressures from new entrants, such as Tesla, and other industries, such as the software industry, that have fast innovation and execution, which enable them to capitalize on current trends. As a result, traditional automobile manufacturers are striving to keep up with consumer demands for new and updated content on the infotainment system, which previously was not capable of being updated without inconveniencing the consumer. According to Strategy Analytics, customers consider on-board access to connected applications an important factor in determining their purchase decision. Consumers are strongly indicating their desire to access connected apps through their vehicle's controls and displays. Automobile manufacturers that enhance the in-vehicle experience with cloud connectivity and improved infotainment capabilities can find greater acceptance from consumers, but the delivery of these capabilities is technically challenging and not a traditional part of the automobile manufacturer's capabilities or supply chain. This challenge is driving automobile manufacturers to seek new partners to create differentiated in-car experiences. Automobile manufacturers are also under pressure because of the proliferation of brought-in platforms and products such as Apple's CarPlay and Google's Android Auto along with other initiatives, including Open Automotive Alliance, which take control of the products and platforms away from automobile manufacturers and tier ones and could diminish brand loyalty to the automobile manufacturer. To counter this, automobile manufacturers are investing heavily in their infotainment solutions and leveraging their ability to provide better integration of the various automobile systems resulting in easy-to-use hybrid navigation services that are seamlessly integrated with in-vehicle displays (center screen, cluster, heads up display, rear-seat), speakers, voice recognition and vehicle sensors.

Our competitive strengths

Automobile manufacturers procure various elements of each vehicle that they manufacture from third party suppliers directly and through tier ones. We work directly with automobile manufacturers such as Ford, GM and Toyota, as well as through tier ones. Our strong track record as a provider of connected and personalized navigation services to mobile phones and our history of working with large wireless carriers has helped us develop skills and technology that are well suited to meet the demands faced by today's automobile manufacturers and tier ones. The sales cycle for automotive navigation systems is long, consultative and requires direct and continuous engagement with the automobile manufacturer and tier ones to succeed in securing business. Often the automobile manufacturer uses the sales process to help it define the ultimate product that it delivers to its end users in a way that not only enhances customer experience but also allows the automobile manufacturer to differentiate itself from the competition. We believe that our success with on-board, brought-in and hybrid navigation solutions at Ford and GM, and the continuing shift in emphasis to connected services has demonstrated the strength of our offerings to other automobile manufacturers and tier ones. Through our ongoing collaboration with automobile manufacturers, we remain aligned with their goals and offer solutions that allow them to differentiate themselves from other competitors, providing their users with a superior experience and, as a result, creating brand loyalty among their customers.

Our automotive products and services

We entered the automotive navigation services business in fiscal 2008, initially with Ford, and our first on-board navigation product was launched in Ford's model year 2010 vehicles. Since that time, we have been working with Ford and other automobile manufacturers and tier ones to deploy our various navigation products and services worldwide through on-board, brought-in and hybrid systems.

Ford currently distributes our on-board product as a standard or optional feature in certain of its models and locations. More recently, this solution has been enhanced with a phone-based connectivity feature providing key search capabilities. Our navigation products are now included in Ford models principally manufactured and sold in North America, South America, Europe and China, as well as distributed in models sold in Australia and New Zealand. In each geography where we provide navigation products to Ford, Ford also provides a map update program under which Ford owners in North America, South America, China and Europe with SYNC® 3 and in Australia and New Zealand with SYNC® 2 or SYNC 3 are eligible to receive annual map updates at no additional cost through the contractual period with the respective entity.

In December 2017, we announced that Ford had chosen Telenav to provide its next generation navigation solution in North America, subject to certain conditions and execution of an agreement regarding those solutions. The terms of this next generation navigation solution were embodied in an amendment executed in December 2018. We were not awarded the contracts for Europe, South America and Australia and New Zealand.

We also have agreements with GM to provide our on-board and hybrid navigation solutions in its vehicles. Our navigation SDK powers GM's OnStar RemoteLink, and associated branded mobile applications, MyBuick, MyCadillac, MyChevrolet and MyGMC. In February 2017, GM launched its first model featuring integration of our hybrid navigation solution in North America, the 2017 Cadillac CTS and CTS-V. Our solution is currently available in North America on select 2019 models of Cadillac, GMC, Chevrolet and Buick. GM has also launched vehicles with our hybrid navigation solution in China and the Middle East. Our hybrid navigation solution is scheduled to become available in additional regions and GM models for model years 2020 to 2025.

We provide entry level on-board navigation through LG, a tier one supplier for the Opel and Vauxhall line of vehicles, for the European market, even after the sale of the Opel and Vauxhall brands to PSA Group in August 2017. This solution launched in Opel's Adam, Corsa, Karl and Zafira model vehicles in July 2017. Our solution is expected to be made available in select vehicles for model years 2020 to 2022.

We have a partnership with Toyota for brought-in navigation services where our Scout GPS Link mobile application is enabled to connect with select Toyota and Lexus models in the United States and Canada. Toyota and Lexus vehicles enabled to connect with our Scout GPS Link began shipping in August 2015 and September 2016, respectively. In addition, we have an agreement with Xevo, Inc., a tier one supplier to Toyota, whereby our Scout GPS Link and Xevo™ Engine Link provide brought-in navigation services, including a fully interactive moving map, for select Toyota vehicles equipped with Entune 3.0 Audio, as well as select Lexus vehicles equipped with Lexus Enform. Our fully interactive solution first became available on select model year 2018 Toyota Camry and Sienna and Lexus NX and RC models, and was recently expanded to select model year 2019 Toyota Corolla hatchback, Avalon, CHR and RAV4 models, as well as Lexus UX and select model year 2020 Corolla sedans and Prius Prime. On these same Toyota and Lexus models, a premium embedded connected navigation option is also available that provides cloud-based search, powered by our navigation SDK.

While we saw expansion of our latest version of Scout GPS Link solution across more Toyota and Lexus models in fiscal 2019, we expect Toyota to limit or reduce the number of models or vehicles on which Scout GPS Link is offered by Toyota and Lexus, beginning in model year 2021, due in part to the offering of alternative brought-in solutions such as Apple's CarPlay, which Toyota is offering across certain Toyota models, and the expanded offering of Google's Android Auto solution across more automobile manufacturers.

During the fourth quarter of fiscal 2019, Telenav entered into an amended agreement with Xevo. The amended agreement provides that we will receive a one-time $17.0 million cash pre-payment in the first quarter of fiscal 2020 in exchange for removing a contractual minimum unit commitment that otherwise would have resulted in a payment to us in fiscal 2027. We recorded the receivable as deferred revenue in the fourth quarter of fiscal 2019, and it will be recognized as revenue over future periods. Our contract with Xevo relating to the implementation of our solutions in Toyota and Lexus vehicles is expected to remain in place through 2026, and we are exploring additional opportunities with Xevo and Toyota as well.

In August 2017, Daimler AG, or Mercedes, selected Telenav's enhanced OpenStreetMap, or OSM, platform and navigation SDK to power its Mercedes-Benz COMAND TOUCH® Rear Seat Entertainment system throughout the world. In May 2019, we announced that our solution will provide fully interactive mapping for rear seat entertainment and will be launched as optional equipment on the current Mercedes E-class and S-class models.

We also have an agreement to offer our on-board navigation solution in select Jeep and Chrysler vehicles in the China market through Panasonic. Our on-board navigation solution was initially included in the 2018 Jeep Grand Cherokee, which had its China launch in August 2017, and is now included in other Jeep Cherokee and Compass models in China.

Going forward, we anticipate more automobile manufacturers and tier ones will offer our hybrid navigation solutions with up-to-date data such as traffic, fuel prices, maps and points of interest, or POIs, to deliver an enhanced user experience. In addition, as the market transitions to cars that are "always connected," we expect our product and service offerings to become more personalized, safer and seamlessly integrated with other functions in the infotainment system, resulting in a better overall user experience.

Platform and architecture

Our automotive navigation product architecture is designed with flexibility in mind such that we may deliver custom solutions efficiently, to meet the unique requirements of automobile manufacturers and tier ones. We have created and continue to enhance our automotive reference product, or ARP, which serves as the foundation for our custom solutions and allows us to show automobile manufacturers our latest on-board, brought-in and hybrid navigation capabilities. In addition, we provide our cloud services via a standard application programming interface, or API, via our navigation SDK for those manufacturers seeking cloud services only, such as GM's mobile companion app.

We have developed proprietary technologies to provide location-based on-board, brought-in and hybrid mapping and navigation services. Our on-board navigation products include a broad set of services including local search for addresses and business, converting addresses to latitude and longitude coordinates known as geocoding, routing, map rendering, traffic decoding and processing, multi-level map matching, map updates, navigation and guidance. We have also developed customized technology to improve the quality of speech recognition for address and POI searches.

Our cloud location-based services platform includes our engines for routing, mapping, local search, voice recognition, geo data aggregation, traffic, personalization, and sensor processing. We leverage our existing back-end cloud technologies for deployment to automobile manufacturer and tier one applications.

Our proprietary location-based services platform provides fast route and map generation while optimizing the route based on real-time traffic conditions. It also includes a local search technology so users can find addresses and POIs easily, to which users can then be routed. Because our proprietary platform uses computing resources efficiently, we are able to scale our servers economically for our automotive solutions.

Our back-end cloud services allow us to deliver up-to-date location based data and services to support our on-board navigation technologies. Our platform is designed to be content agnostic and offers the flexibility to use various data providers for maps, POIs, traffic and other location-based content services. This enables the automobile manufacturer or tier one to offer best of breed content, by region, to delight their drivers. It also allows more competitive content pricing by offering the automobile manufacturer or tier one the option of seeking bids from more than one content provider. We have expanded our navigation offering to add Advanced Driver Assistance Systems, or ADAS, capabilities. Our initial ADAS feature, called e-horizon, predicts the path of the user and extracts relevant map attributes to tell the vehicle about upcoming road characteristics such as curvature and elevation. This information may be used by the vehicle to alert the driver of unsafe conditions, actuate the car and also improve fuel economy.

In January 2014, we acquired skobbler GmbH, or skobbler, a leading provider of technologies that enhance the collection and use of OSM mapping data. By combining skobbler's technologies with other proprietary Telenav technologies, we have developed our OpenTerra Platform, which includes a range of OSM capabilities that allow us to use crowd sourced maps for more advanced services such as navigation. We deployed OSM as part of our Toyota Entune Audio Plus and Lexus Display Audio multimedia products. In addition, the agreements entered into with Grab in August 2019 provide for the license to Grab of certain intellectual property underlying our OpenTerra Platform and represent an important step in monetizing the OpenTerra platform. While the agreements with Grab also provide for the sale of that intellectual property to Grab, we plan to leverage the license back to that intellectual property that we will receive from Grab to continue the development of the OpenTerra Platform and may potentially enter into similar licensing arrangements relating to our OSM mapping technologies with other third parties in the future.

Infrastructure and operations

Automotive Navigation

Our end users rely on our services primarily while on the road. As a result, we strive to ensure the continuous availability of our services through our high quality hosting platform and operational excellence.

Data center facilities. We developed our infrastructure with the goal of maximizing the availability of our applications, which are hosted on a highly scalable and available network located in Amazon Web Services, or AWS, facilities in California, Oregon, Virginia, Germany, Ireland and South Korea.

We entered into hosted service agreements with AWS for primary resource capacity and disaster recovery capacity. Pursuant to the service agreements, AWS provides leased facility space, power, cooling and Internet connectivity for a term of one year, and such agreements are subject to renewal.

We have similar arrangements with Alibaba Group Holding Limited’s cloud computing business unit, Alibaba Cloud, to provide hosting services for our location services in China.

Research and development

Our research and development organization is responsible for the design, development and testing of our services and products. Our engineering team has deep expertise and experience in in-car embedded software, mobile software, location technologies and cloud services and we have a number of personnel with longstanding experience with location services applications and scaling hosted service models.

Our current research and development efforts are focused on:

- timely execution and delivery of contracted customer solutions;
- enhancing our unified platform that enables more efficient deployment of our solutions across multiple customers and programs;
- improving and expanding features, functionality and performance of our existing services;
- creating new applications, services and functionality for vehicles and mobile phones;
- developing key technology and content to reduce third party costs; and
- building features and functionality that allow OSM to be enhanced.

Our development strategy is to identify features, services and products that are, or are expected to be, needed or desired by end users and provide our customers with a means to differentiate themselves against their competitors.

As of June 30, 2019, our research and development team consisted of 653 people, 159 of whom were located in Santa Clara and Culver City, California and 494 of whom were located in Cluj, Romania; Shanghai and Xi'an, China; Berlin, Germany; and Incheon, South Korea. Our U.S., China and Romanian research and development teams function together to provide service and product development for our automotive customers. Our research and development expenses were $67.4

million, $85.6 million and $84.0 million for fiscal 2017, 2018 and 2019, respectively. In August 2019, in connection with the inMarket Transaction, 11 employees engaged in research and development in our Culver City, California location left the Company.

Marketing and sales

Automotive Navigation

In connection with sales efforts directed at automobile manufacturers and tier ones, we employ a sales team that focuses on targeted customers and responds to requests for proposals and related sales opportunities.

The development and sales cycle for automotive navigation products and services is long. The automotive sales cycle is consultative and requires direct and continuous engagement with the customer to succeed in securing a design win. A typical sales cycle is 12 to 18 months long. Often the automobile manufacturer uses the sales process to help it to define the ultimate product that it chooses to deliver to its end users. Generally, design wins for vehicles are awarded 24 to 36 months prior to the anticipated model year launch of the vehicle, as it takes this much time to develop and integrate the software and cloud services. Once we launch services with an automobile manufacturer, our application and services are typically bundled with vehicles for multiple years.

Customers

We derive revenue primarily from automobile manufacturers and tier ones whose vehicles contain our proprietary software and are able to access our navigation services. To a lesser extent, we have legacy relationships with wireless carrier customers to provide mobile navigation services to their subscribers through mobile phones.

We generate revenue from automobile manufacturers and tier ones for delivery of customized software and royalties from the distribution of this customized software for on-board and hybrid automotive navigation solutions. In addition, we earn royalties from brought-in navigation services for vehicle applications powered by our location-based services platform. We typically enter into long term supply arrangements with our automotive customers to provide our solutions across multiple car models in multiple regions around the world.

Our revenue from customers located in the United States comprised 90%, 90% and 81% of our total revenue for fiscal 2017, 2018 and 2019, respectively.

We are substantially dependent on Ford and GM for our billings and revenue. In fiscal 2017, 2018 and 2019, Ford represented 71%, 67% and 55% of our revenue, respectively, and 68%, 66% and 50% of billings, respectively. In fiscal 2017, 2018 and 2019, GM represented less than 10%, less than 10% and 18% of our revenue, respectively, and less than 10%, less than 10% and 19% of billings, respectively. We expect Ford and GM to represent a significant portion of our revenue and billings for the foreseeable future.

Ford

Our contract with Ford covers a broad range of products and services that we provide to Ford. On March 28, 2018, we entered into an amendment with Ford that extends the term of the agreement from December 31, 2018 to December 31, 2020 for each jurisdiction in which we currently provide our products to Ford. On December 14, 2017, Ford also selected us to provide its next generation navigation solution in North America, subject to certain conditions and execution of an agreement regarding those solutions. The terms of this next generation navigation solution were embodied in an amendment executed in December 2018. With respect to North America production, this amendment extended the term of the agreement to December 31, 2022, which term may be further extended at Ford's option subject to certain conditions. We were not awarded the contracts for Europe, South America and Australia and New Zealand.

We are the preferred provider for on-board navigation integrated with Ford's SYNC 2 and SYNC 3 platforms during the term of the agreement.

We have also entered into amendments with Ford such that Ford Europe and Ford Australia and New Zealand also provide a map update program under which Ford owners with SYNC 2, with respect to Australia and New Zealand only, or SYNC 3 in all geographies where we provide SYNC 3 products are eligible to receive annual map updates at no additional cost through the contractual period.

In fiscal 2017, we also entered into amendments of our agreement with Ford pursuant to which Ford's joint venture in China, Changan Ford Automobile Co., Ltd., became the primary contracting party for our relationship with Ford in that region.

Our agreement with Ford relating to navigation solutions integrated with Ford's SYNC 2 and SYNC 3 platforms allows for renewals for successive 12-month periods if either party provides notice of renewal at least 45 days prior to the expiration of the applicable term, and the other party agrees to such renewal. Either party may terminate the agreement if the other party is insolvent or materially breaches its obligations and fails to cure such breach. Under our agreement with Ford, we are required to become certified under a set of technical standards for the computer software development process in the automobile industry, which requirement currently requires certification by the fall of 2019. We do not currently have any such certification, and we may not be able to obtain it in a timely manner, if at all, for our software to be included in Ford’s model year 2021 vehicles.

GM

Our contract with GM includes the provision of our on-board, hybrid, and brought-in navigation solutions across a wide assortment of GM vehicles. Our mobile navigation SDK powers GM’s branded mobile and web-based applications and is covered under a services agreement that was entered into June 13, 2014 and extends to December 31, 2019. Our on-board and hybrid navigation solutions for GM are covered under a product and services agreement that became effective February 1, 2017. These solutions began shipping in a limited number of vehicles beginning with model year 2017 and are gradually expanding across additional regions and models. In May 2017, additional vehicles through model year 2025 were added to this products and services agreement, which terminates on December 31, 2026. Our agreement with GM allows either party to terminate the agreement if the other party is insolvent or breaches its obligations and fails to cure such breach, and permits GM to terminate at its convenience.

Our hybrid navigation solutions are available on select model year 2019 GM vehicles in markets including North America, Australia and New Zealand, and in China with Shanghai-GM, or SGM. Our on-board navigation solutions are available on select model year 2019 Opel vehicles. We have also started offering our hybrid and on-board navigation solutions in select model year 2020 GM vehicles. Under our agreements with GM, we are obligated to provide our navigation products and services for additional models and regions through model year 2025.

Indemnification under automotive customer agreements

Under our agreements with Ford and GM, we have obligations to indemnify each of them against, among other things, losses arising out of or in connection with any claim that our technology or services infringe third party proprietary or intellectual property rights. Our agreements with each of Ford and GM may be terminated in the event an infringement claim is made against us and it is reasonably determined that there is a possibility our technology or service infringed upon a third party's rights.

Safeguards against unauthorized data usage

We employ administrative, physical and technical safeguards as part of our efforts to prevent unauthorized collection, access, use and disclosure of our end users' private data and to comply with applicable federal, state and local laws, rules and regulations. We do not use any end user data for direct marketing or promotions without the consent of the user and do not store any user location information that personally identifies the end user except to deliver and support our services. We are also required to comply with our customers' privacy and data securities policies.

Intellectual property

We rely on a combination of patent, copyright, trademark and trade secret laws, as well as confidentiality procedures and contractual restrictions, to establish and protect our proprietary rights. These laws, procedures and restrictions provide only limited protection and the legal standards relating to the validity, enforceability and scope of protection of intellectual property rights are uncertain and still evolving. Furthermore, effective patent, trademark, copyright and trade secret protection may not be available in every country in which our services and products are available.

We seek to patent key concepts, components, protocols, processes and other inventions. As of June 30, 2019, we held 163 U.S. patents and 155 foreign patents expiring between April 11, 2020 and April 27, 2036, and have 62 U.S. and 106 foreign patent applications pending. Of the pending 62 U.S. patent applications, 49 are nonprovisional utility patent applications. These patents and patent applications may relate to features and functions of our services and the technology platforms we use to provide them. We have filed, and will continue to file, patent applications in the United States and other countries where there exists a strategic technological or business reason to do so. Any future patents issued to us may be challenged, invalidated or circumvented. Any patents that may issue in the future with respect to pending or future patent applications may not provide sufficiently broad protection or may not prove to be enforceable in actions against alleged infringers.

We endeavor to enter into agreements with our employees and contractors and with parties with which we do business in order to limit access to and disclosure of our proprietary information. We cannot be certain that the steps we have taken will prevent unauthorized use or reverse engineering of our technology. Moreover, others may independently develop technologies that are competitive with ours or that infringe our intellectual property. The enforcement of our intellectual property rights also depends on the success of our legal actions against these infringers, but these actions may not be successful, even when our rights have been infringed.

We also enter into various types of licensing agreements to obtain access to technology or data that we utilize in connection with our navigation services. Our contracts with certain licensors include minimum guaranteed royalty payments, which are payable regardless of the ultimate volume of revenue derived from the number of paying end users. Our most important agreements are with the providers of maps pursuant to which we generally pay a monthly fee per end user or copy or a per transaction fee. We obtain map data from HERE North America, LLC, or HERE, pursuant to a master data license agreement dated December 1, 2002. HERE is principally owned by a consortium consisting of Audi AG, or Audi, BMW AG, or BMW, and Mercedes. Our agreement with HERE was automatically renewed under its existing terms through January 31, 2019, and automatically renews for successive one year periods unless either party provides notice of non-renewal at least 180 days prior to the expiration of the applicable term. In addition, we have entered into separate territory license agreements with HERE under which we are licensed to use certain map data for particular programs with certain of our current automotive customers to fulfill their requirements. The term of these territory licenses with HERE vary based on the customer and program, and can be extended for additional periods. Our agreement with HERE also allows a party to terminate the agreement if the other party materially breaches its obligations and fails to cure such breach.

In addition, we obtain other data such as map, weather updates, gas prices, POI and traffic information from additional providers.

Competition

The markets for development, distribution and sale of location services are highly competitive. Many of our competitors have greater name recognition, larger customer bases and significantly greater financial, technical, marketing, public relations, sales, distribution and other resources than we do.

We compete in the automotive navigation market with established automobile manufacturers and tier ones and providers of on-board navigation services such as AISIN AW CO., Ltd, or AISIN, AutoNavi Software Co., Ltd., or AutoNavi, Robert Bosch GmbH, or Bosch, Elektrobit Corporation, or Elektrobit, Garmin Ltd., or Garmin, HERE, Navinfo Co., Ltd., or Navinfo, NNG LLC, or NNG, Shenyang MXNavi Co., Ltd., or MXNavi, and TomTom North America, Inc., or TomTom, as well as other competitors such as Apple and Google.

Competition in our markets is based primarily on pricing and performance including features, functions, reliability, flexibility, scalability and interoperability; automobile manufacturer and tier one relationships; technological expertise, capabilities and innovation; price of services and products and total cost of ownership; brand recognition; and size and financial stability of operations. We believe we compete favorably with respect to these factors based upon the performance, reliability and breadth of our services and products and our technical experience.

Some of our competitors and potential competitors enjoy advantages over us, either globally or in particular geographic markets, including with respect to the following:

- significantly greater revenue and financial resources;
- ownership of mapping and other content allowing them to offer a more vertically integrated solution;
- stronger brand and consumer recognition in a particular market segment, geographic region or worldwide;
- the capacity to leverage their marketing expenditures across a broader portfolio of products;
- access to core technology and intellectual property, including more extensive patent portfolios;
- access to custom or proprietary content;
- quicker pace of innovation;
- stronger automobile manufacturer or tier one~~, advertising agency and advertiser~~ relationships;

- more financial flexibility and experience to make acquisitions;
- lower labor and development costs; and
- broader global distribution and presence.

Our competitors' and potential competitors' advantages over us could make it more difficult for us to sell our navigation services, and could result in increased pricing pressures, reduced profit margins, increased sales and marketing expenses and failure to increase, or even the loss of, market share or expected market share, any of which would likely cause harm to our business, operating results and financial condition.

Employees

As of June 30, 2019, we employed 784 people, including 653 in research and development, 49 in sales and marketing, 25 in customer support, data center operations, and advertising operations, and 57 in a general and administrative capacity. As of that date, we had 241 employees in the United States, 288 in China, 237 in Romania, 11 in Germany, six in South Korea and one in Japan. In connection with the inMarket Transaction, 46 employees left the Company in August 2019. We also engage a number of temporary employees and consultants. As of June 30, 2019, none of our employees were represented by a labor union or were a party to a collective bargaining agreement. However, in January 2019, our employees in Romania designated certain employee representatives to represent their interests in the negotiation of a future collective bargaining agreement under the Social Dialogue Law of Romania.

Information about our Executive Officers

The following table sets forth the names, ages (as of July 31, 2019) and positions of our executive officers:

Name	Age	Position
Dr. HP Jin	55	President, Chief Executive Officer and Chairman of the Board of Directors
Adeel Manzoor	44	Chief Financial Officer, Treasurer and Assistant Secretary
Salman Dhanani	46	Co-President, Automotive Business Unit
Philipp Kandal	36	Senior Vice President, Engineering
Steve Debenham	57	General Counsel and Secretary
Hassan Wahla	47	Co-President, Automotive Business Unit

Dr. HP Jin is a cofounder of our company and has served as our president and a member of our board of directors since October 1999. Dr. Jin has also served as our chief executive officer and chairman of our board of directors from October 1999 to May 2001 and since December 2001. Prior to Telenav, Dr. Jin served as a senior strategy consultant at the McKenna Group, a strategy consulting firm. Prior to that time, Dr. Jin was a business strategy and management consultant at McKinsey & Company, a management consulting firm. Dr. Jin was also previously a technical director at Loral Integrated Navigation Communication Satellite Systems, or LINCSS, a division of Loral Space & Communications, Inc., a GPS service and engineering company. Dr. Jin holds a B.S. and M.S. in Mechanical Engineering from Harbin Institute of Technology in China and a Ph.D. in Guidance, Navigation and Control, with a Ph.D. minor in Electrical Engineering, from Stanford University.

Adeel Manzoor has served as our chief financial officer, treasurer and assistant secretary since July 2019. From November 2016 to June 2019, Mr. Manzoor served as Vice President and Controller of the Storage, Big Data and Value Compute business unit at HPE. He also served as Vice President and Controller of the Converged Infrastructure business unit at HPE from August 2015 to November 2016. Previously, Mr. Manzoor served as Director of Strategy and Planning at HP from June 2014 to August 2015 and Director of Investor Relations at HP from September 2012 to June 2014. Prior to joining HP, Mr. Manzoor was an auditor at Ernst and Young LLP. Mr. Manzoor holds a degree in Business/Commerce from the University of the Punjab, an MBA from the Asian Institute of Technology and an MS, Accounting and Finance from New Mexico State University.

Salman Dhanani is a cofounder of our company and has served as co-president of our automotive business unit since January 2014. Mr. Dhanani served as our vice president, growth strategy and partnerships from July 2012 to January 2014, as our vice president, products from August 2010 to July 2012 and as our vice president, products and marketing from August 2009 to August 2010. Mr. Dhanani served as our executive director of marketing from March 2009 to July 2009 and as our senior director of marketing from November 1999 to February 2009. From January 1999 to November 1999, Mr. Dhanani served as a consultant at the McKenna Group, a strategy consulting firm. From July 1996 to December 1998, Mr. Dhanani served as an application engineer at Schlumberger Ltd., a technology consulting services company. Mr. Dhanani holds a B.S. in Electrical Engineering from the University of Washington.

Philipp Kandal has served as our senior vice president, engineering since January 2017. In August 2019, Mr. Kandal resigned from Telenav, effective October 4, 2019. From October 2016 to January 2017, Mr. Kandal served as our vice president, engineering for automotive and OSM. From January 2014 to October 2016, Mr. Kandal served as our general manager, EU and head of OSM. From September 2008 to January 2014, Mr. Kandal served as co-founder and CTO of skobbler, prior to our acquisition of skobbler. Mr. Kandal holds an M.B.A. from the University of Cologne.

Steve Debenham has served as our general counsel and secretary since August 2019. Prior to joining Telenav, Mr. Debenham served as vice president, general counsel and corporate secretary of Aerohive Networks, Inc. from January 2013 to August 2019. Previously, Mr. Debenham served in senior leadership roles at various other technology companies, including: vice president corporate development, general counsel and secretary of Silicor Materials Inc. from August 2010 to January 2013; senior vice president, general counsel and secretary of Asyst Technologies, Inc. from September 2003 to September 2009; and senior vice president, general counsel and secretary of Harris MyCFO Inc. from May 2000 to June 2003. Mr. Debenham began his legal career with the law firm of Jackson Tufts Cole & Black, LLP, where he was a partner practicing intellectual property litigation. Mr. Debenham holds an A.B. in History from Stanford University and a J.D. from the University of California, Hastings College of the Law.

Hassan Wahla has served as co-president of our automotive business unit since January 2014. Mr. Wahla served as our vice president, business development and carrier sales from August 2009 to January 2014 and served as our executive director of business development from May 2005 to August 2009. From April 2003 to May 2005, Mr. Wahla served as a senior product manager at Nextel Communications, a wireless communications company that merged with Sprint Corporation, or Sprint. From February 2002 to April 2003, Mr. Wahla served as vice president of business development of Wireless Multimedia Solutions, a privately held wireless software platform company. From September 1999 to February 2002, Mr. Wahla served as director of business development at MicroStrategy, Inc., a business intelligence software company. Prior to that time, Mr. Wahla served as a senior consultant at Maritime Power, a maritime equipment company. Mr. Wahla holds a B.S. in Industrial Engineering from Virginia Tech, an M.S. in Management from Stevens Institute of Technology and a Masters of International Affairs from Columbia University.

ITEM 1A. RISK FACTORS

We operate in a rapidly changing environment that involves numerous uncertainties and risks. The following risks and uncertainties may have a material and adverse effect on our business, financial condition or results of operations. You should consider these risks and uncertainties carefully, together with all of the other information included or incorporated by reference in this Form 10-K. If any of the risks or uncertainties we face were to occur, the trading price of our securities could decline, and you may lose all or part of your investment.

Risks related to our business

We incurred losses in each period since fiscal 2015. We expect that we will incur losses during fiscal 2020 and we do not know when, or if, we will return to profitability, as we make further expenditures to enhance and expand our operations in order to support growth and diversification of our business.

As a percentage of revenue, our net loss was 15%, 19% and 14% in fiscal 2019, 2018 and 2017, respectively. Our revenue from paid wireless carrier mobile navigation has substantially declined and we expect it to continue to do so and we may be unable to generate sufficient revenue from our automobile navigation business to return Telenav to profitability in the short-term, if at all.

We anticipate that we will continue to incur net operating losses during fiscal 2020. These expected losses are also due to the expected continued decline in our higher margin mobile navigation revenue and the costs we expect to incur prior to generating revenue in connection with new automotive navigation products and services that will not be integrated into production vehicles for several years, if at all. The time required to develop, test and deploy products between the time we secure the award of a new contract with any automobile manufacturer or tier one, and the timing of revenue thereunder, as well as a substantial required upfront investment in research and development resources prior to entering into contracts with automobile manufacturers and tier ones contribute to these expected losses. We also expect to continue to experience pressure on pricing in our negotiations with automobile manufacturers and tier ones as we enter into negotiations for contract renewals or new products where we are competing with larger suppliers that are competing on price, rather than features, or for vehicles where customers are price sensitive regarding navigation solutions or where the automobile manufacturer is offering or is considering brought-in solutions such as Apple's CarPlay or Google's Android Auto.

Although we are working to replace the continued decline in wireless carrier revenue, our efforts to develop new services and products and attract new customers require investments in anticipation of longer-term revenue. For example, the design cycle for automotive navigation products and services is typically 18 to 24 months, and in order to win designs and achieve revenue from this growth area, we typically have to make investments two to four years before we anticipate receiving revenue, if any. This is the case for our relationship with GM. In addition, the revenue commencement at initial launch may not be significant depending on the automobile manufacturer's or tier one's launch timing schedule across vehicle models and regions. For example, although our hybrid product with GM launched in February 2017, it has only launched in select vehicle models and we do not have any control over when and whether it launches in other GM models. Although we recently entered into a series of agreements with Grab with respect to the intellectual property underlying our OpenTerra Platform, we cannot provide any assurance that we will be able to enter into other arrangements for our OSM mapping technologies in the future.

We are required to recognize certain automotive revenue over time if there are contractual service periods or other obligations to fulfill, such as specified contractual deliverables. Certain contractual service periods or other obligations currently extend up to eight years. We intend to make additional investments in systems and continue to expand our operations to support diversification of our business, but it is likely that these efforts at diversification will not replace our declining wireless carrier revenue in the short-term, if at all. As a result of these factors, we believe we will incur a net operating loss and we will incur net losses during fiscal 2020, and we cannot predict when, or if, we will return to profitability. Our investments and expenditures may not result in the growth that we anticipate.

Our quarterly revenue and operating results have fluctuated in the past and may fluctuate in the future due to a number of factors. As a result, we may fail to meet or exceed the expectations of securities analysts or investors, which could cause our stock price to decline.

Our quarterly revenue and operating results may vary significantly in the future. Therefore, you should not rely on the results achieved in any one quarter as an indication of future performance. Period to period comparisons of our revenue and operating results may not be meaningful. Our quarterly results of operations may fluctuate as a result of a variety of factors, including, but not limited to, those listed below, many of which are outside of our control:

- the ability of automobile manufacturers to sell automobiles equipped with our products;

- competitive in-car platforms and products, such as Apple's CarPlay and Google's auto initiatives, which are currently offered in North America on Ford vehicles equipped with its SYNC 3 platform and most GM models;
- the decision by Toyota to expand Apple's CarPlay compatibility to certain of its 2019 model year and beyond Toyota and Lexus vehicles;
- Ford's announced intentions to modify its North America and European passenger car portfolio whereby it has begun phasing out certain car models;
- GM's announced intentions to end production of certain passenger vehicles in North America;
- the seasonality and unpredictability of new vehicle production, including tooling and assembly changes and plant shutdowns, such as the impact to production of certain Ford pickup truck models in U.S. factories due to a May 2018 fire at a supplier plant;
- the potential disruption of the anticipated departure of the United Kingdom from the European Union on automotive supply chains and potential plant closures in the United Kingdom;
- changes made to existing contractual obligations with a customer that may affect the nature and timing of revenue recognition, such as the adoption of our map update solution for Ford's customers in multiple geographies and its impact on the timing of our revenue recognition;
- competitive pressures on automotive navigation pricing from low cost suppliers and for vehicles where consumers are extremely price sensitive;
- the introduction and success of in-car integration, such as Google's in-car integration of Android Auto with Google Maps which did not require a mobile handset;
- investments made by HERE North America, LLC, or HERE, and TomTom North America, Inc., or TomTom, in high definition maps that may be leveraged to displace our products and services in new vehicle models;
- the seasonality of new vehicle model introductions and consumer buying patterns, as well as the effects of economic uncertainty on vehicle purchases, particularly outside of the United States;
- the impact of tariffs and other trade negotiations on vehicle prices and supply chains;
- the impact on vehicle sales resulting from tariffs on imported vehicles and parts and disruption to automobile manufacturer supply chains resulting therefrom;
- the effectiveness of our entry into new business areas;
- the loss of our relationship, a change in our revenue model, a change in pricing, or a reduction in geographic scope with any particular customer;
- poor reviews of automotive service offerings into which our navigation solutions are integrated resulting in limited uptake of navigation options by car buyers;
- warranty claims based on the performance of our products and the potential impact on our reputation with navigation users and automobile manufacturers and tier ones;
- the sale of vehicle brands by automobile manufacturers to an automobile manufacturer with which we do not have an existing relationship;
- the timing and quality of information we receive from our customers and the impact of customer audits of their reporting to us;
- the inability of our automobile manufacturer customers to attract new vehicle buyers and new subscribers for connected services;
- the timing of customized software development and other deliverables such as map updates;
- the amount and timing of operating costs and capital expenditures related to the expansion of our operations and infrastructure through acquisitions or organic growth;

- the timing of expenses related to the development, acquisition or divestiture of technologies, products or businesses;
- the cost and potential outcomes of existing and future litigation;
- the timing and success of new product or service introductions by us or our competitors and customer reviews of those products or services;
- the timing and success of marketing expenditures for our products and services;
- the extent of any interruption in our services;
- potential foreign currency exchange gains and losses associated with expenses and sales denominated in currencies other than the U.S. dollar;
- general economic, industry and market conditions, including the recent rise in U.S. interest rates, that impact expenditures for new vehicles, smartphones and mobile location services in the United States and other countries where we sell our services and products;
- changes in interest rates and our mix of investments, which would impact our return on our investments in cash and marketable securities;
- changes in our effective tax rates; and
- the impact of new accounting pronouncements such as ASC 606.

Fluctuations in our quarterly operating results might lead analysts and investors to change their models for valuing our common stock. As a result, our stock price could decline rapidly and we could face costly securities class action lawsuits or other unanticipated issues.

We are dependent on Ford and GM for a substantial portion of our billings and revenue, and our business, financial condition and results of operations will be harmed if our billings and revenue from Ford and GM do not continue to grow or decline.

Ford represented approximately 55%, 67% and 71% of our revenue and 50%, 66% and 68% of our billings in fiscal 2019, 2018 and 2017, respectively. GM represented approximately 18%, less than 10% and less than 10% of our revenue and 19%, less than 10% and less than 10% of our billings in fiscal 2019, 2018 and 2017, respectively. During fiscal 2019, we experienced a decline in billings to Ford as compared to fiscal 2018 due primarily to a January 1, 2018 reduction in certain content costs that are passed through to Ford. Despite the decrease in Ford's billings, we expect that Ford, GM, other automobile manufacturers and tier ones will account for an increasing percentage of our revenue and billings, as our revenue and billings from paid wireless carrier provided navigation continues to decline. However, our total revenue and billings could potentially decline if Ford or GM increases the cost to consumers of our navigation products, reduces the number of vehicles or the geographies in which vehicles with our products as an option are sold, or if their sales of vehicles fall below forecast due to competition, global macro-economic conditions or other factors. Ford offers Apple's CarPlay and Google's Android Auto on its vehicles in North America equipped with its SYNC 3 platform and announced that Waze is available on its vehicles equipped with the SYNC 3 platform, which may reduce the number of vehicle purchasers who purchase built-in navigation services. GM also offers Apple's CarPlay and Google's Android Auto on most of its vehicles in North America. We may not successfully increase our revenue and billings from Ford or GM if our products are replaced within vehicles by Ford or GM with our competitors' products or from price competition from third parties. Moreover, Ford announced its intention to modify its North American passenger car portfolio strategy and has begun phasing out certain car models, and it recently indicated that it is also considering changes in its European portfolio strategy. This could lead to a significant reduction in the sales of vehicles with our products as an option. We may not be able to mitigate the effect of any lost billings and revenue and our business, financial condition, results of operations and prospects could be materially adversely affected, our stock price could be volatile, and it may be difficult for us to achieve and maintain profitability.

Our contract with Ford covers a broad range of products and services that we provide to Ford. On March 28, 2018, we entered into an amendment to the Ford Agreement that extends the term of the agreement to December 31, 2020 for each jurisdiction in which we currently provide our products to Ford. On December 14, 2017, Ford also selected us to provide its next generation navigation solution in North America, subject to certain conditions and execution of an agreement regarding those solutions. The terms of this next generation navigation solution were embodied in an amendment executed in December 2018, and this amendment extended the term of the agreement to December 31, 2022 for North America production; provided that Ford may extend the term further subject to certain conditions. We were not awarded the contracts for Europe, South

America and Australia and New Zealand. The loss of any contracts awarded, or our failure to be awarded contracts for certain geographies, may adversely impact our business, financial condition and results of operations.

Our contract with GM includes the provision of our on-board, hybrid, and brought-in navigation solutions across a wide assortment of GM vehicles. Our mobile navigation SDK powers GM's branded mobile and web-based applications and is covered under a services agreement that was entered into June 13, 2014 and extends to December 31, 2019. Our on-board and hybrid navigation solutions for GM are covered under a product and services agreement that became effective February 1, 2017. These solutions began shipping in a limited number of vehicles beginning with model year 2017 and are gradually expanding across additional regions and models. In May 2017, additional vehicles through model year 2025 were added to this products and services agreement, which terminates on December 31, 2026.

In addition, a substantial portion of our revenue and billings and, to a lesser extent, gross profit from Ford is impacted by the underlying licensed content cost negotiated through HERE and other content providers. We cannot predict the impact on our revenue, billings, and gross profit of any changes between the automobile manufacturers and the map or other content providers.

We have limited experience managing, supporting and retaining automobile manufacturers and tier ones as customers, and if we are not able to maintain Ford and GM as customers our revenue will decline.

If we fail to comply with our automobile manufacturer and tier one contracts, our business, financial condition and results of operations could suffer.

Our contracts with our automobile manufacturer and tier one customers include increasingly specialized, complex and strict performance requirements. We are experiencing increased challenges in achieving certain milestones under our contracts with our automobile manufacturer and tier one customers, including, among others, our largest automobile manufacturer customer. In particular, our agreement with our largest automobile manufacturer customer requires that we become certified under a set of technical standards for the computer software development process in the automobile industry, which requirement currently requires certification by the fall of 2019. We do not currently have any such certification, and we may not be able to obtain it in a timely manner, if at all, for our software to be included in that customer's model year 2021 vehicles. In addition, our automobile manufacturer and tier one customers regularly evaluate our capabilities against those of our competitors and may even engage one or more of our competitors as a dual source supplier. Any failure by us to timely perform under our automobile manufacturer and tier one contracts could at any time result in the termination of those contracts, the awarding of work to one or more of our competitors, or other adverse actions being taken by the applicable automobile manufacturer or tier one customer. Further, any negative publicity related to our automobile manufacturer or tier one contracts or any proceedings surrounding them, regardless of its accuracy, may damage our business by affecting our ability to compete for new contracts. If one of our automobile manufacturer or tier one contracts is terminated, or if our ability to compete for new contracts is adversely affected, our business, reputation, financial condition and results of operations could suffer.

Our automotive revenue and earnings could fluctuate due to the complexities of revenue recognition and capitalization of expenses related to customized products.

We adopted ASC 606, *Revenue from Contracts with Customers*, effective July 1, 2018, utilizing the full retrospective transition method. Under this accounting methodology, royalty amounts earned are bifurcated when there exist various underlying obligations. Revenue is recognized upon fulfillment of the underlying obligation. Such obligations related to earned royalties generally can include an onboard navigation component recognized as revenue once delivered and accepted, a connected services component recognized to revenue over the applicable service period, and a map update component recognized as revenue upon periodic delivery. Due to the complexities of revenue recognition, we may be required to recognize certain revenue over extended periods. For example, because customers of our brought-in automotive navigation solutions simultaneously receive and consume the benefit from our performance, we recognize revenue ratably over the period the services obligation is expected to be fulfilled, which is generally 8 to 12 years, as this provides a faithful depiction of the transfer of control.

Revenue recognition could also be impacted by future amendments to automobile manufacturer and tier one agreements, such as providing our map update solution in other regions, changes in procurement patterns, shipping terms and title transfer. As our solutions encompass greater value-added services, there is potential for changes in the timing of revenue recognition. Investors and securities analysts may not understand the subtleties of these revenue recognition requirements, and the trading prices of our common stock may be negatively affected.

In addition, our revenue recognition is becoming increasingly more complex with the evolution of our value-added products and services, such as our hybrid navigation solutions. The agreements for these solutions can extend over several years and require multiple deliverables. Given the length of our contractual obligations, which often extend beyond the manufacture and sale of the vehicle when the royalty is determined and paid, we may have significant post-production obligations to provide brought-in navigation services or map updates over an extended period of time. These extended obligations can result in a delay in recognition of revenue, or the need to defer and recognize revenue over the period that we are required to provide these post-production obligations or other services.

In conjunction with the adoption of ASC 606, development costs subject to ASC 340-40 incurred to fulfill future obligations under certain actual or anticipated contracts for automotive solutions are capitalized, provided they are expected to be recovered, and then recognized as the related performance obligations are transferred. For on-board automotive solutions, such costs represent the customized portion of software development, which will continue to be recognized upon acceptance of the software under ASC 340-40 since acceptance is generally required for control of the software to transfer. As a result, our recognition of deferred costs may be lumpy and not tied to the production of the vehicles in which the software is installed. For brought-in automotive solutions, such costs will be amortized over the period the services obligation is expected to be fulfilled because software development does not represent a distinct performance obligation in the case of brought-in automotive solutions. Historically, we recognized such costs for brought-in automotive solutions upon acceptance of the software.

We may also incur significant expense to develop products for automobile manufacturers, such as under our worldwide connected navigation services agreement with GM, prior to receiving any significant revenue related to the sale of vehicles with our navigation services. As our offerings in automotive navigation expand, we may not correctly anticipate the financial accounting treatment for the various products.

We may not be successful at adapting our business model for the Chinese automotive navigation market, which may reduce our revenue per vehicle.

Expanding our initial automotive entry in the Chinese market is an important component of our global growth strategy. The automotive software market in China is highly competitive. This competition comes from large international automotive software providers as well as strong domestic providers. The Chinese navigation software market is seeing transition towards new business models by third-party navigation product vendors, such as substantially lower per unit license fees that are intended to be offset by opportunities to monetize navigation usage in additional ways that may include, but not be limited to, advertising, usage-based insurance and utilizing data to create high definition maps. Global platform navigation products tend to fare poorly in China. For example, our revenue from Ford China declined materially in fiscal 2018 and 2019, and we expect it to continue to decline in the absence of a new, localized product. We may need to change or modify our license fee model in China in order to compete effectively. Our inability to do so may have a material impact on our ability to expand into the Chinese market. Even if we adopt new license fee models for China based automobile manufacturers, we may not recognize revenue from those new models sufficient to compensate us for the costs of supporting those automobile manufacturers in the short-term, if at all. In addition, many of the same business model, pricing and licensing changes, could also impact us in additional markets including, but not limited to, North America and Europe.

We may not be successful in generating material revenue from automobile manufacturers and tier ones other than Ford and GM. As a result, our business, financial condition and results of operations will be harmed if we are unable to diversify our automotive revenue.

Although we have attempted to mitigate our dependence on Ford and GM by establishing relationships with other automobile manufacturers and tier ones, these relationships may not produce significant revenue if the products are launched in limited models or face competition from third parties. Even if we are able to diversify our automotive navigation business through new arrangements, customers may not elect to purchase automobile manufacturer and tier one navigation offerings that include our software and/or services for reasons unrelated to performance of our software or services. Even if we win new awards, once those programs go into production, consumers may not widely adopt our navigation offerings or may criticize the performance or quality of the navigation software and our reputation may be harmed. If customer purchase rates are less than anticipated, or if our relationships with one or more of these other automobile manufacturers and tier ones are terminated or not renewed or extended, we may be unable to effectively diversify our automotive navigation revenue and our business, financial condition and results of operations may be harmed.

We may be unable to enter into agreements to provide automotive navigation products if we do not offer navigation products that serve geographies throughout the world or automobile manufacturers and tier ones are uncomfortable with our ability to support markets outside of the United States. Our automobile manufacturer and tier one customers may choose to partner with providers of location services with extensive international operations. We may be at a disadvantage in attracting such customers due to our business being concentrated in the United States, and we may not be successful in other geographies if customers are uncomfortable with the look and feel of our solutions. If we are unable to attract or retain such automobile manufacturer and tier one customers, our revenue and operating results will be negatively affected.

We may incur substantial costs when engaging with a new automotive navigation customer and may not realize substantial revenue from that new customer in the short-term, if at all.

The design and sales cycle for on-board or brought-in automotive navigation services and products is substantially longer than those associated with our mobile navigation services to customers of wireless carriers. As a result, we may not be able to achieve significant revenue growth with new customers from the automotive navigation business in a short period of time, or at all. In addition, these lengthy cycles make it difficult to predict if and when we will generate revenue from new customers. For example, design wins for vehicles may be awarded 12 to 36 months prior to the anticipated commercial launch of the vehicle. We also entered into a contract with GM in 2014 to provide worldwide hybrid navigation solutions beginning in model year 2017 and continuing through model year 2025, and our hybrid product launched in its first GM models, the Cadillac CTS and CTS-V, in February 2017. We cannot assure you that our products will be in a wide variety of geographic markets in which GM sells vehicles in or across a variety of models and brands. GM has not provided us with any volume or revenue guarantees, and we cannot assure you that we will continue to receive material revenue from these products and services.

We have a partnership with Toyota for Toyota and Lexus vehicles and a separate partnership with Xevo, a tier one supplier to Toyota, for another navigation solution for Toyota and Lexus vehicles. While we have seen expansion of our latest version of Scout GPS Link solution across more Toyota and Lexus models in fiscal 2019, we expect Toyota to limit or reduce the number of models or vehicles on which Scout GPS Link is offered by Toyota and Lexus, beginning in model year 2021, due in part to the offering of alternative brought-in solutions such as Apple’s CarPlay, which Toyota recently announced it is offering across certain Toyota models, and the expanded offering of Google’s Android Auto solution across more automobile manufacturers. In addition, during the fourth quarter of 2019, Telenav entered into an amended agreement with Xevo. The amended agreement provides that we will receive a one-time $17.0 million cash pre-payment in the first quarter of fiscal 2020 in exchange for removing a contractual minimum unit commitment that otherwise would have resulted in a payment to us in 2027. We recorded the receivable as deferred revenue in the fourth quarter of fiscal 2019, and it will be recognized as revenue over future periods. Our contract with Xevo relating to the implementation of our solutions in Toyota and Lexus vehicles is expected to remain in place through 2026. We cannot assure you that we will receive significant revenue from the solutions for Toyota in the long-term. While we continue to invest in our existing and new relationships with automobile manufacturers, if our products do not meet the consumer’s expectations, automobile manufacturer customers may not continue to offer our solutions.

We also may not price our solutions in such a way that is profitable for us and enables us to recoup the development expenses we incurred to provide such solutions in the time we expect or at all. Development schedules for automotive navigation products are difficult to predict, and there can be no assurance that we will achieve timely delivery of these products to our customers. To the extent that we charge service fees beyond an initial fee at the time the vehicle is purchased, we may not be successful in gaining traction with customers to provide services and charge ongoing monthly or annual fees outside of the traditional on-board navigation service model.

Our ability to build demand for our automotive navigation products and services is also dependent upon our ability to provide the products and services in a cost-effective manner, which may require us to renegotiate map and POI content relationships to address the specific demands of our automotive navigation products and services. If we are unable to improve our margins, we may not be able to operate our automotive navigation business profitably. If we fail to achieve revenue growth in any of our automotive navigation solutions (whether on-board, brought-in or other), we may be unable to achieve the benefits of revenue diversification. In addition, our map and content suppliers, HERE and TomTom, are also becoming competitors through the offering of their own automotive navigation services.

The success of our automotive navigation products may be affected by the number of vehicle models offered with our navigation solutions, as well as overall demand for new vehicles.

Our ability to succeed long term in the automotive industry depends on our ability to expand the number of models offered with our navigation solutions by our current automobile manufacturer customers. We are also dependent upon our ability to attract new automobile manufacturers and tier ones. For automobile manufacturers with whom we have established relationships, such as Ford, our success depends on continued production and sale of new vehicles offered with, and adoption by end users of, our products when our product is not a standard feature. Our on-board and hybrid solutions may not satisfy automobile manufacturers’ or end customers’ expectations for those solutions. If automobile manufacturers and tier ones do not believe that our services meet their customers’ needs, our products and services may not be designed into future model year vehicles. As we move forward, our existing automobile manufacturers and tier ones may not include our solutions in future year vehicles or territories, which would negatively affect our revenue from these products. Production and sale of new vehicles are subject to delay due to forces outside of our control, such as natural disasters, parts shortages and work stoppages, as well as general economic conditions. For example, in May 2018, Ford ceased production of certain of its pickup trucks for several weeks due to a fire at a third-party supplier.

We rely on our customers for timely and accurate vehicle and subscriber sales information. A failure or disruption in the provisioning of this data to us would materially and adversely affect our ability to manage our business effectively.

We rely on our automobile manufacturers and tier one customers to provide us with reports on the number of vehicles they sell with our on-board, brought-in and hybrid navigation products and services included, depending on the nature of our contractual relationship, and to remit royalties for those sales to us. We also rely on our wireless carrier customers to bill subscribers and collect monthly fees for our mobile navigation services, either directly or through third-party service providers. The risk of inaccurate reports may increase as our customers expand internationally and increase the number of manufacturing locations. For example, in the three months ended March 31, 2017 and September 30, 2017, Ford determined that it had misreported the production of vehicles to us in certain factories. If our customers or their third-party service providers provide us with inaccurate data or experience errors or outages in their own billing and provisioning systems when performing these services, our revenue may be less than anticipated or may be subject to adjustment with the customer. In the past, we have experienced errors in reporting from automobile manufacturers and wireless carriers. If we are unable to identify and resolve discrepancies in a timely manner, our revenue may vary more than anticipated from period to period, which could harm our business, operating results and financial condition.

Our business practices with respect to data could give rise to liabilities or reputational harm as a result of governmental regulation, legal requirements or industry standards relating to consumer privacy and data protection.

Our automotive navigation services depend on our ability to collect, store and use such information as we deliver personalized navigation. Federal, state and international laws and regulations govern the collection, use, retention, sharing and security of data that we collect across our navigation platform. We strive to comply with all applicable laws, regulations, policies and legal obligations relating to privacy and data protection. However, it is possible that these requirements may be interpreted and applied in a manner that is inconsistent with our practices. Any failure, or perceived failure, by us to comply with such laws could result in proceedings or actions against us by governmental entities, consumers or others. Such proceedings or actions could hurt our reputation, force us to spend significant amounts to defend ourselves, distract our management, increase our costs of doing business, adversely affect the demand for our services and ultimately result in the imposition of monetary liability. We may also be contractually liable to indemnify and hold harmless our users from the costs or consequences of inadvertent or unauthorized disclosure of data that we store or handle as part of providing our services.

The regulatory framework for privacy issues worldwide is still evolving. For example, the European Union's ("EU") General Data Protection Regulation ("GDPR") took effect in May 2018. The GDPR replaces Directive 95/46/EC of 1995 and is directly applicable in EU member states. Among other things, the GDPR regulates data controllers and processors outside of the EU whose processing activities relate to the offering of goods or services to, or monitoring the behavior within the EU of, EU data subjects. Complying with the GDPR may cause us to incur substantial operational costs or require us to change our business practices. Despite our efforts to bring practices into compliance before the effective date of the GDPR, we cannot assure you that we are fully compliant. In addition, because the GDPR is new, it may be subject to new or changing interpretations by courts, and our interpretation of the law and efforts to comply with the rules and regulations of the law may be ruled invalid. The GDPR imposes significant penalties of up to the greater of 4% of worldwide turnover and €20 million for violations of the GDPR. Similarly, in June 2018, California enacted the California Consumer Privacy Act of 2018 (the "CCPA"), which will become effective in January 2020. The CCPA will, among other things, require covered companies to provide new disclosures to California consumers and afford such consumers new rights to opt-out of certain sales of personal information. The CCPA creates a private right of action for statutory damages for certain breaches of information. Legislators have proposed amendments to the CCPA, of which nearly a dozen continue to progress through the Senate committee. In addition, the Office of the California Attorney General will be promulgating regulations to establish procedures to facilitate these new rights. The proposed regulations are anticipated to be published in the fall of 2019, and the deadline for the California Attorney General to release final regulations is July 1, 2020. As such, it remains unclear what, if any, modifications will be made to this legislation or how it will be interpreted and enforced. In addition, other states have enacted or proposed legislation that regulates the collection, use, and sale of personal information, and such regimes might not be compatible with either the GDPR or the CCPA. We cannot yet predict the impact of the CCPA or impending legislation on our business or operations, but it may require us to modify our data processing practices and policies and to incur substantial costs and expenses in an effort to comply. If we fail to implement practices and procedures deemed necessary by regulators or consumers or to comply with the GDPR, CCPA or other applicable regimes, we may be subject to fines, penalties, litigation, and reputational harm and our business may be seriously harmed. In addition, various government and consumer agencies and public advocacy groups have called for new regulation and changes in industry practices, including some directed at the mobile and advertising industries in particular. It is possible that new laws, regulations, standards, recommendations, best practices or requirements will be adopted that would affect our business, particularly with regard to location-based services, collection or use of data to target ads and communication with consumers via mobile devices. To the extent that we or our clients are subject to new laws or recommendations or choose to adopt new standards, recommendations, or other requirements, we may have greater compliance burdens. If we are perceived as not operating in accordance with industry best practices or any such guidelines or codes with regard to privacy, our reputation may suffer, and we could lose relationships with developer partners.

Changes to United States tax, tariff and import/export regulations may have a negative effect on global economic conditions, financial markets and our business.

The current administration, along with Congress, has created significant uncertainty about the future relationship between the United States and other countries with respect to the trade policies, treaties, taxes, government regulations and tariffs that would be applicable. It is unclear what changes might be considered or implemented and what response to any such changes may be by the governments of other countries. These changes have created significant uncertainty about the future relationship between the United States and China, as well as other countries, including with respect to the trade policies, treaties, government regulations and tariffs that could apply to trade between the United States and other nations. For example, in 2018, the Office of the U.S. Trade Representative, or the USTR, enacted new tariffs on imports into the United States from China. Since then, additional tariffs have been imposed by the USTR on imports into the United States from China and China has also imposed tariffs on imports into China from the United States. The countries continue to negotiate a trade deal. If additional tariffs or other restrictions are placed on Chinese imports or any additional counter-measures are taken by China, our revenue and results of operations may be materially harmed. Furthermore, current or future tariffs imposed by the United States may negatively impact the automobile manufacturers to which we provide our automotive navigation products and services, thereby causing an indirect negative impact on our own sales. Any reduction in the sales of our customers and business partners, and/or any apprehension among our customers and business partners of a possible reduction in such sales, would likely cause an indirect negative impact on our own sales. Even in the absence of further tariffs, the related uncertainty and the market's fear of an escalating trade war might create forecasting difficulties for us and could cause our customers and business partners to place fewer orders for our products and services, which could have a material adverse effect on our business, liquidity, financial condition, and/or results of operations. These developments, or the perception that any of them could occur, may have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global trade and, in particular, trade between these nations and the United States. Any of these factors could depress economic activity and restrict our access to suppliers or customers and have a material adverse effect on our business, financial condition and results of operations and affect our strategy in China and elsewhere around the world. Given the relatively fluid regulatory environment in China and the United States and uncertainty how the U.S. administration or foreign governments will act with respect to tariffs, international trade agreements and policies, a trade war, further governmental action related to tariffs or international trade policies, or additional tax or other regulatory changes in the future could directly and adversely impact our financial results and results of operations.

Our legacy wireless carrier mobile navigation business is declining and may be eliminated altogether in the future. As it continues to decline, our revenue and net income or loss will continue to be adversely affected.

Although we historically received a majority of our revenue from wireless carriers whose subscribers received our services through bundles or by purchasing our navigation services, consistent with industry trends, our wireless carrier revenue has declined significantly. In the last three fiscal years, wireless carrier subscribers have materially decreased their subscriptions for, and usage of, our paid navigation services and our revenue from our relationship with wireless carriers has declined accordingly. We anticipate that wireless carrier subscribers will continue to decrease their subscriptions for paid navigation services in favor of free or freemium offerings and that revenue from our relationship with wireless carriers will continue to decline and may be eliminated altogether in the future. In the event that our mobile navigation business ceases to be profitable or we determine that it diverts resources from growing areas of our business, we may ultimately elect to terminate our legacy wireless carrier mobile navigation business. In addition, our wireless carrier customers may determine that the cost of offering our service to their subscribers outweighs the benefits and may decide to terminate our business relationship. Our other sources of revenue from our location-based platforms, including automotive navigation, have substantially lower margins than wireless carrier mobile navigation revenue and, as a result, we would have to generate substantially more revenue from those services to replace the declining wireless carrier revenue.

Our customer requirements and content management obligations are complex. If we inadvertently include content for which we have liability to the vendor but may not be entitled to payment from our customer, our financial condition and results of operation could be harmed.

The nature and extent of content that is delivered as part of our navigation solutions is complex to manage. Matching the requirements of our customers with the content offered by our vendors may result in our inclusion of content which we believe is necessary to meet our customers' requirements for which the customer may not have agreed to make payment to us. In addition, our customers speak directly to our vendors and often those conversations influence the expected content for our end products; however, customers may not be fully informed as to the license costs associated with the various components. Therefore, there is some risk that we may include content for which we have liability to the vendor but may not be entitled to payment from our customer. If these situations were to occur, our business, financial condition and results of operations could be adversely affected.

We face intense competition in our market, especially from competitors that offer their location services for free, which could make it difficult for us to acquire and retain customers and end users.

The market for development, distribution and sale of location services is highly competitive. Many of our competitors have greater name recognition, larger customer bases and significantly greater financial, technical, marketing, public relations, sales, distribution and other resources than we do. Competitors may offer location services that have at least equivalent functionality to ours for free. For example, Google offers free voice-guided turn by turn navigation as part of its Google Maps and Waze products for mobile devices, including those based on the Android and iOS operating system platforms, and Apple offers proprietary maps and voice-guided turn by turn directions. Microsoft Corporation also provides a free voice-guided turn by turn navigation solution on its Windows Mobile and Windows Phone operating systems. Competition from these free offerings may reduce our revenue, result in our incurring additional costs to compete and harm our business. If our wireless carrier customers can offer these mobile location services to their subscribers for free, they may elect to cease their relationships with us, similar to Sprint, alter or reduce the manner or extent to which they market or offer our services or require us to substantially reduce our fees or pursue other business strategies that may not prove successful. In addition, new car buyers may not value navigation solutions built in to their vehicles if they believe that free (brought-in) offerings, such as Apple's CarPlay or Google's auto initiatives, are adequate and may not purchase our solutions with their new cars. Ford offers Apple's CarPlay and Google's Android Auto on its vehicles in North America equipped with its SYNC 3 platform and announced that Waze will be available on its vehicles equipped with the SYNC 3 platform, which may reduce the number of vehicle purchasers who purchase on-board navigation solutions. GM also offers Apple's CarPlay and Google's Android Auto on most of its vehicles in North America. While we have seen expansion of our latest version of Scout GPS Link solution across more Toyota and Lexus models in fiscal 2019, we expect that Toyota may limit the number of future models or vehicles on which Scout GPS Link is offered by Toyota and Lexus due in part to the offering of alternative brought-in solutions such as Apple's CarPlay, which Toyota announced it is offering across certain Toyota models, and the expanded offering of Google's Android Auto solution across more automobile manufacturers. We may not successfully increase our revenue from Ford or Toyota, and our revenue could decrease, if our products are replaced within vehicles by Ford or Toyota with our competitors' products or due to price competition from third parties.

We compete in the automotive navigation market with established automobile manufacturers and tier ones and providers of on-board navigation services such as AISIN AW CO., Ltd, AutoNavi Software Co., Ltd., Robert Bosch GmbH, Elektrobit Corporation, Garmin, Ltd., HERE, Navinfo Co., Ltd., NNG LLC, Shenyang MXNavi Co., Ltd., and TomTom, as well as other competitors such as Apple and Google. Lear announced in April 2019 that it had agreed to acquire Xevo, with which we provide an offering to Toyota, which could result in Xevo moving into the on-board navigation services space. Some of our competitors' and our potential competitors' advantages over us, either globally or in particular geographic markets, include the following:

- significantly greater revenue and financial resources;
- ownership of mapping and other content allowing them to offer a more vertically integrated solution;
- stronger brand and consumer recognition in a particular market segment, geographic region or worldwide;
- the capacity to leverage their marketing expenditures across a broader portfolio of products;
- access to core technology and intellectual property, including more extensive patent portfolios;
- access to custom or proprietary content;
- quicker pace of innovation;

- stronger automobile manufacturer and tier one relationships;
- more financial flexibility and experience to make acquisitions;
- ability or demonstrated ability to partner with others to create stronger or new competitors;
- stronger international presence, which could make our larger competitors more attractive partners to automobile manufacturers and tier ones;
- lower labor and development costs; and
- broader global distribution and presence.

Our competitors' and potential competitors' advantages over us could make it more difficult for us to sell our navigation services, and could result in increased pricing pressures, reduced profit margins, increased sales and marketing expenses and failure to increase, or the loss of, market share or expected market share, any of which would likely cause harm to our business, operating results and financial condition.

If we are unable to integrate future acquisitions successfully, our operating results and prospects could be harmed.

In the future, we may make acquisitions to improve our navigation services offerings or expand into new markets. Our future acquisition strategy will depend on our ability to identify, negotiate, complete and integrate acquisitions and, if necessary, to obtain satisfactory debt or equity financing to fund those acquisitions. Mergers and acquisitions are inherently risky, and any mergers and acquisitions we complete may not be successful. Future mergers and acquisitions we may pursue would involve, numerous risks, including the following:

- difficulties in integrating and managing the operations, technologies and products of the companies we acquire, that are geographically remote from our existing operations;
- diversion of our management's attention from normal daily operation of our business;
- our inability to maintain the key business relationships and the reputations of the businesses we acquire;
- our inability to retain key personnel of the companies we acquire;
- uncertainty of entry into markets in which we have limited or no prior experience and in which competitors have stronger market positions;
- our dependence on unfamiliar affiliates and customers of the companies we acquire;
- insufficient revenue to offset our increased expenses associated with acquisitions;
- our responsibility for the liabilities of the businesses we acquire, including those which we may not anticipate; and
- our inability to maintain internal standards, controls, procedures and policies.

We may be unable to secure the equity or debt funding necessary to finance future acquisitions on terms that are acceptable to us. If we finance acquisitions by issuing equity or convertible debt securities, our existing stockholders will likely experience dilution, and if we finance future acquisitions with debt funding, we will incur interest expense and may have to comply with financial covenants and secure that debt obligation with our assets.

We may be required to recognize a significant charge to earnings if our goodwill or other intangible assets become impaired.

We have recorded goodwill related to our prior acquisitions and may do so in connection with any potential future acquisitions. Goodwill and other intangible assets with indefinite lives are not amortized, but are reviewed for impairment annually or on an interim basis whenever events or changes in circumstances indicate that the carrying value of these assets may not be recoverable. Factors that may indicate that the carrying value of our goodwill or other intangible assets may not be recoverable include a persistent decline in our stock price and market capitalization, reduced future cash flow estimates and slower growth rates in our industry. We may be required to record a significant charge in our financial statements during the period in which any impairment of our goodwill or other intangible assets is determined, which would adversely impact our results of operations. We are required to allocate goodwill and intangibles to each of our business segments. As a result, we conduct our impairment review each year or on an interim basis by segment, which can result in a different outcome than if assessed on an overall consolidated basis. We have recognized goodwill impairments in fiscal 2019 and 2018.

We performed our annual goodwill impairment test as of April 1, 2019 by comparing the fair value of our three reporting units with their respective carrying amounts. Based upon a qualitative assessment indicating that it was not more likely than not that the fair value of each of our reporting units was less than its carrying value, we determined that no impairment was indicated. Subsequent to the completion of our annual assessment, in May 2019 we entered into substantive discussions with inMarket regarding the sale of certain assets and the assumption of certain liabilities associated with the Ads Business in exchange for an equity interest in inMarket. In June 2019, we considered it more likely than not that a sale would occur, and we concluded that this represented a triggering event that required an interim goodwill impairment assessment. Accordingly, in June 2019, we performed an interim goodwill impairment test for our advertising business segment. In assessing its fair value, we made assumptions regarding our estimated future cash flows, weighted average cost of capital and timing over which the cash flows will occur, among other factors. Based on the results of this interim goodwill impairment test, the carrying value of our advertising business segment exceeded its estimated fair value and, accordingly, in fiscal 2019 we recognized a $2.6 million impairment of the goodwill associated with our advertising business segment.

During the three months ended March 31, 2018, certain mobile navigation customer contracts were amended and certain other customers indicated their intent with respect to terminating services in the near term. Based upon a qualitative assessment indicating that it was more likely than not that the fair value of the mobile navigation reporting unit was less than its carrying value, we performed an interim goodwill impairment test for our mobile navigation business segment during the three months ended March 31, 2018. Based on the results of our test, the carrying value of our mobile navigation business segment exceeded its estimated fair value. Accordingly, during the three months ended March 31, 2018, we recognized a $2.7 million impairment of all of the goodwill associated with our mobile navigation business segment.

We may make similar determinations regarding the impairment of goodwill in the future, which could have a material and adverse effect on our profitability.

Warranty claims, product liability claims, product recalls and regulatory liability claims could subject us to significant costs and adversely affect our financial results.

We warrant our automotive navigation products to be free from defects in materials, workmanship and design for periods ranging from three months to seven years. If our navigation services or products contain defects, there are errors in the maps supplied by third-party map providers or if our end users do not heed our warnings about the proper use of these products, collisions or accidents could occur resulting in property damage, personal injury or death. If any of these events occurs, we could be subject to significant liability for personal injury and property damage and under certain circumstances could be subject to a judgment for punitive damages. In addition, if any of our designed products are defective or are alleged to be defective, we may be required to participate in a recall campaign. These recall and warranty costs could be exacerbated to the extent they relate to global platforms or we are unable to deliver software updates over the air. Furthermore, recall actions could adversely affect our reputation or market acceptance of our products, particularly if those recall actions cause consumers to question the safety or reliability of our products. Warranty claims, a successful product liability claim or a requirement that we participate in a product recall campaign may adversely affect our results of operations and financial condition.

We accrue costs related to warranty claims when they are probable of being incurred and reasonably estimable. Our warranty costs have historically not been material. From time to time, we experience incidents where it may be necessary for us to expend resources to investigate and remedy a potential warranty claim.

We maintain limited insurance against accident related risks involving our products. However, we cannot assure you that this insurance would be sufficient to cover the cost of damages to others or will continue to be available at commercially reasonable rates. In addition, our errors and omissions insurance policy excludes coverage for certain consumer protection regulatory claims, including any future claims brought under the Telephone Consumer Protection Act. We may also be named as a defendant in litigation by consumers individually or on behalf of a class if their handsets or automobiles suffer problems from software downloads from our customers. If we are unable to obtain indemnification from our customer for any damages or legal fees we may incur in connection with such complaints, our financial position may be adversely impacted. In addition, insurance coverage generally will not cover awards of punitive damages and may not cover the cost of associated legal fees and defense costs. If we are unable to maintain sufficient insurance to cover product liability or regulatory liability costs, or if we experience losses not covered by our insurance, our business, financial condition and results of operations could be adversely affected.

Indemnity provisions in various agreements potentially expose us to substantial liability for intellectual property infringement, damages caused by defective software and other losses.

Our agreements with our customers include indemnification provisions. We agree to indemnify them for losses suffered or incurred in connection with our navigation services or products, including as a result of intellectual property infringement, damages caused by defects and damages caused by viruses, worms and other malicious software. The term of these indemnity provisions is generally perpetual after execution of the corresponding agreement, and the maximum potential amount of future payments we could be required to make under these indemnification provisions is generally substantial and may be unlimited. In addition, some of these agreements permit our indemnitees to terminate their agreements with us if they determine that the use of our navigation services or products infringes third-party intellectual property rights.

We have received, and expect to receive in the future, demands for indemnification under these agreements. These demands can be very expensive to settle or defend, and we have in the past incurred substantial legal fees and settlement costs in connection with certain of these indemnity demands. Furthermore, we have been notified by several customers that they have been named as defendants in certain patent infringement cases for which they may seek indemnification from us. Large future indemnity payments and associated legal fees and expenses, including potential indemnity payments and legal fees and expenses relating to the current or future notifications, could materially harm our business, operating results and financial condition.

We may in the future agree to defend and indemnify our customers in connection with the pending notifications or future demands, irrespective of whether we believe that we have an obligation to indemnify them or whether we believe that our services and products infringe the asserted intellectual property rights. Alternatively, we may reject certain of our customers' indemnity demands, which may lead to disputes with our customers and may negatively impact our relationships with them or result in litigation against us. Our customers may also claim that any rejection of their indemnity demands constitutes a material breach of our agreements with them, allowing them to terminate such agreements. Our agreements with certain customers may be terminated in the event an infringement claim is made against us and it is reasonably determined that there is a possibility our technology or services infringed upon a third party's rights. If, as a result of indemnity demands, we make substantial payments, our relationships with our customers are negatively impacted or if any of our customer agreements is terminated, our business, operating results and financial condition could be materially adversely affected.

Our investment portfolio may become impaired by deterioration of the financial markets.

Our cash equivalent and short-term investment portfolio as of June 30, 2019 consisted of corporate bonds, asset-backed securities, municipal securities, U.S. agency securities, commercial paper and money market mutual funds. We follow an established investment policy and set of guidelines to monitor and help mitigate our exposure to interest rate and credit risk. The policy sets forth credit quality standards and limits our exposure to any one issuer, as well as our maximum exposure to various asset classes.

Should financial market conditions worsen in the future, investments in some financial instruments may pose risks arising from market liquidity and credit concerns. In addition, any deterioration of the capital markets could cause our other income and expense to vary from expectations. As of June 30, 2019, we had no material impairment charges associated with our short-term investment portfolio. Although we believe our current investment portfolio has little risk of material impairment, we cannot predict future market conditions or market liquidity, or credit availability, and can provide no assurance that our investment portfolio will remain materially unimpaired.

Our effective tax rate may fluctuate, which could reduce our anticipated income tax benefit in the future.

Our effective tax rate could be adversely affected by several factors, many of which are outside of our control. Our effective tax rate may be affected by the proportion of our revenues and income (loss) before taxes in the various domestic and international jurisdictions in which we operate. Our revenue and operating results are difficult to predict and may fluctuate substantially from quarter to quarter. We are also subject to changing tax laws, regulations and interpretations in multiple jurisdictions in which we operate, as well as the requirements of certain tax and other accounting body rulings. Since we must estimate our annual effective tax rate each quarter based on a combination of actual results and forecasted results of subsequent quarters, any significant change in our actual quarterly or forecasted annual results may adversely impact the effective tax rate for the period. Our estimated annual effective tax rate may fluctuate for a variety of reasons, including:

- changes in forecasted annual operating income or loss by jurisdiction and forecasted withholding taxes;
- changes in relative proportions of revenue and income or loss before taxes in the various jurisdictions in which we operate;
- requests by customers to bill their foreign subsidiaries and related entities, which may subject us to income tax withholding requirements on sales made in such jurisdictions;
- changes to the valuation allowance on net deferred tax assets;

- changes to actual or forecasted permanent differences between book and tax reporting, including the tax effects of purchase accounting for acquisitions and non-recurring charges which may cause fluctuations between reporting periods;
- impact from any future tax settlements with state, federal or foreign tax authorities;
- impact from increases or decreases in tax reserves due to new assessments of risk, the expiration of the statute of limitations or the completion of government audits;
- impact from changes in tax laws, regulations and interpretations in the jurisdictions in which we operate, as well as the expiration and retroactive reinstatement of tax holidays;
- impact from withholding tax requirements in various non-U.S. jurisdictions and our ability to recoup those withholdings, which may depend on how much revenue we have in a particular jurisdiction to offset the related expenses;
- changes in customer arrangements where the customer's domicile may impose withholding tax on our revenue that we previously were not subject to;
- impact from acquisitions and related integration activities or divestitures; or
- impact from new FASB requirements.

Although we believe our estimates are reasonable, the ultimate tax outcome may differ from the amounts recorded in our financial statements and may materially affect our financial results in future periods. In fiscal 2014, we recorded a valuation allowance on the majority of our deferred tax assets, net of liabilities since the assets are not more likely than not to be realized based upon our assessment of all positive and negative evidence. Realization of deferred tax assets is dependent upon future taxable earnings, the timing of which is uncertain. Due to operating losses in previous years and expected losses in fiscal 2020 and potentially future years in the United States, we continue to maintain a full valuation allowance on deferred tax assets in the United States. Due to operating losses in previous years and expected losses in future years in the United Kingdom, we continue to maintain a full valuation allowance for our foreign deferred tax assets in the United Kingdom. In the event deferred tax assets in Germany cannot be realized based upon the ability to generate future income in Germany, our effective tax rate will be negatively impacted.

Changes in accounting principles, or interpretations thereof, could have a significant impact on our financial position and results of operations.

We prepare our consolidated financial statements in accordance with GAAP. These principles are subject to interpretation by the SEC and various bodies formed to interpret and create appropriate accounting principles. A change in these principles can have a significant effect on our reported results and may even retroactively affect previously reported transactions. Additionally, the adoption of new or revised accounting principles, such as ASC 842, *Leases*, may require that we make significant changes to our systems, processes and controls.

It is not clear if or when other potential changes in accounting principles may become effective, whether we have the proper systems and controls in place to accommodate such changes and the impact that any such changes may have on our financial position and results of operations.

We rely on a proprietary provisioning and reporting system for our navigation products and services to track end user activation, deactivation and usage data and any material failures in this system could harm our revenue, affect our costs and impair our ability to manage our business effectively.

Our provisioning and reporting system that authenticates end users and tracks the number of end users and their use of our services is a proprietary and customized system that we developed internally. Although we believe that the flexibility of this service to integrate tightly with automobile manufacturers' reporting and provisioning systems gives us a competitive advantage, we might lose revenue and the ability to manage our business effectively if the system were to experience material failures or be unable to scale as our business grows. In addition, we may not be able to report our financial results on a timely basis if our customers question the accuracy of our records or we experience significant discrepancies between the data generated by our provisioning and reporting systems and data generated by their systems, or if our systems fail or we are unable to report timely and accurate information to our third party data providers. The inability to timely report our financial results would impair the quality of our financial reporting and could result in the delisting of our common stock.

We rely on third party data and content to provide our services and if we were unable to obtain content at reasonable prices, or at all, our gross margins and our ability to provide our services would be harmed.

We rely on third-party data and content to provide our services, including map data, POI, traffic information, gas prices and weather information. If our suppliers of this data or content were to enter into exclusive relationships with other providers of location services or were to discontinue providing such information and we were unable to replace them cost effectively, or at all, our ability to provide our services would be harmed. Our gross margins may also be affected if the cost of third-party data and content increases substantially. Although we have integrated OSM data into our products, we may experience difficulty with customer acceptance if the quality of the consumer generated data within OSM is lower than that of paid maps. We introduced mobile phone-based navigation with OSM and launched our first brought-in automotive navigation service with OSM in 2015. In addition, the entry into the transactions with affiliates of Grab, which transactions include, among other things, the performance of certain OSM development services for Grab during fiscal 2020 and the subsequent planned hiring by Grab of certain of our employees focused on OSM development activities, may limit the amount of OSM development work that will be completed for internal purposes during fiscal 2020. As a result, we may not have sufficient data for automobile manufacturers and tier ones to feel comfortable electing to use OSM in the products and services we provide them.

We obtain map data from TomTom and HERE, which are companies owned by our current and potential competitors. Accordingly, these third-party data and content providers may act in a manner that is not in our best interest. For example, they may cease to offer their map and POI data to us. The termination dates of our licenses to data from TomTom utilized in our mobile and automotive products generally approximate the respective termination dates of our obligations to provide map data to the applicable wireless carriers and automobile manufacturers. Our master data license agreement with HERE was automatically renewed under its existing terms through January 31, 2020, and automatically renews for successive one-year periods unless either party provides notice of non-renewal at least 180 days prior to the expiration of the applicable term. However, individual territory licenses with distinct term, termination and renewal provisions further govern the license of map data to support individual programs and products for our automobile manufacturers and tier ones.

We may identify other requisite content and content-related technologies, including certain geocoding data necessary for our OSM products, that we may be unable to license or develop internally. If we are unsuccessful in these endeavors, we may be unable to successfully launch our OSM-based products globally and across all desired product offerings.

We may not be able to upgrade our navigation services platform to support certain advanced features and functionality without obtaining technology licenses from third parties. Obtaining these licenses may be costly and may delay the introduction of such features and functionality, and these licenses may not be available on commercially favorable terms, or at all. The inability to offer advanced features or functionality, or a delay in our ability to upgrade our navigation services platform, may adversely affect consumer demand for our navigation services and, consequently, harm our business.

We may be subject to our automobile manufacturer or tier one’s selection of map and other content providers, and our ability to negotiate and enter into a license with such provider(s) may be dependent on the timing of such automobile manufacturer or tier one’s official nomination for such content providers. Accordingly, we may have contractual obligations to provide certain products and services for certain model years or periods to our automobile manufacturer or tier one partners, prior to our ability to enter into agreements with our map and other content providers to support such products and services. We may be unable to obtain data licenses with the necessary content providers to support these products and services, or we may not be able to secure such data licenses without additional, unplanned costs or delays.

We also use our proprietary provisioning and reporting system to record and report royalties we owe to third-party providers of content used by end users in connection with our services. Certain of the third-party content providers have the right to audit our use of their services and, if we are found to have under or incorrectly reported usage, we may be required to pay the third-party content providers for the actual usage, as well as interest and the cost of the audit. Any significant error in our recording and payment of royalties to our third-party content providers could have a material and adverse effect on our financial results. We may also incur losses as a result of any significant error.

Network failures, disruptions or capacity constraints in our third party hosted data center facilities could affect the performance of our navigation services and harm our reputation and our revenue.

We use hosted services provided by AWS and wireless carrier networks to deliver our navigation ~~and advertising~~ platform services. Our operations rely to a significant degree on the efficient and uninterrupted operation of the third-party data centers we use. In the event that AWS or wireless carrier networks experience a disruption in services or a natural disaster, our ability to continue providing our services would be compromised. Depending on the growth rate in the number of our end users and their usage of our services, if we do not timely complete the negotiation for and scale of additional hosting services, we may experience capacity issues, which could lead to service failures and disruptions. In addition, if we are unable to secure third-party hosting services with appropriate power, cooling and bandwidth capacity, we may be unable to efficiently and effectively scale our business to manage the addition of new automobile manufacturers and tier ones, increases in the number of our end users or increases in data traffic.

AWS hosting services are potentially vulnerable to damage or interruption from a variety of sources, including fire, flood, earthquake, power loss, telecommunications or computer systems failure, human error, terrorist acts or other events. We have not yet completed a comprehensive business continuity plan, and there can be no assurance that the measures implemented by us to date, or measures implemented by us in the future, to manage risks related to network failures or disruptions in our data centers will be adequate, or that the redundancies built into our servers will work as planned in the event of network failures or other disruptions. In particular, if we were to experience damage or interruptions to AWS hosting services our ability to provide efficient and uninterrupted operation of our services would be significantly impaired.

We could also experience failures of our data centers or interruptions of our services, or other problems in connection with our operations, as a result of:

- damage to or failure of our computer software or hardware or our connections and outsourced service arrangements with third parties;
- errors in the processing of data;
- computer viruses or software defects;
- physical or electronic break-ins, sabotage, intentional acts of vandalism and similar events; or
- errors by our employees or third-party service providers.

Poor performance in or disruptions of our services could harm our reputation, delay market acceptance of our services and subject us to liabilities. Our automobile manufacturer and tier one agreements for on-board and hybrid solutions require us to meet at least 99.9% operational uptime requirements, excluding scheduled maintenance periods, or be subjected to penalties. Any outage in a network or system, or other unanticipated problem that leads to an interruption or disruption of our navigation services, could have a material adverse effect on our operating results and financial condition.

We may not be able to enhance our location services to keep pace with technological and market developments, or develop new location services in a timely manner or at competitive prices.

The market for location services is characterized by rapid technological change, evolving industry standards, frequent new product introductions and short product life cycles. To keep pace with technological developments, satisfy increasing customer requirements and achieve product acceptance, our future success depends upon our ability to enhance our current navigation services platform and to continue to develop and introduce new navigation services and other location-based product offerings and enhanced performance features and functionality on a timely basis at competitive prices. Our inability, for technological or other reasons, to enhance, develop, introduce or deliver compelling services and products in a timely manner, or at all, in response to changing market conditions, technologies or consumer expectations could have a material adverse effect on our operating results or could result in our services becoming obsolete. Our ability to compete successfully will depend in large measure on our ability to maintain a technically skilled development and engineering team and to adapt to technological changes and advances in the industry, including providing for the continued compatibility of our services platform with evolving industry standards and protocols and competitive network operating environments.

Because our long term success depends on our ability to increase the number of end users located outside of the United States, our business will be susceptible to risks associated with international operations.

As of June 30, 2019, we had international operations in China, Romania, Germany, Japan and South Korea. Our experience with wireless carriers, automobile manufacturers and tier ones, and advertisers outside the United States is limited. Our revenue from customers in the United States comprised 81% and 90% of our total revenue in fiscal 2019 and 2018, respectively. However, our product is distributed globally in many different regions outside the United States, including Australia and New Zealand, China, Europe and South America. Our limited experience in operating our business outside the United States increases the risk that our current and future international expansion efforts may not be successful. In particular, our business model may not be successful in certain countries or regions outside the United States for reasons that we currently do not anticipate. In addition, conducting international operations subjects us to risks that we have not generally faced in the United States. These include:

- fluctuations in currency exchange rates;
- unexpected changes in foreign regulatory requirements or delays in obtaining necessary foreign regulatory approvals;
- difficulties in managing the staffing of remote operations;
- potentially adverse tax consequences, including the complexities of foreign value added tax systems, foreign tax withholding, restrictions on the repatriation of earnings and changes in tax rates;
- difficulties in collecting accounts receivable balances in a timely manner;
- dependence on foreign wireless carriers with different pricing models;
- roaming charges to end users;
- availability of reliable mobile networks in those countries;
- requirements that we comply with local telecommunication regulations and automobile hands free laws in those countries;
- requirements that we comply with local privacy regulations;
- the burdens of complying with a wide variety of foreign laws and different legal standards;
- increased financial accounting and reporting burdens and complexities;
- political, social and economic instability in some jurisdictions;
- terrorist attacks and security concerns in general; and
- reduced or varied protection for intellectual property rights in some countries.

The occurrence of any one of these risks could negatively affect our international business and, consequently, our operating results. Additionally, operating in international markets requires significant management attention and financial resources. We cannot be certain that the investment and additional resources required to establish, acquire or integrate operations in other countries will produce desired levels of revenue or profitability and we may incur larger losses as a result.

The United Kingdom's vote to leave the European Union will have uncertain effects and could adversely affect us.

On June 23, 2016, the electorate in the United Kingdom, or UK, voted in favor of leaving the European Union, or EU, (commonly referred to as the "Brexit"). Thereafter, on March 29, 2017, the country formally notified the EU of its intention to withdraw pursuant to Article 50 of the Lisbon Treaty. Although the withdrawal of the UK from the EU was scheduled to take effect on March 29, 2019, the withdrawal date was extended until April 12, 2019 and further extended until October 31, 2019, although it could occur earlier if the UK so determines.

The effects of Brexit will depend on agreements the UK makes to retain access to EU markets either during a transitional period or more permanently. Brexit creates an uncertain political and economic environment in the UK and potentially across other EU member states for the foreseeable future, including during any period while the terms of Brexit are being negotiated and such uncertainties could impair or limit our ability to transact business in the member EU states.

Further, Brexit could adversely affect European and worldwide economic or market conditions and could contribute to instability in global financial markets, and the value of the Pound Sterling currency or other currencies, including the Euro. We are exposed to the economic, market and fiscal conditions in the UK and the EU and to changes in any of these conditions. Depending on the terms reached regarding Brexit, it is possible that there may be adverse practical and/or operational implications on our business.

A significant amount of the regulatory regime that applies to us in the UK is derived from EU directives and regulations. For so long as the UK remains a member of the EU, those sources of legislation will (unless otherwise repealed or amended) remain in effect. However, Brexit could change the legal and regulatory framework within the UK where we operate and is likely to lead to legal uncertainty and potentially divergent national laws and regulations as the UK determines which EU laws to replace or replicate. Consequently, no assurance can be given as to the impact of Brexit and, in particular, no assurance can be given that our operating results, financial condition and prospects would not be adversely impacted by the result.

We rely on our management team and need specialized personnel to grow our business, and the loss of one or more key employees or our inability to attract and retain qualified personnel could harm our business.

Our success and future growth depend on the skills, working relationships and continued services of our management team. We have experienced significant turnover in our management team since the beginning of fiscal 2019, including the departure of our Chief Financial Officer in January 2019 and our General Counsel in October 2018. In addition, our Senior Vice President, Engineering has notified us of his decision to resign, effective in October 2019. Although we recently hired a new Chief Financial Officer and a new General Counsel, our future performance will depend on our ability to retain these and other members of our senior management, particularly in the growth areas of our business, such as hybrid or brought-in automotive navigation.

Our future success also depends on our ability to attract, retain and motivate highly skilled personnel in the United States and internationally. All of our U.S. employees work for us on an at will basis. Competition for highly skilled personnel is intense, particularly in the software industry and for persons with experience with GPS and location services. The high degree of competition for personnel we experience has resulted in and may also continue to result in the incurrence of significantly higher compensation costs to attract, hire and retain employees. We have from time to time experienced, and we expect to continue to experience, difficulty in attracting, hiring and retaining highly skilled employees with appropriate qualifications. Many of the companies with which we compete for experienced personnel have greater resources than we have. If we hire employees from competitors, their former employers may attempt to assert that these employees or we have breached the former employees' legal obligations to the former employer, resulting in a diversion of our time and resources. In addition, existing employees often consider the value of the stock awards they receive in connection with their employment. If our stock price performs poorly, it may adversely affect our ability to retain highly skilled employees. Our inability to attract and retain the necessary personnel could adversely affect our business and future growth prospects.

We rely on network infrastructures provided by our wireless carriers, mobile phones and in-car wireless connections for the delivery of our navigation services to end users.

We generally provide our navigation services from third-party hosted servers, which require close integration with the wireless carriers' networks. We may be unable to provide high quality services if the wireless carriers' networks perform poorly or experience delayed response times. Our future success will depend on the availability and quality of our wireless carrier customers' networks in the United States and abroad to run our mobile navigation services. This includes deployment and maintenance of reliable networks with the speed, data capacity and security necessary to provide reliable wireless communications services. We do not establish or maintain these wireless networks and have no control over interruptions or failures in the deployment and maintenance by wireless carrier customers of their network infrastructure. In addition, these wireless network infrastructures may be unable to support the demands placed on them if the number of subscribers increases, or if existing or future subscribers increase their use of limited bandwidth. Market acceptance of our mobile navigation services will depend in part on the quality of these wireless networks and the ability of our customers to effectively manage their subscribers' expectations.

In addition, certain automotive navigation applications rely on wireless connections between the vehicle and our network. We have no influence or control over the vehicle's wireless equipment and if it does not operate in a satisfactory manner, our ability to provide those services would be impaired and our reputation would be harmed.

Wireless communications have experienced a variety of outages and other delays as a result of infrastructure and equipment failures and could face outages and delays in the future. These outages and delays could affect our ability to provide our navigation services successfully. In addition, changes by a wireless carrier to its network infrastructure may interfere with the integration of our servers with their network and delivery of our navigation services and may cause end users to lose functionality for services they have already purchased. Any of the foregoing could harm our business, operating results and financial condition.

We cannot control the quality standards of our wireless carriers, their mobile phone providers, automobile manufacturers and other technology infrastructure providers. We cannot guarantee that the mobile phones or in-car wireless equipment are free from errors or defects. If errors or defects occur in mobile phones or services offered by our wireless carrier customers, it could result in consumers terminating our services, damage to our reputation, increased customer service and support costs, warranty claims, lost revenue and diverted development resources, any of which could adversely affect our business, results of operations and financial condition.

Mergers, consolidations or other strategic transactions in the mapping data industry could weaken our competitive position, reduce the number of our map providers and adversely affect our business.

The mapping data industry continues to experience consolidation. Should one of our map providers consolidate or enter into an alliance with another navigation provider, this could have a material adverse impact on our business. Currently, two of our map suppliers are owned by competitors in the navigation space. Such a consolidation may cause us to lose a map supplier or require us to increase the royalties we pay to map vendors as a result of enhanced supplier leverage, which would have a negative effect on our business. In the event that we lose a map supplier, we may be unable to replace our map suppliers, and the remaining map suppliers may increase license fees. In addition, if we continue to use more OSM-based maps and no longer purchase maps from those suppliers, we may be unable to purchase other data that is integral to our navigation products from our existing map suppliers.

Changes in business direction and market conditions could lead to charges related to structural reorganization and discontinuation of certain products or services, which may adversely affect our financial results.

In response to changing market conditions and the desire to focus on new and more potentially attractive opportunities, we may be required to strategically realign our resources and consider restructuring, eliminating, or otherwise exiting certain business activities. Any decision to reduce investment in, dispose of, or otherwise exit business activities may result in the recording of special charges, such as workforce reduction and excessive facility space costs.

Risks related to our intellectual property and regulation

We operate in an industry with extensive intellectual property litigation. Claims of infringement against us, our customers, or other business partners may cause our business, operating results and financial condition to suffer.

Our commercial success depends in part upon us, our partners and our customers not infringing intellectual property rights owned by others and being able to resolve claims of intellectual property infringement without major financial expenditures and/or need to alter our technologies or cease certain activities. We operate in an industry with extensive intellectual property litigation and it is not uncommon for our automobile manufacturers and tier ones and competitors to be involved in infringement lawsuits by or against third parties. Many industry participants that own, or claim to own, intellectual property aggressively assert their rights, and our customers and other business partners, who we agree in certain circumstances to indemnify for intellectual property infringement claims related to our services, are often targets of such assertions. We cannot determine with certainty whether any existing or future third-party intellectual property rights would require us to alter our technologies, obtain licenses or cease certain activities.

We have received, and may in the future receive, claims from third parties alleging infringement and other related claims. Current and future litigation may make it necessary to defend ourselves and our customers and other business partners by determining the scope, enforceability and validity of third-party proprietary rights or to establish our proprietary rights. Some of our competitors may have substantially greater resources than we do and may be able to sustain the costs of complex intellectual property litigation to a greater degree and for longer periods of time than we could. In addition, patent holding companies that focus solely on extracting royalties and settlements by enforcing patent rights may target us, our wireless carrier customers or our other business partners. These companies typically have little or no product revenue and therefore our patents may provide little or no deterrence against such companies filing patent infringement lawsuits against us. Regardless of whether claims that we are infringing patents or other intellectual property rights have any merit, these claims are time consuming and costly to evaluate and defend and could:

- adversely affect our relationships with our current or future customers and other business partners;
- cause delays or stoppages in the shipment of Telenav-enabled or preloaded mobile phones or vehicles, or cause us to modify or suspend the provision of our navigation services;

- cause us to incur significant expenses in defending claims brought against our customers, other business partners or us;
- divert management's attention and resources;
- subject us to significant damages or settlements;
- require us to enter into settlements, royalty or licensing agreements on unfavorable terms; or
- require us or our business partners to cease certain activities and/or modify our products or services.

In addition to liability for monetary damages against us or, in certain circumstances, our customers, we may be prohibited from developing, commercializing or continuing to provide certain of our navigation services unless we obtain licenses from the holders of the patents or other intellectual property rights. We cannot assure you that we will be able to obtain any such licenses on commercially reasonable terms, or at all. If we do not obtain such licenses, our business, operating results and financial condition could be materially adversely affected, and we could, for example, be required to cease offering our navigation services or be required to materially alter our navigation services, which could involve substantial costs and time to develop.

Unauthorized control or manipulation of our systems in vehicles may cause them to operate improperly or not at all, or compromise their safety and data security, which could result in loss of confidence in us and our products, cancellation of contracts with certain of our automobile manufacturer or tier one customers and harm our business.

There have been reports of vehicles of certain automobile manufacturers being "hacked" to grant access and operation of the vehicles to unauthorized persons and would-be thieves. Modern vehicles are technologically advanced machines requiring the interoperation of numerous complex and evolving hardware and software systems, including the navigation system, and with respect to vehicles with autonomous driving features, control of the vehicle. We have agreed with some of our automobile manufacturer and tier one customers to adopt certain security procedures and we may be subject to claims or our contracts with those automobile manufacturers and tier ones may be terminated if we do not comply with our covenants or if our products are the source of access to the systems in their vehicles by intruders.

Although we have designed, implemented and tested security measures to prevent unauthorized access to our products when installed in vehicles, our information technology networks and communications with vehicles in which our products are installed may be vulnerable to interception, manipulation, damage, disruptions or shutdowns due to attacks by hackers or breaches due to errors by personnel who have access to our networks and systems. Any such security incidents could result in unexpected control of or changes to the vehicles' functionality and our products' user interface and performance characteristics. Hackers may also use similar means to gain access to data stored in or generated by the vehicle, such as its current geographical position, previous and stored destination address history and web browser "favorites." Any such unauthorized control of vehicles or access to or loss of information could result in legal claims or proceedings and negative publicity, which would negatively affect our brand and harm our business, prospects, financial condition and operating results.

Our business is subject to online security risks, including potential security and privacy incidents.

Our business involves the collection, storage, processing and transmission of information about our users, including users' locations, routes mapped and taken. Additionally, our apps transmit information to users' personal devices, which creates opportunities for hackers to exploit vulnerabilities, if any, in our apps. An increasing number of organizations, including large online and offline merchants and businesses, other large Internet companies, financial institutions, and government institutions, have disclosed breaches of their security, some of which have involved sophisticated and highly targeted attacks, including on portions of their websites or infrastructure. While we are investing significant resources to evaluate and improve our security, we have been subject to such attacks in the past, although they have not, to our knowledge, resulted in a breach of security involving unauthorized acquisition of users' personal information. A breach of security or privacy could have negative consequences to our reputation, which could result in users discontinuing or reducing their use of our products and our automotive customers terminating their agreements with us, and could have significant out-of-pocket financial impact, which could harm our business. Similarly, a breach of security or privacy in vehicles in which our navigation products are installed could result in a reduction in adoption of our navigation products.

The techniques used to obtain unauthorized, improper or illegal access, disable or degrade service, or sabotage systems or access data change frequently, may be difficult to detect quickly, and often are not recognized until launched against a target. Certain efforts may be state-sponsored and supported by significant financial and technological resources and may therefore be even more difficult to detect. As a result, we may be unable to anticipate these techniques or to implement adequate preventative measures. Unauthorized parties also may attempt to gain access to our systems or facilities through various means, including hacking into our systems or facilities, fraud, trickery or other means of deceiving our employees, contractors and temporary staff. A party that is able to circumvent our security measures could misappropriate our, our customers' or our employees' personal or proprietary information, cause interruption in our operations and damage our computers and systems or those of our customers. In addition, our customers have been and likely will continue to be targeted by parties using fraudulent "spoof" and "phishing" emails to misappropriate user names, passwords, payment card numbers, GPS data or other personal information or to introduce viruses or other malware, including through "trojan horse" programs, to our users' phones and vehicles. Also, our information technology and infrastructure may be vulnerable to cyberattacks or security incidents, and third parties may be able to access our customers' personal or proprietary information and payment card data that are stored on or accessible through our systems. Any security or privacy incident at a company providing services to us or our tier one customers, or integrated with our products and services, could have similar effects. We may also need to expend significant additional resources to protect against security or privacy incidents or to redress problems caused by such incidents. These issues are likely to become more difficult and costly as we expand the number of markets where we operate. Additionally, our insurance policies carry low coverage limits, which may not be adequate to reimburse us for losses caused by security incidents, and we may not be able to collect fully, if at all, under these insurance policies.

Vulnerabilities in our products and services have been publicly disclosed before, and if we are unable to adequately detect and address vulnerabilities in our products and services, it may result in harm to our business.

As with any application, our products may contain known and unknown vulnerabilities, coding errors, design flaws, or other issues that could allow an attacker to maliciously exploit our software. Vulnerabilities in our software and applications have been publicly exposed in the past, although they have not, to our knowledge, resulted in the disclosure of user information or been maliciously exploited. While we are investing significantly to evaluate and improve our security on the vulnerabilities we have identified, addressing vulnerabilities in our software is an ongoing process. Malicious exploitation of our products could result in the introduction of malicious software onto our users' devices, the theft of confidential or private information, damage to users' devices, and harm to our reputation, among other issues. Successful exploitation of a vulnerability in our software may subject us to numerous lawsuits or regulatory inquiries. Additionally, the disclosure of any vulnerability may result in a loss of confidence in us or our products, the cancellation of contracts with certain of our automotive tier one customers, discontinued use of our products, and harm to our business and reputation. These events could have significant out-of-pocket financial impact.

Changes in government regulation of the wireless communications, automobile and in car commerce industries may adversely affect our business.

It is possible that a number of laws and regulations may be adopted in the United States and elsewhere that could restrict the wireless communications industry, further regulate the automobile industry or impair the ability to conduct in car commerce, including laws and regulations regarding lawful interception of personal data, hands free use of mobile phones or navigation services within autos, autonomous driving or the control of such use, privacy, taxation, content suitability, copyright and antitrust. Furthermore, the growth and development of electronic storage of personal information may prompt calls for more stringent consumer protection laws that may impose additional burdens on companies such as ours that store personal information. We anticipate that regulation of the industries in which our products and services are used will increase and that we will be required to devote legal and other resources to address this regulation. In addition, governments have recently begun to consider and adopt laws regarding vehicles using ADAS and semi-autonomous driving capabilities and those laws may curtail or preclude using the services our products provide. Changes in current laws or regulations or the imposition of new laws and regulations in the United States or elsewhere regarding the wireless communications or automobile industries may make operation more costly, and may materially reduce our ability to increase or maintain sales of our products and services.

Government regulation designed to protect end user privacy may make it difficult for us to provide our services or provide in car commerce services.

We transmit and store a large volume of information collected or about end users or their devices in the course of providing our products and services. This information is increasingly subject to legislation and regulations, such as the GDPR, in numerous jurisdictions around the world. This government regulation is typically intended to protect the privacy and security of personal information about its residents or that is collected, stored and transmitted in or from the governing jurisdiction.

We could be adversely affected if domestic or international legislation or regulations are expanded to require changes in our business practices or if governing jurisdictions interpret or implement their legislation or regulations in ways that negatively affect our business. For example, the USA PATRIOT Act provides certain rights to U.S. law enforcement authorities to obtain personal information in the control of U.S. persons and entities without notifying the affected individuals. If we are required to allocate significant resources to modify the delivery of our services to enable enhanced legal interception of the personal information that we transmit and store, our results of operations and financial condition may be adversely affected.

In addition, because various foreign jurisdictions have different laws and regulations concerning the storage and transmission of personal information, we may face unknown requirements that pose compliance challenges in new international markets that we seek to enter. Such variation could subject us to costs, delayed service launches, liabilities or negative publicity that could impair our ability to expand our operations into some countries and therefore limit our future growth.

As privacy and data protection have become more topical issues, we may also be subject to increased scrutiny or potential liabilities as a result of developing views on the relevance of privacy or sensitivity of personal information. These and other privacy concerns could adversely impact our business, results of operations and financial condition.

If we are unable to obtain the required government licenses or approvals to comply with government regulation relating to map data and location-based services, we may not be able to provide our products and services and our business could be adversely impacted.

A number of countries and local jurisdictions require certain licenses and/or government approvals in order to comply with regulations governing the creation or distribution map data and/or the provision of location-based services, including the collection of location information. If we are unable to obtain the necessary licenses or approvals or fail to comply with the regulations in each jurisdiction where we or our partners offer location-based products and services, we may be unable to offer to our partners or customers the full scope of planned products and services. In addition, should any map or location-based services related regulations change, we may incur additional expense in modifying our existing products and product roadmaps to comply with the requirements of individual jurisdictions. Such laws or regulations or the imposition of new laws and regulations regarding the provision of map data or location-based services may make operation more costly, and may materially reduce our ability to increase or maintain sales of our products and services.

If we are unable to protect our intellectual property and proprietary rights, our competitive position and our business could be harmed.

We rely primarily on a combination of patent laws, trademark laws, copyright laws, trade secrets, confidentiality procedures and contractual provisions to protect our proprietary technology. However, our issued patents and any future patents that may be issued may not survive a legal challenge to their scope, validity or enforceability, or provide significant protection for us. The failure of our patents to adequately protect our technology might make it easier for our competitors to offer similar products or technologies. In addition, patents may not be issued from any of our current or future applications.

Monitoring unauthorized use of our intellectual property is difficult and costly. The steps we have taken to protect our proprietary rights may not be adequate to prevent misappropriation of our intellectual property. We may not be able to detect unauthorized use of, or take appropriate steps to enforce, our intellectual property rights. Our competitors may also independently develop similar technology. In addition, the laws of many countries do not protect our proprietary rights to as great an extent as do the laws of the United States. Any failure by us to meaningfully protect our intellectual property could result in competitors offering products that incorporate our most technologically advanced features, which could seriously reduce demand for our navigation services. In addition, we may in the future need to initiate infringement claims or litigation. Litigation, whether we are a plaintiff or a defendant, can be expensive, time consuming and may divert the efforts of our technical staff and managerial personnel, which could harm our business, whether or not such litigation results in a determination favorable to us.

Confidentiality agreements with employees and others may not adequately prevent disclosure of our trade secrets and other proprietary information.

We have devoted substantial resources to the development of our proprietary technology, including the proprietary software components of our navigation services and related processes. In order to protect our proprietary technology and processes, we rely in part on confidentiality agreements with our employees, licensees, independent contractors and other advisors. These agreements may not effectively prevent disclosure of our confidential information and may not provide an adequate remedy in the event of unauthorized disclosure of our confidential information. In addition, others may independently discover trade secrets and proprietary information, and in such cases, we could not assert any trade secret rights against such parties. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

Our use of open source software could negatively affect our ability to sell our service and subject us to possible litigation.

We use open source software in our navigation services platform and client applications and may use more open source software in the future. Use of open source software may subject our navigation services platform and client applications to general release or require us to re-engineer our navigation services platform and client applications, which may cause harm to our business. From time to time, there have been claims challenging the ownership of open source software against companies that incorporate open source software into their products. As a result, we could be subject to suits by parties claiming ownership of what we believe to be open source software. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the open source software and that we license such modifications or derivative works under the terms of a particular open source license or other license granting third parties certain rights of further use. If we combine our proprietary software products with open source software in a certain manner, we could, under certain of the open source licenses, be required to release our proprietary source code. In addition to risks related to license requirements, usage of open source software can lead to greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or controls on origin of the software. Open source license terms may be ambiguous and many of the risks associated with usage of open source cannot be eliminated, and could, if not properly addressed, negatively affect our business. If we were found to have inappropriately used open source software, we may be required to release our proprietary source code, re-engineer our navigation services platform and client applications, discontinue the sale of our service in the event re-engineering cannot be accomplished on a timely basis or take other remedial action that may divert resources away from our development efforts, any of which could adversely affect our business, operating results and financial condition.

Risks related to being a publicly traded company and holding our common stock

As a public company, we are obligated to develop and maintain effective internal control over financial reporting. We may not always complete our assessment of the effectiveness of our internal control over financial reporting in a timely manner, or such internal control may not be determined to be effective, which may adversely affect investor confidence in our company and, as a result, the value of our common stock.

The Sarbanes-Oxley Act requires that we test our internal control over financial reporting and disclosure controls and procedures annually. For example, as of June 30, 2019, we performed system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Our compliance with Section 404 requires that we incur substantial expense and expend significant management time on compliance-related issues.

During the three months ended December 31, 2018, we identified certain errors related to our implementation of ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606) due to our internal control over financial reporting relating to supervision and review of the financial models supporting our revenue recognition accounting and disclosures not operating effectively. We concluded that, because this deficiency created a more than remote likelihood of a material misstatement not being prevented or detected on a timely basis, this deficiency constituted a material weakness in internal control over financial reporting.

As further described in Part II, Item 9A of this Annual Report on Form 10-K, we have taken specific steps to remediate the material weakness by implementing and enhancing our internal controls. The material weakness will not be deemed remediated until all of those steps have been implemented and the affected internal controls have been tested and determined to be operating effectively. In addition, we may need to modify these steps or implement additional remediation measures to address the material weakness, and we cannot be certain that the measures we have taken, and expect to take, will be sufficient to address the issues identified, to ensure that our internal controls are effective, or to ensure that the identified material weakness will not result in a future material misstatement of our annual or interim consolidated financial statements.

If we are unable to remediate this material weakness in a timely manner and otherwise comply with the requirements of Section 404 in the future, or if we or our independent registered public accounting firm identify additional deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price and trading liquidity of our stock may decline, investors may lose confidence in our reported financial information, we could be subject to civil and criminal investigations and penalties by the NASDAQ Global Market, the SEC or other regulatory authorities, and our business and financial condition could otherwise be materially and adversely impacted.

We will continue to incur high costs and demands upon management as a result of complying with the laws and regulations affecting public companies, which could harm our operating results.

As a public company, we incur significant legal, accounting, investor relations and other expenses, including costs associated with public company reporting requirements. We also have incurred and will continue to incur costs associated with current corporate governance requirements, including requirements under Section 404 and other provisions of the Sarbanes-Oxley Act, as well as rules implemented by the SEC and the stock exchange on which our common stock is traded. We are generally not eligible to report under reduced disclosure requirements or benefit from longer phase in periods for “emerging growth companies” as such term is defined in the Jumpstart Our Business Act of 2012. The expenses incurred by public companies for reporting and corporate governance purposes have increased dramatically over the past several years. We expect these rules and regulations to continue to impact our legal and financial compliance costs substantially and to make some activities more time consuming and costly. We are unable currently to estimate these costs with any degree of certainty. We also expect that, over time, it may be more expensive for us to obtain director and officer liability insurance. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as our executive officers if we cannot provide a level of insurance coverage that they believe is adequate.

Regulations relating to investments in offshore companies by Chinese residents may subject our Chinese-resident beneficial owners or our Chinese subsidiaries to liability or penalties, limit our ability to inject capital into our Chinese subsidiaries, limit our Chinese subsidiaries' ability to increase their registered capital or limit their ability to distribute profits to us.

On July 4, 2014, the State Administration of Foreign Exchange of the People's Republic of China, or SAFE, promulgated the *Circular on Relevant Issues Concerning Foreign Exchange Control on Domestic Residents' Offshore Investment and Financing and Roundtrip Investment through Special Purpose Vehicles*, or Circular 37, which replaced the former *Circular on Issues Relating to the Administration of Foreign Exchange in Fund-Raising and Round Trip Investment Activities of Domestic Residents Conducted via Offshore Special Purpose Vehicles* (commonly known as "SAFE Circular 75") promulgated by SAFE on October 21, 2005. Circular 37 requires Chinese residents to register with local branches of SAFE in connection with their direct establishment or indirect control of an offshore entity, for the purpose of overseas investment and financing, with such Chinese residents' legally owned assets or equity interests in domestic enterprises or offshore assets or interests, referred to in Circular 37 as a "special purpose vehicle." Circular 37 further requires amendment to the registration in the event of any significant changes with respect to the special purpose vehicle, such as increase or decrease of capital contributed by Chinese individuals, share transfer or exchange, merger, division or other material event. In the event that a Chinese shareholder holding interests in a special purpose vehicle fails to fulfill the required SAFE registration, the Chinese subsidiaries of that special purpose vehicle may be prohibited from making profit distributions to the offshore parent and from carrying out all subsequent cross-border foreign exchange activities in worst scenario, and the special purpose vehicle may be restricted in its ability to contribute additional capital into its Chinese subsidiary. Furthermore, failure to comply with the various SAFE registration requirements described above could result in liability under Chinese law for evasion of foreign exchange controls. On February 13, 2015, SAFE promulgated a *Notice on Further Simplifying and Improving Foreign Exchange Administration Policy on Direct Investment*, or Circular 13, which became effective on June 1, 2015. Pursuant to Circular 13, entities and individuals are required to apply for foreign exchange registration of overseas direct investment, including those required under Circular 37, with qualified banks, instead of SAFE. The qualified banks, under the supervision of SAFE, will directly review the applications and conduct the registration.

We attempt to comply, and attempt to ensure that our stockholders who are subject to Circular 37 and other related rules, comply with the relevant requirements under Circular 37. However, we cannot provide any assurances that all of our stockholders who are Chinese residents have complied or will comply with our request to make or obtain any applicable registrations or comply with other requirements required by Circular 37 or other related rules. Any failure or inability of any of our stockholders who is a Chinese resident to comply with relevant requirements under Circular 37 could subject such stockholders or our Chinese subsidiaries to fines and legal sanctions imposed by the Chinese government and may also limit our ability to contribute additional capital into our Chinese subsidiaries or receive dividends or other distributions from our Chinese subsidiaries. As a result, these risks may have a material adverse effect on our business, financial condition and results of operations.

If securities analysts do not publish research or reports about our business or if they publish negative evaluations of our stock, the price of our stock could decline.

We expect that the trading price for our common stock will be affected by any research or reports that industry or financial analysts publish about us or our business. As of June 30, 2019, only three research analysts regularly publish reports regarding our company. If one or more of these analysts cease coverage of our company, our stock may lose visibility in the market, which in turn could cause its price to decline. In addition, if any analysts who may elect to cover us downgrade their evaluations of our stock, the price of our stock could decline. For example, in late July 2011, following our earnings release for the three months and fiscal year ended June 30, 2011, several financial analysts published research reports lowering their price targets of our stock. After our earnings announcement and the publication of these reports, our stock price fell more than 40%. If one or more of these analysts cease coverage of our company, our stock may lose visibility in the market, which in turn could cause its price to decline. During a portion of fiscal 2019, our stock traded at prices below $5.00 per share. If our stock were to trade at prices below $5.00 per share for an extended period of time, financial analysts might terminate coverage of our company due to internal policies within their investment banks, which could result in further stock price declines.

Our stock price has fluctuated significantly and may continue to fluctuate in the future.

Our common stock was sold in our initial public offering at $8.00 per share. Although our common stock has traded at prices as high as $22.07 per share, it has also traded at prices as low as $3.35 per share and has tended to have significant downward and upward price movements in a relatively short time period. Future fluctuations or declines in the trading price of our common stock may result from a number of events or factors, including those discussed in the preceding risk factors relating to our operations, as well as:

- actual or anticipated fluctuations in our operating results;
- changes in the financial projections we may provide to the public or our failure to meet these projections;
- announcements by us or our competitors of significant technical innovations, relationship changes with key customers, acquisitions, strategic partnerships, joint ventures, capital raising activities or capital commitments;
- announcements by automobile manufacturers regarding use of free, third-party navigation platforms in their vehicles;
- the public's response to our press releases or other public announcements, including our filings with the SEC;
- lawsuits threatened or filed against us; and
- large distributions of our common stock by significant stockholders to limited partners or others who immediately resell the shares.

General market conditions and domestic or international macroeconomic factors unrelated to our performance, such as the continuing unprecedented volatility in the financial markets, may also affect our stock price. For these reasons, investors should not rely on recent trends to predict future stock prices or financial results. Investors in our common stock may not be able to dispose of the shares they purchased at prices above the initial public offering price, or, depending on market conditions, at all.

In addition, during portions of fiscal 2019, our stock traded at prices below $5.00 per share. If the market price of our common stock were to stay below $5.00 per share for an extended period of time, under stock exchange rules, our stockholders would not be able to use such shares as collateral for borrowing in margin accounts. Further, certain institutional investors are restricted from investing in shares priced below $5.00 per share. This inability to use shares of our common stock as collateral and the inability of certain institutional investors to invest in our shares may depress demand and lead to sales of such shares creating downward pressure on and increased volatility in the market price of our common stock.

In the past, the market price for our common stock has traded only slightly above the cash value of our common stock. If investors do not value our company as an ongoing business and only value it for the cash on our balance sheet, our stock price may decline if we continue to incur net losses and use our cash to fund operations. We may also attract investors who are looking for short-term gains in our shares rather than being interested in our long-term outlook. As a result, the price of our common stock may be volatile.

The concentration of ownership of our capital stock limits your ability to influence corporate matters.

Our executive officers and directors and entities affiliated with them beneficially owned (as determined in accordance with the rules of the SEC) approximately 33.9% of our common stock outstanding as of June 30, 2019, which includes approximately 10.2% of our common stock held by Nokomis Capital. These stockholders, acting together, may be able to control our management and affairs and matters requiring stockholder approval, including the election of directors and the approval of significant corporate transactions, such as mergers, consolidations or the sale of substantially all of our assets. Consequently, this concentration of ownership may have the effect of delaying or preventing a change of control, including a merger, consolidation or other business combination involving us, or discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control, even if that change of control would benefit our other stockholders.

Anti-takeover provisions contained in our amended and restated certificate of incorporation and amended and restated bylaws, as well as provisions of Delaware law, could impair a takeover attempt.

Our amended and restated certificate of incorporation, amended and restated bylaws and Delaware law contain provisions which could have the effect of rendering more difficult, delaying or preventing an acquisition deemed undesirable by our board of directors. These provisions could also make it more difficult for stockholders to elect directors and take other corporate actions. Among other things, our amended and restated certificate of incorporation and amended and restated bylaws include provisions:

- providing for a classified board of directors whose members serve staggered three-year terms;
- authorizing "blank check" preferred stock, which could be issued by our board of directors without stockholder approval and may contain voting, liquidation, dividend and other rights superior to the rights of our common stock;
- limiting the liability of, and providing indemnification to, our directors and officers;
- limiting the ability of our stockholders to call and bring business before special meetings;
- requiring advance notice of stockholder proposals for business to be conducted at meetings of our stockholders and for nominations of candidates for election to our board of directors;
- prohibiting stockholder action by written consent; and
- providing that certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws can be amended only by supermajority vote (a 66 2/3 % majority) of the outstanding shares. In addition, our board of directors can amend our amended and restated bylaws by majority vote of the members of our board of directors.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our management.

As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the Delaware General Corporation Law, which prevents certain stockholders holding more than 15% of our outstanding capital stock from engaging in certain business combinations without approval of the holders of at least two-thirds of our outstanding common stock not held by such stockholder.

Any provision of our amended and restated certificate of incorporation, amended and restated bylaws or Delaware law that has the effect of delaying, preventing or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock, and could also affect the price that some investors are willing to pay for our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Facilities

Our corporate headquarters are located at 4655 Great America Parkway, Suite 300, Santa Clara, California in an office consisting of approximately 55,000 square feet pursuant to a lease that expires in September 2023. This headquarters facility houses the majority of our U.S. research and development, support, marketing and general and administrative personnel. We lease approximately 30,000 square feet of space in Shanghai, China for our research and development, sales and support operations pursuant to a lease expiring in November 2020, approximately 20,000 square feet in Xi'an, China, for research and development operations pursuant to a lease expiring in September 2020, and approximately 34,000 square feet in Cluj, Romania, for research and development operations pursuant to leases that expire in September 2022. We lease approximately 12,000 square feet in Culver City, California for research and development and sales and marketing operations pursuant to a lease expiring in February 2022, which we intend to either assign to inMarket or terminate in connection with the inMarket Transaction. We also lease various office spaces of less than 5,000 square feet throughout the world for our sales, marketing and business development personnel located in those areas. We believe our current facilities will be adequate or that additional space will be available on commercially reasonable terms for the foreseeable future.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may be subject to legal proceedings and claims in the ordinary course of business. We have received, and may in the future continue to receive, claims from third parties asserting infringement of their intellectual property rights. Future litigation may be necessary to defend ourselves and our customers by determining the scope, enforceability and validity of third-party proprietary rights or to establish our proprietary rights. From time to time, we also may be subject to claims from our third-party content providers that we owe them additional royalties and interest, which claims may result in litigation if we and the third-party content provider are unable to resolve the matter. There can be no assurance with respect to the outcome of any current or future litigation brought against us or pursuant to which we have indemnification obligations and the outcome could have a material adverse impact on our business, operating results and financial condition.

In addition, we have received, and expect to continue to receive, demands for indemnification from our customers, which demands can be very expensive to settle or defend, and we have in the past offered to contribute to settlement amounts and incurred legal fees in connection with certain of these indemnity demands. In response to these demands we may be required to assume control of and bear all costs associated with the defense of our customers in compliance with our contractual commitments.

Large future indemnity payments and associated legal fees and expenses, including potential indemnity payments and legal fees and expenses relating to our wireless carrier and other customers' indemnity demands with respect to pending litigation, could materially harm our business, operating results and financial condition.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II.

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

Our common stock is listed on the NASDAQ Global Market under the symbol "TNAV."

We had approximately 29 stockholders of record as of June 30, 2019. A substantially greater number of holders of our common stock are "street name" or beneficial holders, whose shares are held by banks, brokers and other financial institutions. We have never declared or paid dividends on our common stock and do not expect to pay dividends on our common stock for the foreseeable future. Instead, we anticipate that all of our earnings in the foreseeable future will be used for the operation and growth of our business.

Unregistered Sales of Equity Securities and Use of Proceeds.

Not applicable.

Issuer Purchases of Equity Securities

On February 7, 2019, we announced that our board of directors had approved a stock repurchase program to facilitate our repurchase up to $20.0 million worth of our issued and outstanding common stock in the open market. The timing and amount of repurchase transactions under this program will depend on market conditions, cash flow and other considerations. The repurchase authorization will expire on August 4, 2020.

The following table summarizes stock repurchase activity during the three months ended June 30, 2019:

	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value that May Yet be Purchased Under the Plans or Programs
April 1 – April 30, 2019	—	$ —	—	$ 18,695,600
May 1 – May 31, 2019	—	—	—	18,695,600
June 1 – June 30, 2019	—	—	—	18,695,600
Total	—		—	$ 18,695,600

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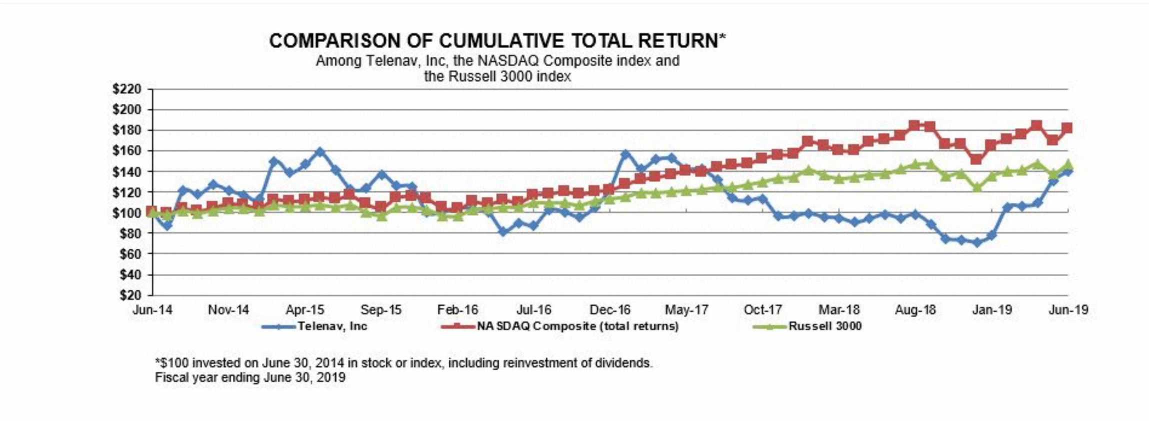
STOCK PERFORMANCE GRAPH

This performance graph shall not be deemed “soliciting material” or to be “filed” with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of Telenav, Inc. under the Securities Act or the Exchange Act.

The following graph shows a comparison from July 1, 2014 through June 30, 2019 of cumulative total return for our common stock, the NASDAQ Composite Index and the Russell 3000 Index. Such returns are based on historical results and are not intended to suggest future performance. Data for the NASDAQ Composite Index and the Russell 3000 Index assume reinvestment of dividends.



ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data should be read in conjunction with the consolidated financial statements and related notes thereto appearing elsewhere in this Form 10-K. We have derived the statement of operations data for fiscal years ended June 30, 2019, 2018 and 2017 and the balance sheet data as of June 30, 2019 and 2018 from the audited consolidated financial statements included elsewhere in this Form 10-K. The statement of operations data for the fiscal years ended June 30, 2016 and 2015 and the balance sheet data as of June 30, 2017, 2016 and 2015 were derived from audited consolidated financial statements that are not included in this Form 10-K. The consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The results of operations of our enterprise business, which were previously presented as a component of our consolidated operating results, have been classified as discontinued operations in our statement of operations for all periods presented. We have not declared or distributed any cash dividends on our common stock. Historical results are not necessarily indicative of results to be expected for future periods.

Consolidated Statements of Operations Data: (in thousands, except per share data)	Fiscal Year Ended June 30, 2019	2018 As Adjusted[1]	2017 As Adjusted[1]	2016	2015
Revenue	$ 220,896	$ 218,463	$ 209,715	$ 183,346	$ 160,239
Cost of revenue	124,675	128,071	120,436	100,797	78,784
Gross profit	96,221	90,392	89,279	82,549	81,455
Operating expenses:					
Research and development	83,953	85,646	67,406	68,911	68,060
Sales and marketing	19,322	20,748	21,995	25,587	26,975
General and administrative	23,811	21,562	23,041	23,059	23,606
Goodwill impairment	2,556	2,666	—	—	—
Legal settlement and contingencies	700	425	6,424	935	—
Restructuring	—	—	—	(1,362)	1,150
Total operating expenses	130,342	131,047	118,866	117,130	119,791
Operating loss	(34,121)	(40,655)	(29,587)	(34,581)	(38,336)
Other income (expense), net	2,916	833	892	(229)	2,267
Loss from operations	(31,205)	(39,822)	(28,695)	(34,810)	(36,069)
Provision (benefit) for income taxes	1,283	1,012	841	511	(13,006)
Net loss	$ (32,488)	$ (40,834)	$ (29,536)	$ (35,321)	$ (23,063)
Net loss per share, basic and diluted	$ (0.71)	$ (0.92)	$ (0.68)	$ (0.85)	$ (0.58)
Weighted average shares used in computing net loss per share, basic and diluted	45,577	44,498	43,343	41,567	39,991

Consolidated Balance Sheets Data: (in thousands)	As of June 30, 2019	2018 As Adjusted[1]	2017 As Adjusted[1]	2016	2015
Cash, cash equivalents and short-term investments	$ 99,478	$ 84,946	$ 98,355	$ 109,626	$ 119,916
Working capital	99,672	76,996	107,817	118,182	138,415
Total assets	297,015	237,680	240,894	218,247	223,922
Common stock and additional paid-in capital	182,396	167,940	159,710	149,818	140,447
Total stockholders’ equity	90,640	108,883	141,704	149,685	176,183

[1] The summary consolidated financial data for the fiscal years ended and as of June 30, 2018 and 2017 have been retrospectively restated to reflect the adoption of Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606) and subsequent amendments to the initial guidance. In conjunction with Topic 606, a new subtopic, ASC 340-40, Other Assets and Deferred Costs - Contracts with Customers, was also issued. Collectively, we refer to Topic 606 and Subtopic 340-40 as “ASC 606.” See Note 1 of Notes to Consolidated Financial Statements included elsewhere in this Annual Report on Form 10-K for a summary of adjustments related to ASC 606. The selected financial data for the fiscal years ended and as of June 30, 2016 and 2015 have not been updated to reflect the adoption of ASC 606.

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

The following discussion and analysis should be read together with our consolidated financial statements and the notes to those statements included elsewhere in this Form 10-K. This discussion contains forward-looking statements based on our current expectations, assumptions, estimates and projections about Telenav and our industry. These forward-looking statements involve risks and uncertainties. Our actual results could differ materially from those indicated in these forward-looking statements as a result of certain factors, as more fully described in "Risk factors" in Item 1A of this Form 10-K, Management's Discussion and Analysis of Financial Condition and Results of Operations and elsewhere in this Form 10-K. We undertake no obligation to update publicly any forward-looking statements for any reason, even if new information becomes available or other events occur in the future.

Overview

Telenav is a leading provider of location-based products and services for connected cars. We utilize our connected car platform to deliver these products and services. Our connected car platform allows us to deliver enhanced location-based navigation services to automobile manufacturers and tier one suppliers, or tier ones. In addition, as discussed below, until August 2019, we utilized our advertising platform, which we refer to as our Ads Business, to deliver highly targeted advertising services to advertisers and advertising agencies by leveraging our location expertise. We reported results through June 30, 2019 in three business segments: automotive, advertising and mobile navigation. Our fiscal year ends June 30. In this Form 10-K, we refer to the fiscal years ended June 30, 2017, 2018 and 2019 and ending June 30, 2020 as fiscal 2017, fiscal 2018, fiscal 2019 and fiscal 2020, respectively. Our total revenue was $209.7 million in fiscal 2017, $218.5 million in fiscal 2018 and $220.9 million in fiscal 2019. Our net loss was $29.5 million in fiscal 2017, $40.8 million in fiscal 2018 and $32.5 million in fiscal 2019.

We derive revenue primarily from automobile manufacturers and tier ones whose vehicles or systems incorporate our proprietary personalized navigation software and services. These manufacturers and tier ones generally do not provide us with any volume or revenue guarantees.

Our legacy mobile navigation business has declined steadily since fiscal 2013, and we expect it to continue to decline and represent less than 10% of our consolidated revenue in fiscal 2020. Our mobile navigation business generates revenue from our partnerships with wireless carriers who sell our navigation services to their subscribers either as a standalone service or in a bundle with other data or services. The mobile navigation business has declined both in absolute dollars and as a percentage of revenue from $116.4 million, or 61% of our revenue, in fiscal 2013 to $9.8 million, or 4% of our revenue, in fiscal 2019, as subscriptions for paid navigation services declined in favor of free or freemium navigation services offered by our competitors with greater resources and name recognition, such as Google and Apple. We have experienced and anticipate that we will continue to experience the non-renewal of our agreements for these services by our wireless carrier customers as demand from their subscribers declines. In the event our mobile navigation business ceases to be profitable, we may ultimately elect to terminate our legacy wireless carrier mobile navigation business to the extent allowable under our contractual arrangements.

We offer four variations of our connected car products and services to our automobile manufacturer and tier one customers for distribution with their vehicles and systems. First, we offer on-board navigation systems that are built into vehicles with all key elements of the system residing in the vehicle as a self-contained application along with the related software and content. Our on-board navigation products do not require access to the Internet or wireless networks to function. Second, we offer advanced navigation solutions that contain on-board functionality and also add cloud functionality such as cloud search, cloud routing, map updates and "live" data. We refer to these solutions as hybrid navigation. Third, we offer mobile phone-based navigation solutions that run on the phone and provide an interactive map and navigation instructions to the vehicle's video screen and audio system, which we refer to as brought-in navigation. Finally, we offer a SDK that enables our customers to add mapping and location capabilities to their cloud, mobile and on-board automotive applications. We believe our history as a supplier of cloud-based navigation services combined with our proven track record of delivering navigation solutions to three of the top five global automobile manufacturers provides a unique advantage in the automotive navigation marketplace over our competitors.

We provide our connected car products and services directly to automobile manufacturers such as Ford, which represented 55% of our revenue in fiscal 2019, GM, which represented 18% of our revenue in fiscal 2019, and Toyota. We also provide our products and services indirectly through tier ones such as Xevo for certain Toyota solutions; LG for certain Opel solutions; and Panasonic for certain FCA solutions.

We generate product revenue from the delivery of customized software and royalties from the distribution of this customized software in certain automotive navigation applications, map updates to the software and customized software development. We generate services revenue from brought-in automotive navigation solutions, advertising services and mobile navigation services.

Ford utilizes our on-board automotive navigation product in its Ford SYNC® platform. Ford pays us a royalty fee on SYNC 2 on-board solutions as the software is imaged onto an SD card and shipped for installation in vehicles and pays us a royalty fee on SYNC 3 on-board solutions as our software is installed in the vehicle. We also derive product revenue from map update fees.

We generate automotive services revenue primarily from our brought-in automotive navigation solutions. We earn a fee for each new vehicle owner who downloads and activates the associated mobile application featuring GM's branded mobile and web-based applications, whereby we provide enhanced search capabilities for contracted service periods. We also earn a fee for each new Toyota and Lexus vehicle sold and enabled to connect with our Scout GPS Link mobile application, similarly provided over a contracted service period.

For its hybrid navigation solutions, GM pays us a royalty fee as the SD card is shipped for installation in vehicles; this royalty includes a fee for the initial connected service to be provided once the vehicle is sold. GM will pay us an additional service fee for connected solution subscriptions for each end user that elects to renew their OnStar Connected Navigation or Connected Navigation subscription with GM.

Through August 2019, we generated revenue from advertising network services through the delivery of advertising impressions based on the specific terms of the advertising contract. In fiscal 2019, we recognized a $2.6 million impairment of the goodwill associated with our advertising business segment. Subsequent to June 30, 2019, we entered into the inMarket Transaction described above.

We also generate a declining portion of our services revenue from subscriptions to access our mobile navigation services, which are generally provided through our wireless carrier customers that offer our services to their subscribers. Our wireless carrier customers typically pay us based on a revenue sharing arrangement or a monthly subscription fee per end user. This revenue continues to decline and in fiscal 2018 we recognized a $2.7 million impairment of all of the goodwill associated with our mobile navigation segment.

In August 2019, we sold the Ads Business to inMarket. Upon the terms and subject to the conditions of the Asset Purchase Agreement, inMarket acquired substantially all of the assets and assumed certain liabilities related to and used in the Ads Business. In exchange, inMarket issued to Telenav units of inMarket representing a 14.5% member interest in inMarket at the time of closing of the inMarket Transaction. In addition, inMarket granted to Telenav a perpetual, non-exclusive, irrevocable, royalty-free, license back to the software and other intellectual property rights being assigned to inMarket as part of the inMarket Transaction. We will report the operating results of the Ads Business as discontinued operations in our condensed consolidated financial statements for the first quarter of fiscal 2020 and for all prior comparative periods.

In August 2019, we entered into certain agreements with affiliates of Grab, including: (i) a services agreement pursuant to which we agreed that we will provide certain services to Grab through certain of our employees designated to work on our OpenTerra Platform; (ii) a license agreement pursuant to which we have granted to Grab a perpetual license to certain intellectual property associated with the OpenTerra Platform; and (iii) an asset purchase agreement pursuant to which we will sell certain intellectual property associated with the OpenTerra Platform to Grab and facilitate the making of offers for employment or consulting arrangements by Grab of certain of our OpenTerra employees. The transactions contemplated by the services agreement, license agreement and asset purchase agreement together comprise the "Grab Transaction." The consideration for the services agreement, license agreement and asset purchase agreement is a mix of cash and Grab Holdings, Inc. ordinary shares. The asset purchase component of the Grab Transaction is subject to customary closing conditions and is expected to close before June 30, 2020.

Adoption of ASC 606

We adopted ASC 606 effective July 1, 2018, utilizing the full retrospective transition method. All prior period amounts and disclosures for the three years ended June 30, 2019 set forth in this Form 10-K have been adjusted to comply with ASC 606. See Note 1 to our consolidated financial statements for a summary of adjustments.

The effect of adopting ASC 606 on fiscal 2018 was material to our statements of operations and balance sheets as a result of its impact on the recognition of revenue and associated third-party content costs for certain of our on-board and brought-in automotive navigation solutions. The adoption of ASC 606 had no significant impact on our advertising and mobile navigation business segments. The adoption of ASC 606 resulted in reductions to deferred costs (asset) and deferred revenue (liability) balances, and accelerated the recognition of revenues and deferred costs in the automotive segment. Such impact on our statements of operations will continue going forward.

The adjustments required to transition to ASC 606 resulted in $160.6 million of deferred revenue and $86.9 million of deferred costs of the total originally reported on our balance sheet as of June 30, 2018 being recorded instead as revenue and cost of revenue, respectively, in our adjusted prior periods. In addition, the adoption of ASC 606 required us to capitalize an additional $4.2 million, net, of deferred development costs on our adjusted June 30, 2018 balance sheet, resulting in a net decrease in deferred costs of $82.7 million. In total, our accumulated deficit decreased by $77.8 million as of June 30, 2018. All prior period amounts presented have been adjusted to comply with ASC 606. See Note 1 to our condensed consolidated financial statements.

With respect to on-board automotive solutions, historically we recognized revenue and associated content costs over the life of our contractual obligations when map updates were included, and we deferred substantially all revenue and associated content costs pending the delivery of future specified upgrades. Instead, as of July 1, 2018, we recognize revenue related to royalties for distinct software and content that has been accepted as transfer of control takes place, with an allocation of the transaction price based on the relative standalone selling price, or SSP, of map updates, specified upgrades, and other services as applicable, which we will recognize with the associated content costs at a point in time or over time as we transfer control of the related performance obligation.

Regarding brought-in automotive solutions, historically we recognized revenue for each royalty over the expected remaining term of the service obligation. Effective July 1, 2018, since these contracts contain variable consideration we estimate the total transaction price each reporting period using a probability assessment, and then recognize revenue ratably over the period the services obligation is expected to be fulfilled.

Development costs subject to ASC 340-40 incurred to fulfill future obligations under certain actual or anticipated contracts for automotive solutions are capitalized, provided they are expected to be recovered, and then recognized as control of the related performance obligations is transferred. Historically, such costs were not capitalized until receipt of a signed contract or purchase order for a fixed amount, provided the costs were probable of being recovered. Under ASC 340-40, we are required to capitalize such costs in anticipation of a contract, provided the costs are expected to be recovered; thus, increasing the amount of costs we capitalize under ASC 340-40. For on-board automotive solutions, such capitalized costs represent the customized portion of software development, which will continue to be recognized upon acceptance of the software under ASC 340-40 since acceptance is generally required for control of the software to transfer. For brought-in automotive solutions, such costs will be amortized over the period the services obligation is expected to be fulfilled, since software development does not represent a distinct performance obligation in the case of brought-in automotive solutions. Historically, we recognized such costs for brought-in automotive solutions upon acceptance of the software.

Key operating and financial performance metrics

We monitor the key operating and financial performance metrics set forth in the tables below to help us evaluate growth trends, establish budgets, measure the effectiveness of our sales and marketing efforts and assess our operational efficiencies. Certain of these measures such as billings, direct contribution from billings, direct contribution margin from billings, changes in deferred revenue and deferred costs, adjusted earnings before interest, taxes, depreciation and amortization, or adjusted EBITDA, adjusted cash flow from operations and free cash flow are not measures calculated in accordance with GAAP, and should not be considered as an alternative to any measure of financial performance calculated and presented in accordance with GAAP. In addition, these non-GAAP measures may not be comparable to similarly titled measures of other companies because other companies may not calculate them in the same manner that we do.

Our key operating and financial performance metrics are as follows (in thousands, except percentages and per share amounts):

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[1]	2017 As Adjusted[1]
	(in thousands, except percentages and per share amounts)		
Revenue	$ 220,896	$ 218,463	$ 209,715
Revenue from Ford as a percentage of total revenue	55%	67%	71%
Revenue from GM as a percentage of total revenue	18%	< 10%	< 10%
Billings (Non-GAAP)	$ 281,493	$ 253,887	$ 233,749
Billings to Ford as a percentage of total billings (non-GAAP)	50%	66%	68%
Billings to GM as a percentage of total billings (non-GAAP)	19%	< 10%	< 10%
Increase in deferred revenue	$ 60,597	$ 35,424	$ 24,034
Increase in deferred costs	$ 21,377	$ 22,999	$ 19,814
Gross profit	$ 96,221	$ 90,392	$ 89,279
Gross margin	44%	41%	43%
Direct contribution from billings (Non-GAAP)	$ 135,441	$ 102,817	$ 93,499
Direct contribution margin from billings (Non-GAAP)	48%	40%	40%
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Diluted net loss per share	$ (0.71)	$ (0.92)	$ (0.68)
Adjusted EBITDA (Non-GAAP)	$ (18,024)	$ (25,199)	$ (10,354)
Adjusted cash flow from operations (Non-GAAP)	$ 21,196	$ (12,774)	$ (6,134)
Net cash provided by (used in) operating activities	$ 7,514	$ (7,411)	$ (11,155)
Free cash flow (Non-GAAP)	$ 6,115	$ (12,059)	$ (12,380)

(1) Certain amounts have been adjusted to reflect the adoption of ASC 606. See Note 1 to our consolidated financial statements for a summary of adjustments.

Gross margin is our gross profit, or total revenue less cost of revenue, expressed as a percentage of our total revenue. Our gross margin has been and will continue to be impacted by the increasing percentage of our revenue base derived from automotive navigation solutions and advertising network services, which generally have higher associated third party content costs and third party display ad inventory costs, respectively, than our mobile navigation offerings provided through wireless carriers.

Billings equals revenue recognized plus the change in deferred revenue from the beginning to the end of the applicable period. Direct contribution from billings reflects GAAP gross profit plus change in deferred revenue less change in deferred costs from the beginning to the end of the applicable period. Direct contribution margin from billings reflects direct contribution from billings divided by billings. We have also provided a breakdown of the calculation of the change in deferred revenue by segment, which is added to revenue in calculating our non-GAAP metric of billings. In connection with our presentation of the change in deferred revenue, we have provided a similar presentation of the change in the related deferred costs. Such deferred costs primarily include costs associated with third party content and certain development costs associated with our customized software solutions whereby customized engineering fees are earned. As we enter into more hybrid and brought-in navigation programs, deferred revenue and deferred costs become larger components of our operating results, so we believe these metrics are useful in evaluating cash flows.

We consider billings, direct contribution from billings and direct contribution margin from billings to be useful metrics for management and investors because billings drive revenue and deferred revenue, which is an important indicator of our business. We believe direct contribution from billings and direct contribution margin from billings are useful metrics because they reflect the impact of the contribution over time for such billings, exclusive of the incremental costs incurred to deliver any related service obligations. There are a number of limitations related to the use of billings, direct contribution from billings and direct contribution margin from billings versus revenue, gross profit and gross margin calculated in accordance with GAAP. First, billings, direct contribution from billings and direct contribution margin from billings include amounts that have not yet been recognized as revenue or cost and may require additional services to be provided over contracted service periods. For example, billings related to certain brought-in solutions cannot be fully recognized as revenue in a given period due to requirements for ongoing map updates and provisioning of services such as hosting, monitoring, customer support and, for certain customers, additional period content and associated technology costs. Accordingly, direct contribution from billings and direct contribution margin from billings do not include all costs associated with billings. Second, we may calculate billings, direct contribution from billings and direct contribution margin from billings in a manner that is different from peer companies that report similar financial measures, making comparisons between companies more difficult. When we use these measures, we attempt to compensate for these limitations by providing specific information regarding billings, direct contribution from billings and direct contribution margin from billings and how they relate to revenue, gross profit and gross margin calculated in accordance with GAAP.

Adjusted EBITDA measures our GAAP net loss excluding the impact of stock-based compensation expense, depreciation and amortization, other income (expense), net, provision (benefit) for income taxes, and other applicable items such as goodwill impairment, legal settlements and contingencies, deferred rent reversal and tenant improvement allowance recognition due to sublease termination, and merger and acquisition, or M&A, transaction expenses, net of tax. Stock-based compensation expense relates to equity incentive awards granted to our employees, directors, and consultants. Legal settlements and contingencies represent settlements, offers made to settle, or loss accruals relating to litigation or other disputes in which we are a party or the indemnitor of a party. Deferred rent reversal and tenant improvement allowance recognition represent the reversal of our deferred rent liability and recognition of our deferred tenant improvement allowance, as amortization of these amounts is no longer required due to the termination of our Santa Clara facility sublease and subsequent entry into a new lease agreement with our landlord for this same facility effective September 2017. M&A transaction expenses related primarily to transaction costs associated with the inMarket Transaction and the Grab Transaction. Goodwill impairment represents the impairment charge related to our mobile navigation business segment recorded in the third quarter of fiscal 2018 and the impairment charge related to our advertising business segment recorded in the fourth quarter of fiscal 2019.

Adjusted cash flow from operations measures adjusted EBITDA plus the effect of changes in deferred revenue and deferred costs. We believe adjusted cash flow from operations is a useful measure, especially in light of the impact we expect on reported revenue from certain value-added offerings we provide our customers, including map updates and the impact of future deliverables.

Adjusted EBITDA and adjusted cash flow from operations, while generally measures of profitability and the generation of cash, can also represent losses and the use of cash, respectively. Adjusted EBITDA and adjusted cash flow from operations are key measures used by our management and board of directors to understand and evaluate our core operating performance and trends, to prepare and approve our annual budget and to develop short- and long-term operational plans. In particular, we believe that the exclusion of the expenses eliminated in calculating adjusted EBITDA and adjusted cash flow from operations can provide a useful measure for period-to-period comparisons of our core business.

In addition, adjusted cash flow from operations is a key financial measure used by the compensation committee of our board of directors in connection with the development of incentive-based compensation for our executive officers and other employees. Accordingly, we believe that adjusted EBITDA and adjusted cash flow from operations generally provide useful information to investors and others in understanding and evaluating our operating results in the same manner as our management and board of directors.

Free cash flow is a non-GAAP financial measure we define as net cash provided by (used in) operating activities less purchases of property and equipment. We consider free cash flow to be a liquidity measure that provides useful information to management and investors about the amount of cash (used in) generated by our business after purchases of property and equipment.

These non-GAAP measures have limitations as analytical tools and should not be considered in isolation or as substitutes for our financial results as reported under GAAP. Some of these limitations are:

- We expect to incur additional costs in the future due to requirements to provide ongoing provisioning of services such as hosting, monitoring and customer support; accordingly, direct contribution from billings, direct contribution margin from billings and adjusted cash flow from operations do not reflect all costs associated with billings;
- assets being depreciated and amortized may have to be replaced in the future, and adjusted EBITDA does not reflect cash capital expenditure requirements for such replacements or for new capital expenditures;
- adjusted EBITDA and adjusted cash flow from operations do not reflect the potentially dilutive impact of equity-based compensation;
- adjusted EBITDA and adjusted cash flow from operations do not reflect the use of cash for net share settlements of RSUs;
- adjusted EBITDA and adjusted cash flow from operations do not reflect tax payments that historically have represented a reduction in cash available to us or tax benefits that may arise as a result of generating net losses; and
- adjusted EBITDA, adjusted cash flow from operations, free cash flow or similarly titled measures may be calculated by other companies differently, which reduces their usefulness as comparative measures.

Because of these and other limitations, billings, direct contribution from billings, direct contribution margin from billings, adjusted EBITDA, adjusted cash flow from operations and free cash flow should be considered alongside other GAAP-based financial performance measures.

We reconcile the most directly comparable GAAP financial measure to each non-GAAP financial metric used. The following tables present reconciliations of revenue to billings, deferred revenue to the change in deferred revenue, deferred costs to the change in deferred costs, gross profit to direct contribution from billings, net loss to adjusted EBITDA and adjusted cash flow from operations, and net loss and net cash flow used in operating activities to free cash flow for each of the periods indicated (dollars in thousands):

Reconciliation of Revenue to Billings

	Fiscal Year Ended June 30,		
	2019	2018	2017
Automotive			
Revenue	$ 186,835	$ 177,842	$ 163,915
Adjustments:			
Change in deferred revenue	60,640	35,771	24,366
Billings	$ 247,475	$ 213,613	$ 188,281
Advertising			
Revenue	$ 24,241	$ 27,229	$ 26,841
Adjustments:			
Change in deferred revenue	—	—	—
Billings	$ 24,241	$ 27,229	$ 26,841
Mobile Navigation			
Revenue	$ 9,820	$ 13,392	$ 18,959
Adjustments:			
Change in deferred revenue	(43)	(347)	(332)
Billings	$ 9,777	$ 13,045	$ 18,627
Total			
Revenue	$ 220,896	$ 218,463	$ 209,715
Adjustments:			
Change in deferred revenue	60,597	35,424	24,034
Billings	$ 281,493	$ 253,887	$ 233,749

Reconciliations of Deferred Revenue to Change in Deferred Revenue and Deferred Costs to Change in Deferred Costs

	Automotive			Advertising			Mobile Navigation			Total		
	Fiscal Year Ended June 30,			Fiscal Year Ended June 30,			Fiscal Year Ended June 30,			Fiscal Year Ended June 30,		
	2019	2018	2017	2019	2018	2017	2019	2018	2017	2019	2018	2017
Deferred revenue, ending balance	$ 134,641	$ 74,001	$ 38,230	$ —	$ —	$ —	$ 494	$ 537	$ 884	$ 135,135	$ 74,538	$ 39,114
Deferred revenue, beginning balance	74,001	38,230	13,864	—	—	—	537	884	1,216	74,538	39,114	15,080
Change in deferred revenue	$ 60,640	$ 35,771	$ 24,366	$ —	$ —	$ —	$ (43)	$ (347)	$ (332)	$ 60,597	$ 35,424	$ 24,034
Deferred costs, ending balance	$ 79,802	$ 58,425	$ 35,426	$ —	$ —	$ —	$ —	$ —	$ —	$ 79,802	$ 58,425	$ 35,426
Deferred costs, beginning balance	58,425	35,426	15,612	—	—	—	—	—	—	58,425	35,426	15,612
Change in deferred costs	$ 21,377	$ 22,999	$ 19,814	$ —	$ —	$ —	$ —	$ —	$ —	$ 21,377	$ 22,999	$ 19,814

Reconciliation of Revenue to Billings - Ford and GM

	Fiscal Year Ended June 30,		
	2019	2018	2017
Revenue from Ford	$ 121,207	$ 145,408	$ 149,308
Adjustments:			
Change in deferred revenue attributed to Ford	18,240	22,299	10,174
Billings to Ford	$ 139,447	$ 167,707	$ 159,482
Billings to Ford as a percentage of total billings	50%	66%	68%
Revenue from GM	$ 40,131	$ 14,142	$ 6,957
Adjustments:			
Change in deferred revenue attributed to GM	13,554	3,992	4,326
Billings to GM	$ 53,685	$ 18,134	$ 11,283
Billings to GM as a percentage of total billings	19%	7%	5%

Reconciliation of Gross Profit to Direct Contribution from Billings

	Fiscal Year Ended June 30,		
	2019	2018	2017
Gross profit	$ 96,221	$ 90,392	$ 89,279
Gross margin	44%	41%	43%
Adjustments to gross profit:			
Change in deferred revenue	$ 60,597	$ 35,424	$ 24,034
Change in deferred costs[1]	(21,377)	(22,999)	(19,814)
Net change	39,220	12,425	4,220
Direct contribution from billings[1]	$ 135,441	$ 102,817	$ 93,499
Direct contribution margin from billings[1]	48%	40%	40%

[1] Deferred costs primarily include costs associated with third party content and in connection with certain customized software solutions, the costs incurred to develop those solutions. We expect to incur additional costs in the future due to requirements to provide ongoing map updates and provisioning of services such as hosting, monitoring, customer support and, for certain customers, additional period content and associated technology costs. Accordingly, direct contribution from billings and direct contribution margin from billings do not include all costs associated with billings.

Reconciliation of Net Loss to Adjusted EBITDA and Adjusted Cash Flow from Operations

	Fiscal Year Ended June 30,		
	2019	2018	2017
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Adjustments:			
Goodwill impairment	2,556	2,666	—
Legal settlement and contingencies	700	425	6,424
M&A transaction costs	562	—	—
Deferred rent reversal due to lease termination	—	(538)	—
Tenant improvement allowance recognition due to lease termination	—	(582)	—
Stock-based compensation expense	8,299	9,876	10,162
Depreciation and amortization	3,980	3,609	2,647
Interest and other income, net	(2,916)	(833)	(892)
Provision for income taxes	1,283	1,012	841
Adjusted EBITDA	$ (18,024)	$ (25,199)	$ (10,354)
Change in deferred revenue	$ 60,597	$ 35,424	$ 24,034
Change in deferred costs[1]	(21,377)	(22,999)	(19,814)
Adjusted cash flow from operations[1]	$ 21,196	$ (12,774)	$ (6,134)

[1] We expect to incur additional costs in the future due to requirements to provide ongoing map updates and provisioning of services such as hosting, monitoring, customer support and, for certain customers, additional period content and associated technology costs. Accordingly, adjusted EBITDA on billings does not reflect all costs associated with billings.

Reconciliation of Net Loss to Free Cash Flow

	Fiscal Year Ended June 30,		
	2019	2018	2017
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Change in deferred revenue[1]	60,597	35,424	24,034
Change in deferred costs[2]	(21,377)	(22,999)	(19,814)
Changes in other operating assets and liabilities	(12,852)	5,784	774
Other adjustments[3]	13,634	15,214	13,387
Net cash used in operating activities	7,514	(7,411)	(11,155)
Less: Purchases of property and equipment	(1,399)	(4,648)	(1,225)
Free cash flow	$ 6,115	$ (12,059)	$ (12,380)

[1] Consists of product royalties, customized software development fees, service fees and subscription fees.

[2] Consist primarily of third party content costs and customized software development expenses.

[3] Consist primarily of depreciation and amortization, stock-based compensation expense and other non-cash items.

Key components of our results of operations

Sources of revenue

We classify our revenue as either product or services revenue. Product revenue consists primarily of revenue we receive from the delivery of customized software and royalties from the distribution of this customized software in certain automotive navigation applications, map updates to the software and customized software development. Services revenue consists primarily of revenue we derive from our brought-in automotive navigation services, advertising services and mobile navigation services.

We reported revenue, cost of revenue and gross profit results in three business segments through June 30, 2019: automotive, advertising and mobile navigation. Our chief executive officer, or CEO, the chief operating decision maker, reviews revenue and gross margin information for each of our reportable segments. See *"- Results of operations"* and Note 11 to the consolidated financial statements in this Form 10-K for more information about our business segments.

Revenue from our automotive segment represented 85%, 81% and 78% of our revenue in fiscal 2019, 2018 and 2017, respectively. Ford represented 55%, 67% and 71% of our revenue in fiscal 2019, 2018 and 2017, respectively, and GM represented 18%, less than 10% and less than 10% of our revenue in fiscal 2019, 2018 and 2017, respectively.

Our contract with Ford covers a broad range of products and services that we provide to Ford. On March 28, 2018, we entered into an amendment with Ford that extends the term of the agreement from December 31, 2018 to December 31, 2020 for each jurisdiction in which we currently provide our products to Ford. On December 14, 2017, Ford also selected us to provide its next generation navigation solution in North America, subject to certain conditions and execution of an agreement regarding those solutions. The terms of this next generation navigation solution were embodied in an amendment executed in December 2018. With respect to North America production, this amendment extended the term of the agreement to December 31, 2022, which term may be further extended at Ford's option subject to certain conditions. We were not awarded the contracts for Europe, South America and Australia and New Zealand. Furthermore, a substantial portion of our revenue, and, to a lesser extent, gross profit, is impacted by the underlying licensed content cost negotiated through HERE and other content providers and we cannot predict the impact on our revenue and gross profit of any changes between Ford and the map or other content providers.

Our contract with GM includes the provision of our on-board, hybrid, and brought-in navigation solutions across a wide assortment of GM vehicles. Our mobile navigation SDK powers GM's branded mobile and web-based applications and is covered under a services agreement that was entered into June 13, 2014 and extends to December 31, 2019. Our on-board and hybrid navigation solutions for GM are covered under a product and services agreement that became effective February 1, 2017. These solutions began shipping in a limited number of vehicles beginning with model year 2017 and are gradually expanding across additional regions and models. In May 2017, additional vehicles through model year 2025 were added to this products and services agreement, which terminates on December 31, 2026.

Product revenue. Our automotive product revenue is generated primarily from on-board and hybrid automotive navigation solutions provided to Ford and GM. Our on-board solutions consist of software, memory card, map and point of interest, or POI, data loaded in the vehicle that provides voice-guided turn by turn navigation displayed on the vehicle screen. Our hybrid navigation solutions contain on-board software functionality and also add cloud functionality such as cloud search, cloud routing, map updates and "live" data.

Royalties for on-board navigation solutions are generally earned at various points in time, depending upon the individual customer agreement. We earn each royalty upon either the re-imaging of the software on each individual memory card or the time at which each vehicle is produced.

We recognize revenue from on-board automotive navigation solutions upon transfer of control of the customized software and any associated integrated content together forming a distinct performance obligation. Transfer of control generally occurs at a point in time upon acceptance. Any royalties for the use of distinct software combined with integrated content, with an allocation of the transaction price based on the relative SSP of map updates, specified upgrades, and other services as applicable, are recognized at the later of when the royalties are earned or when transfer of control of the related performance obligation has occurred.

For hybrid automotive solutions, the transaction price allocated to the on-board component is generally recognized as product revenue as described above, and the transaction price allocated to the included cloud functionality based on SSP is generally recognized as services revenue. Since the on-board software is still the predominant item in the hybrid solution, the royalties recognition guidance applies as it does for on-board navigation solutions described above. Our brought-in automotive navigation solutions as described below are subject to variable consideration and constraint guidance.

Our product revenue from Ford is primarily derived from Ford’s SYNC 2 and SYNC 3 on-board solutions. In each geography where we provide navigation products to it, Ford also provides a map update program under which Ford owners in North America, South America, China and Europe with SYNC 3 and in Australia and New Zealand with SYNC 2 or SYNC 3 are eligible to receive annual map updates at no additional cost through the applicable contractual period. We earn an annual compilation fee and a per unit fee for these updates included in the pricing arrangement. We anticipate that we will continue to depend on Ford for a material portion of our revenue for the foreseeable future.

We also have agreements with GM. In February 2017, GM launched its first model featuring integration of our hybrid navigation solution in North America, the 2017 Cadillac CTS and CTS-V. Our solution is currently available in North America on select 2019 models of Cadillac, GMC, Chevrolet and Buick. GM has also launched vehicles with our hybrid navigation solution in China and the Middle East. Our on-board and connected navigation solution is scheduled to become available in additional regions and GM models for model years 2020 through 2025. We anticipate that we will continue to depend on GM for a material portion of our revenue for the foreseeable future.

We provide entry level on-board navigation through LG, a tier one supplier for the Opel and Vauxhall line of vehicles, for the European market. This solution launched in Opel's Adam, Corsa, Karl and Zafira model vehicles in July 2017. These products are expected to be made available in other select vehicles for model years 2020 to 2022. GM sold its Opel and Vauxhall business to Groupe PSA in August 2017, and we continue to engage in development of similar solutions for Opel and Vauxhall.

We also have an agreement to offer our on-board navigation solution in select Jeep and Chrysler vehicles in the China market through Panasonic. Our on-board navigation was initially included in the 2018 Jeep Grand Cherokee, which had its China launch in August 2017, and is now included in Jeep Cherokee and Compass models in China.

Services revenue. We derive services revenue primarily from our brought-in automotive navigation solutions and, to a lesser extent, from the cloud functionality that is a component of our hybrid automotive navigation solutions as discussed above. Royalties for brought-in navigation solutions are earned upon vehicle sales reporting or upon initial usage by the end user.

Since these contracts typically contain a substantial amount of variable consideration that is required to be estimated and included in the transaction price, we include in the transaction price only variable consideration such that it is probable that a risk of significant revenue reversal will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Total variable consideration to be received is estimated at contract inception and updated at each reporting date. We utilize the expected value method and consider expected unit volume combined with a risk-based probability based on factors including, but not limited to: model year cycles, customer history, technology life cycles, nature of competition and other contract-specific factors. Because customers of our brought-in automotive navigation solutions simultaneously receive and consume the benefit from our performance, we recognize revenue ratably over the period the services obligation is expected to be fulfilled, generally 8 to 12 years, as this provides a faithful depiction of the transfer of control.

In October 2017, we amended our agreement with Ford to provide certain connected services for SYNC 3 in North America, Europe and China. Ford launched connected search across various model year 2018 SYNC 3 vehicles in North America using its FordPass™ and Lincoln Way™ mobile applications. The vast majority of Ford vehicles with SYNC 3 produced in North America and Europe during the fiscal year ended June 30, 2019 were capable of providing connected services.

GM offers its OnStar RemoteLink feature including our location-based services platform, and we earn a one-time fee for each new vehicle owner who downloads the associated MyBrand mobile application, including a localized version offered in Europe for the Opel and Vauxhall brands.

We have a partnership with Toyota for brought-in navigation services where our Scout GPS Link mobile application is available in select Entune® Audio equipped Toyota vehicles in North America and in select Lexus Enform® equipped Lexus models. Toyota and Lexus vehicles enabled to connect with our Scout GPS Link began shipping in August 2015 and September 2016, respectively. We earn a one-time fee for each new Toyota or Lexus sold and enabled to connect to our Scout GPS Link mobile application. In addition, our Scout GPS Link and Xevo’s Xevo™ Engine Link provide brought-in navigation services, including a fully interactive moving map, for select Toyota vehicles equipped with Entune 3.0 Audio, as well as select Lexus vehicles equipped with Lexus Enform. Our fully interactive solution first became available on select model year 2018 Toyota Camry and Sienna and Lexus NX and RC models, and was expanded to select model year 2019 Toyota Corolla hatchback, Avalon, CHR and RAV4 models, as well as Lexus UX and select model year 2020 Corolla sedans and Prius Prime. On most Toyota and Lexus models, a premium embedded connected navigation option is also available that provides connected search, powered by our platform.

While we have seen expansion of our latest version of Scout GPS Link solution across more Toyota and Lexus models in fiscal 2019, we expect that Toyota may limit or reduce the number of models or vehicles on which Scout GPS Link is offered by Toyota and Lexus, beginning in model year 2021, due in part to the offering of alternative brought-in solutions such as Apple’s CarPlay, which Toyota is offering across certain Toyota models, and the expanded offering of Google’s Android Auto solution across more automobile manufacturers.

During the fourth quarter of fiscal 2019, Telenav entered into an amended agreement with Xevo. The amended agreement provides that we will receive a one-time $17.0 million cash pre-payment in the first quarter of fiscal 2020 in exchange for removing a contractual minimum unit commitment that otherwise would have resulted in a payment to us in fiscal 2027. We recorded the receivable as deferred revenue in the fourth quarter of fiscal 2019, and it will be recognized as revenue over future periods. Our contract with Xevo relating to the implementation of our solutions in Toyota and Lexus vehicles is expected to remain in place through 2026, and we are exploring additional opportunities with Xevo and Toyota as well.

Revenue from our advertising segment, which includes the delivery of display, location-based advertising impressions represented 11%, 13% and 13% of our revenue in fiscal 2019, 2018 and 2017, respectively. Our advertising revenue is derived primarily from ad insertion orders contracted with advertising agencies, direct customers, and channel partners. We recognize revenue when transfer of control of the related advertising services occur based on the specific terms of each advertising contract, which are generally based on the number of ad impressions delivered. In August 2019, we sold the Ads Business to inMarket. We will report the operating results of the Ads Business as discontinued operations in our condensed consolidated financial statements for the first quarter of fiscal 2020 and for all prior comparative periods.

Revenue from our mobile navigation segment represented 4%, 6% and 9% of our revenue in fiscal 2019, 2018 and 2017, respectively. We offer voice-guided, real-time, turn by turn, mobile navigation service under several brand names including Telenav GPS as well as under wireless carrier brands (or “white label” brands). Subscription fee revenue from our mobile navigation service has declined steadily, primarily due to a substantial decrease in the number of paying subscribers for navigation services provided through AT&T and other wireless carriers. We expect that mobile navigation revenue will continue to decline. We have experienced and anticipate that we will continue to experience the non-renewal of our agreements for these services by our wireless carrier customers as demand from their subscribers declines.

We derive mobile navigation services revenue primarily from our wireless carrier customers for their end users’ subscriptions to our mobile navigation services. Our wireless carrier customers pay us based on a revenue sharing arrangement or a monthly subscription fee per end user, and they are responsible for billing and collecting the fees they charge their subscribers for the right to use our navigation services. We recognize monthly fees related to our mobile navigation services in the month we provide the services. We defer amounts received or billed in advance of the service being provided and recognize the deferred amounts when the obligation has been fulfilled.

In fiscal 2020, we expect automotive revenue to represent the strategic growth segment of our business, but our expectations may not be realized. We expect that services revenue from wireless carrier customers, which has a higher gross margin than automotive and advertising revenue, will continue to decline substantially in fiscal 2020 due to the continued decline in the number of monthly recurring subscribers.

Revenue concentrations. We generated 81%, 90% and 90% of our revenue in the United States in fiscal 2019, 2018 and 2017, respectively. With respect to revenue we receive from automobile manufacturers and tier ones for sales of vehicles in other countries, we classify the majority of that revenue as being generated in the United States, because we provide deliverables to and receive compensation from the automobile manufacturer's or tier one's United States' entity. It is possible that this classification may change in the future, as existing and new customers may elect to contract through subsidiaries. For example, in fiscal 2017, Ford assigned certain contract rights for its production of vehicles with our SYNC 3 products to its joint ventures in China.

Cost of revenue

We classify our cost of revenue as either cost of product revenue or cost of services revenue. Cost of product revenue consists primarily of the cost of third-party content we incur in providing our on-board automotive navigation solutions, memory cards and recognition of deferred software development costs. Cost of services revenue consists primarily of the costs associated with third-party content we incur in providing our brought-in automotive navigation solutions, third-party ad inventory, data center operations and outsourced hosting services, software maintenance, customer support, the amortization of capitalized software, recognition of deferred customized software development costs, stock-based compensation and amortization of acquired developed technology.

We capitalize and defer recognition of certain third-party royalty-based content costs associated with the fulfillment of future automotive product and services obligations, and we recognize these deferred content costs as cost of revenue as we transfer control of the related performance obligation. As the deferred revenue and related deferred costs are recognized as we transfer control of the related performance obligation, we will also incur ongoing costs of revenue for network operations, hosting and data center, customer service support, and other related costs over time.

We also capitalize and defer recognition of certain costs, primarily payroll and related compensation and benefits expense, of customized software we develop for customers. We begin deferring development costs when they relate directly to a contract or specific anticipated contract and such costs are incurred to satisfy performance obligations in the future, provided they are expected to be recovered. We recognize these deferred software development costs as cost of revenue upon transfer of control of the associated performance obligation.

We primarily provide navigation service customer support through a third-party provider to whom we provide training and assistance with problem resolution. In addition, we use outsourced, hosting services and industry standard hardware to provide our navigation services. We generally maintain at least 99.9% uptime every month, excluding designated periods of maintenance. Our internal targets for service uptime are even higher. We have in the past, and may in the future, not achieve our targets for service availability, which could result in penalties for failure to meet contractual service availability requirements or termination of our customer agreement.

The largest component of cost of revenue as it relates to our advertising business is the cost of location-based, third-party advertising inventory which we acquire from advertising exchanges. Other notable costs of our advertising business are the cost of technologies that we license to deliver customized solutions, costs of ad delivery via contracted hosted relationships and the cost of our advertising operations.

While we expect that our services revenue from wireless carrier customers will continue to decline substantially in fiscal 2020 and beyond, we do not expect to be able to reduce our cost of services revenue at the same rate, if at all, as the decline in mobile navigation services revenue. Although we successfully transitioned to utilizing OpenStreetMap, or OSM, content for the majority of our mobile user base resulting in notable cost savings, we expect to continue to incur significant costs, especially related to third-party content as well as for outsourced hosting services. Cost of services revenue related to our advertising business will be impacted by our ability to grow advertising revenue, as well as the cost and availability of display ad inventory sourced from third-party exchanges. As the number of connected vehicles powered by Telenav continues to increase, we expect to incur additional costs and expenses associated with supporting this functionality.

Operating expenses

We generally classify our operating expenses into three categories: research and development, sales and marketing and general and administrative. Our operating expenses consist primarily of personnel costs, which include salaries, bonuses, advertising sales commissions, payroll taxes, employee benefit costs and stock-based compensation expense. Other expenses include marketing program costs, third-party contractor and temporary staffing services, facilities-related costs including rent expense, legal, audit and tax consulting and other professional service fees. We allocate stock-based compensation expense resulting from the amortization of the fair value of stock-based awards granted, based on the department in which the award holder works. We allocate overhead, such as rent and depreciation, to each expense category based on headcount. In addition, when we incur legal settlements, make offers to settle contingencies or accrue losses relating to litigation or other disputes in which we are a party or the indemnitor of a party, we classify such operating expense amounts separately as legal settlements and contingencies. We anticipate continued investment of resources, including the hiring of additional headcount, or reallocation of employee personnel to automotive and advertising. We may also be required to pay judgments, indemnification claims or other amounts, which we are unable to predict or estimate at this time.

Research and development. Research and development expenses consist primarily of personnel costs for our development and product management employees and related costs of outside consultants and temporary staffing. We have focused our research and development efforts on improving the ease of use and functionality of our existing products and services as well as developing new products and services. In addition to our U.S. employee base, a significant number of our research and development employees are located in our development centers in China and Romania; as a result, a portion of our research and development expense is subject to changes in foreign exchange rates, notably the Chinese Renminbi, or RMB, the Romanian Leu, or RON, and the Euro.

Sales and marketing. Sales and marketing expenses consist primarily of personnel costs for our sales and marketing staff, commissions earned by our sales personnel and the cost of marketing programs, advertising and promotional activities. Automotive revenue has comprised the largest portion of our revenue and has represented the growing component of our revenue. Our sales and marketing activities supporting our automotive navigation solutions include the costs of our business development efforts. Our automobile manufacturer partners and tier ones also provide primary marketing for our on-board and brought-in navigation services.

General and administrative. General and administrative expenses consist primarily of personnel costs for our executive, finance, legal, human resources and administrative personnel, legal, audit and tax consulting and other professional services and corporate expenses.

Legal settlements and contingencies. Legal settlements and contingencies represent settlements, offers made to settle, or loss accruals relating to litigation or other disputes in which we are a party or the indemnitor of a party.

Other income (expense), net. Other income (expense), net consists primarily of interest we earn on our cash and cash equivalents and short-term investments, gain or loss on investments, unrealized gains or losses on non-marketable equity investments and foreign currency gains or losses.

Provision (benefit) for income taxes. Our provision (benefit) for income taxes primarily consists of corporate income taxes related to profits earned in foreign jurisdictions, foreign withholding taxes, and changes to our tax reserves. Our effective tax rate could fluctuate significantly from period to period, particularly in those periods in which we incur losses, due to our ability to benefit from the carryback of net operating losses within the carryback period and the available amount therein, if any. Furthermore, on a quarterly basis our tax rates can fluctuate due to changes in our tax reserves resulting from the settlement of tax audits or the expiration of the statute of limitations. Our effective tax rate could also fluctuate due to a change in our earnings or loss projections, changes in the valuation of our deferred tax assets or liabilities, or changes in tax laws, regulations, or accounting principles, as well as the expiration and retroactive reinstatement of tax holidays.

Critical accounting policies and estimates

We prepare our consolidated financial statements in accordance with GAAP. In many cases, the accounting treatment of a particular transaction is specifically dictated by GAAP and does not require our judgment in its application. In other cases, our judgment is required in selecting among available alternative accounting policies that allow different accounting treatment for similar transactions. The preparation of consolidated financial statements also requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, costs and expenses and related disclosures. We base our estimates on historical experience and various other assumptions that we believe are reasonable under the circumstances. In many instances, we could reasonably use different accounting estimates, and in some instances changes in the accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ significantly from the estimates made by our management. To the extent that there are differences between our estimates and actual results, our future financial statement presentation, financial condition, results of operations and cash flows will be affected. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving our judgments and estimates.

Revenue recognition. The core principle of ASC 606 is to recognize revenue to depict the transfer of products or services to customers in an amount that reflects the consideration we expect to be entitled to in exchange for those products or services. This principle is achieved through applying the following five-step approach:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the contract
- Determination of the transaction price
- Allocation of the transaction price to the performance obligations in the contract
- Recognition of revenue when, or as, the company satisfies a performance obligation

We generate revenue primarily from software licenses, service subscriptions and customized software development fees, as well as the delivery of advertising impressions. We evaluate whether it is appropriate to recognize revenue based on the gross amount billed to our customers or the net amount earned as revenue. Since we control the products or services prior to their transfer to the customer, we report our automotive, advertising and mobile navigation revenue on a gross basis. This assessment is based primarily on our ultimate primary responsibility for fulfilling the promises made with respect to the products and services as well as the degree of discretion we have in establishing pricing.

Royalties for on-board navigation solutions are generally earned at various points in time, depending upon the individual customer agreement. We earn each royalty upon either the re-imaging of the software on each individual memory card or the time at which each vehicle is produced. Royalties for brought-in navigation solutions are earned upon vehicle sales reporting or upon initial usage by the end user.

Product revenue

We generate product revenue from the delivery of our on-board automotive navigation solutions, specified map updates and customized software development.

We recognize revenue from on-board automotive navigation solutions upon transfer of control of the customized software and any associated integrated content together forming a distinct performance obligation. Transfer of control generally occurs at a point in time upon acceptance. Any royalties for the use of distinct software combined with integrated content, with an allocation of the transaction price based on the relative SSP of map updates, specified upgrades, and other services as applicable, are recognized at the later of when the royalties are earned or when transfer of control of the related performance obligation has occurred.

For hybrid automotive solutions, which contain on-board software and cloud functionality, the transaction price allocated to the on-board component is generally recognized as product revenue as described above, and the transaction price allocated to the included cloud functionality based on relative SSP is generally recognized as services revenue. Since the on-board software is still the predominant item in the hybrid solution, the royalties recognition guidance applies as it does for on-board navigation solutions described above. Our brought-in automotive navigation solutions as described below are subject to variable consideration and constraint guidance.

Services revenue

We derive services revenue primarily from our brought-in automotive navigation solutions and, to a lesser extent, from the cloud functionality that is a component of our hybrid automotive navigation solutions as discussed above. Since contracts for our brought-in automotive navigation solutions typically contain a substantial amount of variable consideration that does not meet the allocation objective of ASC 606 and is required to be estimated and included in the transaction price, we include in the transaction price only variable consideration such that it is probable that a risk of significant revenue reversal will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Total variable consideration to be received is estimated at contract inception and updated at each reporting date. We utilize the expected value method and consider expected unit volume combined with a risk-based probability based on factors including, but not limited to: model year cycles, customer history, technology life cycles, nature of competition and other contract-specific factors. Because customers of our brought-in automotive navigation solutions simultaneously receive and consume the benefit from our performance, we recognize revenue ratably over the period the services obligation is expected to be fulfilled, generally 8 to 12 years, as this provides a faithful depiction of the transfer of control.

We also derive services revenue from the delivery of advertising impressions. We recognize revenue when transfer of control of the related advertising services occur based on the specific terms of each advertising contract, which are generally based on the number of ad impressions delivered. Substantially all contracts for advertising services are cancellable within a short period of notice, and we assess whether pricing within such contracts create any material right which could extend the expected term of the contract beyond the cancellable term.

In addition, we derive a declining amount of services revenue from subscriptions to access our mobile navigation services, which are generally provided through our wireless carrier customers that offer our services to their subscribers. Our wireless carrier customers typically pay us based on a revenue sharing arrangement or a monthly subscription fee per end user, which is considered variable consideration. For such variable consideration related to our mobile navigation services, these fees are recognized in the month in which they are earned because the terms of the variable payments relate specifically to the outcome from transferring the distinct time increment (month) of service, which is consistent with the allocation objective when considering all of the performance obligations and payment terms in the contract.

We recognize monthly fees related to our mobile navigation services in the month we provide the services. We defer amounts received or billed in advance of the service being provided and recognize the deferred amounts when the obligation has been fulfilled. Our agreements do not contain general rights of refund once the service has been provided.

In certain instances, due to the nature and timing of monthly revenue and reporting from our customers, we may be required to make estimates of the amount of revenue to recognize from a customer for the current period. Estimates for revenue include our consideration of certain factors and information, including subscriber data, historical subscription and revenue reporting trends, end user subscription data from our internal systems, and data from comparable distribution channels of our other customers. We record any differences between estimated revenue and actual revenue in the reporting period when we determine the actual amounts. To date, actual amounts have not differed materially from our estimates.

Software development costs

Software developed for internal use. We account for the costs of computer software we develop for internal use by capitalizing qualifying costs, which are incurred during the application development stage, and amortizing those costs over the application's estimated useful life, which generally ranges from three to five years depending on the type of application. Costs incurred and capitalized during the application development stage generally include the costs of software configuration, coding, installation and testing. Such costs primarily include payroll and payroll related expenses for employees directly involved in the application development, as well as third party developer fees. We expense preliminary evaluation costs as they are incurred before the application development stage, as well as post development implementation and operation costs, such as training, maintenance and minor upgrades. We begin amortizing capitalized costs when a project is ready for its intended use, and we periodically reassess the estimated useful life of a project considering the effects of obsolescence, technology, competition and other economic factors which may result in a shorter remaining life.

We capitalized $0.8 million of software development costs during fiscal 2018. We did not capitalize any software development costs during fiscal 2019 and fiscal 2017. Amortization expense related to capitalized software development costs, which was recorded in cost of revenue, totaled $0.3 million, $0.2 million and zero for fiscal 2019, 2018 and 2017, respectively.

Deferred costs. We capitalize and defer recognition of certain third-party royalty-based content costs associated with the fulfillment of future automotive product and services obligations, and we recognize these deferred content costs as cost of revenue as we transfer control of the related performance obligation. Deferred costs are classified as current or non-current consistent with the periods over which the performance obligations are anticipated to be satisfied.

Deferred costs also include the cost of customized software we develop for customers. We begin deferring development costs when they relate directly to a contract or specific anticipated contract and such costs are incurred to satisfy performance obligations in the future, provided they are expected to be recovered. We recognize these deferred software development costs as cost of revenue upon transfer of control of the associated performance obligation. We evaluate contract cost deferrals for impairment on a quarterly basis or whenever events or changes in circumstances indicate that a project may require recognition of a contract loss. We did not record any impairment losses during fiscal 2019, 2018 and 2017.

In connection with our usage of licensed third-party content, our contracts with certain licensors include minimum guaranteed royalty payments, which are payable regardless of the ultimate volume of revenue derived from the number of paying end users. These contracts contain obligations for the licensor to provide ongoing services and, accordingly, we record any minimum guaranteed royalty payments as an asset when paid and amortize the amount to cost of revenue over the applicable period. Any additional royalties due based on actual usage are expensed monthly as incurred.

Changes in the balance of total deferred costs (current and non-current) during fiscal 2019 were as follows (in thousands):

	Deferred Costs		
	Content	Development	Total
Balance, June 30, 2018	$ 48,946	$ 9,479	$ 58,425
Content licensing costs incurred	123,493	—	123,493
Customized software development costs incurred	—	2,537	2,537
Less: cost of revenue recognized	(100,973)	(3,680)	(104,653)
Balance, June 30, 2019	$ 71,466	$ 8,336	$ 79,802

Impairment of long-lived assets. We evaluate long-lived assets held and used for impairment whenever events or changes in circumstances indicate that their net book value may not be recoverable. We continually evaluate whether events and circumstances have occurred that indicate the balance of our property and equipment and intangible assets with definite lives may not be recoverable. Our evaluation is significantly impacted by our estimates and assumptions of future revenue, costs, and expenses and other factors. If an event occurs that would cause us to revise our estimates and assumptions used in analyzing the value of our property and equipment, that revision could result in a non-cash impairment charge that could have a material impact on our financial results. When these factors and circumstances exist, we compare the projected undiscounted future cash flows associated with the related asset or group of assets over their estimated useful lives against their respective carrying amounts. We base the impairment, if any, on the excess of the carrying amount over the fair value, based on market value when available, or discounted expected cash flows of those assets, and record it in the period in which we make the determination.

Goodwill. Goodwill represents the excess of the aggregate purchase price paid over the fair value of the net assets acquired. Goodwill is not amortized and is tested for impairment at least annually or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. These tests are based on our operating segment and reporting unit structure. We first assess qualitative factors to determine whether it is necessary to calculate the fair value of our reporting unit. We are not required to calculate the fair value of our reporting units unless we determine, based on a qualitative assessment, that it is more likely than not that the fair value is less than our carrying amount. If we determine it is more likely than not that the fair value of the reporting unit is less than its carrying value, we perform a goodwill impairment test to determine the amount of the impairment loss, if any. In assessing the fair value of our reporting units, we make assumptions regarding our estimated future cash flows, long-term growth rates, timing over which the cash flows will occur and, amongst other factors, the weighted average cost of capital. Application of the goodwill impairment test requires judgment, including the identification of reporting units, assignment of assets and liabilities to reporting units and determination of the fair value of each reporting unit.

We performed our annual goodwill impairment test as of April 1, 2019 by comparing the fair value of our three reporting units with their respective carrying amounts. Based upon a qualitative assessment indicating that it was not more likely than not that the fair value of each of our reporting units was less than its carrying value, we determined that no impairment was indicated. Subsequent to the completion of our annual assessment, in May 2019 we entered into substantive discussions with inMarket regarding the sale of certain assets and the assumption of certain liabilities associated with the Ads Business in exchange for an equity interest in inMarket. In June 2019, we considered it more likely than not that a sale would occur, and we concluded that this represented a triggering event that required an interim goodwill impairment assessment. Accordingly, in June 2019, we performed an interim goodwill impairment test for our advertising business segment. In assessing its fair value, we made assumptions regarding our estimated future cash flows, weighted average cost of capital and timing over which the cash flows will occur, amongst other factors. Based on the results of this interim goodwill impairment test, the carrying value of our advertising business segment exceeded its estimated fair value and, accordingly, during fiscal 2019 we recognized a $2.6 million impairment of the goodwill associated with our advertising business segment.

During the three months ended March 31, 2018, certain mobile navigation customer contracts were amended and certain other customers indicated their intent with respect to terminating services in the near term. Based upon a qualitative assessment indicating that it was more likely than not that the fair value of the mobile navigation reporting unit was less than its carrying value, we performed an interim goodwill impairment test for our mobile navigation business segment during the three months ended March 31, 2018. In assessing its fair value, we made assumptions regarding our estimated future cash flows, weighted average cost of capital and timing over which the cash flows will occur, amongst other factors. Based on the results of our goodwill impairment test, the carrying value of our mobile navigation business segment exceeded its estimated fair value and, accordingly, during fiscal 2018, we recognized a $2.7 million impairment of all of the goodwill associated with our mobile navigation business segment.

The estimates used to calculate the fair value of a reporting unit change from year to year based on operating results, market conditions and other factors. If our estimates or related assumptions change in the future, or if our net book value were to exceed our market capitalization, we may be required to record an impairment loss related to our goodwill. Other than our $2.7 million impairment of all of the goodwill associated with our mobile navigation segment and our $2.6 million impairment of some of the goodwill associated with our advertising business, we have not recognized any impairment of goodwill in the three year period ended June 30, 2019. As of June 30, 2019, we had goodwill of $26.1 million associated with our automotive and advertising segments.

Stock-based compensation expense. We account for stock-based employee compensation arrangements under the fair value recognition method, which requires us to measure the stock-based compensation costs of share-based compensation arrangements based on the grant date fair value, and recognize the costs in the financial statements over the employees' requisite service period. We recognize compensation expense for the fair value of these awards with time based vesting on a straight-line basis over an employee's requisite service period of each of these awards, net of estimated forfeitures.

Our stock-based compensation expense was as follows:

	Fiscal Year Ended June 30,		
	2019	2018	2017
	(in thousands)		
Cost of revenue	$ 108	$ 145	$ 130
Research and development	4,830	5,535	5,543
Sales and marketing	1,348	1,671	2,090
General and administrative	2,013	2,525	2,399
Total stock-based compensation expense	$ 8,299	$ 9,876	$ 10,162

As of June 30, 2019, there was $1.3 million of unrecognized stock-based compensation expense related to unvested stock option awards, net of estimated forfeitures, that we expect to be recognized over a weighted average period of 1.77 years. At

June 30, 2019, the total unrecognized stock-based compensation cost related to restricted stock units was $8.5 million, net of estimated forfeitures, and will be amortized over a weighted average period of 2.26 years.

We generally utilize the Black-Scholes option-pricing model to determine the fair value of our stock option awards, which requires a number of estimates and assumptions. In valuing share-based awards under the fair value accounting method, significant judgment is required in determining the expected volatility of our common stock and the expected term individuals will hold their share-based awards prior to exercising. The expected volatility is based on the historical volatility of our common stock. The expected term of options granted represents the period of time that options granted are expected to be outstanding. The expected term was based on an analysis of our historical exercise and cancellation activity. The estimation of stock awards that will ultimately vest requires judgment, and to the extent actual results differ from our estimates, such amounts will be recorded as an adjustment in the period estimates are revised.

For fiscal 2019, 2018 and 2017, we calculated the fair value of options granted to employees with the following weighted average assumptions:

	Fiscal Year Ended June 30,		
	2019	2018	2017
Expected volatility	39%	42%	39%
Expected term (in years)	6.87	4.75	4.25
Risk-free interest rate	2.99%	2.00%	1.32%
Dividend yield	—	—	—

We recognize the estimated stock-based compensation expense of restricted stock units, net of estimated forfeitures, over the vesting term. The estimated stock-based compensation expense is based on the fair value of our common stock on the date of grant.

Provision (benefit) for income taxes. We use the asset and liability method of accounting for income taxes. Under this method, income tax expense (benefit) is recognized for the amount of taxes payable or refundable for the current year. In addition, deferred tax assets and liabilities are recognized for the expected future tax effect of temporary differences between the financial reporting and tax bases of assets and liabilities, and for operating losses and tax credit carryforwards. We must make assumptions, judgments and estimates to determine our current provision for income taxes and also our deferred tax assets and liabilities and any valuation allowance to be recorded against a deferred tax asset.

Our assumptions, judgments and estimates relative to the current provision (benefit) for income taxes take into account current tax laws, our interpretation of current tax laws and possible outcomes of current and future audits conducted by foreign and domestic tax authorities. We have established reserves for income taxes to address potential exposures involving tax positions that could be challenged by tax authorities. In addition, we are subject to the periodic examination of our income tax returns by the Internal Revenue Service, or IRS, and other domestic and foreign tax authorities. Although we believe our assumptions, judgments and estimates are reasonable, changes in tax laws or our interpretation of tax laws and the resolution of the current and any future tax audits could significantly impact the amounts provided for income taxes in our consolidated financial statements.

Our assumptions, judgments and estimates relative to the value of a deferred tax asset take into account predictions of the amount and category of future taxable income, such as income from operations or capital gains income and predictions of the amount and category of future taxable loss that may be carried back for a tax refund. In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets, on a jurisdiction by jurisdiction basis, will be realized. Actual operating results and the underlying amount and category of income in future years as well as expectations regarding the generation of operating losses could render our current assumptions, judgments and estimates of recoverable net deferred taxes inaccurate. Any of the assumptions, judgments and estimates mentioned above could cause our actual income tax obligations or refunds to differ from our estimates, thus materially impacting our financial position and results of operations.

Results of operations

The following tables set forth our results of operations for fiscal 2019, 2018 and 2017, as well as a percentage that each line item represents of our revenue for those periods. The period to period comparison of financial results is not necessarily indicative of financial results to be achieved in future periods.

	Fiscal Year Ended June 30,		
Consolidated Statements of Operations Data	**2019**	**2018 As Adjusted[(1)]**	**2017 As Adjusted[(1)]**
Revenue:		(in thousands)	
Product	$ 168,619	$ 163,599	$ 155,025
Services	52,277	54,864	54,690
Total revenue	220,896	218,463	209,715
Cost of revenue:			
Product	97,245	102,224	98,531
Services	27,430	25,847	21,905
Total cost of revenue	124,675	128,071	120,436
Gross profit	96,221	90,392	89,279
Operating expenses:			
Research and development	83,953	85,646	67,406
Sales and marketing	19,322	20,748	21,995
General and administrative	23,811	21,562	23,041
Goodwill impairment	2,556	2,666	—
Legal settlement and contingencies	700	425	6,424
Total operating expenses	130,342	131,047	118,866
Loss from operations	(34,121)	(40,655)	(29,587)
Other income (expense), net	2,916	833	892
Loss before provision for income taxes	(31,205)	(39,822)	(28,695)
Provision for income taxes	1,283	1,012	841
Net loss	$ (32,488)	$ (40,834)	$ (29,536)

Revenue:		(as a percentage of revenue)	
Product	76 %	75 %	74 %
Services	24 %	25 %	26 %
Total revenue	100 %	100 %	100 %
Cost of revenue:			
Product	44 %	47 %	47 %
Services	12 %	12 %	10 %
Total cost of revenue	56 %	59 %	57 %
Gross profit	44 %	41 %	43 %
Operating expenses:			
Research and development	38 %	39 %	32 %
Sales and marketing	9 %	10 %	11 %
General and administrative	11 %	10 %	11 %
Goodwill impairment	1 %	1 %	— %
Legal settlement and contingencies	— %	— %	3 %
Total operating expenses	59 %	60 %	57 %
Loss from operations	(15)%	(19)%	(14)%
Other income (expense), net	1 %	— %	— %
Loss before provision for income taxes	(14)%	(19)%	(14)%
Provision for income taxes	1 %	— %	— %
Net loss	(15)%	(19)%	(14)%

[(1)] Certain amounts have been adjusted to reflect the adoption of ASC 606. See Note 1 to our consolidated financial statements for a summary of adjustments.

Segments information. The information below is organized in accordance with our three reportable business segments (dollars in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Automotive			
Revenue	$ 186,835	$ 177,842	$ 163,915
Cost of revenue	109,758	109,001	102,024
Gross profit	$ 77,077	$ 68,841	$ 61,891
Gross margin	41%	39%	38%
Advertising			
Revenue	$ 24,241	$ 27,229	$ 26,841
Cost of revenue	11,527	13,341	12,724
Gross profit	$ 12,714	$ 13,888	$ 14,117
Gross margin	52%	51%	53%
Mobile Navigation			
Revenue	$ 9,820	$ 13,392	$ 18,959
Cost of revenue	3,390	5,729	5,688
Gross profit	$ 6,430	$ 7,663	$ 13,271
Gross margin	65%	57%	70%
Total			
Revenue	$ 220,896	$ 218,463	$ 209,715
Cost of revenue	124,675	128,071	120,436
Gross profit	$ 96,221	$ 90,392	$ 89,279
Gross margin	44%	41%	43%

Comparison of the fiscal years ended June 30, 2019 and 2018

Revenue, cost of revenue and gross profit

Consolidated overview. Product revenue increased 3% to $168.6 million in fiscal 2019 from $163.6 million in fiscal 2018. The increase was due primarily to increases in map update revenue and on-board royalty revenue. Services revenue decreased 5% to $52.3 million in fiscal 2019 from $54.9 million in fiscal 2018. The decrease in services revenue was due primarily to lower advertising revenue and mobile navigation subscription fees, partially offset by increased revenue from brought-in automotive solutions.

Our cost of product revenue decreased 5% to $97.2 million in fiscal 2019 from $102.2 million in fiscal 2018. The decrease was due primarily to a net decrease in third-party content costs resulting from a January 1, 2018 reduction in certain on-board automotive navigation content costs that are passed through to Ford. Our cost of services revenue increased 6% to $27.4 million in fiscal 2019 from $25.8 million in fiscal 2018. The increase was due primarily to included costs of software maintenance performed by engineering personnel and an increase in cost of automotive revenue associated with increased revenue from brought-in solutions, partially offset by decreases in cost of mobile navigation revenue and cost of advertising revenue.

Our gross profit increased to $96.2 million in fiscal 2019 from $90.4 million in fiscal 2018. Our gross margin increased to 44% in fiscal 2019 from 41% in fiscal 2018. The increase in gross margin was due primarily to the aforementioned reduction in certain on-board automotive navigation content costs that are passed through to Ford.

Revenue concentrations. In fiscal 2019 and 2018, revenue from Ford represented 55% and 67% of our total revenue, respectively, and revenue from GM comprised 18% and less than 10% of our total revenue, respectively.

We primarily sell our services in the United States. In fiscal 2019 and 2018, revenue derived from U.S. sources represented 81% and 90% of our total revenue, respectively.

Segments information

Automotive. Automotive revenue increased 5% to $186.8 million in fiscal 2019 from $177.8 million in fiscal 2018. The increase was due primarily to increases in map update revenue of $5.2 million, brought-in automotive navigation solutions of $3.0 million and royalty revenue of $0.6 million. The $0.6 million net increase in on-board royalty revenue was due to a net increase in navigation unit volume, partially offset by a decrease in royalty revenue resulting from a January 1, 2018 reduction in certain on-board navigation content costs that are passed through to Ford. Automotive revenue included customized software development revenue of $3.3 million and $4.1 million in fiscal 2019 and 2018, respectively. Automotive revenue represented 85% and 81% of total revenue in fiscal 2019 and 2018, respectively.

Cost of automotive revenue increased 1% to $109.8 million in fiscal 2019 from $109.0 million in fiscal 2018. The increase was due primarily to a $2.3 million increase in costs related to software maintenance services performed by engineering personnel, which maintenance costs were allocated entirely to research and development expense in prior periods, a $0.8 million increase in hosted services costs and a $0.6 million increase in payroll and related compensation and benefits expense. These increases were partially offset by a decrease of $2.7 million in deferred development costs recognized and a net decrease in third-party content costs of $0.4 million. Content costs decreased due primarily to the aforementioned January 1, 2018 reduction in certain on-board navigation content costs that are passed through to Ford, partially offset by an increase in content costs associated with increased map update revenue.

Automotive gross profit increased 12% to $77.1 million in fiscal 2019 from $68.8 million in fiscal 2018. Automotive gross margin increased to 41% in fiscal 2019 from 39% in fiscal 2018. The increase in gross margin was due primarily to the aforementioned reduction in certain on-board navigation content costs that are passed through to Ford, partially offset by increased costs related to software maintenance services and a decrease in gross margin resulting from increased map update revenue, which carries a higher relative cost and lower gross margin.

Advertising. Advertising revenue decreased 11% to $24.2 million in fiscal 2019 from $27.2 million in fiscal 2018. The decrease was due primarily to a decrease in the number of impressions delivered, partially offset by a higher effective revenue per thousand impressions, or eRPM. Advertising revenue represented 11% and 13% of total revenue in fiscal 2019 and 2018, respectively.

Cost of advertising revenue decreased 14% to $11.5 million in fiscal 2019 from $13.3 million in fiscal 2018. The decrease was due primarily to decreased third-party ad exchange inventory costs of $1.7 million due to a decrease in impressions and a slight decrease in our average cost per thousand impressions, or eCPM.

Advertising gross profit decreased 8% to $12.7 million in fiscal 2019 from $13.9 million in fiscal 2018. Advertising gross margin increased slightly to 52% in fiscal 2019 from 51% in fiscal 2018. The slight increase in gross margin was due to a higher eRPM combined with a slightly lower eCPM.

In August 2019, we sold the Ads Business to inMarket. We will report the operating results of the Ads Business as discontinued operations in our condensed consolidated financial statements for the first quarter of fiscal 2020 and for all prior comparative periods.

Mobile Navigation. Mobile navigation revenue decreased 27% to $9.8 million in fiscal 2019 from $13.4 million in fiscal 2018. The decrease was primarily due to lower subscription revenue resulting from decreases in the number of paying subscribers for mobile navigation services provided through AT&T, and a decrease in mobile navigation revenue internationally. Mobile navigation revenue represented 4% and 6% of total revenue in fiscal 2019 and 2018, respectively.

Cost of mobile navigation revenue decreased 41% to $3.4 million in fiscal 2019 from $5.7 million in fiscal 2018. The decrease was due primarily to decreases in hosted services costs of $0.9 million, payroll and related compensation and benefits expense of $0.6 million and third-party content costs of $0.3 million associated with the decline in mobile navigation revenue.

Mobile navigation gross profit decreased 16% to $6.4 million in fiscal 2019 from $7.7 million in fiscal 2018. Mobile navigation gross margin increased to 65% in fiscal 2019 from 57% in fiscal 2018. The increase in gross margin resulted primarily from decreased hosted services costs and headcount required to support the declining business.

Operating expenses

Our total operating expenses decreased 1% to $130.3 million in fiscal 2019 from $131.0 million in fiscal 2018. Operating expenses in fiscal 2019 included $2.6 million related to the impairment of goodwill associated with our advertising segment, and operating expenses in fiscal 2018 included $2.7 million related to the impairment of all of the goodwill associated with our mobile navigation segment. Excluding goodwill impairment, the decrease in operating expenses was due primarily to cost optimization, including lower compensation costs resulting from a redesigned employee incentive compensation plan that more closely aligns compensation payouts with financial results, partially offset by higher base compensation driven by merit-based salary increases on generally flat headcount. In addition, operating expenses decreased as a result of the allocation to cost of services revenue of certain software maintenance costs previously allocated to research and development expense, as discussed above in Automotive results of operations.

Research and development. Our research and development expenses decreased 2% to $84.0 million in fiscal 2019 from $85.6 million in fiscal 2018. The decrease was due primarily to software maintenance costs of $2.3 million allocated to cost of services revenue, as discussed above, and decreases in payroll and related compensation and benefits expense of $1.4 million, stock-based compensation expense of $0.7 million, outside consulting services of $0.4 million and travel and entertainment expense of $0.4 million. These decreases were partially offset by an increase of $3.3 million as a result of lower capitalized deferred development costs in fiscal 2019. As a percentage of revenue, research and development expenses decreased slightly to 38% in fiscal 2019 from 39% in fiscal 2018. The total number of research and development personnel increased 1% to 653 at June 30, 2019 from 644 at June 30, 2018. We believe that as we deliver our contracted customer requirements for our automotive customers, establish relationships with new automobile manufacturers and tier ones and continue the development of our OSM capabilities, revenue from those investments and development efforts will lag the related research and development expenses.

Sales and marketing. Our sales and marketing expenses decreased 7% to $19.3 million in fiscal 2019 from $20.7 million in fiscal 2018. The decrease was due primarily to decreases in payroll and related compensation and benefits expense of $1.2 million and stock-based compensation expense of $0.3 million. As a percentage of revenue, sales and marketing expenses decreased to 9% in fiscal 2019 from 10% in fiscal 2018. The total number of sales and marketing personnel decreased 13% to 49 at June 30, 2019 from 56 at June 30, 2018.

General and administrative. Our general and administrative expenses increased 10% to $23.8 million in fiscal 2019 from $21.6 million in fiscal 2018. The increase was due primarily to an increase in outside services of $2.9 million, partially offset by a decrease in payroll and related compensation and benefits expense of $0.7 million. The total number of general and administrative personnel was comparable at 57 as of June 30, 2019 and 2018. As a percentage of revenue, general and administrative expenses increased to 11% in fiscal 2019 from 10% in fiscal 2018.

Goodwill impairment. Goodwill impairment in fiscal 2019 was comprised of $2.6 million related to the impairment of goodwill associated with our advertising segment. Goodwill impairment in fiscal 2018 was comprised of $2.7 million related to the impairment of all of the goodwill associated with our mobile navigation segment.

Legal settlement and contingencies. Legal settlement and contingencies expense in fiscal 2019 related to the Traxcell Technologies, LLC patent matter. Legal settlement and contingencies expense in fiscal 2018 related primarily to the settlement of the Location Based Services LLC patent matter. Refer to Note 6 of Notes to the Consolidated Financial Statements for more information.

Other income (expense), net. Our other income (expense), net was $2.9 million in fiscal 2019 and $0.8 million in fiscal 2018. Other income (expense), net in fiscal 2019 included $1.7 million of interest income, an unrealized gain of $1.1 million recorded on marketable equity investments and gains of $0.1 million on foreign exchange. Other income (expense), net in fiscal 2018 included $1.4 million of interest income partially offset by losses of $(0.6) million on foreign exchange.

Provision (benefit) for income taxes. Our provision for income taxes increased to $1.3 million in fiscal 2019 compared to $1.0 million in fiscal 2018. Our effective tax rate was 4% in fiscal 2019 compared to an effective tax rate of 3% in fiscal 2018. Our effective tax rate in fiscal 2019 and fiscal 2018 was attributable primarily to foreign withholding taxes and income taxes in certain foreign jurisdictions.

We anticipate that our foreign tax withholding obligation will continue into the future and that we will not be able to benefit from an offsetting deduction in the United States for an extended period of time given our existing net operating loss carryforwards.

The ability to carry back losses for a refund of prior taxes paid was eliminated under the Tax Cuts and Jobs Act, which impacts our losses incurred during fiscal 2019 and 2018.

The usage of our remaining U.S. federal and California state loss carryforwards at June 30, 2019 of approximately $250.2 million and $14.3 million, respectively, is subject to an annual limitation under Section 382 of the Internal Revenue Code.

As of June 30, 2019, our cumulative unrecognized tax benefit was $4.6 million, of which $4.5 million was netted against deferred tax assets. Included in the other long-term liabilities are unrecognized tax benefits at June 30, 2019 of $0.1 million that, if recognized, would affect the annual effective tax rate.

We believe it is reasonably possible that the gross unrecognized tax benefits as of June 30, 2019 will not decrease (whether by payment, release, or a combination of both) by a material amount in the next 12 months. We recognize interest and penalties related to unrecognized tax benefits as part of our provision for income taxes. We had zero and $0.1 million accrued for the payment of interest and penalties at June 30, 2019 and 2018, respectively.

All available evidence, both positive and negative, was considered to determine whether, based upon the weight of the evidence, a valuation allowance for deferred tax assets is needed.

Due to operating losses in previous years and continued earnings volatility, we maintain a valuation allowance on the majority of our deferred tax assets, net of liabilities, since the assets are not more likely than not to be realized based upon our assessment of all positive and negative evidence. Realization of deferred tax assets is dependent upon future taxable earnings, the timing of which is uncertain. Due to losses in previous years, and expected losses in fiscal 2020 and potentially future years in the United States, we continue to maintain a valuation allowance on deferred tax assets in the United States. Due to operating losses in previous years and expected losses in future years in the United Kingdom, we continue to maintain a full valuation allowance for our foreign deferred tax assets in the United Kingdom. Our valuation allowance increased (decreased) from the prior fiscal year by approximately $(19.3) million, $13.9 million and $25.9 million in fiscal 2019, 2018 and 2017, respectively.

We file income tax returns in the U.S. with the IRS, California, various states and foreign tax jurisdictions in which we have subsidiaries. The statute of limitations remains open for fiscal 2016 through fiscal 2018 for federal tax purposes, for fiscal 2015 through fiscal 2018 in state jurisdictions, and for fiscal 2014 through fiscal 2018 in foreign jurisdictions. Fiscal years outside the normal statute of limitations remain open to audit by tax authorities due to tax attributes generated in those early years which have been carried forward and may be audited in subsequent years when utilized.

The impact of our adoption of ASC 606 was to reduce deferred revenue and deferred costs and accelerate the recognition of such revenue and costs. For tax purposes, the acceleration of income is reported in the current and future fiscal years and, accordingly, we have established a deferred tax liability. The impact of the new standard on income tax expense was not material since it resulted in the reduction of deferred tax assets and liabilities with a corresponding adjustment to our valuation allowance.

On December 22, 2017, the Tax Cuts and Jobs Act (the “Act”), a tax reform bill which, among other items, reduces the current corporate federal income tax rate to 21% from 35%, was signed into law. The rate reduction is effective January 1, 2018.

The Act caused our deferred tax assets and deferred tax liabilities to be revalued. Deferred income taxes result from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements that will result in taxable or deductible amounts in future years. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in years in which those temporary differences are expected to be recovered or settled. As changes in tax laws or rates are enacted, deferred tax assets and liabilities are adjusted through income tax expense. Due to the full valuation allowance placed against our U.S. deferred tax assets, any change in our gross deferred tax assets will have no impact to income tax expense.

The value of deferred tax assets, net of liabilities decreased by $18.9 million as of January 1, 2018 due to the reduction in the federal corporate tax rate, which had no impact to income tax expense during fiscal 2018 due to the full valuation allowance placed on the assets.

Comparison of the fiscal years ended June 30, 2018 and 2017

Revenue, cost of revenue and gross profit

Consolidated overview. Product revenue increased 6% to $163.6 million in fiscal 2018 from $155.0 million in fiscal 2017. The net increase in product revenue was due primarily to an increase in royalty revenue from higher unit volume, partially offset by a decrease in royalty revenue resulting from a January 1, 2018 reduction in certain on-board navigation content costs that are passed through to Ford, and an increase in map update revenue. Services revenue was comparable at $54.9 million in fiscal 2018 and $54.7 million in fiscal 2017. Services revenue was impacted primarily by increases in automotive navigation revenue and advertising revenue, offset by lower subscription fees resulting from decreases in the number of paying subscribers for mobile navigation revenue.

Our cost of product revenue increased 4% to $102.2 million in fiscal 2018 from $98.5 million in fiscal 2017. The increase was due primarily to an increase in unit volume, partially offset by a decrease in third-party content costs resulting from the aforementioned reduction in certain on-board navigation content costs. Our cost of services revenue increased 18% to $25.8 million in fiscal 2018 from $21.9 million in fiscal 2017. The increase was due primarily to an increase in cost of automotive revenue associated with the increased revenue from brought-in solutions and, to a lesser extent, an increase in cost of advertising revenue associated with delivered impressions related to a cash basis customer, for which we do not recognize revenue until cash is received.

Our gross profit increased to $90.4 million in fiscal 2018 from $89.3 million in fiscal 2017. Our gross margin decreased to 41% in fiscal 2018 from 43% in fiscal 2017. The decrease in gross margin was primarily due to decreases in advertising and mobile navigation margins, partially offset by an increase in automotive margins.

Revenue concentrations. In fiscal 2018 and 2017, revenue from Ford represented 67% and 71% of our total revenue, respectively. GM comprised less than 10% of our total revenue in fiscal 2018 and 2017.

We primarily sell our services in the United States. In both fiscal 2018 and 2017, revenue derived from U.S. sources represented 90% of our total revenue.

Segments information

Automotive. Automotive revenue increased 8% to $177.8 million in fiscal 2018 from $163.9 million in fiscal 2017. The increase was due primarily to increases in royalty revenue of $4.4 million, brought-in automotive navigation solutions of $5.3 million and map update revenue of $2.5 million. Automotive revenue included customized software development revenue of $4.1 million and $2.5 million in fiscal 2018 and 2017, respectively. Automotive revenue represented 81% and 78% of total revenue in fiscal 2018 and 2017, respectively.

Cost of automotive revenue increased 7% to $109.0 million in fiscal 2018 from $102.0 million in fiscal 2017. The increase was due primarily to increases in third-party content costs of $3.8 million, deferred development costs recognized of $2.3 million, hosted services costs of $0.3 million and payroll and related compensation and benefits expense of $0.3 million.

Automotive gross profit increased 11% to $68.8 million in fiscal 2018 from $61.9 million in fiscal 2017. Automotive gross margin increased slightly to 39% in fiscal 2018 from 38% in fiscal 2017. The increase in gross margin was due primarily to the aforementioned reduction in certain on-board navigation content costs that are passed through to Ford.

Advertising. Advertising revenue increased 1% to $27.2 million in fiscal 2018 from $26.8 million in fiscal 2017. The increase was due primarily to an increase in the value of contracted insertion orders along with the number of impressions delivered. Advertising revenue in fiscal 2018 excludes $0.9 million of billings for delivered impressions related to a cash basis customer, for which we recognized the related costs of such impressions in cost of advertising revenue. Advertising revenue represented 13% of total revenue in both fiscal 2018 and 2017.

Cost of advertising revenue increased 5% to $13.3 million in fiscal 2018 from $12.7 million in fiscal 2017. The increase was due primarily to an increase in hosted services costs of $0.3 million and amortization of capitalized software costs of $0.2 million. Our cost of advertising revenue increased at a higher rate than our advertising revenue due primarily to the inclusion of costs in fiscal 2018 associated with $0.9 million of excluded revenue related to a cash basis customer.

Advertising gross profit decreased 2% to $13.9 million in fiscal 2018 from $14.1 million in fiscal 2017. Advertising gross margin decreased to 51% in fiscal 2018 from 53% in fiscal 2017. The decrease in gross margin resulted primarily from the inclusion of costs in fiscal 2018 associated with $0.9 million of excluded revenue related to a cash basis customer.

Mobile Navigation. Mobile navigation revenue decreased 29% to $13.4 million in fiscal 2018 from $19.0 million in fiscal 2017. The decrease was primarily due to lower subscription revenue resulting from decreases in the number of paying subscribers for mobile navigation services provided through AT&T and T-Mobile and a decrease in mobile navigation revenue internationally. Mobile navigation revenue represented 6% and 9% of total revenue in fiscal 2018 and 2017, respectively.

Cost of mobile navigation revenue was generally flat at $5.7 million in fiscal 2018 and 2017. Cost of mobile navigation revenue in fiscal 2018 reflects a decrease in third party content costs of $0.4 million, offset by an increase in hosted services costs of $0.2 million, payroll and related compensation and benefits expense of $0.1 million and telecommunications expense of $0.1 million.

Mobile navigation gross profit decreased 42% to $7.7 million in fiscal 2018 from $13.3 million in fiscal 2017. Mobile navigation gross margin decreased to 57% in fiscal 2018 from 70% in fiscal 2017. The decrease in gross margin resulted primarily from declining revenue, while cost of revenue remained generally fixed.

Operating expenses

Research and development. Our research and development expenses increased 27% to $85.6 million in fiscal 2018 from $67.4 million in fiscal 2017. The increase was due primarily to increases in payroll and related compensation and benefits expense of $12.1 million, outside consulting services of $1.5 million and business and other expenses of $0.6 million, partially offset by decreases in hardware, software and related maintenance of $0.4 million and travel and entertainment expense of $0.3 million. As a percentage of revenue, research and development expenses increased to 39% in fiscal 2018 from 32% in fiscal 2017. The total number of research and development personnel increased 7% to 644 at June 30, 2018 from 604 at June 30, 2017, with a significant portion of the increase attributable to employees in lower cost regions such as Romania and China. We believe that as we deliver our contracted customer requirements for our automotive customers, establish relationships with new automobile manufacturers and tier ones, enhance our service offerings around our OSM capabilities, and develop new products and services for advertisers, revenue from those investments and development efforts will lag the related research and development expenses.

Sales and marketing. Our sales and marketing expenses decreased 6% to $20.7 million in fiscal 2018 from $22.0 million in fiscal 2017. The decrease was primarily due to decreases of $0.4 million in stock-based compensation expense, $0.3 million in travel and entertainment expense, $0.2 million in marketing expense and $0.1 million in payroll and related compensation and benefits expense. As a percentage of revenue, sales and marketing expenses decreased to 10% in fiscal 2018 from 11% in fiscal 2017. The total number of sales and marketing personnel decreased 8% to 56 at June 30, 2018 from 61 at June 30, 2017.

General and administrative. Our general and administrative expenses decreased 6% to $21.6 million in fiscal 2018 from $23.0 million in fiscal 2017. The decrease was primarily due to a decrease in legal expense of $2.0 million, partially offset by an increase in outside services of $0.5 million. The total number of general and administrative personnel was comparable at 57 as of June 30, 2018 and 2017. As a percentage of revenue, general and administrative expenses decreased to 10% in fiscal 2018 from 11% in fiscal 2017.

Goodwill impairment. Goodwill impairment in fiscal 2018 was comprised of $2.7 million related to the impairment of all of the goodwill associated with our mobile navigation segment.

Legal settlement and contingencies. Legal settlement and contingencies expense in fiscal 2018 related primarily to the settlement of the Location Based Services LLC patent matter. Legal settlement and contingencies expense in fiscal 2017 included the portion of our $8.0 million settlement with Vehicle IP in January 2017 that was not previously accrued. Of the $8.0 million total settlement expense, $0.9 million was previously accrued in fiscal 2016. Legal settlement and contingencies expense in fiscal 2017 also reflected the reversal of an accrued liability of $0.7 million previously expensed related to other ongoing indemnification matters, which were also resolved in January 2017.

Other income (expense), net. Our other income (expense), net was $0.8 million in fiscal 2018 and $0.9 million in fiscal 2017. Other income (expense), net in fiscal 2018 included $1.4 million of interest income partially offset by $(0.6) million losses on foreign exchange. Other income (expense), net in fiscal 2017 included $1.2 million of interest income partially offset by a $(0.3) million loss on foreign exchange.

Provision (benefit) for income taxes. Our provision for income taxes increased to $1.0 million in fiscal 2018 compared to $0.8 million in fiscal 2017. Our effective tax rate was 3% in fiscal 2018 and fiscal 2017. Our effective tax rate in fiscal 2018 was attributable primarily to foreign withholding taxes and income taxes in certain foreign jurisdictions. Our effective tax rate in fiscal 2017 was attributable primarily to foreign withholding taxes and income taxes in certain foreign jurisdictions, partially offset by the reversal of tax reserves related to the settlement of our New York state and IRS tax audits.

Liquidity and capital resources

The following table sets forth the major sources and uses of cash and cash equivalents for each of the periods set forth below:

	Fiscal Year Ended June 30,		
	2019	2018	2017
		(in thousands)	
Net cash provided by (used in) operating activities	$ 7,514	$ (7,411)	$ (11,155)
Net cash provided by (used in) investing activities	(3,478)	4,469	8,942
Net cash provided by (used in) financing activities	5,568	(1,646)	(270)
Effect of exchange rate changes on cash and cash equivalents	(478)	529	183
Net increase (decrease) in cash and cash equivalents	$ 9,126	$ (4,059)	$ (2,300)

At June 30, 2019, we had cash and cash equivalents and short-term investments of $99.5 million, which primarily consisted of corporate bonds, asset-backed securities, U.S. treasury securities and money market mutual funds held by well-capitalized financial institutions.

Our accounts receivable are heavily concentrated in a small number of customers. As of June 30, 2019, our accounts receivable, net balance was $75.8 million, of which Ford, Xevo and GM represented 33%, 29% and 15%, respectively.

Our future capital requirements will depend on many factors, including our ability to continue to increase our billings and control our expenses in fiscal 2020 and beyond, whether we return to profitability, the timing and extent of expenditures to support development efforts, the management and optimization of research and development and sales and marketing activities and headcount, the introduction of our new and enhanced service and product offerings and the timing and scale of the introduction of vehicles including our navigation products relative to when we are required to develop the product. We believe our cash, cash equivalents and short-term investments will be sufficient to satisfy our financial obligations through at least the next 12 months. However, we expect to continue to use cash in operating activities in fiscal 2020 and we may experience greater than expected cash usage in operating activities if revenue is lower than we anticipate or we incur greater than expected cost of revenue or operating expenses. Our revenue and operating results could be lower than we anticipate if, among other reasons, our customers, one of which we are substantially dependent upon for a large portion of our revenue, were to limit or terminate our relationships with them; we were to fail to successfully compete in our highly competitive market; or our revenue did not grow as expected. In the future, we may acquire businesses or technologies or license technologies from third parties, and we may decide to raise additional capital through debt or equity financing to the extent we believe this is necessary to successfully complete these acquisitions or license these technologies. However, additional financing may not be available to us on favorable terms, if at all, at the time we make such determinations, which could have a material adverse effect on our business, operating results, financial condition and liquidity and cash position.

Net cash provided by (used in) operating activities. Net cash provided by (used in) operating activities was $7.5 million, $(7.4) million and $(11.2) million in fiscal 2019, 2018 and 2017, respectively. Cash provided by (used in) operating activities has historically been affected by changes in our end user base and our operating costs. In fiscal 2019, cash provided by operating activities was due primarily to a net loss of $32.5 million, which was more than offset by non-cash charges for depreciation and amortization of $4.0 million, stock-based compensation of $8.3 million, goodwill impairment of $2.6 million and a $26.4 million change in our operating assets and liabilities. In fiscal 2018, cash used in operating activities was due primarily to a net loss of $40.8 million, partially offset by non-cash charges for depreciation and amortization of $3.6 million, stock-based compensation of $9.9 million, goodwill impairment of $2.7 million and an $18.2 million change in our operating assets and liabilities. In fiscal 2017, cash used in operating activities was due primarily to a net loss of $29.5 million, partially offset by non-cash charges for depreciation and amortization of $2.6 million, stock-based compensation of $10.2 million, and a $5.0 million change in our operating assets and liabilities.

Net cash provided by (used in) investing activities. Net cash provided by (used in) investing activities was $(3.5) million, $4.5 million and $8.9 million during fiscal 2019, 2018 and 2017, respectively. In fiscal 2019, cash used in investing activities was principally the result of purchases of short-term investments, net of sales and maturities, of $2.1 million and purchases of property and equipment of $1.4 million. In fiscal 2018, cash was provided primarily by proceeds from sales and maturities of short-term investments, net of purchases, of $9.1 million, partially offset by purchases of property and equipment of $4.6 million. In fiscal 2017, cash was provided primarily by proceeds from sales and maturities of short-term investments, net of purchases, of $9.9 million, partially offset by purchases of property and equipment of $1.2 million.

Net cash provided by (used in) financing activities. During fiscal 2019, 2018 and 2017, our financing activities provided (used) $5.6 million, $(1.6) million and $(0.3) million, respectively. In fiscal 2019, these activities reflect proceeds from the exercise of options to acquire our common stock, partially offset by tax withholdings paid related to net share settlements of restricted stock units upon vesting and repurchases of our common stock. In fiscal 2018 and 2017, these activities reflect tax withholdings paid related to net share settlements of restricted stock units upon vesting, partially offset by proceeds from the exercise of stock options.

Contractual obligations, commitments and contingencies

We generally do not enter into long term minimum purchase commitments. However, we have agreed to pay minimum annual license fees to certain of our third party content providers. Our principal commitments, in addition to those related to our third party content providers, consist of obligations under facility leases for office space in Santa Clara and Culver City, California; Southfield, Michigan; Chicago, Illinois; New York, New York; Shanghai, China; Xi'an, China; Cluj, Romania; Berlin, Germany; Tokyo, Japan; and Incheon, South Korea. In connection with the inMarket Transaction, we expect to assign our interest in the Culver City, California and Chicago, Illinois leases to inMarket or to terminate such leases.

The following table summarizes our outstanding noncancelable contractual obligations as of June 30, 2019:

	Payments due by period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(in thousands)				
Operating lease obligations[1]	$ 13,759	$ 4,504	$ 6,528	$ 2,727	$ —
Purchase obligations[2]	10,649	8,095	1,308	726	520
Total contractual obligations	$ 24,408	$ 12,599	$ 7,836	$ 3,453	$ 520

(1) Consist of contractual obligations for office space under noncancelable operating leases.
(2) Consist of minimum noncancelable financial commitments primarily related to fees owed to certain third party content providers, regardless of usage level.

At June 30, 2019, we had no material liability for unrecognized tax benefits and no material accrual for the payment of related interest and penalties.

Warranties and indemnifications

Our agreements with our customers generally include certain provisions for indemnifying them against liabilities if our navigation services or products infringe a third party's intellectual property rights or for other specified reasons. We have in the past received indemnification requests or notices of their intent to seek indemnification in the future from our customers with respect to litigation in which our customers have been named as defendants. See Note 7, "Commitments and contingencies" of the Notes to Consolidated Financial Statements included elsewhere in this Annual Report on Form 10-K. As it relates to past indemnification requests or notices, in certain situations we have agreed to defend or indemnify our customers for the indemnity demands. For those notices where we have not agreed to provide indemnity or defense to date, or future demands for indemnity, we may in the future agree to defend and indemnify our customers, irrespective of whether we believe that we have an obligation to indemnify them or whether we believe our navigation services and products infringe the asserted intellectual property rights. Alternatively, we may reject certain of our customers' indemnity demands, including the outstanding demands, which may lead to disputes with our customers, negatively impact our relationships with them or result in litigation against us. Our customers may also claim that any rejection of their indemnity demands constitutes a material breach of our agreements with them, allowing them to terminate such agreements. If, as a result of indemnity demands, we make substantial payments, our relationships with our customers are negatively impacted, or any of our customer agreements is terminated, our business, operating results and financial condition could be materially harmed. As of June 30, 2019, any costs in connection with such indemnity demands which are probable and estimable have been recorded in our consolidated financial statements.

We have agreed to indemnify our directors, officers and certain other employees for certain events or occurrences, subject to certain limits, while such persons are or were serving at our request in such capacity. We may terminate the indemnification agreements with these persons upon the termination of their services with us, but termination will not affect claims for indemnification related to events occurring prior to the effective date of termination. The maximum amount of potential future indemnification is unlimited. We have a director and officer insurance policy that limits our potential exposure. We believe the fair value of these indemnification agreements is minimal. We have not recorded any liabilities for these agreements as of June 30, 2019.

Off-balance sheet arrangements

During fiscal 2019, 2018 and 2017, we did not have any relationships with unconsolidated entities or financial partnerships, such as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Recent accounting pronouncements

See Part IV., Item 15 (a) 1. Financial Statements, Note 1 Summary of business and significant accounting policies, "Recent accounting pronouncements."

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest rate sensitivity. The primary objectives of our investment activities are to preserve principal, provide liquidity and maximize income without significantly increasing risk. By policy, we do not enter into investments for trading or speculative purposes. Some of the securities we invest in are subject to market risk. This means that a change in prevailing interest rates may cause the fair value of the investment to fluctuate. To minimize this risk, we invest in a variety of securities, which primarily consist of money market funds, commercial paper, municipal securities and other debt securities of domestic corporations. Due to the nature of these investments and relatively short duration of the underlying securities, we believe that we do not have any material exposure to changes in the fair value of our investment portfolio as a result of changes in interest rates. Declines in interest rates, however, will reduce future interest income. A 10% appreciation or depreciation in interest rates in fiscal 2019 would not have had a material impact on our interest income or the fair value of our marketable securities.

Foreign currency risk. A substantial majority of our revenue has been generated to date from our end users in the United States and, as such, our revenue has not been substantially exposed to fluctuations in currency exchange rates. However, some of our contracts with our customers outside of the United States are denominated in currencies other than the U.S. dollar and therefore expose us to foreign currency risk. Should the revenue generated outside of the United States grow in absolute amounts and as a percentage of our revenue, we will increasingly be exposed to foreign currency exchange risks. In addition, a portion of our operating expenses are incurred outside the United States, are denominated in foreign currencies and are subject to changes in foreign currency exchange rates, particularly the RMB and the RON. Additionally, changes in foreign currency exchange rates may cause us to recognize transaction gains and losses in our statement of operations.

To date, we have not used any foreign currency forward contracts or similar instruments to attempt to mitigate our exposure to changes in foreign currency rates.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The response to this item is submitted as a separate section of this Form 10-K. See Part IV, Item 15.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and our chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our management, with the participation of our CEO and our Chief Financial Officer, or CFO, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019. Based on that evaluation, our CEO and CFO concluded that, as of such date, our disclosure controls and procedures were not effective due to the existence of the material weakness in internal control over financial reporting described below.

Management's Report on Internal Control Over Financial Reporting

The SEC, as required by Section 404 of the Sarbanes-Oxley Act, adopted rules requiring every company that files reports with the SEC to include a management report on such company's internal control over financial reporting in its annual report. In addition, our independent registered public accounting firm must attest to the effectiveness of our internal control over financial reporting.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

During the three months ended December 31, 2018, our management identified certain errors related to our implementation of ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606) ("ASC 606") due to our internal control over financial reporting relating to supervision and review of the financial models supporting our revenue and related cost of revenue recognition accounting and disclosures not operating effectively. Our management concluded that, because this deficiency created a more than remote likelihood of a material misstatement not being prevented or detected on a timely basis, this deficiency constituted a material weakness in internal control over financial reporting.

A material weakness is a control deficiency or combination of control deficiencies that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. We are committed to maintaining a strong internal control environment, and we have implemented a remediation plan that is designed to address the material weakness relating to our adoption of ASC 606. While the original remediation plan adopted shortly after the discovery of the errors relating to our adoption of ASC 606 was fully implemented during the third quarter of fiscal 2019, during the fourth quarter of fiscal 2019, we decided to implement additional remediation measures relating to the review of supporting calculations to further address that control deficiency. The material weakness will not be deemed remediated until the affected internal controls have been tested and determined to be operating effectively.

Management assessed our internal control over financial reporting as of June 30, 2019. Management based its assessment on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on that assessment, management concluded that our internal control over financial reporting was not effective as of June 30, 2019 due to the existence of the material weakness in internal control over financial reporting described above.

Grant Thornton LLP, an independent registered public accounting firm, has issued a report on our internal control over financial reporting, which is included below.

Changes in Internal Control over Financial Reporting

Except for the additional remediation measures discussed above that were implemented during the fourth quarter of fiscal 2019 to address the identified control deficiency relating to our adoption of ASC 606, there were no changes in our internal control over financial reporting that occurred during the three months ended June 30, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

Control systems, no matter how well conceived and operated, are designed to provide a reasonable, but not an absolute, level of assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Because of the inherent limitations in any control system, misstatements due to error or fraud may occur and not be detected.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Telenav, Inc.

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of Telenav, Inc. (a Delaware corporation) and subsidiaries (the "Company") as of June 30, 2019, based on criteria established in the 2013 Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, because of the effect of the material weakness described in the following paragraphs on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of June 30, 2019, based on criteria established in the 2013 Internal Control-Integrated Framework issued by COSO.

A material weakness is a deficiency, or combination of control deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The Company's control related to the review of the financial models supporting their accounting for revenue and related cost of revenue recognition and disclosures was not operating effectively. The material weakness referred to above is described in Management's Annual Report on Internal Control over Financial Reporting appearing under Item 9A. We considered this material weakness in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 consolidated financial statements, and our opinion regarding the effectiveness of the Company's internal control over financial reporting does not affect our opinion on those consolidated financial statements.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements of the Company as of and for the year ended June 30, 2019. The material weakness identified above was considered in determining the nature, timing, and extent of audit tests applied in our audit of the fiscal year 2019 consolidated financial statements, and this report does not affect our report dated August 22, 2019 which expressed an unqualified opinion on those financial statements.

Basis for opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

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

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

Other information

We do not express an opinion or any other form of assurance on Management's Plan for Remediation of Material Weakness.

/s/ GRANT THORNTON LLP

San Francisco, California
August 22, 2019

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Pursuant to General Instruction G(3) of Form 10-K, the information required by this Item 10 relating to our executive officers is included under the caption “Information about our Executive Officers” in Part I of this Form 10-K.

The other information required by this Item 10 is incorporated by reference to our Proxy Statement for the 2019 Annual Meeting of Stockholders (to be filed with the Securities and Exchange Commission within 120 days of our June 30, 2019 fiscal year end) under the headings “Proposal One — Election of Directors” and “Corporate Governance.”

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item 11 is incorporated by reference to our Proxy Statement for the 2019 Annual Meeting of Stockholders (to be filed with the Securities and Exchange Commission within 120 days of our June 30, 2019 fiscal year end) under the headings “Corporate Governance” and “Executive Compensation.”

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

The information required by this Item 12 is incorporated by reference to our Proxy Statement for the 2019 Annual Meeting of Stockholders (to be filed with the Securities and Exchange Commission within 120 days of our June 30, 2019 fiscal year end) under the headings “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information.”

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

The information required by this Item 13 is incorporated by reference to our Proxy Statement for the 2019 Annual Meeting of Stockholders (to be filed with the Securities and Exchange Commission within 120 days of our June 30, 2019 fiscal year end) under the headings “Corporate Governance” and “Certain Relationships and Related Party Transactions.”

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this Item 14 is incorporated by reference to our Proxy Statement for the 2019 Annual Meeting of Stockholders (to be filed with the Securities and Exchange Commission within 120 days of our June 30, 2019 fiscal year end) under the heading “Ratification of Appointment of Independent Registered Public Accounting Firm.”

PART IV.

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) 1. Financial Statements

We have filed the consolidated financial statements listed in the Index to Consolidated Financial Statements of Telenav, Inc. on page F-1 as a part of this Form 10-K.

2. Financial Statement Schedule

Schedule II—Valuation and Qualifying Accounts is set forth on page F-38 of this Form 10-K. All other schedules are omitted because they are not applicable or the required information is shown in the Consolidated Financial Statements and the Notes thereto.

3. Exhibits

See Item 15(b) below.

(b) Exhibits

The following exhibits are filed herewith or are incorporated by reference to exhibits previously filed with the U.S. Securities and Exchange Commission.

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
3.1	Second Amended and Restated Certificate of Incorporation of TeleNav, Inc. filed on May 18, 2010.	10-K	3.1	9/24/2010
3.1.1	Certificate of Amendment of Second Amended and Restated Certificate of Incorporation of Telenav, Inc. filed on November 27, 2012.	8-K	3.1.1	12/3/2012
3.2	Amended and Restated Bylaws of TeleNav, Inc. effective as of May 18, 2010.	10-K	3.2	9/24/2010
4.1	Specimen Common Stock Certificate of TeleNav, Inc.	S-1/A	4.1	1/5/2010
4.2	Fifth Amended and Restated Investors' Rights Agreement, dated April 14, 2009, between TeleNav, Inc. and certain holders of TeleNav, Inc.'s capital stock named therein.	S-1	4.2	10/30/2009
4.3	Description of Telenav's securities registered under Section 12 of the Exchange Act	Filed Herewith		
10.1	Form of Indemnification Agreement between Registrant and its directors and officers.	S-1	10.1	10/30/2009
10.2#	1999 Stock Option Plan and forms of agreement thereunder.	S-1	10.2	10/30/2009
10.4#	2009 Equity Incentive Plan and forms of agreement thereunder.	S-1	10.4	10/30/2009
10.4.5#	2009 Equity Incentive Plan, amended and restated as of July 30, 2018.	10-Q	10.4.5	11/9/2018
10.7#	Employment Agreement, dated as of May 4, 2005, between TeleNav, Inc. and Hassan Wahla.	S-1	10.7	10/30/2009
10.8#	Employment Agreement, dated October 28, 2009, between TeleNav, Inc. and H.P. Jin.	S-1	10.8	10/30/2009
10.9#	Form of Employment Agreement between TeleNav, Inc. and each of Y.C. Chao, Salman Dhanani, Robert Rennard and Hassan Wahla.	S-1	10.9	10/30/2009
10.16†	Data License Agreement, dated as of December 1, 2002, by and between Televigation, Inc. and Navigation Technologies Corporation.	S-1/A	10.16	2/2/2010
10.16.3†	Fifth Amendment dated January 15, 2008 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc. and NAVTEQ North America, LLC.	S-1/A	10.16.3	2/2/2010

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
10.16.4†	Seventh Amendment dated December 16, 2008 to the Data License Agreement, dated as of December 1, 2002, by and among TeleNav, Inc., NAVTEQ Europe B.V. and NAVTEQ North America, LLC.	S-1/A	10.16.4	4/26/2010
10.16.5	Eighth Amendment dated December 15, 2008 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc. and NAVTEQ North America, LLC.	S-1	10.16.5	10/30/2009
10.16.12†	Ninth Amendment dated February 25, 2010 to the Data License Agreement, dated as of December 1, 2002 by and between TeleNav, Inc. and NAVTEQ North America, LLC.	S-1/A	10.16.12	4/26/2010
10.16.13	Tenth Amendment dated June 1, 2010 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc., NAVTEQ North America, LLC, and NAVTEQ Europe B.V.	10-Q	10.16.13	5/7/2012
10.16.14†	Eleventh Amendment dated September 16, 2010 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc., NAVTEQ North America, LLC, and NAVTEQ Europe B.V.	10-Q	10.16.14	5/7/2012
10.16.15†	Twelfth Amendment dated September 28, 2010 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc., NAVTEQ North America, LLC, and NAVTEQ Europe B.V.	10-Q	10.16.15	5/7/2012
10.16.16†	Fourteenth Amendment dated September 30, 2011 to the Data License Agreement, dated as of December 1, 2002, by and between TeleNav, Inc., NAVTEQ North America, LLC, and NAVTEQ Europe B.V.	10-Q	10.16.16	5/7/2012
10.16.20	Fifteenth Amendment dated October 30, 2012 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc., NAVTEQ North America, LLC and NAVTEQ Europe B.V.	10-Q	10.16.20	2/8/2013
10.16.22†	Seventeenth Amendment dated June 27, 2013 to the Data License Agreement, dated as of December 1, 2002, by and between HERE North America, LLC (f/k/a NAVTEQ North America, LLC) (formerly Navigation Technologies Corporation) and Telenav, Inc.	10-Q/A	10.16.22	2/27/2014
10.16.24	Eighteenth Amendment dated January 28, 2014 to the Data License Agreement, dated as of December 1, 2002, by and between HERE North America, LLC (f/k/a NAVTEQ North America, LLC) (formerly Navigation Technologies Corporation) and Telenav, Inc.	10-Q	10.16.24	2/6/2014
10.16.25†	Territory License No. 9, dated February 1, 2014 by and between HERE North America, LLC, HERE Europe B.V., NAVTEQ Korea Co. Ltd. and Telenav, Inc.	10-Q	10.16.25	5/8/2014
10.16.26†	General License Agreement, dated February 10, 2014 by and between HERE North America, LLC, and Telenav, Inc.	10-Q	10.16.26	5/8/2014
10.16.27†	Nineteenth Amendment dated May 20, 2014 to the Data License Agreement, dated as of December 1, 2002, by and between HERE North America, LLC (f/k/a NAVTEQ North America, LLC) (formerly Navigation Technologies Corporation) and Telenav, Inc.	10-K	10.16.27	8/22/2014
10.16.28†	First Amendment, dated June 12, 2014, to Territory License No. 9, dated as of February 1, 2014, by and between Telenav, Inc., and HERE North America, LLC (f/k/a NAVTEQ North America, LLC)."	10-K	10.16.28	8/22/2014
10.16.29†	Amended and Restated Territory License No. 8, dated August 18, 2014, by and between Telenav, Inc., HERE North America, LLC (f/k/a NAVTEQ North America, LLC), and Here Europe B.V. (f/k/a NAVTEQ Europe B.V.)	10-Q	10.16.29	11/6/2014
10.16.30†	Patent License Agreement, dated January 1, 2014, by and between Telenav, Inc., and HERE Global B.V. (f/k/a Navteq B.V.)	10-Q	10.16.30	2/5/2015
10.16.31†	Territory License No. 11, dated April 3, 2015 by and between HERE North America, LLC, HERE Europe B.V., and Telenav, Inc.	10-K	10.16.31	8/24/2015
10.16.32†	First Amendment to Amended and Restated Territory License No. 8, dated November 4, 2015 by and between Telenav, Inc., and HERE North America, LLC (f/k/a NAVTEQ North America, LLC).	10-Q	10.16.32	2/9/2016

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
10.16.33†	First Amendment to General License Agreement, dated November 12, 2015 by and between HERE North America, LLC, and Telenav, Inc.	10-Q	10.16.33	2/9/2016
10.16.34†	Territory License No. 10, dated March 15, 2016, by and between HERE North America, LLC, HERE Europe B.V., HERE Solutions Korea Co. Ltd, and Telenav, Inc.	10-Q	10.16.34	5/9/2016
10.16.35†	First Amendment, effective August 24, 2016, to Territory License No. 11, dated April 3, 2015, by and between HERE North America, LLC and Telenav, Inc.	10-Q	10.16.35	11/7/2016
10.16.36†	Second Amendment, effective December 5, 2016, to Amended and Restated Territory License No. 8, dated April 1, 2014, by and between HERE North America, LLC and Telenav, Inc.	10-Q	10.16.36	2/3/2017
10.16.37†	Third Amendment, effective December 6, 2016, to Territory License No. 9, dated February 1, 2014, by and between HERE North America, LLC and Telenav, Inc.	10-Q	10.16.37	2/3/2017
10.16.38†	Second Amendment, effective December 6, 2016, to Territory License No. 11, dated April 3, 2015, by and between HERE North America, LLC and Telenav, Inc.	10-Q	10.16.38	2/3/2017
10.16.39†+	Territory License No. 12, dated June 30, 2017, by and among HERE North America, LLC, HERE Europe B.V. and Telenav, Inc.	10-Q	10.16.39	11/9/2017
10.16.40†	Third Amendment dated August 7, 2017 to Territory License No. 11, dated April 3, 2015 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc., NAVTEQ North America, LLC and NAVTEQ Europe B.V.	10-Q	10.16.40	11/9/2017
10.16.41†	Access Agreement dated August 7, 2017 by and between Telenav, Inc., HERE North America LLC	10-Q	10.16.41	11/9/2017
10.16.42†	First Amendment dated October 2, 2017 to Territory License No. 10, dated March 15, 2016, by and between HERE North America, LLC, HERE Europe B.V., HERE Solutions Korea Co. Ltd, and Telenav, Inc.	10-Q	10.16.42	11/9/2017
10.16.43†	Fourth Amendment dated December 14, 2017 to Territory License No. 11, dated April 3, 2015 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc., NAVTEQ North America, LLC and NAVTEQ Europe B.V.	10-Q	10.16.43	2/8/2018
10.16.44+	Second Amendment dated December 15, 2017 to Territory License No. 10, dated March 15, 2016, by and between Telenav, Inc., HERE North America, LLC (formerly NAVTEQ North America, LLC), HERE Europe B.V. (formerly NAVTEQ Europe B.V.) and HERE Solutions Korea Co. Ltd.	10-K	10.16.44	9/12/2018
10.16.45+	Fourth Amendment dated April 4, 2018 to Territory License No. 10, dated March 15, 2016, by and between Telenav, Inc., HERE North America, LLC (formerly NAVTEQ North America, LLC), HERE Europe B.V. (formerly NAVTEQ Europe B.V.) and HERE Solutions Korea Co. Ltd.	10-K	10.16.45	9/12/2018
10.16.46+	Territory License No. 13, dated August 15, 2018, by and among HERE North America, LLC, HERE Europe B.V., HERE Solutions Korea Co. Ltd. and Telenav, Inc.	10-Q	10.16.46	2/8/2019
10.16.47+	Sixth Amendment dated September 6, 2018 to Territory License No. 10, dated March 15, 2016, by and between Telenav, Inc., HERE North America, LLC (formerly NAVTEQ North America, LLC), HERE Europe B.V. (formerly NAVTEQ Europe B.V.) and HERE Solutions Korea Co. Ltd.	10-Q	10.16.47	11/9/2018
10.16.48†	Fifth Amendment dated November 6, 2018 to Territory License No. 10, dated March 15, 2016, by and between Telenav, Inc., HERE North America, LLC (formerly NAVTEQ North America, LLC), HERE Europe B.V. (formerly NAVTEQ Europe B.V.) and HERE Solutions Korea Co. Ltd.	10-Q	10.16.48	2/8/2019

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
10.16.49†	Eighth Amendment dated December 13, 2018 to Territory License No. 10, dated March 15, 2016, by and between Telenav, Inc., HERE North America, LLC (formerly NAVTEQ North America, LLC), HERE Europe B.V. (formerly NAVTEQ Europe B.V.) and HERE Solutions Korea Co. Ltd.	10-Q	10.16.49	2/8/2019
10.16.50†	Territory License No. 14, dated December 21, 2018, between HERE North America, LLC, and Telenav, Inc.	10-Q	10.16.50	2/8/2019
10.16.51+	Twentieth Amendment dated January 17, 2019 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc. and HERE North America, LLC	10-Q	10.16.51	5/10/2019
10.16.52+	Second Amendment to General License Agreement, dated January 17, 2019 by and between Telenav, Inc. and HERE North America, LLC	10-Q	10.16.52	5/10/2019
10.16.53+	Ninth Amendment dated January 28, 2019 to Territory License No. 10, dated March 1, 2016, by and between Telenav, Inc. and HERE North America, LLC	10-Q	10.16.53	5/10/2019
10.16.54+	Sixth Amendment dated January 23, 2018 to Territory License No. 11, dated April 3, 2015 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc. and HERE North America, LLC	10-Q	10.16.54	5/10/2019
10.16.55+	Eighth Amendment dated January 28, 2019 to Territory License No. 11, dated April 3, 2015 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc. and NAVTEQ North America, LLC	10-Q	10.16.55	5/10/2019
10.16.56++	Access Agreement No. 2 dated March 21, 2019 by and between Telenav, Inc. and HERE North America LLC	Filed herewith		
10.16.57++	Ninth Amendment dated April 30, 2019 to Territory License No. 11, dated April 3, 2015 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc. and HERE North America, LLC	Filed herewith		
10.16.58++	Third Amendment dated November 1, 2018 to Territory License No. 10, dated March 1, 2016 to the Data License Agreement, dated as of December 1, 2002, by and between Telenav, Inc. and HERE North America, LLC	Filed herewith		
10.22#	Retention Letter dated March 27, 2012 from TeleNav, Inc. to Michael W. Strambi.	10-Q	10.22	5/7/2012
10.23#	Employment Agreement dated March 28, 2012 between TeleNav, Inc. and Michael W. Strambi.	10-Q	10.23	5/7/2012
10.23.1#	Amendment No. 1 dated December 20, 2013 to the Employment Agreement dated March 28, 2012 between TeleNav, Inc. and Michael W. Strambi	10-Q	10.23.1	2/6/2014
10.23.2#	Consulting Agreement, effective September 11, 2018, by and between Telenav, Inc. and Michael W. Strambi	10-Q	10.23.2	2/8/2019
10.23.3#	Transition Agreement and Release, effective September 19, 2019, by and between Michael W. Strambi and Telenav, Inc.	10-Q	10.23.3	2/8/2019
10.26†	SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009 by and between TeleNav, Inc. and Ford Motor Company.	10-K	10.26	9/7/2012
10.26.16†	Amendment No. 16 effective April 17, 2014 to the SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009, as amended, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.16	5/8/2014
10.26.17†	Amendment No. 17 effective January 1, 2015 to the SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009, as amended, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.17	5/7/2015

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
10.26.18†	Amendment No. 18 effective June 17, 2015 to the SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.18	11/9/2015
10.26.19†	Amendment No. 19, effective December 1, 2015, to the SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.19	11/7/2016
10.26.20†	Amendment No. 20, effective January 1, 2016, to the SYNC Generation 2 On-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.20	2/3/2017
10.26.21†	Amendment No. 21, effective October 1, 2017, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company.	10-Q	10.26.21	5/10/2018
10.26.22†	Amendment No. 22, effective January 1, 2017, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company. America, LLC and NAVTEQ Europe B.V.	10-Q	10.26.22	2/8/2018
10.26.23†	Amendment No. 23, effective December 13, 2017, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company. America, LLC and NAVTEQ Europe B.V.	10-Q	10.26.23	5/10/2018
10.26.24†	Amendment No. 24, effective January 1, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company.	10-Q	10.26.24	5/10/2018
10.26.25†	Amendment No. 25, effective January 1, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company.	10-Q	10.26.25	5/10/2018
10.26.26+	Amendment No. 26, effective July 1, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.26	11/9/2018
10.26.27†	Amendment No. 27, effective July 1, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.27	2/8/2019
10.26.28†	Amendment No. 28, effective January 1, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.28	2/8/2019
10.26.29†	Amendment No. 29, effective December 7, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.29	2/8/2019
10.26.30+	Amendment No. 31, effective February 19, 2019, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.30	5/10/2019
10.26.31+	Amendment No. 32, effective February 27, 2019, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company	10-Q	10.26.31	5/10/2019
10.26.32++	Amendment No. 30, effective February 22, 2018, to the SYNC Generation 2 on-Board Navigation Agreement dated October 12, 2009, by and between Telenav, Inc. and Ford Motor Company.	Filed herewith		
10.27+	Services Agreement, dated March 7, 2017, by and between General Motors Holdings LLC and Telenav, Inc.	10-Q	10.27	2/8/2019
10.27.1+	Amendment No. 1 effective May 22, 2018 to Services Agreement, dated March 7, 2017, by and between General Motors Holdings LLC	10-Q	10.27.1	11/9/2018
10.27.2+	Services Agreement, dated June 13, 2014, by and between General Motors Holdings LLC and Telenav, Inc.	8-K	10.27.2	8/5/2019
10.27.3+	Amendment No. 1 effective December 5, 2014 to Services Agreement, dated June 13, 2014, by and between General Motors	10-Q	10.27.3	11/9/2018

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
10.27.4+	Amendment No. 2 effective March 18, 2015 to Services Agreement, dated June 13, 2014, by and between General Motors Holdings LLC and Telenav, Inc.	10-Q	10.27.4	11/9/2018
10.27.5+	Amendment No. 3 effective December 24, 2015 to Services Agreement, dated June 13, 2014, by and between General Motors Holdings LLC and Telenav, Inc.	10-Q	10.27.5	11/9/2018
10.27.6+	Amendment No. 4 effective May 30, 2016 to Services Agreement, dated June 13, 2014, by and between General Motors Holdings LLC and Telenav, Inc.	10-Q	10.27.6	11/9/2018
10.29#	Amended and Restated Telenav, Inc. 2011 Stock Option and Grant Plan.	S-8	4.2	10/29/2012
10.32	Form of Restricted Stock Unit Award Agreement under the 2009 Equity Incentive Plan.	10-Q	10.32	2/5/2015
10.33	Form of Restricted Stock Unit Award Agreement under the Amended and Restated Telenav, Inc. 2011 Stock Option and Grant Plan.	10-Q	10.33	2/5/2015
10.39	Shanghai Real Estate Lease Agreement, dated as of March 4, 2016, by and between TeleNav Shanghai Inc. and Shanghai Dongfang Weijing Culture Development Co.	10-K	10.39	8/22/2016
10.40	Lease dated August 9, 2017 for 4655 Great America Parkway, Suite 300, Santa Clara, CA among PRII Towers at Great America Owner LLC and Telenav, Inc.	10-Q	10.40	11/9/2017
10.43#	Confidential Consulting Agreement, effective November 2, 2018, by and between FLG Partners, LLC and Telenav, Inc.	10-Q	10.43	2/8/2019
10.44#	Offer letter between the Company and Adeel Manzoor, dated May 16, 2019.	8-K	10.1	7/8/2019
10.45#	Change in Control and Severance Agreement between the Company and Adeel Manzoor, effective as of July 1, 2019.	8-K	10.2	7/8/2019
21.1	Subsidiaries of the registrant.	Filed herewith		
23.1	Consent of Independent Registered Public Accounting Firm	Filed herewith		
24.1	Power of Attorney (contained in the signature page to this Form 10-K).	Filed herewith		
31.1	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 of Chief Executive Officer.	Filed herewith		
31.2	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 of Chief Financial Officer.	Filed herewith		
32.1~	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 of Chief Executive Officer.	Filed herewith		
32.2~	Certification Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 of Chief Financial Officer.	Filed herewith		
101.INS*	XBRL Instance Document - the instance document does not appear in the interactive data file because its XBRL tags are embedded within the Inline XBRL document.			
101.SCH*	Inline XBRL Taxonomy Extension Schema Document	Filed herewith		
101.CAL*	Inline XBRL Taxonomy Calculation Linkbase Document	Filed herewith		
101.DEF*	Inline XBRL Taxonomy Definition Linkbase Document	Filed herewith		

Exhibit Number	Description	Incorporated by Reference From Form	Incorporated by Reference From Exhibit Number	Date Filed
101.LAB*	InlineXBRL Taxonomy Label Linkbase Document	Filed herewith		
101.PRE*	InlineXBRL Taxonomy Extension Presentation Linkbase Document	Filed herewith		

Management contracts or compensation plans or arrangements in which directors or executive officers are eligible to participate.

† Portions of the exhibit have been omitted pursuant to an order granted by the Securities and Exchange Commission for confidential treatment.

\+ Portions of the exhibit have been omitted pursuant to a request for confidential treatment filed with the Securities and Exchange Commission.

++ Portions of the exhibit have been omitted by means of marking such portions with an asterisk because the identified portions are not material and would likely cause competitive harm to the Company if publicly disclosed.

~ In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 33-8238 and 34-47986, Final Rule: Management's Reports on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-K and will not be deemed "filed" for purposes of Section 18 of the Exchange Act. Such certifications will not be deemed to be incorporated by reference into any filings under the Securities Act or the Exchange Act, except to the extent that the registrant specifically incorporates it by reference.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

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

TELENAV, INC.

Dated:	August 22, 2019	By:	/s/ Dr. HP JIN
			Dr. HP Jin
			Chairman of the Board of Directors, President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Dr. HP Jin, in his capacity as Telenav, Inc.'s Chief Executive Officer, and Adeel Manzoor, in his capacity as Telenav, Inc.'s Chief Financial Officer, jointly and severally, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign this Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Name and Signature	Title	Date
/s/ Dr. HP JIN **Dr. HP Jin**	Chairman of the Board of Directors, President and Chief Executive Officer (Principal Executive Officer)	August 22, 2019
/s/ ADEEL MANZOOR **Adeel Manzoor**	Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	August 22, 2019
/s/ SAMUEL CHEN **Samuel Chen**	Director	August 22, 2019
/s/ WES CUMMINS **Wes Cummins**	Director	August 22, 2019
/s/ KAREN C. FRANCIS **Karen C. Francis**	Director	August 22, 2019
/s/ DOUGLAS MILLER **Douglas Miller**	Director	August 22, 2019
/s/ RANDY ORTIZ **Randy Ortiz**	Director	August 22, 2019
/s/ KEN XIE **Ken Xie**	Director	August 22, 2019

FINANCIAL STATEMENTS.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS OF TELENAV, INC.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Telenav, Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of Telenav, Inc. (a Delaware corporation) and subsidiaries (the "Company") as of June 30, 2019 and 2018, the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for each of the three years in the period ended June 30, 2019, and the related notes and schedule (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of June 30, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended June 30, 2019, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of June 30, 2019, based on criteria established in the 2013 "Internal Control-Integrated" Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated August 22, 2019 expressed an adverse opinion.

Adoption of New Accounting Standard

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for revenue in fiscal year 2019 due to the adoption of Accounting Standards Update No. 2014-09, "Revenue from Contracts with Customers" (Topic 606), and the related amendments.

Basis for opinion

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

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

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2015.

San Francisco, California
August 22, 2019

TELENAV, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except per share amounts)

	June 30, 2019	June 30, 2018 As Adjusted[1]
Assets		
Current assets:		
Cash and cash equivalents	$ 27,275	$ 17,117
Short-term investments	72,203	67,829
Accounts receivable, net of allowances of $7 and $17 at June 30, 2019 and 2018, respectively	75,792	46,188
Restricted cash	1,950	2,982
Deferred costs	18,752	11,759
Prepaid expenses and other current assets	4,103	3,867
Total current assets	200,075	149,742
Property and equipment, net	5,655	6,987
Deferred income taxes, non-current	939	867
Goodwill and intangible assets, net	27,487	31,046
Deferred costs, non-current	61,050	46,666
Other assets	1,809	2,372
Total assets	$ 297,015	$ 237,680
Liabilities and stockholders' equity		
Current liabilities:		
Trade accounts payable	$ 17,034	$ 13,008
Accrued expenses	51,299	38,803
Deferred revenue	31,270	20,714
Income taxes payable	800	221
Total current liabilities	100,403	72,746
Deferred rent, non-current	1,296	1,112
Deferred revenue, non-current	103,865	53,824
Other long-term liabilities	811	1,115
Commitments and contingencies	—	—
Stockholders' equity:		
Preferred stock, $0.001 par value: 50,000 shares authorized; no shares issued or outstanding	—	—
Common stock, $0.001 par value: 600,000 shares authorized; 46,911 and 44,871 shares issued and outstanding at June 30, 2019 and 2018, respectively	47	45
Additional paid-in capital	182,349	167,895
Accumulated other comprehensive loss	(1,477)	(1,855)
Accumulated deficit	(90,279)	(57,202)
Total stockholders' equity	90,640	108,883
Total liabilities and stockholders' equity	$ 297,015	$ 237,680

[1] See Note 1 for a summary of adjustments.

See accompanying Notes to Consolidated Financial Statements.

TELENAV, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[1]	2017 As Adjusted[1]
Revenue:			
Product	$ 168,619	$ 163,599	$ 155,025
Services	52,277	54,864	54,690
Total revenue	220,896	218,463	209,715
Cost of revenue:			
Product	97,245	102,224	98,531
Services	27,430	25,847	21,905
Total cost of revenue	124,675	128,071	120,436
Gross profit	96,221	90,392	89,279
Operating expenses:			
Research and development	83,953	85,646	67,406
Sales and marketing	19,322	20,748	21,995
General and administrative	23,811	21,562	23,041
Goodwill impairment	2,556	2,666	—
Legal settlement and contingencies	700	425	6,424
Total operating expenses	130,342	131,047	118,866
Loss from operations	(34,121)	(40,655)	(29,587)
Other income, net	2,916	833	892
Loss before provision for income taxes	(31,205)	(39,822)	(28,695)
Provision for income taxes	1,283	1,012	841
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Net loss per share, basic and diluted	$ (0.71)	$ (0.92)	$ (0.68)
Weighted average shares used in computing net loss per share, basic and diluted	45,577	44,498	43,343

[1] See Note 1 for a summary of adjustments.

See accompanying Notes to Consolidated Financial Statements.

TELENAV, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(in thousands)

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[1]	2017 As Adjusted[1]
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustment, net of tax	(461)	539	188
Available for sale securities:			
Unrealized gain (loss) on available-for-sale securities, net of tax	816	(465)	(360)
Reclassification adjustments for gain on available-for-sale securities recognized, net of tax	23	5	5
Net increase (decrease) from available-for-sale securities, net of tax	839	(460)	(355)
Other comprehensive income (loss), net of tax	378	79	(167)
Comprehensive loss	$ (32,110)	$ (40,755)	$ (29,703)

[1] See Note 1 for a summary of adjustments.

See accompanying Notes to Consolidated Financial Statements.

TELENAV, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings (Accumulated Deficit) As Adjusted(1)	Total Stockholders' Equity As Adjusted(1)
	Shares	Amount				
Balance at June 30, 2016	42,708	$ 43	$ 149,775	$ (1,767)	$ 13,464	$ 161,515
Issuance of common stock upon exercise of stock options	437	—	2,738	—	—	2,738
Release of restricted stock units	801	1	(3,009)	—	—	(3,008)
Stock-based compensation expense	—	—	10,162	—	—	10,162
Foreign currency translation adjustment, net of tax	—	—	—	188	—	188
Unrealized net gain on available-for-sale securities, net of tax	—	—	—	(355)	—	(355)
Net loss	—	—	—	—	(29,536)	(29,536)
Balance at June 30, 2017	43,946	$ 44	$ 159,666	$ (1,934)	$ (16,072)	$ 141,704
Issuance of common stock upon exercise of stock options	151	—	681	—	—	681
Release of restricted stock units	774	1	(2,328)	—	—	(2,327)
Stock-based compensation expense	—	—	9,876	—	—	9,876
Foreign currency translation adjustment, net of tax	—	—	—	539	—	539
Unrealized net loss on available-for-sale securities, net of tax	—	—	—	(460)	—	(460)
Adoption of ASU 2016-16 using the modified retrospective method	—	—	—	—	(296)	(296)
Net loss	—	—	—	—	(40,834)	(40,834)
Balance at June 30, 2018	44,871	$ 45	$ 167,895	$ (1,855)	$ (57,202)	$ 108,883
Issuance of common stock upon exercise of stock options	1,477	1	8,852	—	—	8,853
Release of restricted stock units	784	1	(1,983)	—	—	(1,982)
Repurchases of common stock	(221)	—	(714)	—	(589)	(1,303)
Stock-based compensation expense	—	—	8,299	—	—	8,299
Foreign currency translation adjustment, net of tax	—	—	—	(461)	—	(461)
Unrealized net loss on available-for-sale securities, net of tax	—	—	—	839	—	839
Net loss	—	—	—	—	(32,488)	(32,488)
Balance at June 30, 2019	46,911	$ 47	$ 182,349	$ (1,477)	$ (90,279)	$ 90,640

(1) See Note 1 for a summary of adjustments. The cumulative effect adjustment to Accumulated Deficit and Total Stockholders' Equity related to the adoption of ASU No. 2014-09 (Topic 606) as of June 30, 2016 was $11.8 million.

See accompanying Notes to Consolidated Financial Statements.

TELENAV, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Fiscal Year Ended June 30, 2019	2018 As Adjusted[1]	2017 As Adjusted[1]
Operating activities			
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Stock-based compensation expense	8,299	9,876	10,162
Depreciation and amortization	3,980	3,609	2,647
Deferred rent reversal due to lease termination	—	(538)	—
Tenant improvement allowance recognition due to lease termination	—	(582)	—
Goodwill impairment	2,556	2,666	—
Accretion of net premium on short-term investments	(30)	192	403
Bad debt expense	10	(24)	189
Loss (gain) on disposal of property and equipment	(7)	15	(14)
Unrealized gain on investments	(1,174)	—	—
Changes in operating assets and liabilities:			
Accounts receivable	(29,651)	11,708	(15,807)
Deferred income taxes	(94)	52	(239)
Deferred costs	(21,377)	(22,999)	(19,814)
Prepaid expenses and other current assets	(241)	76	1,113
Other assets	47	(1,300)	483
Trade accounts payable	4,005	6,836	1,195
Accrued expenses and other liabilities	12,124	(12,789)	13,854
Income taxes payable	583	23	109
Deferred rent	375	1,178	66
Deferred revenue	60,597	35,424	24,034
Net cash provided by (used in) operating activities	7,514	(7,411)	(11,155)
Investing activities			
Purchases of property and equipment	(1,399)	(4,648)	(1,225)
Purchases of short-term investments	(45,816)	(49,287)	(64,957)
Proceeds from sales and maturities of short-term investments	43,737	58,404	74,878
Proceeds from sales of long-term investments	—	—	246
Net cash provided by (used in) investing activities	(3,478)	4,469	8,942
Financing activities			
Proceeds from exercise of stock options	8,853	681	2,738
Repurchase of common stock	(1,303)	—	—
Tax withholdings related to net share settlements of restricted stock units	(1,982)	(2,327)	(3,008)
Net cash provided by (used in) financing activities	5,568	(1,646)	(270)
Effect of exchange rate changes on cash and cash equivalents	(478)	529	183
Net increase (decrease) in cash and cash equivalents	9,126	(4,059)	(2,300)
Cash and cash equivalents, at beginning of period	20,099	24,158	26,458
Cash and cash equivalents, at end of period	$ 29,225	$ 20,099	$ 24,158
Supplemental disclosure of cash flow information			
Income taxes paid (received), net	$ 1,128	$ 1,053	$ 1,872
Non-cash transfer of non-marketable equity securities to short-term investments	$ 1,348	$ —	$ —
Reconciliation of cash, cash equivalents and restricted cash to the consolidated balance sheets			
Cash and cash equivalents	$ 27,275	$ 17,117	$ 20,757
Restricted cash	$ 1,950	$ 2,982	$ 3,401
Total cash, cash equivalents and restricted cash	$ 29,225	$ 20,099	$ 24,158

[1] See Note 1 for a summary of adjustments.

See accompanying Notes to Consolidated Financial Statements.

TELENAV, INC.

Notes to Consolidated Financial Statements

1. Summary of business and significant accounting policies

Description of business

Telenav, Inc., also referred to in this report as "Telenav," "we," "our" or "us," was incorporated in September 1999 in the State of Delaware. We are a leading provider of connected car and location-based products and services. We utilize our automotive navigation platform and our advertising delivery platform to deliver these products and services. Our automotive navigation platform allows us to deliver enhanced location-based services to automobile manufacturers, as well as original equipment manufacturers and tier one suppliers, to which we refer collectively as tier ones. Our automotive solutions primarily include navigation systems built into vehicles, or on-board, mobile phone based navigation systems, or brought-in, and advanced navigation solutions that offer on-board functionality combined with cloud functionality, or hybrid. Our advertising delivery platform, which we provide through our Thinknear business unit, delivers highly targeted advertising services leveraging our location expertise. We reported results in three business segments through June 30, 2019: automotive, advertising and mobile navigation. Our fiscal year ends on June 30, and in this report we refer to the fiscal years ended June 30, 2019, 2018 and 2017 as fiscal 2019, fiscal 2018 and fiscal 2017, respectively.

Basis of presentation

The consolidated financial statements and accompanying notes have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The consolidated financial statements include the accounts of Telenav, Inc. and our wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated in consolidation. Certain prior year balances have been reclassified to conform to the current year presentation.

Our consolidated financial statements also include the financial results of Shanghai Jitu Software Development Ltd., or Jitu, located in China. Based on our contractual arrangements with the shareholders of Jitu, we have determined that Jitu is a variable interest entity, or VIE, for which we are the primary beneficiary and are required to consolidate in accordance with Accounting Standards Codification, or ASC, subtopic 810-10, or ASC 810-10, *Consolidation: Overall*. The results of Jitu did not have a material impact on our overall operating results for fiscal 2019, fiscal 2018 or fiscal 2017.

Use of estimates

The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Significant estimates and assumptions made by us include the determination of revenue recognition and deferred revenue, including estimating and allocating the transaction price of customer contracts, the recoverability of accounts receivable, the determination of acquired intangibles and assessment of goodwill for impairment, the fair value of stock-based awards issued, the determination of income taxes and the recoverability of deferred tax assets. Actual results could differ from those estimates.

Revenue recognition

The core principle of ASC 606 is to recognize revenue to depict the transfer of products or services to customers in an amount that reflects the consideration we expect to be entitled to in exchange for those products or services. This principle is achieved through applying the following five-step approach:

- Identification of the contract, or contracts, with a customer
- Identification of the performance obligations in the contract
- Determination of the transaction price
- Allocation of the transaction price to the performance obligations in the contract
- Recognition of revenue when, or as, the company satisfies a performance obligation

We generate revenue primarily from software licenses, service subscriptions and customized software development fees, as well as the delivery of advertising impressions. We evaluate whether it is appropriate to recognize revenue based on the gross amount billed to our customers or the net amount earned as revenue. Since we control the products or services prior to their transfer to the customer, we report our automotive, advertising and mobile navigation revenue on a gross basis. This assessment is based primarily on our ultimate primary responsibility for fulfilling the promises made with respect to the products and services as well as the degree of discretion we have in establishing pricing.

Royalties for on-board navigation solutions are generally earned at various points in time, depending upon the individual customer agreement. We earn each royalty upon either the re-imaging of the software on each individual memory card or the time at which each vehicle is produced. Royalties for brought-in navigation solutions are earned upon vehicle sales reporting or upon initial usage by the end user.

Product revenue

We generate product revenue from the delivery of our on-board automotive navigation solutions, specified map updates and customized software development.

We recognize revenue from on-board automotive navigation solutions upon transfer of control of the customized software and any associated integrated content together forming a distinct performance obligation. Transfer of control generally occurs at a point in time upon acceptance. Any royalties for the use of distinct software combined with integrated content, with an allocation of the transaction price based on the relative SSP of map updates, specified upgrades, and other services as applicable, are recognized at the later of when the royalties are earned or when transfer of control of the related performance obligation has occurred.

For hybrid automotive solutions, which contain on-board software and cloud functionality, the transaction price allocated to the on-board component is generally recognized as product revenue as described above, and the transaction price allocated to the included cloud functionality based on relative SSP is generally recognized as services revenue. Since the on-board software is still the predominant item in the hybrid solution, the royalties recognition guidance applies as it does for on-board navigation solutions described above. Our brought-in automotive navigation solutions as described below are subject to variable consideration and constraint guidance.

Services revenue

We derive services revenue primarily from our brought-in automotive navigation solutions and, to a lesser extent, from the cloud functionality that is a component of our hybrid automotive navigation solutions as discussed above. Since contracts for our brought-in automotive navigation solutions typically contain a substantial amount of variable consideration that does not meet the allocation objective of ASC 606 and is required to be estimated and included in the transaction price, we include in the transaction price only variable consideration such that it is probable that a risk of significant revenue reversal will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Total variable consideration to be received is estimated at contract inception and updated at each reporting date. We utilize the expected value method and consider expected unit volume combined with a risk-based probability based on factors including, but not limited to: model year cycles, customer history, technology life cycles, nature of competition and other contract-specific factors. Because customers of our brought-in automotive navigation solutions simultaneously receive and consume the benefit from our performance, we recognize revenue ratably over the period the services obligation is expected to be fulfilled, generally 8 to 12 years, as this provides a faithful depiction of the transfer of control.

We also derive services revenue from the delivery of advertising impressions. We recognize revenue when transfer of control of the related advertising services occur based on the specific terms of each advertising contract, which are generally based on the number of ad impressions delivered. Substantially all contracts for advertising services are cancellable within a short period of notice, and we assess whether pricing within such contracts create any material right which could extend the expected term of the contract beyond the cancellable term.

In addition, we derive a declining amount of services revenue from subscriptions to access our mobile navigation services, which are generally provided through our wireless carrier customers that offer our services to their subscribers. Our wireless carrier customers typically pay us based on a revenue sharing arrangement or a monthly subscription fee per end user, which is considered variable consideration. For such variable consideration related to our mobile navigation services, these fees are recognized in the month in which they are earned because the terms of the variable payments relate specifically to the outcome from transferring the distinct time increment (month) of service, which is consistent with the allocation objective when considering all of the performance obligations and payment terms in the contract.

We recognize as revenue monthly fees related to our mobile navigation services in the month we provide the services. We defer amounts received or billed in advance of the service being provided and recognize the deferred amounts when the obligation has been fulfilled. Our agreements do not contain general rights of refund once the service has been provided.

In certain instances, due to the nature and timing of monthly revenue and reporting from our customers, we may be required to make estimates of the amount of revenue to recognize from a customer for the current period. Estimates for revenue include our consideration of certain factors and information, including subscriber data, historical subscription and revenue reporting trends, end user subscription data from our internal systems, and data from comparable distribution channels of our other customers. We record any differences between estimated revenue and actual revenue in the reporting period when we determine the actual amounts. To date, actual amounts have not differed materially from our estimates.

Disaggregation of revenue

In order to further depict how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors, the following table depicts the disaggregation of revenue according to revenue type and pattern of recognition, and is consistent with how we evaluate our financial performance (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Product			
On-board automotive navigation solutions (point in time)[1]	$ 168,619	$ 163,599	$ 155,025
Total product revenue	168,619	163,599	155,025
Services			
Brought-in automotive navigation solutions (over time)[2]	17,161	14,209	8,872
Automotive maintenance and support (over time)	1,055	34	18
Advertising services (point in time)	24,241	27,229	26,841
Mobile navigation services (over time)	9,820	13,392	18,959
Total services revenue	52,277	54,864	54,690
Total revenue	$ 220,896	$ 218,463	$ 209,715

[1]Includes i) royalties earned and recognized at the point in time usage occurs, ii) map updates and iii) customized software development fees.

[2]Includes royalties earned and recognized over time from the allocation of transaction price to service obligations.

Contracts with multiple performance obligations

Some of our contracts with customers contain multiple performance obligations. For these contracts, we account for individual performance obligations separately if they are distinct. The transaction price is allocated to the separate performance obligations on a relative SSP basis. We determine SSP based on, if available, observable prices for those related products and services when sold separately. When observable prices are not available, we determine SSP based on our overall pricing trends and objectives, taking into consideration market conditions and other factors, including the value of the contracts, the products and services sold, and stated prices for renewal. In such instances, we apply the expected cost plus margin method and the residual method in cases where we have not yet established a price and the product or service has not previously been sold on a standalone basis.

We have used the practical expedient to reflect the aggregate effect of all contract modifications that occurred before our earliest reporting period, fiscal 2017, when i) determining the satisfied and unsatisfied performance obligations, ii) determining the transaction price, and iii) allocating the transaction price to the satisfied and unsatisfied performance obligations.

Contract assets

Contract assets relate to our rights to consideration for performance obligations satisfied but not billed at the reporting date. As of June 30, 2019 and 2018, we had no contract assets.

Deferred revenue

Deferred revenue consists primarily of amounts that have been invoiced, and for which we have the right to bill, in advance of performance obligations being satisfied and revenue being recognized under our contracts with customers. Deferred revenue associated with performance obligations that are anticipated to be satisfied during the succeeding 12 months is recorded as current deferred revenue, and the remaining portion is recorded as non-current deferred revenue in our consolidated balance sheets.

In instances where the timing of revenue recognition differs from the timing of invoicing, we do not adjust consideration for the effects of a significant financing portion for periods of one year or less, for example, in the case of customized software development fees paid in advance of acceptance of the software. Substantially all brought-in automotive navigation solutions contain consideration paid significantly in advance of our provision of the services. In these cases, we have determined such contracts do not include a significant financing component, since neither we nor the applicable automobile manufacturer or tier one is substantially in control of such consideration, as revenue from these contracts is driven by future sales demand of a particular vehicle.

Cost of revenue

Our cost of revenue consists primarily of the cost of third-party royalty based content, such as map, points of interest, or POI, traffic, gas price and weather data, and voice recognition technology that we use in providing our personalized navigation services. Our cost of revenue also includes the cost of third-party exchange ad inventory as well as expenses associated with outsourced hosting services, data center operations, customer support, the amortization of capitalized software, recognition of deferred customized software development costs, stock-based compensation and amortization of acquired developed technology.

Deferred costs

We capitalize and defer recognition of certain third-party royalty-based content costs associated with the fulfillment of future automotive product and services obligations, and we recognize these deferred content costs as cost of revenue as we transfer control of the related performance obligation. Deferred costs are classified as current or non-current consistent with the periods over which the performance obligations are anticipated to be satisfied. We do not capitalize advertising commission costs, as we have applied the practical expedient under ASC 606 to allow such incremental costs of obtaining a contract to be expensed in the period incurred if the amortization period is one year or less. Incremental costs of obtaining advertising contracts with amortization periods greater than one year are immaterial.

Deferred costs also include the cost of customized software we develop for customers. We begin deferring development costs when they relate directly to a contract or specific anticipated contract and such costs are incurred to satisfy performance obligations in the future, provided they are expected to be recovered. We recognize these deferred software development costs as cost of revenue upon transfer of control of the associated performance obligation. We evaluate contract cost deferrals for impairment on a quarterly basis or whenever events or changes in circumstances indicate that a project may require recognition of a contract loss. We did not record any impairment losses during fiscal 2019, 2018 and 2017.

In connection with our usage of licensed third-party content, our contracts with certain licensors include minimum guaranteed royalty payments, which are payable regardless of the ultimate volume of revenue derived from the number of paying end users. These contracts contain obligations for the licensor to provide ongoing services and, accordingly, we record any minimum guaranteed royalty payments as an asset when paid and amortize the amount to cost of revenue over the applicable period. Any additional royalties due based on actual usage are expensed monthly as incurred.

Changes in the balance of total deferred costs (current and non-current) during fiscal 2019 and 2018 are as follows (in thousands):

	Deferred Costs		
	Content	Development	Total
Balance, June 30, 2018	$ 48,946	$ 9,479	$ 58,425
Content licensing costs incurred	123,493	—	123,493
Customized software development costs incurred	—	2,537	2,537
Less: cost of revenue recognized	(100,973)	(3,680)	(104,653)
Balance, June 30, 2019	$ 71,466	$ 8,336	$ 79,802

Foreign currency

We translate the financial statements of certain of our foreign subsidiaries whose functional currency is their local currency. Adjustments resulting from translating foreign functional currency financial statements into U.S. dollars are recorded as part of a separate component of comprehensive income in stockholders' equity. Foreign currency transaction gains and losses are included in our net income for each year. All assets and liabilities denominated in a foreign currency are translated into U.S. dollars at the exchange rate on the balance sheet date. Revenue and expenses are translated at the average monthly exchange rates during the year. Equity transactions are translated using historical exchange rates. Foreign currency transaction gains (losses) were $(215,000), $254,000 and $318,000 in fiscal 2019, 2018 and 2017, respectively.

Accumulated other comprehensive income (loss), net of tax

The components of accumulated other comprehensive income (loss), net of related taxes, were as follows (in thousands):

	Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Available-for-Sale Securities	Total
Balance, net of tax as of June 30, 2017	$ (1,701)	$ (233)	$ (1,934)
Other comprehensive income (loss) before reclassifications, net of tax	539	(465)	74
Amount reclassified from accumulated other comprehensive income (loss), net of tax	—	5	5
Other comprehensive income (loss), net of tax	539	(460)	79
Balance, net of tax as of June 30, 2018	(1,162)	(693)	(1,855)
Other comprehensive income (loss) before reclassifications, net of tax	(461)	816	355
Amount reclassified from accumulated other comprehensive income (loss), net of tax	—	23	23
Other comprehensive income (loss), net of tax	(461)	839	378
Balance, net of tax as of June 30, 2019	$ (1,623)	$ 146	$ (1,477)

The amount reclassified from accumulated other comprehensive income (loss), net of tax, was determined using the specific identification method and the amount was included in other income, net, for fiscal 2019 and 2018, respectively.

The amount of income tax benefit allocated to each component of accumulated other comprehensive income (loss) was not material for fiscal 2019 and 2018.

Cash equivalents and short-term investments

Cash equivalents consist of highly liquid fixed-income investments with original maturities of three months or less at the time of purchase, including money market funds and commercial paper. Short-term investments consist of readily marketable debt securities with a remaining maturity of more than three months from time of purchase and marketable equity securities. Short-term investments are classified as current assets, even though maturities may extend beyond one year, because they represent investments of cash available for operations. We classify all of our cash equivalents and short-term investments as "available-for-sale," as these investments are free of trading restrictions. We may or may not hold securities with stated maturities greater than 12 months until maturity. After consideration of our risk versus reward objectives, as well as our liquidity requirements, we may sell these securities prior to their stated maturities. As we view these securities as available to support current operations, we classify securities with maturities beyond 12 months as current assets under the caption short-term investments in the accompanying consolidated balance sheets.

Marketable debt securities are carried at fair value, with the unrealized gains and losses, net of tax, reported as accumulated other comprehensive income and included as a separate component of stockholders' equity. Gains and losses are recognized when realized. When we have determined that an other-than-temporary decline in fair value has occurred, the amount of the decline that is related to a credit loss is recognized in earnings. Gains and losses are determined using the specific identification method. Our net realized gains (losses) were $11,000, $(64,000) and zero in fiscal 2019, 2018 and 2017, respectively. Interest income totaled $1.7 million, $1.4 million and $1.2 million in fiscal 2019, 2018 and 2017, respectively.

As of June 30, 2019, short-term investments also included marketable equity securities, which are carried at fair value with unrealized gains and losses recognized in other income (expense), net. Our net realized gains (losses) from marketable equity securities were zero in fiscal 2019. We did not hold any marketable equity securities in fiscal 2018 and 2017.

Concentrations of risk and significant customers

Financial instruments that subject us to significant concentrations of credit risk primarily consist of cash, cash equivalents, short-term investments and accounts receivable. We maintain our cash, cash equivalents and short-term investments with well-capitalized financial institutions. At times, such deposits may be in excess of federally insured limits. Cash equivalents consist primarily of money-market accounts and commercial paper with original maturities of three months or less at the time of purchase. Our primary customers are automobile manufacturers and tier ones, and advertisers and advertising agencies, and we do not require collateral for accounts receivable. To manage the credit risk associated with accounts receivable, we evaluate the creditworthiness of our customers. We evaluate our accounts receivable on an ongoing basis to determine those amounts not collectible. To date, we are not aware of circumstances that may impair a specific customer's ability to meet its financial obligations to us, other than those customers for which an allowance for doubtful accounts has been established.

Revenue related to products and services provided through Ford Motor Company, or Ford, comprised 55%, 67% and 71% of revenue for fiscal 2019, 2018 and 2017, respectively. Receivables due from Ford were 33% and 56% of total accounts receivable at June 30, 2019 and 2018, respectively.

Revenue related to products and services provided through General Motors Holdings and its affiliates, or GM, comprised 18% of revenue for fiscal 2019 and less than 10% of revenue for fiscal 2018 and 2017. Receivables due from GM were 15% and 10% of total accounts receivable at June 30, 2019 and 2018, respectively.

Receivables due from Xevo, Inc. were 29% of total accounts receivable at June 30, 2019. No other customer represented 10% of our revenue or 10% of our receivables for any period presented.

Our licensed map, POI and traffic data have been provided principally through HERE North America, LLC, a company owned by a consortium of German automobile manufacturers, or HERE, and TomTom North America, Inc., or TomTom, in fiscal 2019, 2018 and 2017. To date, we are not aware of circumstances that may impair either party's intent or ability to continue providing such services to us.

Restricted cash

As of June 30, 2019 and 2018, we had restricted cash of $2.0 million and $3.0 million, respectively, on our consolidated balance sheets. As of June 30, 2019 and 2018, restricted cash is comprised primarily of prepayments from a customer.

Fair value of financial instruments

The estimated fair market value of financial instruments, including cash, accounts receivable and accounts payable, approximates the carrying values of those instruments due to their relatively short maturities.

We measure certain other financial instruments at fair value on a recurring basis. We have established a hierarchy, which consists of three levels, for disclosure of the inputs used to determine the fair value of our financial instruments.

Level 1 valuations are based on quoted prices in active markets for identical assets or liabilities.

Level 2 valuations are based on inputs that are observable, either directly or indirectly, other than quoted prices included within Level 1. Such inputs used in determining fair value for Level 2 valuations include quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 valuations are based on information that is unobservable and significant to the overall fair value measurement.

As of June 30, 2018, we did not have any Level 3 financial instruments.

Property and equipment

Property and equipment are stated at cost, less accumulated depreciation and amortization. Depreciation is computed using the straight-line method over the estimated useful lives of the respective assets. Computers, software and equipment have useful lives of three years and automobiles, furniture and fixtures have useful lives of five years. Leasehold improvements are amortized using the straight-line method over the shorter of the estimated useful lives of the assets or the term of the related lease.

Long-lived assets

We evaluate our long-lived assets, including intangible assets, for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Recoverability of these assets is measured by a comparison of the carrying amounts to the future undiscounted cash flows the assets are expected to generate. If long-lived assets are considered to be impaired, the impairment to be recognized equals the amount by which the carrying value of the asset exceeds its fair value.

Goodwill

Goodwill represents the excess of the aggregate purchase price paid over the fair value of the net assets acquired. Goodwill is not amortized and is tested for impairment at least annually or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. These tests are based on our operating segment and reporting unit structure.

We performed our annual goodwill impairment test as of April 1, 2019 by comparing the fair value of our three reporting units with their respective carrying amounts. Based upon a qualitative assessment indicating that it was not more likely than not that the fair value of each of our reporting units was less than its carrying value, we determined that no impairment was indicated. Subsequent to the completion of our annual assessment, in May 2019 we entered into substantive discussions with inMarket regarding the sale of certain assets and the assumption of certain liabilities associated with the Ads Business in exchange for an equity interest in inMarket. In June 2019, we considered it more likely than not that a sale would occur, and we concluded that this represented a triggering event that required an interim goodwill impairment assessment. Accordingly, in June 2019, we performed an interim goodwill impairment test for our advertising business segment. In assessing its fair value, we made assumptions regarding our estimated future cash flows, weighted average cost of capital and timing over which the cash flows will occur, amongst other factors. Based on the results of this interim goodwill impairment test, the carrying value of our advertising business segment exceeded its estimated fair value and, accordingly, during fiscal 2019 we recognized a $2.6 million impairment of the goodwill associated with our advertising business segment.

Revenue from our mobile navigation business has been declining substantially over the last few years and has continued to deteriorate in fiscal 2018 and 2019. During the three months ended March 31, 2018, certain mobile navigation customer contracts were amended and certain other customers indicated their intent with respect to terminating services in the near term. Based upon a qualitative assessment indicating that it was more likely than not that the fair value of the mobile navigation reporting unit was less than its carrying value, we performed an interim goodwill impairment test for our mobile navigation business segment during the three months ended March 31, 2018. In assessing its fair value, we made assumptions regarding our estimated future cash flows, weighted average cost of capital and timing over which the cash flows will occur, amongst other factors. Based on the results of our goodwill impairment test, the carrying value of our mobile navigation business segment exceeded its estimated fair value and, accordingly, during fiscal 2018, we recognized a $2.7 million impairment of all of the goodwill associated with our mobile navigation business segment.

As of June 30, 2019, we had goodwill of $26.1 million associated with our automotive and advertising segments. See Note 5.

Leases

We lease our office facilities under operating lease agreements. Office facilities subject to an operating lease and the related lease payments are not recorded on our consolidated balance sheets. The terms of certain lease agreements provide for rental payments on a graduated basis; however, we recognize rent expense on a straight-line basis over the lease period. Any lease incentives or contracted sublease income are recognized as reductions of rental expense on a straight-line basis over the term of the lease. The lease term begins on the date we become legally obligated for the rent payments or when we take possession of the office space, whichever is earlier. As of June 30, 2019, and 2018, we had a total of $1.6 million and $1.3 million, respectively, in deferred rent related to tenant improvement lease incentives and graduated rent payments recorded as liabilities on our balance sheets.

Stock-based compensation

We account for stock-based employee compensation arrangements under the fair value recognition method, which requires us to measure the stock-based compensation costs of share-based compensation arrangements based on the grant-date fair value, and recognize the costs in the financial statements over the employees' requisite service period. We recognize compensation expense for the fair value of these awards with time-based vesting on a straight-line basis over the employee's requisite service period of each of these awards, net of estimated forfeitures.

Equity instruments issued to nonemployees are recorded at their fair value on the measurement date and are subject to periodic adjustment as the underlying equity instruments vest.

Income taxes

We utilize the asset and liability method of accounting for income taxes, whereby deferred tax asset or liability account balances are calculated at the balance sheet date using current tax laws and rates in effect for the year in which the differences are expected to affect taxable income. Valuation allowances are provided when necessary to reduce deferred tax assets to the amount that will more likely than not be realized.

Research and software development costs

We expense research and development costs as incurred. For costs incurred under ASC 985-20, *Costs of Software to be Sold, Leased, or Marketed*, we typically do not achieve technological feasibility prior to incurring such costs and, as a result, all such costs are expensed as incurred. We account for the costs of computer software we develop for internal use by capitalizing qualifying costs, which are incurred during the application development stage, and amortizing those costs over the application's estimated useful life, which generally ranges from three to five years depending on the type of application. We capitalized $781,000 of internal use software development costs during fiscal 2018. We did not capitalize any software development costs during fiscal 2019 and 2017. Amortization expense related to capitalized internal use software development costs, which has been recorded in cost of revenue, totaled $260,000, $174,000 and zero for fiscal 2019, 2018 and 2017, respectively. As of June 30, 2019 and 2018, unamortized capitalized internal use software development costs, which were included in other assets, were $347,000 and $608,000, respectively.

Advertising expense

Advertising costs are expensed as incurred. Advertising expense was $334,000, $131,000 and $246,000 in fiscal 2019, 2018 and 2017, respectively.

Recently adopted accounting pronouncements

In January 2017, the Financial Accounting Standards Board, or FASB, issued ASU No. 2017-04, Simplifying the Test for Goodwill Impairment (ASU 2017-04), which removes the second step of the goodwill impairment test that requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. This guidance is effective for interim and annual reporting periods beginning after December 15, 2019 and will be applied prospectively. Early adoption is permitted for annual or any interim impairment tests with a measurement date on or after January 1, 2017. We early adopted this guidance as of April 1, 2019. The adoption of this standard did not have a material impact to our consolidated financial statements.

In November 2016, the FASB issued new guidance to clarify how entities should present restricted cash and restricted cash equivalents in the statement of cash flows. The new guidance requires that restricted cash and restricted cash equivalents be included with cash and cash equivalents when reconciling the beginning and ending total amounts shown in the statement of cash flows. The new standard was effective for us in our first quarter of fiscal 2019 and requires a retrospective method of adoption. We adopted this standard on July 1, 2018 on a retrospective basis, resulting in immaterial changes to our previously reported consolidated statement of cash flows for fiscal 2018.

In August 2016, the FASB issued new guidance which clarifies how companies present and classify certain cash receipts and cash payments in the statement of cash flows. The new standard was effective for us in our first quarter of fiscal 2019. We adopted this standard on July 1, 2018, and it did not have a material impact to our consolidated statements of cash flows.

In March 2016, the FASB issued new guidance to clarify the implementation guidance on principal versus agent considerations for reporting revenue gross versus net. The guidance includes indicators to assist an entity in determining whether it controls a specified good or service before it is transferred to the customer. The new standard was effective for us in our first quarter of fiscal 2019. We adopted this standard on July 1, 2018 in connection with our adoption of ASU 2014-09 discussed below, and it did not have a material impact to our consolidated financial statements.

In January 2016, the FASB issued new guidance that amends the accounting and disclosures of financial instruments, including a provision that requires equity investments (except for investments accounted for under the equity method of accounting) to be measured at fair value with changes in fair value recognized in current earnings. A practicality exception applies to those equity investments that do not have a readily determinable fair value. These investments may be measured at cost, adjusted for changes in observable prices minus impairment. The new standard was effective prospectively for us in our first quarter of fiscal 2019 for our equity investments that were previously accounted for under the cost-method. We adopted this standard on July 1, 2018 and it did not have a material impact to our consolidated financial statements.

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers* (Topic 606), which supersedes the revenue recognition requirements in ASC 605, *Revenue Recognition*. Under Topic 606, revenue is recognized when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. In conjunction with Topic 606, a new subtopic, ASC 340-40, *Other Assets and Deferred Costs - Contracts with Customers*, was also issued. The updated standard replaces most existing revenue recognition and certain cost guidance under GAAP. Collectively, we refer to Topic 606 and Subtopic 340-40 as “ASC 606.”

We adopted ASC 606 effective July 1, 2018, utilizing the full retrospective transition method. Adoption of ASC 606 resulted in changes to our accounting policies for revenue recognition and deferred costs as detailed below. We applied ASC 606 using a practical expedient where the consideration allocated to the remaining performance obligations or an explanation of when we expect to recognize that amount as revenue for all reporting periods presented before the date of the initial application is not disclosed.

The effect of adopting ASC 606 on fiscal 2018 was material to our statements of operations and balance sheets as a result of its impact on the recognition of revenue and associated third-party content costs for certain of our on-board and brought-in automotive navigation solutions. The adoption of ASC 606 had no significant impact on our advertising and mobile navigation business segments. The adoption of ASC 606 resulted in reductions to deferred costs (asset) and deferred revenue (liability) balances, and accelerated the recognition of revenues and deferred costs in the automotive segment.

With respect to on-board automotive solutions, historically we recognized revenue and associated content costs over the life of our contractual obligations when map updates were included, and we deferred substantially all revenue and associated content costs pending the delivery of future specified upgrades. Instead, as of July 1, 2018, we recognize revenue related to royalties for distinct software and content that has been accepted as transfer of control takes place, with an allocation of the transaction price based on the relative standalone selling price, or SSP, of map updates, specified upgrades, and other services as applicable, which we will recognize with the associated content costs at a point in time or over time as we transfer control of the related performance obligation.

Regarding brought-in automotive solutions, historically we recognized revenue for each royalty over the expected remaining term of the service obligation. Effective July 1, 2018, since these contracts contain variable consideration that does not meet the allocation objective of ASC 606 to recognize the fees in the month in which they are earned because the terms of the variable payments do not relate specifically to the outcome from transferring the distinct time increment (month) of service, we will estimate the total transaction price each reporting period, subject to a constraint, and then recognize revenue ratably over the period the services obligation is expected to be fulfilled, as further described in the section titled “*Services revenue*” of this Note 1.

Development costs subject to ASC 340-40 incurred to fulfill future obligations under certain actual or anticipated contracts for automotive solutions are capitalized, provided they are expected to be recovered, and then recognized as control of the related performance obligations is transferred. Historically, such costs were not capitalized until receipt of a signed contract or purchase order for a fixed amount, provided the costs were probable of being recovered. Under ASC 340-40, we are required to capitalize such costs in anticipation of a contract, provided the costs are expected to be recovered; thus, increasing the amount of costs we capitalize under ASC 340-40. For on-board automotive solutions, such capitalized costs represent the customized portion of software development, which will continue to be recognized upon acceptance of the software under ASC 340-40 since acceptance is generally required for control of the software to transfer. For brought-in automotive solutions, such costs will be amortized over the period the services obligation is expected to be fulfilled, since software development does not represent a distinct performance obligation in the case of brought-in automotive solutions. Historically, we recognized such costs for brought-in automotive solutions upon acceptance of the software.

We adjusted our consolidated financial statements from amounts previously reported due to the adoption of ASC 606. Summarized financial information depicting the impact of ASC 606 is presented below. Our historical net cash flows provided by or used in operating, investing and financing activities are not impacted by the adoption of ASC 606. (Amounts in thousands, except per share data):

	As of June 30, 2018		
	As Reported June 30, 2018 Form 10-K	**Adjustments**	**As Adjusted**
Assets			
Deferred costs	$ 31,888	$ (20,129)	$ 11,759
Deferred costs, non-current	109,269	(62,603)	46,666
Total assets	320,412	(82,732)	237,680
Liabilities and stockholders' equity			
Deferred revenue	52,871	(32,157)	20,714
Deferred revenue, non-current	182,236	(128,412)	53,824
Accumulated deficit	(135,042)	77,840	(57,202)
Total liabilities and stockholders' equity	320,412	(82,732)	237,680

	Fiscal 2018			Fiscal 2017		
	As Reported June 30, 2018 Form 10-K	**Adjustments**	**As Adjusted**	**As Reported June 30, 2018 Form 10-K**	**Adjustments**	**As Adjusted**
Revenue:						
Product	$ 59,143	$ 104,456	$ 163,599	$ 119,785	$ 35,240	$ 155,025
Services	47,037	7,827	54,864	49,799	4,891	54,690
Total revenue	106,180	112,283	218,463	169,584	40,131	209,715
Cost of revenue:						
Product	37,517	64,707	102,224	70,260	28,271	98,531
Services	24,713	1,134	25,847	22,075	(170)	21,905
Total cost of revenue	62,230	65,841	128,071	92,335	28,101	120,436
Gross profit	43,950	46,442	90,392	77,249	12,030	89,279
Operating expenses:						
Research and development	87,488	(1,842)	85,646	73,102	(5,696)	67,406
Total operating expenses	132,889	(1,842)	131,047	124,562	(5,696)	118,866
Loss from operations	(88,939)	48,284	(40,655)	(47,313)	17,726	(29,587)
Net loss	(89,118)	48,284	(40,834)	(47,262)	17,726	(29,536)
Net loss per share, basic and diluted	$ (2.00)	$ 1.08	$ (0.92)	$ (1.09)	$ 0.41	$ (0.68)

Recent accounting pronouncements

In February 2016, the FASB issued ASU No. 2016-02, *Leases* (Topic 842) which supersedes the guidance in topic ASC 840, Leases. The new standard, including subsequent amendments, requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases today.

Topic 842 is effective for us beginning July 1, 2019. We will adopt the standard on a modified retrospective basis and intend to elect the package of transition expedients and the current period adjustment transition method that allows us not to restate the comparative periods in our financial statements in the year of adoption. We are assessing the impact of Topic 842 on our internal controls over financial reporting.

While the adoption of Topic 842 remains in progress, we expect that adoption will result in the recognition of right-of-use assets and lease liabilities for operating leases that were not previously recognized, which will increase total assets and liabilities on our balance sheet. We expect that adoption will have no impact to our results of operations or cash flows.

In August 2018, the FASB issued ASU 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, or ASU 2018-15, which requires a customer in a cloud computing arrangement that is a service contract to follow the internal-use software guidance in ASC 350-40 to determine which implementation costs to defer and recognize as an asset. This guidance is effective for us in our first quarter of fiscal 2021. Early adoption is permitted and the guidance allows for a retrospective or prospective application. We are evaluating the impact of the adoption of this standard on our consolidated financial statements.

2. Net income (loss) per share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted average number of common shares outstanding for the period. Diluted net income (loss) per share is computed by dividing net income (loss) by the weighted average number of common shares outstanding for the period, including potential dilutive common shares assuming the dilutive effect of outstanding stock options and restricted stock units using the treasury-stock method.

The following table presents the calculation of basic and diluted net loss per share (in thousands, except per share amounts):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Net loss	$ (32,488)	$ (40,834)	$ (29,536)
Weighted average common shares used in computing net loss per share, basic and diluted	45,577	44,498	43,343
Net loss per share, basic and diluted	$ (0.71)	$ (0.92)	$ (0.68)

The following outstanding shares subject to options and restricted stock units were excluded from the computation of diluted net loss per share for the periods presented because including them would have had an antidilutive effect (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Stock options	3,409	5,116	5,708
Restricted stock units	2,637	3,068	3,005
Total	6,046	8,184	8,713

3. Cash, cash equivalents and short-term investments

Cash, cash equivalents and short-term investments consisted of the following as of June 30, 2019 (in thousands):

	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Cash	$ 25,987	$ —	$ —	$ 25,987
Cash equivalents:				
Money market mutual funds	790	—	—	790
Commercial paper	498	—	—	498
Total cash equivalents	1,288	—	—	1,288
Total cash and cash equivalents	27,275	—	—	27,275
Short-term investments:				
U.S. treasury securities	3,570	6	(4)	3,572
U.S. agency securities	3,002	9	(2)	3,009
Asset-backed securities	12,319	104	(10)	12,413
Municipal securities	4,124	16	—	4,140
Commercial paper	1,986	—	—	1,986
Corporate bonds	45,492	269	(27)	45,734
Total debt securities	70,493	404	(43)	70,854
Marketable equity securities[1]	250	1,099	—	1,349
Total short-term investments	70,743	1,503	(43)	72,203
Cash, cash equivalents and short-term investments	$ 98,018	$ 1,503	$ (43)	$ 99,478

[1] Consist of Chess Depository Interests held in an Australian Stock Exchange traded company. Investment was sold subsequent to June 30, 2019.

Cash, cash equivalents and short-term investments consisted of the following as of June 30, 2018 (in thousands):

	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Cash	$ 10,202	$ —	$ —	$ 10,202
Cash equivalents:				
Money market mutual funds	3,751	—	—	3,751
Commercial paper	2,666	—	—	2,666
U.S. treasury securities	498	—	—	498
Total cash equivalents	6,915	—	—	6,915
Total cash and cash equivalents	17,117	—	—	17,117
Short-term investments:				
U.S. treasury securities	4,737	—	(34)	4,703
U.S. agency securities	2,424	—	(16)	2,408
Asset-backed securities	8,040	1	(72)	7,969
Municipal securities	2,220	—	(4)	2,216
Commercial paper	1,249	—	—	1,249
Corporate bonds	49,717	2	(435)	49,284
Total short-term investments	68,387	3	(561)	67,829
Cash, cash equivalents and short-term investments	$ 85,504	$ 3	$ (561)	$ 84,946

The following table summarizes the fair value and gross unrealized losses related to available-for-sale securities, aggregated by investment category, that have been in an unrealized loss position for less than 12 months or a continuous unrealized loss position for 12 months or greater, as of June 30, 2019 and 2018 (in thousands):

	June 30, 2019					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
U.S. treasury securities	$ —	$ —	$ 2,992	$ (5)	$ 2,992	$ (5)
U.S. agency securities	—	—	998	(1)	998	(1)
Asset-backed securities	—	—	3,537	(11)	3,537	(11)
Commercial paper	493	(1)	—	—	493	(1)
Corporate bonds	4,600	(3)	14,615	(24)	19,215	(27)
Total	$ 5,093	$ (4)	$ 22,142	$ (41)	$ 27,235	$ (45)

	June 30, 2018					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
U.S. treasury securities	$ 4,703	$ (34)	$ —	$ —	$ 4,703	$ (34)
U.S. agency securities	1,118	(6)	1,290	(10)	2,408	(16)
Asset-backed securities	5,368	(69)	1,562	(3)	6,930	(72)
Municipal securities	1,716	(4)	—	—	1,716	(4)
Commercial paper	1,249	—	—	—	1,249	—
Corporate bonds	34,982	(318)	10,880	(117)	45,862	(435)
Total	$ 49,136	$ (431)	$ 13,732	$ (130)	$ 62,868	$ (561)

There were 11 securities and 111 securities in an unrealized loss position for less than 12 months at June 30, 2019 and 2018, respectively, and 51 securities and 25 securities in an unrealized loss position for 12 months or greater at June 30, 2019 and 2018, respectively.

The following table summarizes the cost and estimated fair value of fixed income securities classified as short-term investments based on stated maturities as of June 30, 2019 (in thousands):

	Amortized Cost	Estimated Fair Value
Due within one year	$ 31,526	$ 31,512
Due between one and two years	23,608	23,774
Due between two and three years	15,359	15,568
Total	$ 70,493	$ 70,854

Declines in fair value judged to be other-than-temporary on securities available for sale are included as a component of other income, net. In order to determine whether a decline in value is other-than-temporary, we evaluate, among other factors: the duration and extent to which the fair value has been less than the carrying value and our intent and ability to retain the investment for a period of time sufficient to allow for any anticipated recovery in fair market value. As of June 30, 2019 and 2018, we did not consider any of our short-term investments to be other-than-temporarily impaired.

4. Fair value of financial instruments

We measure certain financial instruments at fair value on a recurring basis. We have established a hierarchy, which consists of three levels, for disclosure of the inputs used to determine the fair value of our financial instruments.

All of our cash equivalents and short-term investments are classified within Level 1 or Level 2. The fair values of these financial instruments were determined using the following inputs at June 30, 2019 (in thousands):

	Fair Value Measurements at June 30, 2019 Using			
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Description				
Cash equivalents:				
Money market mutual funds	$ 790	$ 790	$ —	$ —
Commercial paper	498	—	498	—
Total cash equivalents	1,288	790	498	—
Short-term investments:				
U.S. treasury securities	3,572	3,572	—	—
U.S. agency securities	3,009	—	3,009	—
Asset-backed securities	12,413	—	12,413	—
Municipal securities	4,140	—	4,140	—
Commercial paper	1,986	—	1,986	—
Corporate bonds	45,734	—	45,734	—
Total debt securities	70,854	3,572	67,282	—
Marketable equity securities	1,349	1,349	—	—
Total short-term investments	72,203	4,921	67,282	—
Cash equivalents and short-term investments	$ 73,491	$ 5,711	$ 67,780	$ —

The fair values of our financial instruments were determined using the following inputs at June 30, 2018 (in thousands):

	Fair Value Measurements at June 30, 2018 Using			
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Description				
Cash equivalents:				
Money market mutual funds	$ 3,751	$ 3,751	$ —	$ —
Commercial paper	2,666	—	2,666	—
U.S. treasury securities	498	498	—	—
Total cash equivalents	6,915	4,249	2,666	—
Short-term investments:				
U.S. treasury securities	4,703	4,703	—	—
U.S. agency securities	2,408	—	2,408	—
Asset-backed securities	7,969	—	7,969	—
Municipal securities	2,216	—	2,216	—
Commercial paper	1,249	—	1,249	—
Corporate bonds	49,284	—	49,284	—
Total short-term investments	67,829	4,703	63,126	—
Cash equivalents and short-term investments	$ 74,744	$ 8,952	$ 65,792	$ —

Accretion of premium, net of discounts, on short-term investments totaled $(30,000) and $192,000 in fiscal 2019 and 2018, respectively.

Where applicable, we use quoted prices in active markets for identical assets to determine the fair value of short-term investments. If quoted prices in active markets for identical assets are not available to determine fair value, we use quoted prices for similar assets and liabilities or inputs that are observable either directly or indirectly. If quoted prices for identical or similar assets are not available, we use third party valuations utilizing underlying assets assumptions.

There were no transfers between Level 1 and Level 2 financial instruments in fiscal 2019 and 2018, respectively.

We did not have any financial liabilities measured at fair value on a recurring basis as of June 30, 2019 or 2018.

Non-marketable equity investments

Our non-marketable equity securities are investments in privately held companies without readily determinable market values.

Prior to July 1, 2018, we accounted for our non-marketable equity investments at cost less impairment. Realized gains and losses on non-marketable equity investments sold or impaired were recognized in other income (expense), net. As of June 30, 2018, non-marketable equity investments accounted for under the cost method had a carrying value of $708,000.

On July 1, 2018, we adopted ASU 2016-01, which changed the way we account for non-marketable equity securities. The carrying value of our non-marketable equity securities is measured at cost and adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). All gains and losses on non-marketable equity securities, realized and unrealized, are recognized in other income (expense), net. Because we adopted ASU 2016-01 prospectively for investments without readily determinable market values, we apply the measurement alternative commencing July 1, 2018. Non-marketable equity securities that are remeasured are classified within Level 3 in the fair value hierarchy because we estimate the value based on valuation methods using the observable transaction price at the transaction date and other unobservable inputs including volatility, rights, and obligations of the securities we hold.

As of June 30, 2019, we had recorded an unrealized gain of $1.1 million upon the May 2019 initial public offering of stock of a non-marketable equity investee on the Australian Stock Exchange. We reclassified this investment to marketable equity securities as of June 30, 2019.

We did not record any impairment losses during fiscal 2019, 2018 and 2017. As of June 30, 2019, the carrying value of our non-marketable equity securities was $458,000.

5. Balance sheet information

Property and equipment, net

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

	June 30,	
	2019	2018
Computers and equipment	$ 8,448	$ 7,930
Computer software	2,866	2,858
Furniture and fixtures	2,338	2,107
Automobiles	815	819
Leasehold improvements	5,977	5,603
	20,444	19,317
Less accumulated depreciation and amortization	(14,789)	(12,330)
Property and equipment, net	$ 5,655	$ 6,987

Depreciation and amortization expense related to property and equipment was $2.7 million, $2.3 million and $1.7 million for fiscal 2019, 2018 and 2017, respectively.

Goodwill and intangible assets, net

Intangible assets consist of the following (in thousands):

	June 30,	
	2019	2018
Acquired developed technology	$ 13,875	$ 13,875
Less accumulated amortization	(12,494)	(11,491)
Intangible assets, net	$ 1,381	$ 2,384

Acquired developed technology is amortized on a straight-line basis over the expected useful life. Amortization expense related to intangibles was $1.0 million, $1.1 million and $1.1 million for fiscal 2019, 2018 and 2017, respectively.

As of June 30, 2019, amortization expense for intangible assets by fiscal year is as follows: $872,000 in fiscal 2020 and $509,000 in fiscal 2021.

Goodwill by reportable segment as of June 30, 2019 and 2018 was as follows (in thousands):

	June 30, 2018	Impairment	June 30, 2019
Automotive	$ 14,320	$ —	$ 14,320
Advertising	14,342	(2,556)	11,786
Goodwill	$ 28,662	$ (2,556)	$ 26,106

Goodwill impairment

We reported results in three business segments through June 30, 2019. During fiscal 2019, we recognized a $2.6 million impairment of the goodwill associated with our advertising segment. During fiscal 2018, we recognized a $2.7 million impairment of all of the goodwill associated with our mobile navigation segment (see Note 1).

Accrued expenses

Accrued expenses consist of the following (in thousands):

	June 30,	
	2019	2018
Accrued compensation and benefits	$ 14,508	$ 12,024
Accrued royalties	22,274	16,298
Accrued legal settlement and contingencies	—	50
Customer overpayments and related reserves	4,391	5,356
Other accrued expenses	10,126	5,075
	$ 51,299	$ 38,803

The overpayment from customers and related reserves will either be refunded or be applied to future amounts owed to us.

6. Deferred revenue and remaining performance obligations

Deferred revenue

Deferred revenue, which is a contract liability, consists primarily of payments received in advance of revenue recognition under our contracts with customers and is recognized upon transfer of control. Changes in the balance of total deferred revenue (current and non-current) during fiscal 2019 is as follows (in thousands):

Beginning balance, June 30, 2018 (as adjusted)	$ 74,538
Revenue recognized that was included in beginning balance	(22,922)
Amount billed, net of revenue recognized that was not included in beginning balance	83,519
Ending balance, June 30, 2019	$ 135,135

The cumulative adjustment as a result of changes in the estimate of the transaction price of customer contracts during fiscal 2019 was a net increase in revenue recognized of $1.4 million. In addition, the amount of revenue recognized in fiscal 2019 from performance obligations satisfied or partially satisfied in previous periods was $1.8 million.

Remaining performance obligations

Transaction price allocated to the remaining performance obligations represents contracted revenue that has not yet been recognized, which includes deferred revenue and amounts that are expected to be invoiced and recognized as revenue in future periods. As of June 30, 2019, the aggregate amount of the transaction price allocated to remaining performance obligations for our automotive segment was $70.3 million, which is expected to be recognized over a remaining period of approximately 5 to 8 years. This amount excludes the variable consideration that falls under the exemption for usage-based royalties promised in exchange for a license of intellectual property. We have used the practical expedient to not disclose amounts related to the comparative years under ASC 606.

The aggregate amount of transaction price allocated to the remaining performance obligations for our advertising segment and our mobile navigation segment as of June 30, 2019 was not material.

7. Commitments and contingencies

Operating leases

Our primary facilities located in Santa Clara and Culver City, California, Shanghai and Xi'an, China, and Cluj, Romania, as well as certain other facilities in various locations in the United States, Germany and Japan, are leased under noncancelable operating lease arrangements.

In August 2017, we terminated our sublease with Avaya Inc. for our Santa Clara, California headquarters facility and signed a new direct lease agreement, effective in September 2017, for this same facility. The new lease term is six years, expiring in September 2023. We have a one-time option to extend the new facility lease for an additional three years at the prevailing market rate, as defined in the lease agreement.

In connection with the sublease termination agreement, we recorded the following amounts during fiscal 2018: i) the reversal of $538,000 of deferred rent related to the sublease, with an offsetting credit to rent expense, as amortization of this deferred rent liability is no longer required, and ii) the recognition of $582,000 of tenant improvement allowance related to the sublease, with an offsetting credit to depreciation expense, as amortization of this allowance is no longer required.

As of June 30, 2019, future minimum operating lease payments by fiscal year were as follows (in thousands):

Fiscal Year Ending June 30,		
2020	$	4,504
2021		3,542
2022		2,986
2023		2,201
2024		526
Thereafter		—
Total minimum lease payments	$	13,759

Rent expense was $4.4 million, $4.5 million and $4.1 million for fiscal 2019, 2018 and 2017, respectively.

Purchase obligations

As of June 30, 2019, in addition to our lease obligations, we had an aggregate of $10.6 million of future minimum noncancelable financial commitments primarily related to license fees due to certain of our third party content providers. The aggregate of $10.6 million of future minimum commitments is comprised of $8.1 million due in fiscal 2020, $709,000 due in fiscal 2021, $599,000 due in fiscal 2022, $415,000 due in fiscal 2023, $311,000 due in fiscal 2024 and $520,000 due thereafter. The above commitment amounts exclude amounts already recorded on the consolidated balance sheet.

Contingencies

From time to time, we may become involved in legal proceedings, claims and litigation arising in the ordinary course of business. When we believe a loss or a cost of indemnification is probable and can be reasonably estimated, we accrue the estimated loss or cost of indemnification in our consolidated financial statements. Where the outcome of these matters is not determinable, we do not make a provision in our financial statements until the loss or cost of indemnification, if any, is probable and can be reasonably estimated or the outcome becomes known. We expense legal fees related to these matters as they are incurred.

On December 31, 2009, Vehicle IP, LLC, or Vehicle IP, filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware, seeking monetary damages, fees and expenses and other relief. Verizon Wireless, or Verizon, was named as a co-defendant in the Vehicle IP litigation based on the VZ Navigator product and has demanded that we indemnify and defend Verizon against Vehicle IP. We have not agreed to defend or indemnify Verizon. AT&T was also named as a co-defendant in the Vehicle IP litigation based on the AT&T Navigator and Telenav Track products. AT&T tendered the defense of the litigation to us and we defended the case on behalf of AT&T. During fiscal 2016, we accrued $850,000 related to this litigation. On January 12, 2017, we entered into a settlement and license agreement with Vehicle IP. In connection with the agreement, we made a one-time payment of $8.0 million and recorded $7.2 million of this amount as legal settlement and contingencies expense in our consolidated statement of operations in fiscal 2017. On January 31, 2017, Vehicle IP's claims against Telenav and AT&T were dismissed. We are not obligated to make any future payments with respect to the settlement or license. We also have no further obligation to indemnify AT&T with respect to the case.

On July 28, 2016, Nathan Gergetz filed a putative class action complaint in the U.S. District Court for the Northern District of California, alleging that Telenav violated the Telephone Consumer Protection Act, or TCPA. The complaint purported to be filed on behalf of a class, and it alleged that Telenav caused unsolicited text messages to be sent to the plaintiff from July 6, 2016 to July 26, 2016. The plaintiff sought statutory and actual damages under the TCPA, attorneys' fees and costs of the action, and an injunction to prevent any future violations. A settlement was subsequently reached, and the plaintiff filed a motion for preliminary approval of class action settlement on March 5, 2018. The court granted preliminary approval of the class action settlement on April 30, 2018 and final approval of the settlement on September 27, 2018. The settlement became effective on October 30, 2018 and was paid by our technology errors and omissions liability insurance policy, after payment of our deductible of $250,000. We accrued the $250,000 deductible payment in fiscal 2018. We expect the matter to be finally concluded in or around November 2019.

In addition, we have received, and expect to continue to receive, demands for indemnification from our customers, which demands can be very expensive to settle or defend, and we have in the past offered to contribute to settlement amounts and incurred legal fees in connection with certain of these indemnity demands. A number of these indemnity demands, including demands relating to pending litigation, remain outstanding and unresolved as of the date of this Form 10-K. Furthermore, in response to these demands we may be required to assume control of and bear all costs associated with the defense of our customers in compliance with our contractual commitments. At this time, we are not a party to the following cases; however, our customers have requested that we indemnify them in connection with such cases.

In August 2017, AT&T Mobility LLC (AT&T) and Sprint Spectrum L.P. (Sprint) sent Telenav indemnification requests relating to patent infringement lawsuits brought by Location Based Services LLC, alleging patent infringement by the AT&T Navigator system and App for iOS and Android, and the Sprint Scout System and the Sprint Scout App for iOS and Android. Location Based Services LLC filed separate lawsuits against AT&T and Sprint in the U.S. District Court for the Eastern District of Texas, asserting five U.S. patents. Telenav agreed to indemnify and defend AT&T and Sprint in connection with these matters. On November 22, 2017, Location Based Services LLC entered into a Settlement and License Agreement with Telenav for the patents in suit and 15 other patents assigned to Location Based Services LLP. We incurred $250,000 related to these matters in fiscal 2018, and recorded this amount as legal settlement and contingencies expense in our consolidated statement of operations.

In November 2017, Traxcell Technologies, LLC, or Traxcell, filed patent infringement lawsuits against AT&T and Sprint in the U.S. District Court for the Eastern District of Texas. On November 9, 2017, AT&T tendered control of the defense of one of the patents alleged to be infringed upon in the case and sought indemnification for the entire amount of litigation expenses related to the patent and Telenav's products, including discovery, defensive intellectual property rights and any judgment rendered in, or settlement of, the lawsuit. Telenav did not accept tender of the defense but did agree to indemnify AT&T to the extent that the claims relate to the ordinary use of Telenav products.

On June 15, 2018, Telenav filed a complaint against Traxcell seeking a declaratory judgment of non-infringement against the plaintiff.

On December 26, 2018, Telenav and Traxcell entered into a Settlement Agreement. Traxcell granted Telenav and its customers and end users a license to the patent at issue and certain other related patents, and agreed to withdraw its claims of patent infringement against Telenav's products. Telenav agreed to make a one-time payment to Traxcell and to dismiss without prejudice all claims pending in the declaratory judgment matter. On January 10, 2019, the court dismissed without prejudice all claims pending in the declaratory judgment matter.

Following the Traxcell settlement, AT&T sought reimbursement from Telenav of its litigation expenses incurred in connection with the Traxcell lawsuits. On July 11, 2019, Telenav and AT&T entered into a settlement agreement resolving all claims for indemnification in connection with the Traxcell lawsuits.

In fiscal 2019, Telenav expensed an aggregate of $700,000 relating to the two settlement agreements, which amount was recorded as legal settlements and contingencies expense in our consolidated statement of operations.

In connection with our resolution of certain indemnification disputes with AT&T in January 2017, we reversed a total accrued liability of $726,000 previously expensed for these and other contingencies.

Legal proceedings are subject to inherent uncertainties. Were unfavorable final outcomes to occur, there exists the possibility of a material adverse impact on our business, financial position, cash flows or overall trends in results of operations.

8. Guarantees and indemnifications

Our agreements with our customers generally include certain provisions for indemnifying them against liabilities if our products and services infringe a third party's intellectual property rights or for other specified matters. We have in the past received indemnification requests or notices of their intent to seek indemnification in the future from our customers with respect to specific litigation claims in which our customers have been named as defendants.

We have agreed to indemnify our directors, officers and certain other employees for certain events or occurrences, subject to certain limits, while such persons are or were serving at our request in such capacity. We may terminate the indemnification agreements with these persons upon the termination of their services with us, but termination will not affect claims for indemnification related to events occurring prior to the effective date of termination. The maximum amount of potential future indemnification is unlimited. We have a directors and officers insurance policy that limits our potential exposure. We believe that any financial exposure related to these indemnification agreements is not material.

9. Stockholders' equity

Undesignated preferred stock

We are authorized to issue 50,000,000 shares of undesignated preferred stock, par value $0.001 per share. The undesignated preferred stock may be issued from time to time at the discretion of our board of directors. As of June 30, 2019 and 2018, no shares of undesignated preferred stock were issued or outstanding.

Common stock

We are authorized to issue 600,000,000 shares of $0.001 par value stock. The holders of each share of common stock have the right to one vote.

Stock repurchase program

In February 2019, our Board of Directors authorized a program for the repurchase of up to $20.0 million in shares of common stock through open market purchases. The term of the program is 18 months. The timing and amount of repurchase transactions under this program will depend on market conditions, cash flow and other considerations. Under this program, we utilized $1.3 million of cash to repurchase 221,333 shares of our common stock at an average purchase price of $5.89 per share during fiscal 2019.

The repurchased shares are retired and designated as authorized but unissued shares. The timing and amount of repurchase transactions under our stock repurchase programs depends on market conditions and other considerations. We use the par value method of accounting for our stock repurchases. Under the par value method, common stock is first charged with the par value of the shares involved. The excess of the cost of shares acquired over the par value is allocated to additional paid-in capital, or APIC, based on an estimated average sales price per issued share with the excess amounts charged to retained earnings. As a result of our stock repurchases during fiscal 2019, we reduced common stock and APIC by an aggregate of $714,000 and charged $589,000 to retained earnings.

Stock plans

Under our 1999 Stock Option Plan, or 1999 Plan, 2002 Executive Stock Option Plan, or 2002 Plan, 2009 Equity Incentive Plan, or 2009 Plan, and 2011 Stock Option and Grant Plan, or 2011 Plan, eligible employees, directors, and consultants are able to participate in our future performance through awards of nonqualified stock options, incentive stock options and restricted stock units, or RSUs, through the receipt of such awards as authorized by our board of directors. Incentive stock options may be granted only to employees to purchase our common stock at prices equal to or greater than the fair market value on the date of grant. Nonqualified stock options to purchase our common stock may be granted at prices not less than 85% of the fair market value on the date of grant. Options generally vest over a four-year period beginning from the date of grant and generally expire 10 years from the date of grant. RSUs generally vest annually over a four-year period beginning from the date of grant. Prior to our initial public offering, we granted options outside of our stock option plans with terms substantially similar to the terms of options granted under our plans. Our 2009 Plan expires in October of 2019 and our 2011 Plan expires in June 2021.

On the first day of each fiscal year, the number of shares available and reserved for issuance under the 2009 Plan will be annually increased by an amount equal to the lesser of 1,666,666 shares of common stock; 4% of the outstanding shares of our common stock as of the last day of our immediately preceding fiscal year; or an amount determined by our board of directors. The last annual increase occurred in fiscal 2019, as the 2009 Plan expires in October 2019 for new awards.

A summary of our stock option activity is as follows (in thousands except per share and contractual life amounts):

	Number of shares	Weighted average exercise price per share	Weighted average remaining contractual life (years)	Aggregate intrinsic value
Options outstanding as of June 30, 2018	5,116	$ 6.48		
Granted	290	5.10		
Exercised	(1,477)	5.99		
Canceled or expired	(520)	6.95		
Options outstanding as of June 30, 2019	3,409	$ 6.49	5.53	$ 5,748
As of June 30, 2019:				
Options vested and expected to vest	3,341	$ 6.52	5.47	$ 5,564
Options exercisable	2,703	$ 6.74	4.95	$ 4,000

During fiscal 2019, 2018 and 2017, the total cash received from the exercise of stock options was $8.9 million, $681,000 and $2.7 million, respectively, and the total intrinsic value of stock options exercised was $1.1 million, $227,000 and $6.1 million, respectively.

A summary of our RSU activity is as follows (in thousands except contractual life amounts):

	Number of Shares	Weighted average remaining contractual life (years)	Aggregate intrinsic value
RSUs outstanding as of June 30, 2018	3,068		
Granted	1,195		
Vested	(1,151)		
Canceled	(475)		
RSUs outstanding as of June 30, 2019	2,637	1.30	$ 21,097
As of June 30, 2019:			
RSUs expected to vest	2,276	1.18	$ 18,205

Performance-based RSUs

In October 2018, the Compensation Committee of our Board of Directors approved the grant under our 2009 Equity Incentive Plan of performance-based RSUs (the “PSU Award”) covering a target of 240,000 shares of common stock to Dr. HP Jin, our Chairman of the Board of Directors, President and Chief Executive Officer, or CEO.

The PSU Award is subject to (a) four performance milestones, each requiring achievement of a specified trailing average closing stock price for a 50 trading day period on or before the three-year anniversary of the PSU Award’s grant date, as well as (b) Dr. Jin’s continued service with the Company. Achieving each individual stock price performance milestone will result in one quarter of the shares subject to the PSU Award becoming eligible to vest. If a stock price performance milestone is achieved, then one half of the shares that became eligible to vest under the PSU Award upon achievement of that stock price performance milestone will vest on the later of November 1, 2019, or the date that the Compensation Committee of our Board of Directors certifies achievement of the milestone, and the remaining one half of the shares that became eligible to vest will vest on the one-year anniversary of the date the performance milestone was achieved, in each case subject to Dr. Jin’s continued service with the Company through the applicable vesting date. The maximum number of shares subject to the PSU Award that may vest is 240,000.

Since achievement of the award is dependent on a market condition, stock-based compensation expense associated with the PSU Award is recognized regardless of whether the market condition is satisfied, provided that the requisite service period has been met. We utilized the Monte Carlo valuation method to determine the fair value and derived service periods of each of the stock price performance milestones. Total stock-based compensation expense associated with the PSU Award for fiscal 2019 was not material.

In December 2016, 70,000 RSUs granted under a 2015 Performance Share Program were canceled, as the performance conditions were not met. The cancellation of these RSUs resulted in a credit to stock-based compensation expense of $546,000, which is reflected in our results of operations for fiscal 2017.

Shares available for grant

A summary of our shares available for grant activity is as follows (in thousands):

	Number of Shares
Shares available for grant as of June 30, 2018	3,169
Additional shares authorized pursuant to annual increase provisions of 2009 Equity Incentive Plan	1,667
Granted	(1,485)
RSUs withheld for taxes in net share settlements	367
Canceled	994
Shares available for grant as of June 30, 2019	4,712

Stock-based compensation expense

The following table summarizes total stock-based compensation expense included in our consolidated statements of operations (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Cost of revenue	$ 108	$ 145	$ 130
Research and development	4,830	5,535	5,543
Sales and marketing	1,348	1,671	2,090
General and administrative	2,013	2,525	2,399
Total stock-based compensation expense	$ 8,299	$ 9,876	$ 10,162

The following table summarizes total stock-based compensation expense recorded for stock options, RSUs and restricted common stock issued to employees and nonemployees (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Stock option awards	$ 1,644	$ 2,103	$ 2,384
RSU awards	6,655	7,773	7,778
Total stock-based compensation expense	$ 8,299	$ 9,876	$ 10,162

We generally use the Black-Scholes option-pricing model to determine the fair value of stock option awards. The determination of the fair value of stock option awards on the date of grant is affected by the stock price as well as assumptions regarding a number of complex and subjective variables. These variables include expected stock price volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rates and expected dividends. The weighted average assumptions used to value stock options granted and the resulting weighted average grant date fair value per share were as follows:

	Fiscal Year Ended June 30,		
	2019	2018	2017
Expected volatility	39%	42%	39%
Expected term (in years)	6.87	4.75	4.25
Risk-free interest rate	2.99%	2.00%	1.32%
Dividend yield	—	—	—
Weighted average grant date fair value per share	$ 2.32	$ 2.14	$ 1.87

Expected volatility. The expected volatility used is based on the historical volatility of our common stock.

Expected term. The expected term represents the period that our stock-based awards are expected to be outstanding. The expected term was based on an analysis of our historical exercise and cancellation activity.

Risk-free interest rate. The risk-free rate is based on U.S. Treasury zero coupon issues with remaining terms similar to the expected term on the options.

Dividend yield. We have never declared or paid any cash dividends on our common stock and do not plan to pay cash dividends in the foreseeable future and, therefore, use an expected dividend yield of zero in the valuation model.

We recognize the estimated stock-based compensation expense of RSUs and restricted common stock, net of estimated forfeitures, over the vesting term. The estimated stock-based compensation cost is based on the fair value of our common stock on the date of grant.

At June 30, 2019, the total unrecognized stock-based compensation expense related to employee options was $1.3 million, net of estimated forfeitures, and will be amortized over a weighted average period of 1.77 years. The total fair value of stock options that vested during fiscal 2019, 2018 and 2017 was $3.7 million, $2.4 million and $2.2 million, respectively. At June 30, 2019, the total unrecognized stock-based compensation expense related to RSUs was $8.5 million, net of estimated forfeitures, and will be amortized over a weighted average period of 2.26 years. The total fair value of RSUs that vested during fiscal 2019, 2018 and 2017 was $6.0 million, $7.0 million and $8.2 million, respectively.

Shares reserved for future issuance

Common stock reserved for future issuance as of June 30, 2019 was as follows (in thousands):

Stock options outstanding	3,409
RSUs outstanding	2,637
Available for future grants	4,712
Total common shares reserved for future issuance	10,758

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10. Income taxes

The domestic and foreign components of loss before provision (benefit) for income taxes were as follows (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[(1)]	2017 As Adjusted[(1)]
United States	$ (35,763)	$ (42,683)	$ (31,569)
Foreign	4,558	2,861	2,874
Loss before provision for income taxes	$ (31,205)	$ (39,822)	$ (28,695)

(1) See Note 1 for a summary of adjustments.

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

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[(1)]	2017 As Adjusted[(1)]
Current income taxes:			
Federal	$ —	$ —	$ (435)
State	14	32	(1,075)
Foreign	1,598	1,048	2,131
Total current income taxes	1,612	1,080	621
Deferred income taxes:			
Federal	(76)	—	—
State	—	—	—
Foreign	(253)	(68)	220
Total deferred income taxes	(329)	(68)	220
Total provision for income taxes	$ 1,283	$ 1,012	$ 841

(1) See Note 1 for a summary of adjustments.

The provision (benefit) for income taxes differs from the amount computed by applying the statutory federal income tax rate as follows (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018 As Adjusted[(1)]	2017 As Adjusted[(1)]
Tax at federal statutory tax rate	$ (6,553)	$ (11,150)	$ (10,044)
State taxes—net of federal benefit	15	32	(1,075)
Non-deductible expenses	110	88	108
Goodwill impairment	537	746	—
Foreign withholding taxes	340	527	1,737
Foreign income taxed at different rates	(66)	(309)	(323)
Stock-based compensation expense	1,002	653	849
Tax exempt income	(94)	(136)	(33)
Change in valuation allowance	5,507	(8,396)	10,039
One-time transition tax	—	44	—
Remeasurement of deferred tax assets and liabilities	—	18,900	—
FIN 48	114	15	(479)
GILTI inclusion	451	—	—
Other	(80)	(2)	62
Total provision for income taxes	$ 1,283	$ 1,012	$ 841

(1) See Note 1 for a summary of adjustments.

Our provision for income taxes was $1.3 million in fiscal 2019 compared to $1.0 million in fiscal 2018. Our effective tax rate was 4% in fiscal 2019 compared to an effective tax rate of 3% in fiscal 2018. Our effective tax rate in fiscal 2019 and fiscal 2018 was attributable primarily to foreign withholding taxes and income taxes in certain foreign jurisdictions. Our effective tax rate in fiscal 2017 was attributable primarily to foreign withholding taxes and income taxes in certain foreign jurisdictions, partially offset by the reversal of tax reserves related to the settlement of our New York state and IRS tax audits. Our provision for income taxes was $841,000 in fiscal 2017.

Our effective tax rate of 4% and 3% in fiscal 2019 and 2018, respectively, was lower than the tax computed at the U.S. federal statutory income tax rate due primarily to losses for which no benefit will be recognized since they are not more likely than not to be realized due to the lack of current and future income and the inability to carry back losses within the two year carryback period.

In May 2017, the Internal Revenue Service, or IRS, completed its audit of our income taxes for fiscal 2012 through fiscal 2015. The audit resulted in a $947,000 reduction of our research and development tax credit carryforwards and we recorded a tax benefit of $425,000 to reverse the related tax reserves.

The ability to carry back losses for a refund of prior taxes paid was eliminated under the Tax Cuts and Jobs Act, which impacts our losses incurred during fiscal 2019 and 2018.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our net deferred tax assets were as follows (in thousands):

	June 30,	
	2019	2018 As Adjusted[(1)]
Deferred tax assets:		
Federal, state and foreign net operating losses	$ 57,809	$ 55,540
Federal and state tax credits	14,104	12,195
Stock-based compensation	2,885	3,481
Accrued expenses and reserves	13,659	9,395
Capitalized expense	34	60
Unrealized losses	481	609
Property and equipment	43	—
Acquired intangible assets	768	652
Total deferred tax assets	89,783	81,932
Deferred tax liabilities:		
Property and equipment	(79)	(29)
Capitalized software	(17,848)	(13,222)
Deferred revenue	(22,486)	—
Unrealized gains	(236)	(451)
Total deferred tax liabilities:	(40,649)	(13,702)
Deferred tax assets, net of liabilities:	49,134	68,230
Valuation allowance — worldwide	(48,370)	(67,702)
Net deferred tax assets	$ 764	$ 528

(1) See Note 1 for a summary of adjustments.

All available evidence, both positive and negative, was considered to determine whether, based upon the weight of the evidence, a valuation allowance for deferred tax assets is needed. As of June 30, 2019, we recognized deferred tax assets of $939,000 from foreign jurisdictions and a deferred tax liability of $175,000 from a foreign jurisdiction, for net deferred tax assets of $764,000.

Due to operating losses in previous years and continued earnings volatility, we maintain a valuation allowance on the majority of our deferred tax assets, net of liabilities, since the assets are not more likely than not to be realized based upon our assessment of all positive and negative evidence. Realization of deferred tax assets is dependent upon future taxable earnings and losses, the timing of which is uncertain. Due to losses in previous years, and expected losses in fiscal 2020 and potentially future years in the U.S., we maintained a full valuation allowance on deferred tax assets in the U.S. Due to operating losses in previous years and expected losses in future years, we continued to maintain a full valuation allowance for our foreign deferred tax assets in the United Kingdom. Our valuation allowance increased (decreased) from the prior year by approximately $(19.3) million, $13.9 million, and $25.9 million in fiscal 2019, 2018 and 2017, respectively.

The impact of our adoption of ASC 606 was to reduce deferred revenue and deferred costs and accelerate the recognition of such revenue and costs. For tax purposes, the acceleration of income is reported in the current and future fiscal years and, accordingly, we have established a deferred tax liability. The impact of the new standard on income tax expense was not material since it resulted in the reduction of deferred tax assets and liabilities with a corresponding adjustment to our valuation allowance.

On December 22, 2017, the Tax Cuts and Jobs Act (the “Act”), a tax reform bill which, among other items, reduces the current corporate federal income tax rate to 21% from 35%, was signed into law. The rate reduction was effective January 1, 2018.

The Act caused the Company’s deferred tax assets and deferred tax liabilities to be revalued. Deferred income taxes result from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements that will result in taxable or deductible amounts in future years. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in years in which those temporary differences are expected to be recovered or settled. As changes in tax laws or rates are enacted, deferred tax assets and liabilities are adjusted through income tax expense. Due to the full valuation allowance placed against our U.S. deferred tax assets, any change in our gross deferred tax assets will have no impact to income tax expense.

The value of deferred tax assets, net of liabilities decreased by $18.9 million as of January 1, 2018 due to the reduction in the federal corporate tax rate, which had no impact to income tax expense during fiscal 2018 due to the full valuation allowance placed on the assets.

We provide for U.S. income taxes on the earnings of foreign subsidiaries unless the subsidiaries' earnings are permanently reinvested outside the U.S. As of June 30, 2019, the cumulative amount of earnings upon which U.S. income taxes have not been provided was approximately $9.4 million. The net unrecognized deferred tax liability for these earnings was $364,000, which is primarily due to withholding taxes imposed if the dividend was distributed.

As of June 30, 2019, we had federal and California net operating loss carryforwards for income tax purposes of $250.2 million and $14.3 million, respectively. Federal loss carryforwards of $116.3 million will begin to expire in fiscal 2020, while $133.9 million of federal loss carryforwards can be carried forward indefinitely under the Act. Loss carryforwards have begun to expire for California purposes. In addition, we had federal and California research and development tax credit carryforwards of $7.0 million and $11.5 million, respectively, as of June 30, 2019. The federal research credits will begin to expire in fiscal 2023 and the California research credits can be carried forward indefinitely. The loss carryforwards and certain credits are subject to annual limitation under Internal Revenue Code Section 382.

As of June 30, 2019, we also had foreign net operating loss carryforwards of $3.5 million, which can be carried forward indefinitely. Due to uncertainty regarding our ability to utilize the foreign net operating loss carryforwards in certain jurisdictions, we have placed a valuation allowance of $0.5 million on these deferred tax assets.

The following is a tabular reconciliation of the total amounts of unrecognized tax benefits (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Unrecognized tax benefit—beginning of period	$ 3,820	$ 3,035	$ 6,662
Increase in tax positions taken during the current period	825	785	678
Increase in tax positions taken during the prior period	181	—	242
Decrease in tax positions taken during the prior period	(128)	—	—
Decrease in tax positions due to settlements	(98)	—	(4,086)
Lapse of statute of limitations	—	—	(461)
Unrecognized tax benefit—end of period	$ 4,600	$ 3,820	$ 3,035

At June 30, 2019, 2018 and 2017, there was $0.1 million of unrecognized tax benefits that if recognized would affect the annual effective tax rate.

We file income tax returns in the U.S. with the IRS, California, various states, and foreign tax jurisdictions in which we have subsidiaries. The statute of limitations remains open for fiscal 2016 through fiscal 2018 for federal tax purposes, for fiscal 2014 through fiscal 2018 in state jurisdictions, and for fiscal 2014 through 2018 in foreign jurisdictions. Fiscal years outside the normal statute of limitation remain open to audit by tax authorities due to tax attributes generated in those early years which have been carried forward and may be audited in subsequent years when utilized.

We believe it is reasonably possible that the gross unrecognized tax benefits as of June 30, 2019 will not decrease (whether by payment, release, or a combination of both) by a material amount in the next 12 months. We recognize interest and penalties related to unrecognized tax positions as part of our provision for federal, state and foreign income taxes. During fiscal 2019, 2018 and 2017, we recognized approximately zero, $15,000 and $17,000 in interest and penalties. We had accrued zero and $97,000 for the payment of interest and penalties at June 30, 2019 and 2018, respectively.

11. Industry segment and geographic information

We report segment information based on the “management” approach. The management approach designates the internal reporting used by management for making decisions and assessing performance as the source of our reportable segments.

Our CEO, the chief operating decision maker, reviews revenue and gross margin information for each of our reportable segments. In addition, with the exception of goodwill and intangible assets, we do not identify or allocate our assets by the reportable segments.

We reported results in three business segments through June 30, 2019:

Automotive - Our automotive segment utilizes our connected car platform to deliver enhanced location-based navigation services to automobile manufacturers and tier ones. We primarily offer three variations of our connected car products and services to our automobile manufacturer and tier one customers. First, we offer on-board navigation systems that are built into vehicles with all key elements of the system residing in the vehicle as a self-contained application along with the related software and content. Our on-board navigation products do not require access to the Internet or wireless networks to function. Second, we offer advanced hybrid navigation solutions that contain on-board functionality and also add cloud functionality such as cloud search, cloud routing, map updates and “live” data. We refer to these solutions as hybrid navigation. Third, we offer mobile phone-based navigation solutions that run on the phone and provides an interactive map and navigation instructions to the vehicle's video screen and audio system, which we refer to as brought-in navigation.

Advertising - Our advertising segment provides interactive mobile advertisements on behalf of our advertising clients to consumers based specifically on the location of the user and other sophisticated targeting capabilities. Our customers include advertisers and advertising agencies.

Mobile Navigation - Our mobile navigation segment provides our map and navigation platform to end users through mobile devices. We distribute our services primarily through our wireless carrier partners.

Our segment results were as follows (dollars in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Automotive			
Revenue	$ 186,835	$ 177,842	$ 163,915
Cost of revenue	109,758	109,001	102,024
Gross profit	$ 77,077	$ 68,841	$ 61,891
Gross margin	41%	39%	38%
Advertising			
Revenue	$ 24,241	$ 27,229	$ 26,841
Cost of revenue	11,527	13,341	12,724
Gross profit	$ 12,714	$ 13,888	$ 14,117
Gross margin	52%	51%	53%
Mobile Navigation			
Revenue	$ 9,820	$ 13,392	$ 18,959
Cost of revenue	3,390	5,729	5,688
Gross profit	$ 6,430	$ 7,663	$ 13,271
Gross margin	65%	57%	70%
Total			
Revenue	$ 220,896	$ 218,463	$ 209,715
Cost of revenue	124,675	128,071	120,436
Gross profit	$ 96,221	$ 90,392	$ 89,279
Gross margin	44%	41%	43%

Revenue by geographic region is based on the billing address of our customers. The following table sets forth revenue and property and equipment by geographic region (in thousands):

	Fiscal Year Ended June 30,		
	2019	2018	2017
Revenue			
United States	$ 179,723	$ 195,795	$ 188,735
International	41,173	22,668	20,980
Total revenue	$ 220,896	$ 218,463	$ 209,715

	June 30,	
	2019	2018
Property and equipment, net		
United States	$ 2,751	$ 3,213
International	2,904	3,774
Total property and equipment, net	$ 5,655	$ 6,987

12. Employee savings and retirement plan

We sponsor a defined contribution plan under Internal Revenue Code Section 401(k), or the 401(k) Plan. Most of our U.S. employees are eligible to participate following the start of their employment. Employees may contribute up to the lesser of 100% of their current compensation to the 401(k) Plan or an amount up to a statutorily prescribed annual limit. We pay the direct expenses of the 401(k) Plan and beginning in July 2006, we began to match employee contributions up to 4% of an employee's salary, limited to a maximum annual contribution of $8,000 per employee. Contributions made by us are subject to certain vesting provisions. We made matching contributions and recorded expense of $1.1 million, $1.3 million and $1.3 million for fiscal 2019, 2018 and 2017, respectively.

13. Quarterly financial data (unaudited)

Summarized quarterly financial information for fiscal 2019 and 2018 is as follows, as restated for the adoption of ASC 606 (in thousands, except per share data):

Consolidated statements of operations data	Three Months Ended Sept. 30, 2017	Dec. 31, 2017	Mar. 31, 2018	June 30, 2018	Sept. 30, 2018	Dec. 31, 2018	Mar. 31, 2019	June 30, 2019
	(unaudited)							
Revenue	$ 54,695	$ 61,399	$ 46,382	$ 55,987	$ 52,199	$ 57,176	$ 53,069	$ 58,452
Gross profit	20,990	23,523	21,715	24,164	21,437	24,985	23,442	26,357
Net loss	(10,518)	(8,394)	(14,457)	(7,465)	(7,570)	(4,581)	(7,481)	(12,856)
Net loss per share:								
Basic and diluted	$ (0.24)	$ (0.19)	$ (0.32)	$ (0.17)	$ (0.17)	$ (0.10)	$ (0.16)	$ (0.28)

14. Subsequent event (unaudited)

In August 2019, we sold our advertising delivery platform (the Ads Business) to inMarket Media, LLC, or inMarket, a provider of digital advertising services. Upon the terms and subject to the conditions of the Asset Purchase Agreement, inMarket acquired substantially all of the assets and assumed certain liabilities related to and used in the Ads Business. In exchange, inMarket issued to Telenav units of inMarket representing a 14.5% member interest in inMarket at the time of closing of the transaction. In addition, inMarket granted to Telenav a perpetual, non-exclusive, irrevocable, royalty-free, license back to the software and other intellectual property rights being assigned to inMarket as part of the inMarket Transaction.

In connection with the agreement, we expect to assign our interest in our Culver City, California and Chicago, Illinois office leases to inMarket or to terminate such leases, resulting in a decrease in future minimum operating lease payments totaling $1.4 million.

We will report the operating results of the Ads Business as discontinued operations in our condensed consolidated financial statements for the first quarter of fiscal 2020 and for all prior comparative periods. Our pro forma results of operations for fiscal 2019, assuming the sale of the Ads Business had been completed on June 30, 2019, was as follows:

	Fiscal Year Ended June 30, 2019
Pro forma results of operations	
Loss from continuing operations	$ (25,556)
Net loss	$ (32,488)
Pro forma loss per share	
Continuing operations	$ (0.56)
Net loss	$ (0.71)

Assets transferred to inMarket or written off and liabilities assumed by inMarket or written off in connection with the inMarket Transaction totaled less than 5% and less than 1% of our consolidated total assets and consolidated total liabilities, respectively, at June 30, 2019.

SCHEDULE II

VALUATION AND QUALIFYING ACCOUNTS
(in thousands)

	Beginning Balance	Chargeback Additions	Chargeback Reductions	Ending Balance
Trade Receivable Allowances:				
Year Ended June 30, 2017	$ 111	$ 469	$ (505)	$ 75
Year Ended June 30, 2018	$ 75	$ 162	$ (220)	$ 17
Year Ended June 30, 2019	$ 17	$ 93	$ (103)	$ 7

	Beginning Balance	Additions	Reductions	Ending Balance
Valuation Allowance for Deferred Tax Assets:				
Year Ended June 30, 2017	$ 27,902	$ 26,230	$ (372)	$ 53,760
Year Ended June 30, 2018	$ 53,760	$ 13,959	$ (16)	$ 67,703
Year Ended June 30, 2019	$ 67,703	$ —	$ (19,333)	$ 48,370

DESCRIPTION OF TELENAV, INC. CAPITAL STOCK

The following description of Telenav, Inc.'s (the "Company") capital stock is a summary that is not complete and is qualified in its entirety by reference to the Company's Second Amended and Restated Certificate of Incorporation filed on May 18, 2010, as amended on November 27, 2012 ("COI"), and Amended and Restated Bylaws, effective as of May 18, 2010 ("Bylaws").

General

The Company's authorized capital stock consists of 600,000,000 shares of common stock, par value $0.001 per share, and 50,000,000 shares of preferred stock, par value $0.001 per share.

Common stock

Holders of the Company's common stock are entitled to one vote for each share of common stock held of record for the election of directors and on all matters submitted to a vote of stockholders. Holders of the Company's common stock are entitled to receive dividends ratably, if any, as may be declared by the Company's board of directors out of legally available funds, subject to any preferential dividend rights of any preferred stock then outstanding. Upon the Company's dissolution, liquidation or winding up, holders of the Company's common stock are entitled to share ratably in the Company's net assets legally available after the payment of all of the Company's debts and other liabilities, subject to the preferential rights of any preferred stock then outstanding. Holders of the Company's common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that the Company may designate and issue in the future. All of the Company's outstanding shares of common stock are fully paid and nonassessable.

Preferred stock

The Company's board of directors is authorized, without further vote or action by the stockholders, to issue from time to time up to an aggregate of 50,000,000 shares of preferred stock in one or more series and to fix or alter the designations, rights, preferences and privileges and any qualifications, limitations or restrictions of the shares of each such series of preferred stock, including the dividend rights, dividend rates, conversion rights, voting rights, terms of redemption including sinking fund provisions, redemption price or prices, liquidation preferences and the number of shares constituting any series or designations of such series, any or all of which may be greater than the rights of common stock.

Anti-takeover effects of the COI, Bylaws and Delaware law

The Company's COI and Bylaws contain certain provisions that could have the effect of delaying, deferring or discouraging another party from acquiring control of the Company. The Company expects these provisions and certain provisions of Delaware law, which are summarized below, to discourage coercive takeover practices and inadequate takeover bids.

These provisions are also designed, in part, to encourage persons seeking to acquire control of the Company to negotiate first with the Company's board of directors. The Company believes that the benefits of increased protection of the Company's potential ability to negotiate more favorable terms with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire the Company.

Undesignated preferred stock. As discussed above, the Company's board of directors has the ability to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of the Company. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of the Company.

Limits on the ability of stockholders to act by written consent or call a special meeting. The COI provides that the Company's stockholders may not act by written consent, which may lengthen the amount of time required to take stockholder actions. As a result, a holder controlling a majority of the Company's capital stock would not be able to amend the COI or Bylaws or remove directors without holding a meeting of the Company's stockholders called in accordance with the Bylaws.

In addition, the COI and Bylaws provide that special meetings of the stockholders may be called only by the chairperson of the board of directors, the chief executive officer or the Company's board of directors. Stockholders may not call a special meeting, which may delay the ability of the Company's stockholders to force consideration of a proposal or for holders controlling a majority of the Company's capital stock to take any action, including the removal of directors.

Requirements for advance notification of stockholder nominations and proposals. The Bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the Company's board of directors. These provisions may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

Board classification. The COI provides that the Company's board of directors will be divided into three classes, one class of which is elected each year by our stockholders. The directors in each class will serve for a three-year term. The Company's classified board of directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of the Company, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Election and removal of directors. The COI and Bylaws contain provisions that establish specific procedures for appointing and removing members of the Company's board of directors. Under the COI and Bylaws, vacancies and newly created directorships on the Company's board of directors may be filled only by a majority of the directors then serving on the board of directors. Under the COI and Bylaws, directors may be removed only for cause by the affirmative vote of the holders of a majority of the shares then entitled to vote at an election of directors.

No cumulative voting. The Delaware General Corporation Law provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless the COI provides otherwise. The COI and Bylaws do not expressly provide for cumulative voting. Without cumulative voting, a minority stockholder may not be able to gain as many seats on the Company's board of directors as the stockholder would be able to gain if cumulative voting were permitted. The absence of cumulative voting makes it more difficult for a minority stockholder to gain a seat on the Company's board of directors to influence the Company's board of directors' decision regarding a takeover.

Delaware anti-takeover statute. The Company is subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the Company's board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, calculated as provided under Section 203; or
- at or subsequent to the date of the transaction, the business combination is approved by the Company's board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation's outstanding voting stock. The Company expects the existence of this provision to have an anti-takeover effect with respect to transactions the Company's board of directors does not approve in advance. The Company also anticipates that Section 203 may also discourage attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

Registration rights

A few of our existing stockholders are entitled to registration rights that enable them to include their shares in certain registration statements we may file to allow for the resale of their shares to the public.

CERTAIN IDENTIFIED INFORMATION HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. [*****] INDICATES THAT INFORMATION HAS BEEN OMITTED.

March 21, 2019

Telenav, Inc.
4655 Great America Parkway, Suite 300
Santa Clara, California 95054

Attn: Fuad Ahmad, Interim Chief Financial Officer

Re: [*****] Access Agreement No. 2

Dear Mr. Ahmad,

The purpose of this letter (the "[*****] Access Agreement No. 2") is to update our prior [*****] Access Agreement (dated August 7, 2017) concerning Telenav Inc.'s ("Telenav") rights to compile, store and enable access solely to HERE [*****] Data by certain [*****] applications developed by or for [*****] ("[*****]") as specified herein. This [*****] Access Agreement No. 2 supersedes and replaces the August 7, 2017 [*****] Access Agreement as of the date of the last signature below ("Effective Date").

This [*****] Access Agreement No. 2 references but does not limit Telenav's license rights to HERE Data for use with certain [*****], as further specified in the Territory License No. 11, effective April 3, 2015 ("TL 11"), and Territory License No. 14, effective December 21, 2018 ("TL 14"), as amended, including any future amendments to the Territories or scope of data licensed thereunder, to the Data License Agreement ("Agreement"), dated December 1, 2002, by and between Telenav and Navigation Technologies Corporation, which was subsequently assigned to HERE North America, LLC (f/k/a NAVTEQ North America, LLC). ("HERE"). Capitalized terms not otherwise defined herein shall have the meanings as assigned to them in the Agreement, TL11 and/or TL14, as applicable.

Each party's obligations, rights and restrictions under this [*****] Access Agreement No. 2 are subject to the terms of the Agreement, TL11 and TL14, except, however, Sections III, IV, VI, and Exhibit B of TL11 and TL14 shall not apply and Section V of TL11 and TL14 shall apply only to the extent provided herein. However, in the event of any conflict between the terms of the Agreement, TL11 and/or TL14 and the terms of this [*****] Access Agreement No. 2, the relevant terms of this [*****] Access Agreement No. 2 shall prevail.

Specifically, HERE and Telenav hereby agree as follows:

1. Term. This [*****] Access Agreement No. 2 is effective as of the Effective Date and shall continue until December 31, 2023.

2. License Grant and Permitted Use. Subject to Telenav's compliance with the terms and conditions herein and the applicable terms and conditions of the Agreement, TL11 and TL14, during the term of this[*****]Access Agreement No. 2, HERE hereby grants to Telenav the limited, restricted, non-exclusive, non-transferable, non-sublicensable right and license to compile, copy, distribute, host and store solely the [*****] and [*****], which shall include the [*****] of the HERE Data made available by HERE to Telenav under TL11 and/or TL 14 for those Territories as authorized in TL11 and/or TL14 as amended, including any future amendments to the Territories and/or scope of licensed data ("HERE[*****]Data") on servers owned or controlled by Telenav ("Telenav Server") solely for the purpose of providing access to compiled HERE [*****] Data via the Telenav Server solely by the "[*****]" [*****] application as further defined in the [*****] Agreement ("[*****] Application") to [*****] Application end users for personal use. For clarity and except as otherwise

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

permitted under other agreements between HERE and Telenav, in the event that additional HERE Data is made available on the Telenav Server for any reason, Telenav may not grant access to any HERE Data other than HERE [*****] Data solely for use in the [*****] Application.

3. License Fee Reports & Due Dates. In connection with the reporting requirements otherwise set forth in Section V.B. of TL11 and TL14, in each calendar month during the Term, Telenav shall provide a report to HERE that indicates the number of times during such month that any [*****] Application has accessed the HERE [*****] Data via the Telenav Server. Telenav shall report such instances of [*****] Application access as a separate line item in its License Fee Reports to HERE that are otherwise provided to HERE in accordance with TL 11 and TL14, but shall not provide any vehicle specific reporting with regard to the [*****] Applications. Subject to Client's compliance with the conditions set forth herein, License Fees solely for the use and access of HERE [*****] Data by the [*****] Application shall be waived.

4. Obligations Upon Termination. Upon termination or expiration of this [*****] Access Agreement No. 2, Telenav shall promptly remove the HERE [*****] Data from Telenav Servers and immediately terminate access to such HERE [*****] Data by the [*****] Applications.

HERE North America, LLC

By: /s/ Simon Anolick

Name: Simon Anolick

Title: Director Legal Counsel

Date: April 2, 2019

Telenav, Inc.

By: /s/ Fuad Ahmad

Name: Fuad Ahmad

Title: CFO

Date: 3/29/2019

HERE North America, LLC

By: /s/ Greg Drescher

Name: Greg Drescher

Title: Senior Legal Counsel

Date: April 2, 2019

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

CERTAIN IDENTIFIED INFORMATION HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. [*****] INDICATES THAT INFORMATION HAS BEEN OMITTED.

NINTH AMENDMENT TO TERRITORY LICENSE NO. 11 (MapCare Retrofit – North America)

This Ninth Amendment ("Ninth Amendment") to the Territory License No. 11, effective April 3, 2015 ("TL 11"), to the Data License Agreement ("Agreement"), dated December 1, 2002, by and between Telenav, Inc. ("Client") and Navigation Technologies Corporation, which was subsequently assigned to HERE North America, LLC (f/k/a NAVTEQ North America, LLC) (collectively, "HERE"), is made and entered into as of the date of latest signature below ("Amendment Effective Date"). The Agreement, TL 11 and all amendments to date are hereby referred to herein as the "Agreement." Capitalized terms not otherwise defined in the body of this Ninth Amendment shall have the meanings set forth in the Agreement.

WHEREAS, HERE and [*****] have entered into an agreement whereby HERE will provide Multi-Year Annual Copy Subscriptions ("MapCare") for [*****] vehicles distributed in [*****] in [*****] in exchange for [*****] Lump Sum MapCare Fee (defined below);

WHEREAS, Client collects fees from [*****] for MapCare;

WHEREAS, the Parties desire to amend certain terms of the Agreement to account for the payment and reporting of the [*****] Lump Sum MapCare Fee;

NOW THEREFORE, the Parties agree to amend certain provisions of the Agreement with this Ninth Amendment as follows:

A. Retrofit. Exhibit A, Section IV Multi-Year Annual Copy Subscriptions for [*****] Route Guidance Applications. Table 1 of TL 11 shall be followed by the paragraph below:

   "Retrofit - [*****]. The License Fee per Copy for Multi-Year Annual Copy Subscriptions for [*****] and [*****] navigation equipped vehicles distributed in the [*****] Territory from [*****] to [*****] ("[*****] Vehicles"), shall be covered by a lump sum fee ("[*****] Lump Sum MapCare Fee") of $[*****] for up to [*****] Vehicles.

   For clarity, MapCare is a [*****] subscription [*****]. The [*****] Lump Sum MapCare Fee does not include any distribution fees."

B. Reporting. Client shall include in their monthly License Fee Report separate line items for the [*****] Lump Sum MapCare Fee.

Except as modified hereunder, all other terms and conditions of the Agreement shall stay in full force and effect.

No other text below this line

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

IN WITNESS WHEREOF, the parties have caused this Ninth Amendment to be executed by their authorized representatives as of the Amendment Effective Date.

HERE NORTH AMERICA, LLC TELENAV, INC.

By: /s/ Greg Drescher By: /s/ Fuad Ahmad

Name: Greg Drescher Name: Fuad Ahmad

Title: Senior Legal Counsel Title: CFO

Date: 4/30/2019 Date: 4/24/2019

HERE NORTH AMERICA, LLC

By: /s/ Simon Anolick

Name: Simon Anolick

Title: Director Legal Counsel

Date: 4/30/2019

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

CERTAIN IDENTIFIED INFORMATION HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. [*****] INDICATES THAT INFORMATION HAS BEEN OMITTED.

THIRD AMENDMENT TO TERRITORY LICENSE NO. 10 ([*****] Navigation Applications)

This Third Amendment (the "**Amendment**") to the Territory License No. 10, effective March 1, 2016 ("**TL 10**"), as amended, to the Data License Agreement ("Agreement"), dated December 1, 2002, by and between Telenav, Inc. ("**Client**") and Navigation Technologies Corporation, which was subsequently assigned to HERE North America, LLC (f/k/a NAVTEQ North America, LLC) (collectively, " **HERE**"), is made and entered into as of **November 1, 2018** ("**Amendment Effective Date**") . The Agreement and TL 10, and amendments thereto, are hereby referred to herein as the "Agreement." Capitalized terms not otherwise defined in the body of this Amendment shall have the meanings set forth in the Agreement.

The parties agree to amend certain provisions of TL 10 with this Amendment as follows:

1. <u>TL Term.</u> The term of the TL 10 is hereby extended to **June 30, 2021** ("Expiration Date").

2. In Section I of TL 10, the definition of "**North America Territory**" shall be amended by adding "Guam" to the United States.

3. In Section I of TL 10, "Egypt" shall be included in both "**Africa Territory**" and "**Middle East Territory**", provided that vehicles in such countries are [*****] to have [*****] for both Africa Territory and Middle East Territory [*****].

4. At the end of Section I of TL 10, add the following new language:

   "During the TL Term, if HERE releases a HERE Map for commercial use for one or more additional countries in any territories covered by TL 10 (i.e., countries that are not identified above), HERE shall notify Client of such additional country(ies). Upon the commercial release of Data for any such additional country, HERE shall notify Client about whether the Data for such country is included in the scope of this TL 10 in accordance with the foregoing and, if so, i) whether there are any supplier requirements associated with such Data (e.g., supplier copyright notices), and ii) whether there are any additional fees for use of Data in such additional country(ies). HERE and Client may enter into a new amendment to add such additional country(ies) to TL 10. For purposes of the foregoing, "HERE Map" means the non-navigable or navigable geographic map data released by HERE for all or any portion of a country for which HERE has completed its specification and verification procedures."

5. In Section VII of TL 10, after subsection G, add the following new section:
   "H. With respect to this Amendment, the parties acknowledge the Additional requirements listed in the [*****] letter agreement between HERE and [*****] and [*****] ("[*****]") dated [*****], and that [*****] is a [*****] to this Amendment."

6. Commencing on the Amendment Effective Date, the following fees are hereby added to Section 1 of Exhibit D (Pricing) to TL 10 for use of the Data in connection with **Route Guidance Applications**, including (i) the Initial Copy; (ii) a [*****] for [*****] and HERE Traffic (ML) and (iii) access to the HERE Location Platform Services (i.e. [*****]) during the Subscription period.

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	$[*****]	$[*****]
Australia/New Zealand	$[*****]	$[*****]
Middle East Territory	$[*****]	$[*****]
Israel	$[*****]	$[*****]
Africa Territory	$[*****]	$[*****]
South Korea	$[*****]	$[*****]
Taiwan	$[*****]	$[*****]
Latin America Territory	$[*****]	$[*****]
Southeast Asia Territory	$[*****]	$[*****]
India	$[*****]	$[*****]

7. Commencing on the Amendment Effective Date, the following fees are hereby added to Section 2 of Exhibit D (Pricing) to TL 10 for use of the Data in connection with [*****] **Route Guidance Applications**, including (i) the Initial Copy; (ii) a [*****] for [*****] and HERE Traffic (ML) and (iii) access to the HERE Location Platform Services (i.e. [*****]) during the Subscription period.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	$[*****]	$[*****]
Australia/New Zealand	$[*****]	$[*****]

8. Commencing on the Amendment Effective Date, the following fees are hereby added to the end of Section 3 of Exhibit D (Pricing) to TL for use of the Data in connection with **Route Guidance Applications**, including (i) the Initial Copy; (ii) a [*****] for [*****] and HERE Traffic (ML) and (iii) access to the HERE Location Platform Services (i.e. [*****]) during the Subscription period.

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	$[*****]	$[*****]
Europe	$[*****]	$[*****]
Australia/New Zealand	$[*****]	$[*****]
Middle East Territory	$[*****]	$[*****]
Israel	$[*****]	$[*****]
Africa Territory	$[*****]	$[*****]
South Korea	$[*****]	$[*****]
Taiwan	$[*****]	$[*****]
Latin America Territory	$[*****]	$[*****]
Southeast Asia Territory	$[*****]	$[*****]
India	$[*****]	$[*****]

9. Commencing on the Amendment Effective Date, the following fees are hereby added to the end of Section 3 of Exhibit D (Pricing) to TL for use of the Data in connection with [*****] **Route Guidance Applications**, including (i) the Initial Copy; (ii) a [*****] for [*****] and HERE Traffic (ML) and (iii) access to the HERE Location Platform Services (i.e. [*****]) during the Subscription period.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	$[*****]	$[*****]
Australia/New Zealand	$[*****]	$[*****]
South Korea*	$[*****]	$[*****]
Europe	$[*****]	$[*****]

* The additional fees for the [*****] shall be [*****] for the [*****] in South Korea per [*****], the Per Copy License Fees for [*****] shall be $[*****] for [*****] and $[*****] for [*****] for the [*****] with [*****] (the “[*****]”). Such [*****] is applicable solely to [*****] and [*****].

10. Commencing on the Amendment Effective Date, the following fees are hereby added to the end of Section 3 of Exhibit D (Pricing) to TL for use of the Data in connection with **Route Guidance Applications**, including (i) the Initial Copy only.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	$[*****]	$[*****]
Latin America Territory	$[*****]	$[*****]

11. Commencing on the Amendment Effective Date, the following fees are hereby added to the end of Section 3 of Exhibit D (Pricing) to TL for use of the Data in connection with [*****] **Route Guidance Applications**, including (i) the Initial Copy only.

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

PER COPY LICENSE FEES		
[*****]		
Territory	[*****]	[*****]
	[*****] - [*****]	[*****] - [*****]
North America Territory	**$**[*****]	**$**[*****]
Latin America Territory	**$**[*****]	**$**[*****]

12. Subject to Client's compliance with the terms and conditions of the Agreement, HERE shall make available to Client all Additional Content specified in Section 4 (Data) of Exhibit D for each Territory that has been generally released by HERE, at no additional cost to Client.

13. Except as modified hereunder, all other terms and conditions of the Agreement shall stay in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed by their authorized representatives as of the Amendment Effective Date.

HERE NORTH AMERICA, LLC TELENAV, INC.

By: /s/ Greg Drescher By: /s/ Fuad Ahmad

Name: Greg Drescher Name: Fuad Ahmad

Title: Senior Legal Counsel Title: CFO

Date: 6/7/2019 Date: 6/5/2019

HERE NORTH AMERICA, LLC

By: /s/ Simon B. Anolick

Name: Simon B. Anolick

Title: Director Legal Counsel

Date: 6/7/2019

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

CERTAIN IDENTIFIED INFORMATION HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE REGISTRANT IF PUBLICLY DISCLOSED. [*****] INDICATES THAT INFORMATION HAS BEEN OMITTED.

AMENDMENT NO. 30
TO THE
SYNC GENERATION 2 ON-BOARD NAVIGATION AGREEMENT
BETWEEN
FORD MOTOR COMPANY AND TELENAV, INC.

THIS AMENDMENT NO. 30 ("Amendment"), effective as of February 22, 2018 ("Amendment Effective Date") supplements and amends the terms of the SYNC Generation 2 On-Board Navigation Agreement, dated October 12, 2009 ("Agreement"), by and between **Ford Motor Company** ("Buyer" or "Ford"), a Delaware corporation with its principal office at One American Road, Dearborn, Michigan 48126, on behalf of itself and the Ford Related Companies, and **Telenav, Inc.** ("Supplier" or "Telenav"), a Delaware corporation with its principal office at 4655 Great America Parkway, Suite 300, Santa Clara, CA 95054, on behalf of itself and the Telenav Related Companies. Capitalized terms not otherwise defined shall have the meanings ascribed to them in the Agreement.

WHEREAS, the parties wish to provide a [*****] map update for certain vehicles in [*****];

NOW, THEREFORE, in consideration of the mutual promises and covenants contained in this Amendment, the parties agree as follows:

1. In Attachment V, Section 3, under the heading "[*****] Fees", but before the heading "[*****] Fees", add the following new section:

   "[*****]

	[*****]
[*****]	[*****]
[*****]	[*****]
[*****]	[*****]
[*****]	[*****]
[*****]	[*****]

"

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

2. In Attachment V, after Section 18, add the following new section:

"19. For purposes of [*****], the parties approve and agree to implement the [*****] of the [*****] ('[*****]') listed below and the fees associated with these [*****] shall be $[*****].

[*****]	[*****]	[*****]	[*****]
[*****]	[*****]	[*****]	[*****]
[*****]	[*****]	[*****]	[*****]
[*****]	[*****]	[*****]	[*****]
[*****]	[*****]	[*****]	[*****]
[*****]	[*****]	[*****]	[*****]

"

Except as modified and amended by this Amendment, the terms of the Agreement are ratified and confirmed by the parties hereto. This Amendment is incorporated into and made a part of the Agreement by the parties.

IN WITNESS WHEREOF, the parties have executed this Amendment by their authorized representatives as of the Amendment Effective Date.

FORD MOTOR COMPANY

By: /s/ Melissa Sheahan
(Signature)

Name: Melissa Sheahan
(Printed Name)

Title: Software Buyer

Date: 4/24/2019

TELENAV, INC.

By: /s/ Fuad Ahmad
(Signature)

Name: Fuad Ahmad
(Printed Name)

Title: Chief Financial Officer

Date: 5/2/2019

[*****] Certain identified information denoted with an asterisk have been omitted from this exhibit because it is not material and would likely cause competitive harm to the Registrant if publicly disclosed.

Exhibit 21.1

SUBSIDIARIES OF TELENAV, INC.

TeleNav Shanghai Inc. (PRC)

TeleNav Xi'an Software Limited (PRC)

TeleNav Hong Kong, Limited (Hong Kong)

TeleNav UK Limited (U.K.)

Thinknear, Inc. (Delaware)

Telenav GmbH

Telenav Software SRL

Telenav G.K.

Telenav Korea, Limited

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We have issued our reports dated August 22, 2019, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of Telenav, Inc. on Form 10-K for the year ended June 30, 2019. We consent to the incorporation by reference of said reports in the Registration Statements of Telenav, Inc. on Form S-8 (File No. 333-227290, File No. 333-220157, File No. 333-213243, File No. 333-206546, File No. 333-198317, File No. 333-195815, File No. 333-190901, File No. 333-184638, File No. 333-183787, File No. 333-176773, and File No. 333-166780).
.

/s/ GRANT THORNTON LLP
San Francisco, California

August 22, 2019

Exhibit 31.1

**CERTIFICATION OF THE PRESIDENT AND CHIEF EXECUTIVE OFFICER
PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Dr. HP Jin, certify that:

1. I have reviewed this annual report on Form 10-K of Telenav, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 22, 2019

By: /s/ Dr. HP JIN

DR. HP Jin

Chairman of the Board of Directors, President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Adeel Manzoor, certify that:

1. I have reviewed this annual report on Form 10-K of Telenav, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 22, 2019

By: /s/ ADEEL MANZOOR
Adeel Manzoor
Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF PRESIDENT AND CHIEF EXECUTIVE OFFICER PURSUANT TO 18 U.S.C. § 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Dr. HP Jin, the president and chief executive officer of Telenav, Inc. (the "Company"), certify for the purposes of 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

(i) the Annual Report of the Company on Form 10-K for the fiscal year ended June 30, 2019 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 22, 2019

By: /s/ Dr. HP JIN

Dr. HP Jin

Chairman of the Board of Directors, President and Chief Executive Officer

Exhibit 32.2

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

I, Michael Strambi, the chief financial officer of Telenav, Inc. (the "Company"), certify for the purposes of 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

(i) the Annual Report of the Company on Form 10-k for the fiscal year ended June 30, 2019 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 22, 2019	By:	/s/ ADEEL MANZOOR
		Adeel Manzoor
		Chief Financial Officer