Globalstar, Inc.
Form 10-K
February 28, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-K

(Mark One)

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

For the Fiscal Year Ended December 31, 2018
OR
TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Transition Period from to

Commission File Number 001-33117

GLOBALSTAR, INC.
(Exact Name of Registrant as Specified in Its Charter)

Delaware	41-2116508
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

1351 Holiday Square Blvd.
Covington, Louisiana 70433
(Address of Principal Executive Offices)

Registrant's Telephone Number, Including Area Code (985) 335-1500

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

Title of each class	Name of exchange on which registered
Voting Common Stock	NYSE American

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting 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. (Check one):

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 by Rule 12b-2 of the Exchange Act)
Yes No

The aggregate market value of the registrant's common stock held by non-affiliates at June 30, 2018, the last business day of the Registrant's most recently completed second fiscal quarter, was approximately $283.0 million.

As of February 22, 2019, 1,448,027,328 shares of voting common stock and no shares of nonvoting common stock were outstanding. Unless the context otherwise requires, references to common stock in this Report mean registrant's voting common stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2019 Annual Meeting of Stockholders are incorporated by reference in Part III of this Report.

FORM 10-K

For the Fiscal Year Ended December 31, 2018

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PART I

Forward-Looking Statements

Certain statements contained in or incorporated by reference into this Annual Report on Form 10-K (the "Report"), other than purely historical information, including, but not limited to, estimates, projections, statements relating to our business plans, objectives and expected operating results, and the assumptions upon which those statements are based, are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements generally are identified by the words "believe," "project," "expect," "anticipate," "estimate," "intend," "strategy," "plan," "may," "should," "will," "would," "will be," "will continue," "will likely result," and similar expressions, although not all forward-looking statements contain these identifying words. These forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements. Forward-looking statements, such as the statements regarding our ability to develop and expand our business (including our ability to monetize our spectrum rights), our anticipated capital spending, our ability to manage costs, our ability to exploit and respond to technological innovation, the effects of laws and regulations (including tax laws and regulations) and legal and regulatory changes (including regulation related to the use of our spectrum), the opportunities for strategic business combinations and the effects of consolidation in our industry on us and our competitors, our anticipated future revenues, our anticipated financial resources, our expectations about the future operational performance of our satellites (including their projected operational lives), the expected strength of and growth prospects for our existing customers and the markets that we serve, commercial acceptance of new products, problems relating to the ground-based facilities operated by us or by independent gateway operators, worldwide economic, geopolitical and business conditions and risks associated with doing business on a global basis and other statements contained in this Report regarding matters that are not historical facts, involve predictions. Risks and uncertainties that could cause or contribute to such differences include, without limitation, those in Item 1A. Risk Factors of this Report. We do not intend, and undertake no obligation, to update any of our forward-looking statements after the date of this Report to reflect actual results or future events or circumstances.

Item 1. Business

Globalstar, Inc. (“we,” “us” or the “Company”) provides Mobile Satellite Services (“MSS”) including voice and data communications services globally via satellite. By providing wireless communications services in areas not served or underserved by terrestrial wireless and wireline networks and in circumstances where terrestrial networks are not operational due to natural or man-made disasters, we seek to meet our customers' increasing desire for connectivity. We offer voice and data communication services over our network of in-orbit satellites and our active ground stations (“gateways”), which we refer to collectively as the Globalstar System.

We currently provide the following communications services via satellite. These services are available only with equipment designed to work on our network:

- two-way voice communication and data transmissions using mobile or fixed devices, including our GSP-1700 phone, our Globalstar 9600™ hotspot, two generations of our Sat-Fi, and other fixed and data-only devices ("Duplex");
- one-way or two-way communication and data transmissions using mobile devices, including our SPOT family of products, such as SPOT X™, SPOT Gen3 and Trace, that transmit messages and the location of the device ("SPOT"); and
- one-way data transmissions using a mobile or fixed device that transmits its location and other information to a central monitoring station, including our commercial Simplex products, such as our battery- and solar-powered SmartOne, STX-3 and STINGR ("Simplex").

Our constellation of Low Earth Orbit ("LEO") satellites includes second-generation satellites, which were launched and placed into service during the years 2010 through 2013 after a $1.1 billion investment, and certain first-generation satellites. We designed our second-generation satellites to last twice as long in space, have 40% greater capacity and be built at a significantly lower cost compared to our first-generation satellites. We achieved this longer life by increasing the solar array and battery capacity, using a larger fuel tank, adding redundancy for key satellite equipment, and improving radiation specifications and additional lot level testing for all susceptible electronic components, in order to account for the accumulated dosage of radiation encountered during a 15-year mission at the operational altitude of the satellites. The second-generation satellites use passive S-band antennas on the body of the spacecraft providing additional shielding for the active amplifiers which are located inside the spacecraft, unlike the first-generation amplifiers that were located on the outside as part of the active antenna array. Each satellite has a high degree of on-board subsystem redundancy, an on-board fault detection system and isolation and recovery for safe and quick risk mitigation.

Due to the specific design of the Globalstar System (and based on customer input), we believe that our voice quality is the best among our peer group. We define a successful level of service for our customers by their ability to make uninterrupted calls of average duration for a system-wide average number of minutes per month. Our goal is to provide service levels and call success rates equal to or better than our MSS competitors so our products and services are attractive to potential customers. We define voice quality as the ability to easily hear, recognize and understand callers with imperceptible delay in the transmission. By this measure, we believe that our system outperforms geostationary (“GEO”) satellites used by some of our competitors. Due to the difference in signal travel distance, GEO satellite signals must travel approximately 42,000 additional nautical miles, which introduces considerable delay and signal degradation to GEO calls. For our competitors using cross-linked satellite architectures, which require multiple inter-satellite connections to complete a call, signal degradation and delay can result in compromised call quality as compared to that experienced over the Globalstar System.

We designed our second-generation ground network, when combined with our second-generation products, to provide our customers with enhanced future services featuring initial services up to 72 kbps as well as increased capacity. The second-generation ground network is an Internet protocol multimedia subsystem ("IMS") based solution providing such industry standard services as voice, Internet, email and short message services ("SMS"). As technological advancements are made, we explore opportunities to provide new services over our network to meet the needs of our existing and prospective customers.

We compete aggressively on price. We offer a range of price-competitive products to the industrial, governmental and consumer markets. We expect to retain our position as a cost-effective, high quality leader in the MSS industry.

Our satellite communications business, by providing critical mobile communications to our subscribers, serves principally the following markets: recreation and personal; government; public safety and disaster relief; oil and gas; maritime and fishing; natural resources, mining and forestry; construction; utilities; and transportation.

Our products and services are sold through a variety of independent agents, dealers and resellers, and independent gateway operators (“IGOs”). We also have distribution relationships with a number of "Big Box" and other distribution channels.

Duplex Two-Way Voice and Data Products

Mobile Voice and Data Satellite Communications Services and Equipment

We provide mobile voice and data services to a wide variety of commercial, government and recreational customers for remote business continuity, recreational, emergency response and other applications. We offer our services for use only with equipment designed to work on our network. Subscribers typically pay an initial activation fee, a monthly usage fee for a fixed or unlimited number of minutes, and fees for additional services such as voicemail, call forwarding, short messaging, email, data compression and internet access. Extra fees may also apply for non-voice services, roaming and long-distance. We regularly monitor our service offerings in accordance with customer demands and market changes and offer pricing plans such as bundled minutes, annual plans and unlimited plans.

We offer the GSP-1700 phone, which includes a user-friendly color LCD screen and a variety of accessories. We believe that the GSP-1700 is among the smallest, lightest and least-expensive satellite phones. We are the only MSS provider using Qualcomm Incorporated's ("Qualcomm") patented CDMA technology that we believe provides superior voice quality when compared to competitive handsets. We no longer manufacture the GSP-1700 phone. Instead, we sell refurbished GSP-1700 phones to new subscribers through our existing distribution channels. These phones are generally obtained through a buyback program that we have in place to purchase devices from deactivated subscribers in order to address demand for handsets.

Our most recent voice and data solution is Sat-Fi2™, which is the next-generation model of our original Sat-Fi. Sat-Fi2™ is the first product to operate using our second-generation ground infrastructure, resulting in higher data speeds, enhanced applications and improved performance. With Sat-Fi2™, our customers can use their Wi-Fi enabled smartphones and tablets to send and receive communications via the Globalstar System when traveling beyond cellular service, achieving a level of seamless connectivity not offered before. We believe Sat-Fi2™ is superior to other competitors' products released to date, providing the fastest, most affordable, mobile satellite data speeds and the clearest voice communications in the MSS industry. Through a convenient smartphone app that enables connectivity between a Wi-Fi-enabled device and the Sat-Fi satellite hot spot, subscribers can easily send and receive email and SMS messages and make voice calls from their own device any time they are in range of a Sat-Fi2™ device. We believe Sat-Fi2™ represents a major step forward in our desire to integrate seamlessly our mobile satellite capabilities into the communications services that people use on a daily basis.

We also offer the Globalstar 9600™, a first-generation Duplex accessory, that our customers can use with a smartphone app to pair seamlessly with their existing satellite phone to send and receive email over the Globalstar System. This affordable data

hotspot is ideal for remote workforces in industries such as energy and construction to communicate via email, send status reports, download local weather and send pictures. Our marine customers also benefit from the ease of use and the ability to affordably send data and make voice calls beyond cellular.

Fixed Voice and Data Satellite Communications Services and Equipment

We provide fixed voice and data services in rural villages, at remote industrial, commercial and residential sites and on ships at sea, among other places, primarily with our GSP-2900 fixed phone. Fixed voice and data satellite communications services are in many cases an attractive alternative to mobile satellite communications services in environments where multiple users will access the service within a defined geographic area and cellular or ground phone service is not available. Our fixed units also may be mounted on vehicles, barges and construction equipment and benefit from the ability to have higher gain antennas. Our fixed voice and data service plans are similar to our mobile voice and data plans and offer similar flexibility.

Satellite Data Modem Services and Equipment

In addition to data utilization through fixed and mobile services described above, we offer data-only services through Duplex devices that have two-way transmission capabilities. Duplex asset-tracking applications enable customers to control directly their remote assets and perform complex monitoring activities. We offer asynchronous and packet data service in all of our Duplex territories. Customers can use our products to access the internet, corporate virtual private networks and other customer specific data centers. Our satellite data modems can be activated under any of our current pricing plans. Customers can access satellite data modems in every Duplex region we serve. We provide store-and-forward capabilities to customers who do not require real-time transmission and reception of data. Additionally, we offer a data acceleration and compression service to the satellite data modem market. This service increases web-browsing, email and other data transmission speeds without any special equipment or hardware.

Direct Sales, Dealers and Resellers

Our sales group is responsible for conducting direct sales with key accounts and for managing indirect agent, dealer and reseller relationships in assigned territories in the countries in which we operate.

The reseller channel for Duplex equipment and service is comprised primarily of communications equipment retailers and commercial communications equipment rental companies that retain and bill clients directly, outside of our billing system. Many of our resellers specialize in niche vertical markets where high-use customers are concentrated. We have sales arrangements with major resellers to market our services, including some value added resellers that integrate our products into their proprietary end products or applications.

Our typical dealer is a communications services business-to-business equipment retailer. We offer competitive service and equipment commissions to our network of dealers to encourage sales.

In addition to sales through our distribution managers, agents, dealers and resellers, customers can place orders through our existing sales force and through our direct e-commerce website.

SPOT Consumer Retail Products

The SPOT product family has initiated over 6,000 rescues since its launch in 2007. Averaging nearly two rescues per day, SPOT delivers affordable and reliable satellite-based connectivity and real-time GPS tracking to hundreds of thousands of users, completely independent of cellular coverage. We are not aware of any other competitive offering that can match the life-saving record of our SPOT family of products. As we continue to innovate and grow the SPOT

family of products, we are committed to providing affordable life-saving products to an expanding target market of millions of people globally.

We have differentiated ourselves from other MSS providers by offering affordable, high utility mobile satellite products that appeal to the mainstream consumer market. With the 2009 acquisition of satellite asset tracking and consumer messaging products manufacturer Axonn LLC (“Axonn”), we believe we are the only vertically integrated mobile satellite company, which results in decreased pre-production costs, quality assurance and shorter time to market for our retail consumer products.

SPOT Satellite GPS Messenger

We began commercial sales of the first SPOT products and services when we introduced the SPOT Personal Tracker in 2007. Since 2007, we continue to innovate this product and have released another three generations of our SPOT Satellite GPS Messenger to the market. The most recent generations of SPOT devices which we currently sell include SPOT Gen3 and SPOT X™. Compared to earlier generations of our SPOT Satellite GPS Messenger, SPOT Gen3 offers enhanced functionality with more tracking features, improved battery performance and more power options, including rechargeable and USB direct line power. The product also enables users to transmit messages to a specific preprogrammed email address, phone or data device, including a request for assistance and an “SOS” message in the event of an emergency. SPOT X™, which was launched in May 2018, has new keyboard functionality to allow subscribers to send and receive SMS messages along with improved tracking and SOS functions.

We target our SPOT Satellite GPS Messenger to recreational and commercial markets that require personal tracking, emergency location and messaging solutions that operate beyond the reach of terrestrial wireless and wireline coverage. Using our network and web-based mapping software, this device provides consumers with the ability to trace a path geographically or map the location of individuals or equipment. SPOT Satellite GPS Messenger products and services are available virtually everywhere through our product distribution channels and through our direct e-commerce website.

SPOT Trace

SPOT Trace is a cost effective anti-theft and asset tracking device. SPOT Trace ensures cars, motorcycles, boats, ATVs, snowmobiles and other valuable assets are where they need to be, notifying owners via email or text when movement is detected anytime, using 100% satellite technology to provide location-based messaging and emergency notification for on or off the grid communications.

Product Distribution

We distribute and sell our SPOT products through a variety of distribution channels. We have distribution relationships with a number of "Big Box" retailers and other similar distribution channels, including Bass Pro Shops, Cabela's, Fry's Electronics, REI, Sportsman's Warehouse, West Marine and Amazon. We also sell SPOT products and services directly using our existing sales force and through our direct e-commerce website, www.findmespot.com, as well as through certain of our IGOs.

Commercial Simplex One-Way Transmission Products

Simplex service is a one-way data service from a commercial Simplex device over the Globalstar System that can be used to track and monitor assets. Our subscribers currently use our Simplex devices for tracking, such as cargo containers and rail cars; to monitor utility meters; and to monitor oil and gas assets, as well as a host of other applications. At the heart of the Simplex service is a demodulator and RF interface, called an appliqué, which is located at a gateway and an application server located in our facilities. The appliqué-equipped gateways provide coverage over vast areas of the globe. The small size of the devices makes them attractive for use in tracking asset shipments, monitoring unattended remote assets, trailer tracking and mobile security. Current users include various governmental agencies, including the Federal Emergency Management Agency (“FEMA”), the U.S. Army, the U.S. Air Force, the National Oceanic and Atmospheric Administration (“NOAA”), the U.S. Forest Service and the U.K. Ministry of Defence, as well as other organizations, including BP, Shell and The Salvation Army.

We designed our Simplex service to address the market for a small and cost-effective solution for sending data, such as geographic coordinates, from assets or individuals in remote locations to a central monitoring station. Customers

are able to realize an efficiency advantage from tracking assets on a single global system as compared to several regional systems.

We offer small Satellite Transmitter chipsets, such as the STX-3 and STINGR, which enable an integrator’s products to access our Simplex network. We also offer complete products that utilize these transmitters. Our Simplex units, including the enterprise-grade SmartOne family of asset-ready tracking units, are used worldwide by industrial, commercial and government customers. These products provide cost-effective, low power, ultra-reliable, secure monitoring that help solve a variety of security applications and asset tracking challenges. Partnering with existing third party technology providers, we are developing IoT-focused Simplex products to connect existing and new users and accelerate deployment of a Globalstar IoT product suite. Launched in March 2018, our SmartOne Solar™ device is the first of these IoT-focused products. It is solar-powered and supports similar functionality to our SmartOne suite of products without the need to recharge batteries or line power the device, with an expected life of up to eight years. These features will result in a longer field life than existing devices. Solar-powered devices are also expected to take advantage of our network's ability to support multiple billions of daily transmissions assuming an average message size of 90 characters. We are also developing M2M products that support two-way communications allowing for both tracking and control of assets in our coverage footprint.

The reseller channel for Simplex equipment and service is comprised primarily of value added resellers and commercial communications equipment companies that retain and bill clients directly, outside of our billing system. Many of our resellers specialize in niche vertical markets where high-use customers are concentrated. We have sales arrangements with major resellers to market our services, including some value added resellers that integrate our STX-3 and STINGR into their proprietary solutions designed to meet certain specialized niche market applications.

Other New Product Initiatives

We continue to explore opportunities to develop new products and provide new services over our network to meet the needs of our existing and prospective customers. New product initiatives are underway and expected to expand our satellite communications business by effectively leveraging our network capabilities and expanding distribution relationships. We are in the process of developing a two-way emergency messaging and tracking device for the automotive market, a derivative of Sat-Fi2™ specifically designed for the maritime industry and a miniaturized satellite-based tracking device.

Independent Gateway Operators

Our wholesale operations encompass primarily bulk sales of wholesale minutes to IGOs around the globe. IGOs maintain their own subscriber bases that are mostly exclusive to us and promote their own service plans. The IGO system allows us to expand in regions that hold significant growth potential but are harder to serve without sufficient operational scale or where local regulatory requirements do not permit us to operate directly.

Currently, 10 of the 23 gateways in our network are owned and operated by unaffiliated companies, some of whom operate more than one gateway. Except for Globalstar Asia Pacific, our joint venture in South Korea in which we hold a 49% equity interest, we have no financial interest in these IGOs and conduct business with them through arms' length contracts for wholesale minutes of service.

Set forth below is a list of IGOs as of December 31, 2018:

Location	Gateway	Independent Gateway Operators
Argentina	Bosque Alegre	Tesacom
Australia	Dubbo	Pivotel Group PTY Limited
Australia	Mount Isa	Pivotel Group PTY Limited
Australia	Meekatharra	Pivotel Group PTY Limited
South Korea	Yeo Ju	Globalstar Asia Pacific
Mexico	San Martin	Globalstar de Mexico
Russia	Khabarovsk	GlobalTel
Russia	Moscow	GlobalTel
Russia	Novosibirsk	GlobalTel
Turkey	Ogulbey	Globalstar Avrasya

In December 2018, we entered into a binding asset purchase agreement with the owners of our IGO in Argentina whereby we will purchase certain fixed assets and related government authorizations in connection with the operation of this IGO. We expect the asset purchase to close in 2019, subject to the satisfaction of certain conditions. Accordingly, we have included our IGO in Argentina in the table above as of December 31, 2018.

Other Services

We also provide engineering services to assist our commercial and government customers in developing new applications related to our system and to engineer and install new gateways that use our system. These services include hardware and software designs to develop specific applications operating over our network, as well as the installation of gateways and antennas.

Our Spectrum and Regulatory Structure

We benefit from a world-wide allocation of radio frequency spectrum in the international radio frequency tables administered by the International Telecommunications Union (“ITU”). Access to this globally harmonized spectrum enables us to design satellites, networks and terrestrial infrastructure enhancements more cost effectively because the products and services can be deployed and sold worldwide. In addition, this broad spectrum assignment enhances our ability to capitalize on existing and emerging wireless and broadband applications.

First-Generation Constellation

In the United States, the Federal Communications Commission ("FCC") has authorized us to operate our first-generation satellites in 25.225 MHz of radio spectrum comprising two blocks of non-contiguous radio frequencies in the 1.6/2.4 GHz band commonly referred to as the "Big LEO" Spectrum Band. Specifically, the FCC has authorized us to operate between 1610-1618.725 MHz for “Uplink” communications from mobile earth terminals to our satellites and between 2483.5-2500 MHz for “Downlink” communications from our satellites to our mobile earth terminals. The FCC has also authorized us to operate our four domestic gateways with our first-generation satellites in the 5091-5250 and 6875-7055 MHz bands.

Three of our subsidiaries hold our FCC licenses. Globalstar Licensee LLC holds our MSS license. GUSA Licensee LLC (“GUSA”) is authorized by the FCC to distribute mobile and fixed subscriber terminals and to operate gateways in the United States. GUSA holds the licenses for our gateways in Texas, Florida and Alaska. Another subsidiary, GCL Licensee LLC (“GCL”), holds an FCC license to operate a gateway in Puerto Rico. GCL is also subject to regulation by the Puerto Rican regulatory agency.

Our prior Non-Geostationary Satellite Orbit (“NGSO”) satellite constellation license issued by the FCC is valid until October 2024. This license applies only to our continued use of our first-generation satellites.

Second-Generation Constellation

We licensed and registered our second-generation satellites in France. We also obtained all authorizations necessary from the FCC to operate our domestic gateways with our second-generation satellites. In accordance with this authorization to operate the second-generation satellites, in early 2014, we completed the enhancements to the existing gateway operations in Aussaguel, France to include satellite operations and control functions. We have redundant satellite operation control facilities in Covington, Louisiana, Milpitas, California and Aussaguel, France.

The French National Frequencies Agency (“ANFR”) is representing us before the ITU for purposes of receiving assignments of orbital positions and conducting international coordination efforts to address any interference concerns. ANFR submitted the technical papers to the ITU on our behalf in July 2009. We have continued to pursue this process with the ITU through ANFR and have made significant progress in coordinating our spectrum assignments with other companies that use any portion of our spectrum bands. While we believe the coordination process is nearing completion, we are unable to predict when such process will be completed; however, we are able to use the frequencies during the coordination process in accordance with our national licenses.

Terrestrial Authority for Globalstar's Licensed 2.4 GHz Spectrum

In December 2016, the FCC unanimously adopted a Report and Order permitting us to seek modification of our existing MSS licenses to provide terrestrial broadband services over 11.5 MHz of our licensed Mobile Satellite Services spectrum at 2483.5 to 2495 MHz throughout the United States of America and its Territories, covering approximately 328 million people. In August 2017, the FCC modified Globalstar's MSS licenses, granting us authority

to provide terrestrial broadband services over a portion of our satellite spectrum. Specifically, the FCC modified Globalstar's space station authorization and our blanket mobile earth station license to permit a network using 11.5 MHz of our authorized Big LEO mobile-satellite service spectrum. We will need to comply with certain conditions in order to provide terrestrial broadband service, including obtaining FCC certifications for our equipment that will utilize this spectrum authority.

We believe our MSS spectrum position provides potential for harmonized terrestrial authority across many international regulatory domains and have been seeking approvals in various international jurisdictions. To date, we have received terrestrial authorizations in certain countries. We expect this global effort to continue for the foreseeable future while we seek additional terrestrial approvals to internationally harmonize our S-band spectrum across the entire 16.5 MHz authority for terrestrial mobile broadband services.

We expect our terrestrial authority will allow future partners to develop high-density dedicated networks using the TD-LTE protocol for densification of cellular networks, as well as meeting the growing demand for stand-alone, private LTE networks by

government and enterprise customers. We believe that our offering has competitive advantages over other conventional commercial spectrum allocations. Such other allocations must meet minimum population coverage requirements, which effectively prohibit the exclusive use of most carrier spectrum for dedicated small cell deployments. In addition, low frequency carrier spectrum is not physically well suited to high-density small cell topologies, and mmWave spectrum is subject to range and attenuation limitations. We believe that our licensed 2.4 GHz band holds physical, regulatory and ecosystem qualities that distinguish it from other current and anticipated allocations, and that it is well positioned to balance favorable range, capacity and attenuation characteristics.

In December 2018, we were successful in obtaining approval to create a new defined band class, Band 53, from the Third Generation Partnership Project (3GPP) for our 2.4 GHz terrestrial spectrum. Band 53 can now be utilized in the U.S. as a standalone resource providing a pathway for our terrestrial spectrum to be integrated into handset and infrastructure ecosystems. Additional follow-on 3GPP specifications and approvals are expected in the future.

National Regulation of Service Providers

In order to operate gateways, applicable laws and regulations require the IGOs and our affiliates in each country to obtain a license or licenses from that country's telecommunications regulatory authority. In addition, the gateway operator must enter into appropriate interconnection and financial settlement agreements with local and interexchange telecommunications providers. All gateways operated by us and the IGOs are licensed by the appropriate regulatory authority.

Our subscriber equipment generally must be type certified in countries in which it is sold or leased. The manufacturers of the equipment and our affiliates or IGOs are jointly responsible for securing type certification. We have received type certification in multiple countries for each of our products.

Ground Network

Our satellites communicate with a network of 23 gateways, each of which serves an area of approximately 700,000 to 1,000,000 square miles. We have designed the planes in which our satellites orbit so that generally at least one satellite is visible from any point on the earth's surface between 70° north latitude and 70° south latitude. A gateway must be within line-of-sight of a satellite and the satellite must be within line-of-sight of the subscriber to provide services. We have positioned our gateways to cover most of the world's land and population. We own 13 of these gateways and the rest are owned by IGOs. In addition, we have spare parts in storage, including antennas and gateway electronic equipment. We own and operate gateways in the United States, Canada, Venezuela, Puerto Rico, France, Brazil, Singapore and Botswana.

Each of our gateways has multiple antennas that communicate with our satellites and pass calls seamlessly between antenna beams and satellites as the satellites traverse the gateways, thereby reflecting the signals from our users' terminals to our gateways. Once a satellite acquires a signal from an end-user, the Globalstar System authenticates the user and establishes the voice or data channel to complete the call to the public switched telephone network (“PSTN”), to a cellular or another wireless network or to the internet (for a data call including Simplex).

We believe that our terrestrial gateways provide a number of advantages over the in-orbit switching used by our main competitor, including better call quality, reduced call latency and convenient regionalized local phone numbers for inbound and outbound calling. We also believe that our network's design enables faster and more cost-effective system maintenance and upgrades because the system's software and much of its hardware are located on the ground. Our multiple gateways allow us to reconfigure our system quickly to extend another gateway's coverage to make up some or all of the coverage of a disabled gateway or to handle increased call capacity resulting from surges in demand.

Our ground network includes both our first-generation and second-generation ground equipment. Both our first-generation and second-generation ground network use Qualcomm's patented CDMA technology to permit communication to multiple satellites. Patented receivers in our handsets track the pilot channel or signaling channel as well as three additional communications channels simultaneously. Compared to other satellite and network architectures, we offer superior call clarity with virtually no discernible delay. Our system architecture provides full frequency re-use. This maximizes diversity (which maximizes quality) and capacity as we can reuse the assigned spectrum in every satellite beam in every satellite. In addition, we have developed a non-Qualcomm proprietary CDMA technology for our SPOT and Simplex services.

We have contracts with Hughes Network Systems, LLC ("Hughes") and Ericsson, Inc. ("Ericsson") for our second-generation ground network. Hughes designed, supplied and implemented the Radio Access Network ("RAN") network equipment and software upgrades for installation at a number of our gateways. Hughes also provided the satellite interface chips to be used in our various second-generation devices. Ericsson developed, implemented, and installed our ground interface, or core network, system at our

gateways. The second-generation Ericsson core links our Hughes RANs to the PSTN, cellular networks and Internet. We have additional second-generation RANs that are not yet deployed; we will select locations for further deployment based on coverage optimization, including possible gateway acquisitions.

Industry

We compete in the MSS sector of the global communications industry. MSS operators provide voice and data services using a network of one or more satellites and associated ground facilities. Mobile satellite services are usually complementary to, and interconnected with, other forms of terrestrial communications services and infrastructure and are intended to respond to users' desires for connectivity at all times and locations. Customers typically use satellite voice and data communications in situations where existing terrestrial wireline and wireless communications networks are impaired or do not exist.

Worldwide, government organizations, military, natural disaster aid associations, event-driven response agencies and corporate security teams depend on mobile and fixed voice and data communications services on a regular basis. Global businesses with global operations require communications services when operating in remote locations around the world. MSS users span the forestry, maritime, government, oil and gas, mining, leisure, emergency services, construction and transportation sectors, among others.

Over the past two decades, the global MSS market has experienced significant growth. Increasingly, better-tailored, improved-technology products and services are creating new channels of demand for mobile satellite services. Growth in demand for mobile satellite voice services is driven by the declining cost of these services, the diminishing size and lower costs of the handsets, as well as heightened demand by governments, businesses and individuals for ubiquitous global voice and data coverage. Growth in mobile satellite data services is driven by the rollout of new applications requiring higher bandwidth, as well as low cost data collection and asset tracking devices and technological improvements permitting integration of mobile satellite services over smartphones and other Wi-Fi enabled devices.