STARLINK

PROGRESS REPORT

INTERNET FROM SPACE FOR HUMANS ON EARTH

EXPANDING BOUNDARIES

A third of humanity remains offline, and many more have only basic connectivity, which is often slow, intermittent, and unaffordable. Starlink is making tremendous strides in bridging the digital divide by quickly expanding access to high-speed internet to locations where it has historically been unreliable, unaffordable or completely unavailable.

Fast, reliable internet for many people means access to healthcare, the ability to take online classes, work from anywhere, and communicate with friends and family in real time—and it can even help save lives. Digital connectivity is more than a nice perk, it's a major quality of life improvement, and one everyone deserves access to no matter where they live and work.

HIGH-SPEED INTERNET FROM SPACE ALMOST ANYWHERE ON EARTH.

SpaceX has completed more than 100 launches, placing more than 5,000 Starlink satellites in orbit. With each launch, Starlink adds more capacity to the constellation and continues to expand its coverage, connecting even more underserved people in the hardest to reach areas of the world.

This progress report highlights several remote communities where Starlink is providing fast, reliable, and affordable internet. Rural school districts, counties, and tribal governments are now able to offer online access to education, telemedicine, and many other critical services—in some cases, for the first time ever.

We look forward to furthering Starlink's impact in the coming years as we work toward bringing universal and meaningful connectivity to all.

Starlink is providing service to

2.3M+

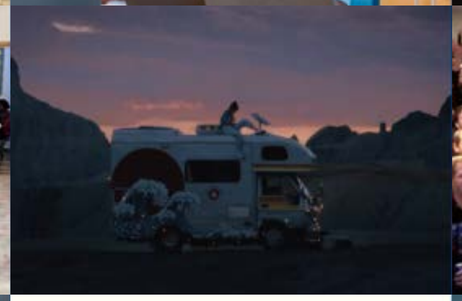
customers in over **70** countries,
and in many more markets around the world,
spanning all **7** continents and oceans.









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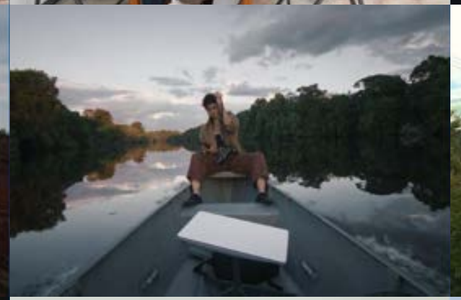





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INTERNET FROM SPACE FOR COMMUNITY IMPACT

People and organizations all over the world are using Starlink and impacting their communities. More than 1,400 kits today are helping 171,000 students stay connected at schools in countries across the globe. And this year alone, Starlink provided 2,420 kits to emergency responders, hospitals, and refugee camps, among many others in support of crisis and recovery efforts globally.

FOR STUDENTS

01

The Rwandan government hopes to enhance its country's education system by bringing internet access to 500 schools. This is a challenge because traditional internet infrastructure is expensive and hard to install in remote areas. The Tony Blair Institute for Global Change, a nonprofit established by former UK Prime Minister Tony Blair, saw Starlink as the solution. The technology is perfect for accessing the internet from isolated or underdeveloped places because users only need a power source to secure connectivity from Starlink satellites in space. The Tony Blair Institute is funding 50 kits to kick-off the program, and the results of this initiative will inform how to bring the remaining schools online as well.

02

In Haiti, the Renand Foundation is making education more accessible. They seek private donations to cover tuition costs and purchase education tools for children who couldn't otherwise afford to attend school. Recently, 1,000 students and teachers benefitted when the foundation received eight Starlink kits and 400 Chromebooks. Now, students have access to teleclasses exploring new ideas, cultures, and possibilities. And teachers can participate in online training.

FOR STUDENTS

03

In Cuba, New Mexico, there was no existing infrastructure for internet access. The local population is sparse, the budget was limited, and tribal, federal and state agencies couldn't agree on a plan to install the traditional fiber optic cables that would be needed to get the community online. Then, the Covid-19 pandemic hit, and educators in the Cuba Independent School District realized their town's lack of connectivity was preventing many students from accessing remote learning. Determined not to let these young minds—most of whom come from Indigenous families—fall behind, the superintendent and staff made a deal to install Starlink in students' and teachers' homes. Over 400 households now have internet access to aid learning and address other realities of rural education, like weather alerts impacting bus transportation, and more.

04

In East Carroll Parish, Louisiana, 63 percent of households do not have internet access. Louisiana State and Delta Interfaith, a coalition of local churches, are aiming to improve digital accessibility through increased connectivity, and so far have secured Starlink for 120 households in the parish. Now more students can access remote learning, and their parents can advance their careers by applying for and accepting remote jobs.

FOR STUDENTS

05

Only 58% of schools in Brazil have computers and internet access for students. While 94% have some connection to the web, it is not good enough to be used as an educational tool. In 2022, iFood and MegaEdu collaborated to help address this issue by donating high-speed internet to 10 rural schools in Cunha and Lages. The goal is to enhance education by giving students access to the wider world.

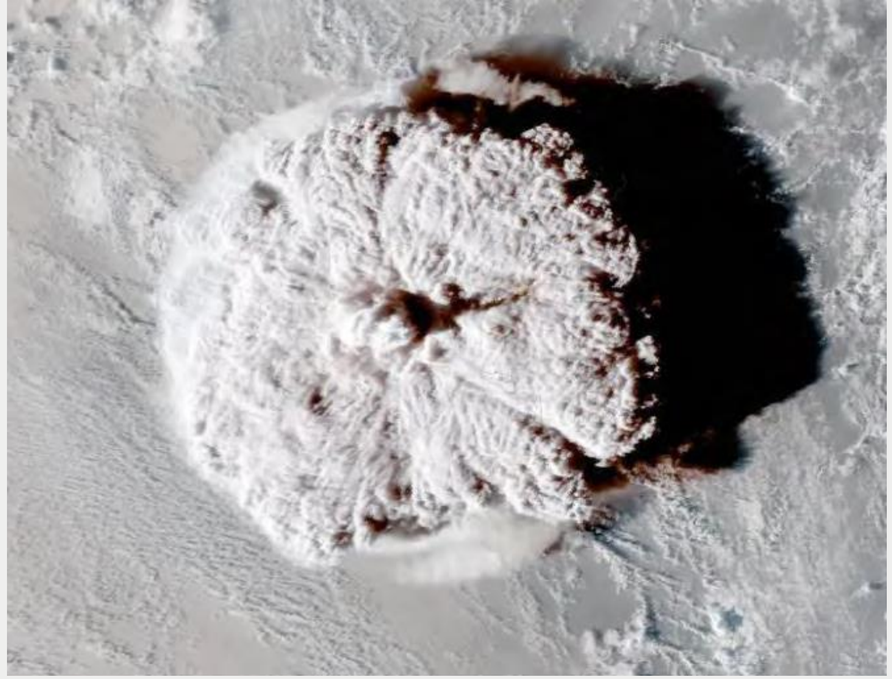
FOR FIRST RESPONDERS

01

After heavy flooding left parts of New South Wales, Australia with no phone or internet access, residents in remote areas were unable to communicate what they needed. A grassroots group of volunteers stepped up, including Australian pro surfer Mick Fanning. He used his social media to help get several Starlink kits to the cut-off communities. The technology was installed on poles to ensure it stayed dry while volunteers carried the supplies on foot through mudslides, downed trees, and other wreckage caused by the floods. Once connectivity was restored to the rural areas, disaster recovery officials were finally able to determine what supplies were needed and where.

02

In July 2021, Western Germany experienced one of the country's deadliest natural disasters when record flooding ravaged the regions of Ahrweiler, Euskirchen, Eschweiler, Stolberg, and Erftstadt. Large swaths of these areas were left without internet and cell service, making it difficult for residents to connect with friends and family. Roughly 1,300 people were reported missing. But after local crisis management teams secured 100 Starlink kits donated by Starlink and Tesla, connectivity was restored, and the number of those unaccounted for dropped to less than 200. Regaining internet access not only brought relief to hundreds of families. It also helped first responders, government officials, and community members coordinate ongoing rescue and relief efforts and start to rebuild.



FOR FIRST RESPONDERS

03

In January 2022, an underwater volcano known as Hunga-Tonga-Hunga-Ha'apai erupted in a blast felt across the entire Pacific region and sent tsunamis crashing onto the shores of Tonga, a small archipelago in the South Pacific Ocean. The government declared a state of emergency, but rescue and relief efforts were hindered by a lack of connectivity once it was discovered the island's undersea fiber communications cable had been severed. With no immediate solutions, the government turned to Starlink to get back online fast and deploy critical support and supplies more efficiently to schools, hospitals and communities across many of its islands.

04

Communities across the globe rely on internet access to provide valuable services to the people who live there. When sea ice severed the under-sea fiber that provided internet and cell service to remote parts of northwestern Alaska and the north slope, it meant government officials, emergency responders, financial services personnel, and business owners could no longer operate at their full capacity. Waiting for the existing infrastructure to be repaired would be time-consuming and costly. Instead, Starlink's satellite-based technology allowed these communities to restore connectivity and resume these vital services more quickly.

FOR FIRST RESPONDERS

05

When bad weather struck the Asubpeechoseewagong First Nation–also known as Grassy Narrows–the remote community could be cut off from internet service for up to a week. The lack of connectivity wasn't just inconvenient. It could also be dangerous if residents weren't able to reach 911 during emergencies, or access vital healthcare services remotely. After reading about the difference Starlink made for the Pikangikum First Nation, Grassy Narrows Councilor Arthur Anderson realized the technology could also be utilized by his community to ensure connectivity, no matter the weather conditions. Now Grassy Narrows residents can take advantage of virtual doctor's appointments, saving thousands of dollars in travel expenses that can instead be invested in improving other critical infrastructure.

FOR HEALTH CENTERS

St. Jude Children's Research Hospital is on a mission to cure, treat, and defeat childhood cancer and other life-threatening diseases. In high-income countries, like the United States, the survival rate of childhood cancer is more than 80 percent. But in low- and middle-income countries—where nearly 90 percent of childhood cancer cases occur—the survival rate is only 30 percent. Increased connectivity expands access to research and treatment options, hopefully improving those odds. In 2023, the Polaris Program donated Starlinks to nine St. Jude Global partners in five countries to do just that. Now, more doctors and healthcare professionals in Chile, Brazil, Peru, Mozambique, and the Philippines can use remote teleconferencing to consult with specialists around the world, collaborate on treatment, transmit critical data, further training and education, and more.

FOR THE NEXT GENERATIONS

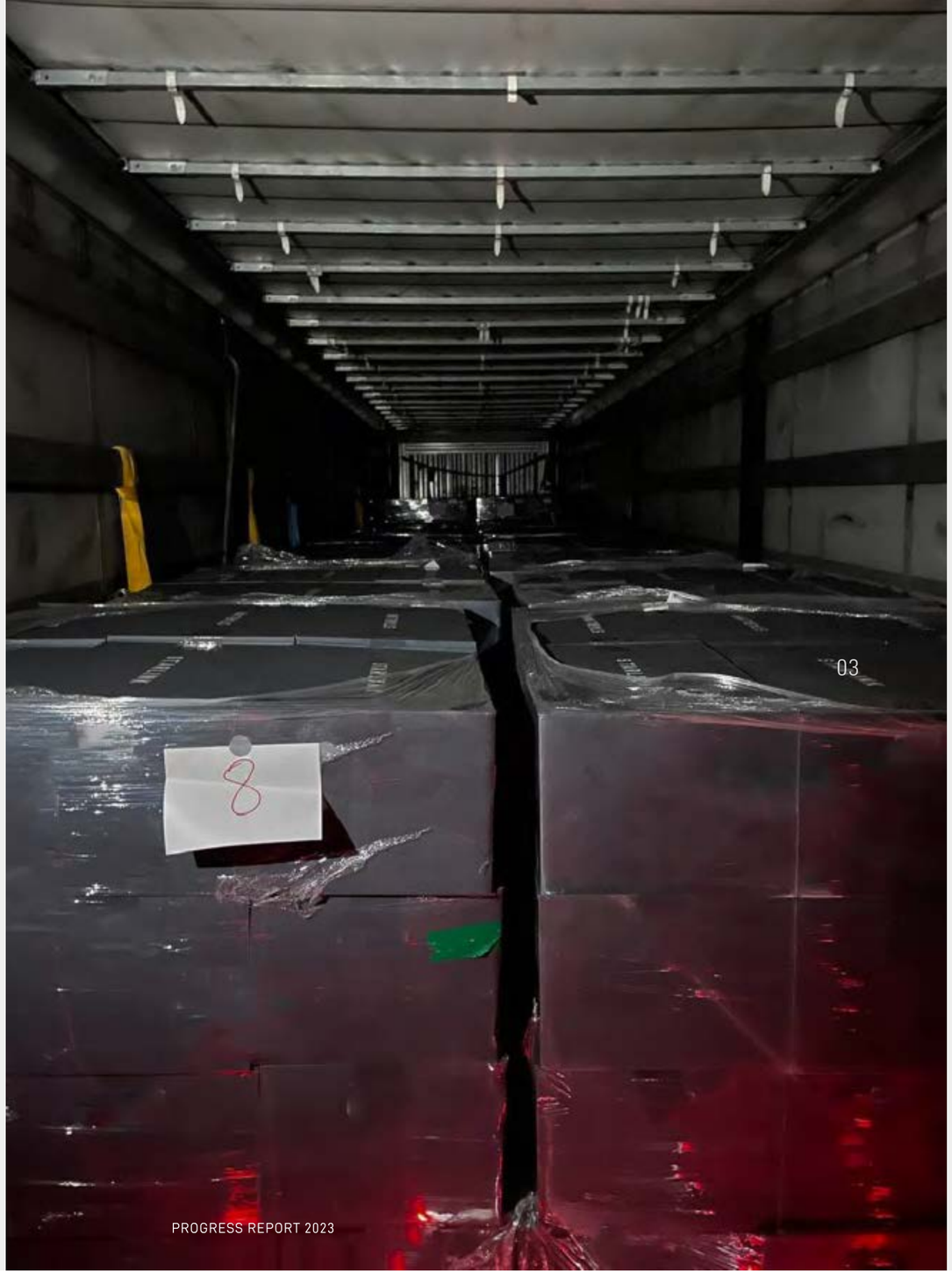
01

Pedro Salazar started Amigos Del Mar in 2010. It's an organization located on an island near Cartagena, Colombia. Before Pedro installed Starlink, a reliable internet connection was not available. Now he uses his own experience to explain to the kids what the internet is. He says, "Imagine Tierra Bomba is an island, and this small island is connected to other islands through the internet." Connectivity is very important to Pedro and his team. They run educational workshops to teach things like English, technology, and recycling. They also organize beach cleanups and other community activities, as well as provide surf lessons.

FOR THE NEXT GENERATIONS

02

When Francisco Luís Vinho discovered skateboarding as a kid growing up in Mozambique, it became a positive force in his life, giving him focus and goals to work toward. In 2006, he founded Maputo Skate, a skatepark and gathering place for the community. He also launched an educational initiative, using Starlink technology to provide internet access and enabling local youth to do their homework and engage in complimentary programming including photography and art workshops, video games, and more. Francisco encourages the young people he works with by saying, "If you want to excel at something, seek information and knowledge, and the internet provides us with that opportunity."



Impact Africa Network (IAN) is a startup that aims to encourage innovation and entrepreneurship among young talent in Africa. In 2023, IAN started utilizing Starlink to facilitate efficient communication among creators across Africa. As a result, the organization now has numerous projects in progress, including an initiative to create 10 companies that will provide 10,000 high-skill jobs and generate $10 billion in value by 2030.

FOR DISASTER PREVENTION

01

Koki Nagata, the General Director of the Aso Geopark in Kumamoto Prefecture, has dedicated himself to reducing the impact of natural disasters in the region. He has addressed the aftermath of the 2012 flood, 2014 eruption, and 2016 earthquake. Nagata stresses the importance of providing timely and accurate information to affected communities, including immediate actions, evacuation supply locations, and overall situation during emergencies. He believes that stable wifi connectivity is crucial for efficiently disseminating this vital information to the public. In remote mountainous areas, Starlink has proven to be a valuable disaster preparedness tool, enabling efficient communication and connectivity. By ensuring stable internet, communities can receive updates, access resources, and navigate through disasters more effectively.

FOR DISASTER PREVENTION

02

Yellowstone National Park is home to a supervolcano, one of the world's largest hydrothermal systems, and experiences up to 2,500 small earthquakes a year. Monitoring all that geothermal and tectonic activity is vital for ensuring public safety, as well as preserving the park's dynamic landscape and natural wonders. But getting to these sites to collect and transmit data has proven challenging since these are remote locations, and communication is often limited to radio and cellular service.

In 2023, United States Geological Survey teams sought to improve the process when they installed a Starlink satellite at Borehole Station B945, near Panther Meadow between Mammoth Hot Springs and Norris Geyser Basin. It quickly became apparent the improved connectivity inside the park could not only streamline data collection, but provide real-time updates and information, as well as serve as a model for other parks services around the world that need reliable communication networks.

FOR REMOTE COMMUNITIES

01

Francisco is one of the leaders of the remote Itaquera community, located in one of the tributaries of the Rio Negro in the Brazilian Amazon. Previously isolated from the outside world due to limited infrastructure and no connectivity, the community now has internet access through Starlink, giving them the ability to communicate, seek help in emergencies, and access educational resources online. This has opened up opportunities for learning, collaboration, and growth within the once-isolated community.

FOR REMOTE COMMUNITIES

02

Navajo Nation families in Coconino County, Northern Arizona used to have drive several miles to get internet. Parents of these families had to scramble to find neighbors with wifi so their children could use it to complete their homework. It wasn't easy or tenable, and students were at risk of falling behind. That's why when Starlink kits were donated to the community, families excitedly lined up to bring the internet into their home. Starlink enabled them to learn more about their interests and advance their skills from attending online courses, earning degrees, to mastering how to play the cello, piano and guitar.

FOR REMOTE COMMUNITIES

03

In 2023, the Manitoba government, Manitoba Association of Chiefs of Police, and Manitoba Keewatinowi Okimakanak came together to figure out how they could engage more remote First Nations communities with the local justice system. Because many Indigenous Peoples live in rural parts of the province, they knew increased connectivity was key and secured grants from the Canadian government to make Starlink internet more widely available. Now First Nations community members can attend court appearances virtually, access victim's services, and seek other resources aimed at reducing crime and increasing public safety.

FOR REMOTE COMMUNITIES 04

Four years ago, with remote work on the rise, Yuge Masanori left city living behind to embrace a nature-centric life in the mountains in Ehime Prefecture, Japan. Initially, he relied on his phone for internet access. But speeds were so slow, it took hours to upload a single 30-minute video. When he upgraded to Starlink, it made the information and tools he needed to live and work efficiently instantly accessible, despite his secluded location. Now Yuge hopes to inspire other like-minded people to embrace mountain living the way he has.

INTERNET FROM SPACE FOR EXPLORERS

People from all over the world can now travel, explore and stay connected like never before.

FOR EXPLORERS

01

Internet and cellular service isn't just hard to find in the places drone videographer Islay Petrie travels for work. Often, the infrastructure doesn't even exist. But with Starlink, she can stay connected wherever she goes, whether that's capturing Icelandic volcanos erupting, soaring high above Italy's Dolomite Mountains, or researching her next project touring salt flats in Bolivia. Having guaranteed internet access in the remotest parts of the world doesn't just fuel Islay's career. As a woman traveling alone, it also promotes her safety. "There are so many of us that don't want to live a conventional life," she says "We don't feel connected to just one place because we know there's so much out there for us." Now she has the freedom to do things her own way.

FOR EXPLORERS

02

Trent Arant has chosen a unique lifestyle that involves traveling across the U.S. while gaming and live streaming from his converted camper van. He uses Starlink to access the internet from wherever he's parked, allowing him to revel in the captivating backdrops of mountains, beaches, and forests, while also staying connected with friends and family virtually. "Gaming in nature might sound counterintuitive to most people," Trent explains. "But for me, it's therapeutic. It's a lot like reading a book on a beach. It's just a different format of entertainment and relaxation."

INTERNET FROM SPACE FOR BUSINESSES BIG AND SMALL

Businesses everywhere are finding new ways to connect and thrive.

FOR SMALL BUSINESSES

01

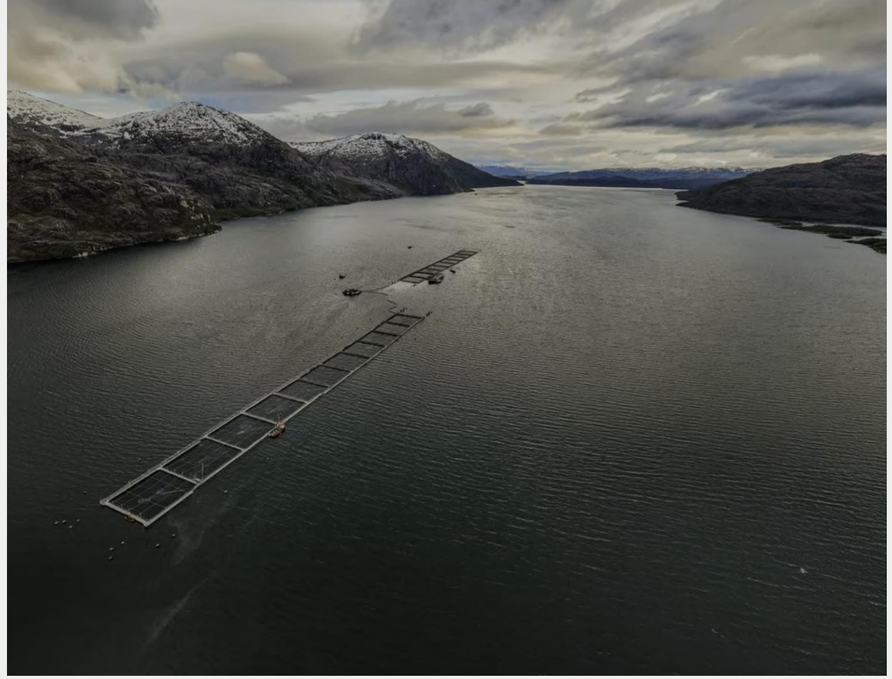
Kozue Tobo is a skilled furniture craftsman who takes her inspiration from nature. Four years ago, she moved to Oguni Town in Aso County, Kumamoto Prefecture, Japan, to live and work in the middle of a forest. Surrounded by Oguni Cedar trees, she finds inspiration for her work and appreciates the ability to connect with nature. Kozue believes that Starlink will be beneficial for people like her who work remotely without easy internet access, as it enables communication with the outside world.

"Because I am surrounded by trees I can work while thinking about trees and forests. It is really the power of the Internet that makes it possible to communicate with people outside of here."

FOR SMALL BUSINESSES

02

The Vassoler family, a small dairy producer in Jóia, Brazil, has successfully overcome the challenges posed by their remote location and lack of infrastructure thanks to Starlink. With reliable internet connectivity enabled by Starlink, they have been able to enhance their cheese production through research and development, expand their customer base through effective marketing, and streamline their business operations. They can now handle online transactions easily, manage their inventory efficiently, and ensure compliance with taxation regulations. Starlink has significantly reduced the administrative burden on the family, enabling them to focus more on the core aspects of their business.



FOR REMOTE BUSINESSES

01

AquaChile is a commercial fishing operation with farms located across south Chile and elsewhere, many of them 1,000 km away from its headquarters in Puerto Montt, Chile. As the world's second second-largest salmon farmer, AquaChile takes the health of its fish seriously. But the remote locations of their operations made it difficult to efficiently monitor the feeding and health of its fish, and required workers to live far away from their families. Since the company invested in Starlink technology, it's been able to streamline the process, enabling the company to control and monitor the food supply and veterinary care for its fish without requiring employees to live in these isolated places.

02

In the midwest, Casey's Convenience stores act as a community hub, a place to meet neighbors, fill up your tank with gas, and pick up a pizza for dinner with the family. The company has around 2,500 locations around the country, over half of which are in rural towns with a population of under 5,000 people. The existing internet infrastructure was unreliable in many of these places, and required the company to make and manage hundreds of different accounts with local service providers. Once Casey's invested in Starlink technology to consolidate connectivity for all of its stores, it streamlined their business and admin operations, allowing employees to focus on providing the exceptional guest services the brand is known for.

FOR REMOTE BUSINESSES

03

Sailors play a crucial role in facilitating global trade. They spend months at sea, shipping goods across thousands of miles of ocean. Before the industry started utilizing Starlink, this meant sailors were isolated, cut off from friends and family while on the job. But now that they can access the internet from anywhere, they can stay connected to loved ones and conduct business more efficiently while navigating the high seas, thanks to improved access to cloud-based applications like Microsoft365, more reliable operational communications, and improved cyber security.

04

Going on a cruise used to mean sacrificing connectivity. But no more, now that major cruise lines are embracing Starlink. 300 cruise ships are now set to use Starlink. Having access to high-speed internet from anywhere on the high seas means guests can check in with friends and family back home, stream their favorite shows and movies, and stay on top of email, all while still enjoying their vacation. Employees can also stay connected to those who matter to them most, while benefiting from improved operations, like onboard equipment monitoring and real-time communications with shore teams.

FOR REMOTE BUSINESSES

05

Brightline is a sustainable commuter rail company operating in south Florida. Their focus is on providing an elevated guest experience, which requires dependable, fast connectivity so passengers can work, relax, and stay connected while traveling between destinations. With Starlink, Brightline has been able to deliver that and help pioneer the railroad industry's broader digital transformation.

06

JSX is a hop-on, semi-private jet service. As part of that luxury experience, executives turned to Starlink to ensure its passengers had high-speed internet access from gate-to-gate without having to deal with complicated sign-in procedures, added terms and conditions, or additional charges that commercial flights require to access their in-flight wifi. Now all JSX customers have to do is walk onboard from one of the carrier's private terminals and Zoom, Facetime, make calls, and use the internet without interruption.

STAYING CONNECTED

Starlink is being used for more than just residential and emergency management. Industries worldwide are realizing its potential to revolutionize secure, global communications. Nowadays, technology is available for various uses, including products for individuals and businesses.

STARLINK FOR PEOPLE

RESIDENTIAL

Starlink offers residential users the opportunity to engage in activities that were previously not possible with satellite internet. Setting up Starlink is a simple process that involves plugging in the equipment and pointing it towards the sky. The service is designed for self-installation and requires an unobstructed view of the sky. Customers can download the Starlink app to determine the best installation location.

ROAM

Starlink enables work and play at remote locations. It connects within minutes and can be easily packed up when it's time to move to the next destination. With the flexibility of pay-as-you-go billing, users can pause and un-pause the service at any time, allowing for customization based on individual travel needs. There are more than 300,000 customers currently using Starlink while traveling.

STARLINK FOR PEOPLE AND BUSINESSES

BOATS

Starlink provides high-speed, low-latency internet connectivity for maritime applications. Whether in motion or anchored, users can enjoy streaming movies, making video calls, playing video games, and more. Designed to withstand extreme conditions at sea, including cold, heat, sleet, heavy rain, and hurricane winds, Starlink offers reliable internet access in even the most challenging environments.

FIXED SITE

Starlink is providing connectivity to more than 60,000 fixed site businesses and growing. With path redundancy through multiple satellites and ground stations, businesses can experience minimal disruption. Starlink also provides 24/7 support with priority plans and dedicated Enterprise Account managers available at scale. With reliable high-speed internet, Starlink ensures that businesses can keep running smoothly.

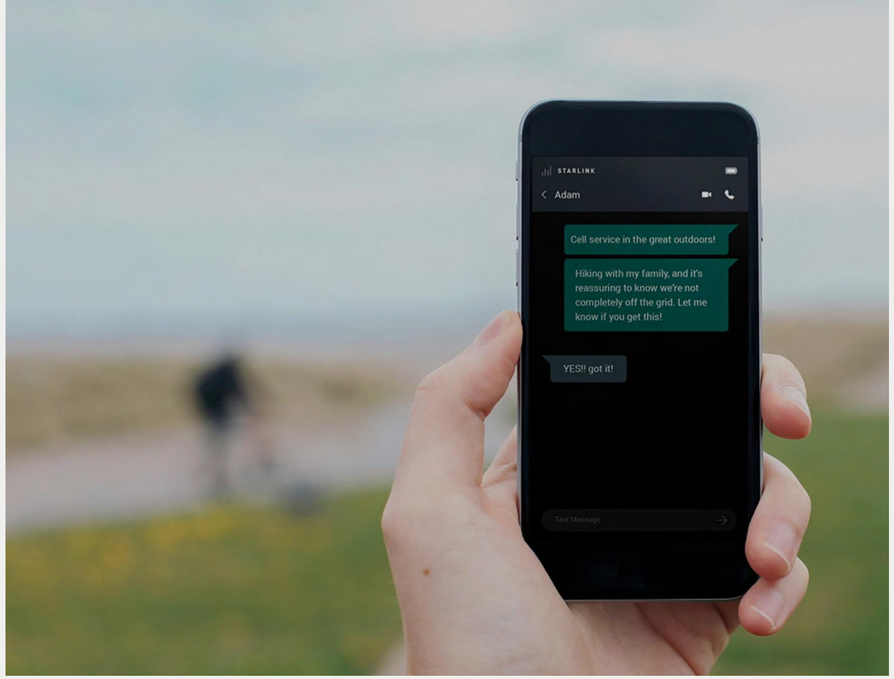
STARLINK FOR BUSINESSES

LAND MOBILITY

The Flat High Performance Starlink has enhanced GPS capabilities, connecting to more satellites for consistent throughput while in-motion. Starlink operates seamlessly anywhere, at any time. Whether operating 10 or 10,000 vehicles, Starlink enables remote monitoring and management of your Starlink fleet from a single portal.

MARITIME

Starlink for Maritime delivers faster speeds and network priority - meaning your data is prioritized whether at port or on open waters. With the ability to withstand extreme cold, heat, sleet, heavy rain, and hurricane winds, it's possible to monitor and manage your Starlink fleet from a single portal, always maintaining end-to-end encryption. More than 10,000 vessels are now connected with Starlink.



STARLINK FOR BUSINESSES

AVIATION

With latency as low as 20 ms, Starlink has enabled activities previously not functional in flight, including seamless video calls, online gaming, and uninterrupted access to virtual private networks on more than 30,000 flights to date. Currently installed and being used on more than 80 aircraft with over 400 additional planes on contract, including for 6 commercial airlines around the world, Starlink's low-profile Aero Terminal features an electronically steered phased array antenna for new levels of reliability, redundancy and performance.

DIRECT TO CELL

Direct to Cell will extend connectivity to previously unreachable areas, such as mountain ranges, coastal waters, and other remote areas. Direct to Cell will provide peace of mind for its subscribers by eliminating dead zones and providing nearly complete coverage to existing phones anywhere with a clear view of the sky.

STARLINK FOR BUSINESSES

COMMUNITY GATEWAYS

Community Gateways provide another way for the Starlink constellation to deliver fiber-like connectivity speeds directly to remote communities, with local service providers using last-mile Wi-Fi, LTE, or fiber to bring the internet from the Community Gateway to homes and businesses. To date, Starlink's two million customers have connected to the network through our fronthaul links, or user terminals, which allows Starlink to deliver 100+Mbps connectivity to homes and businesses. Community Gateways supplement existing Starlink service in a remote area by providing Gigabit connectivity (up to 10 Gbps today) via our high-bandwidth gateway antennas. Our first Community Gateway is currently serving residents and businesses on the remote island community of Unalaska, Alaska.

BACKHAUL

Backhaul connection is crucial for ensuring efficient and reliable communication between the end-users and the broader network infrastructure. Backhaul services from Starlink help connect cell towers to the service provider's core network. Traditionally, satellite backhaul services have not been preferred due to capacity and latency requirements from service providers as the cellar network moved to 4G and 5G services. Thanks to Starlink's laser interlinks, the constellation is readily positioned to serve as a reliable, low-latency backhaul provider.

ENGINEERED BY SPACEX

TECHNOLOGY

SpaceX firmly believes in an iterative approach to technology development and testing that leads to a quick deployment of enhanced capabilities and increased quality of our products. This approach has allowed us to rapidly evolve the reusable Falcon rocket into the world's most reliable launch vehicle, remain nimble in our development of Starship, and design and operate an increasingly capable Starlink constellation that pushes the frontiers of in-space communications.

Starlink satellites are designed and built for high reliability and redundancy in both supply chain and satellite design to successfully carry out their five-year design life. Rigorous part and system-level screening and testing enable us to reliably build and launch satellites at very high rates. We have the capacity to build up to 55 satellites per week, and we have capacity to launch 200+ satellites per month. This is an unprecedented rate of deployment for a complex space system — and reflects SpaceX's commitment to increase broadband accessibility around the world with Starlink as soon as feasible.

NEXT GENERATION STARLINK SATELLITES

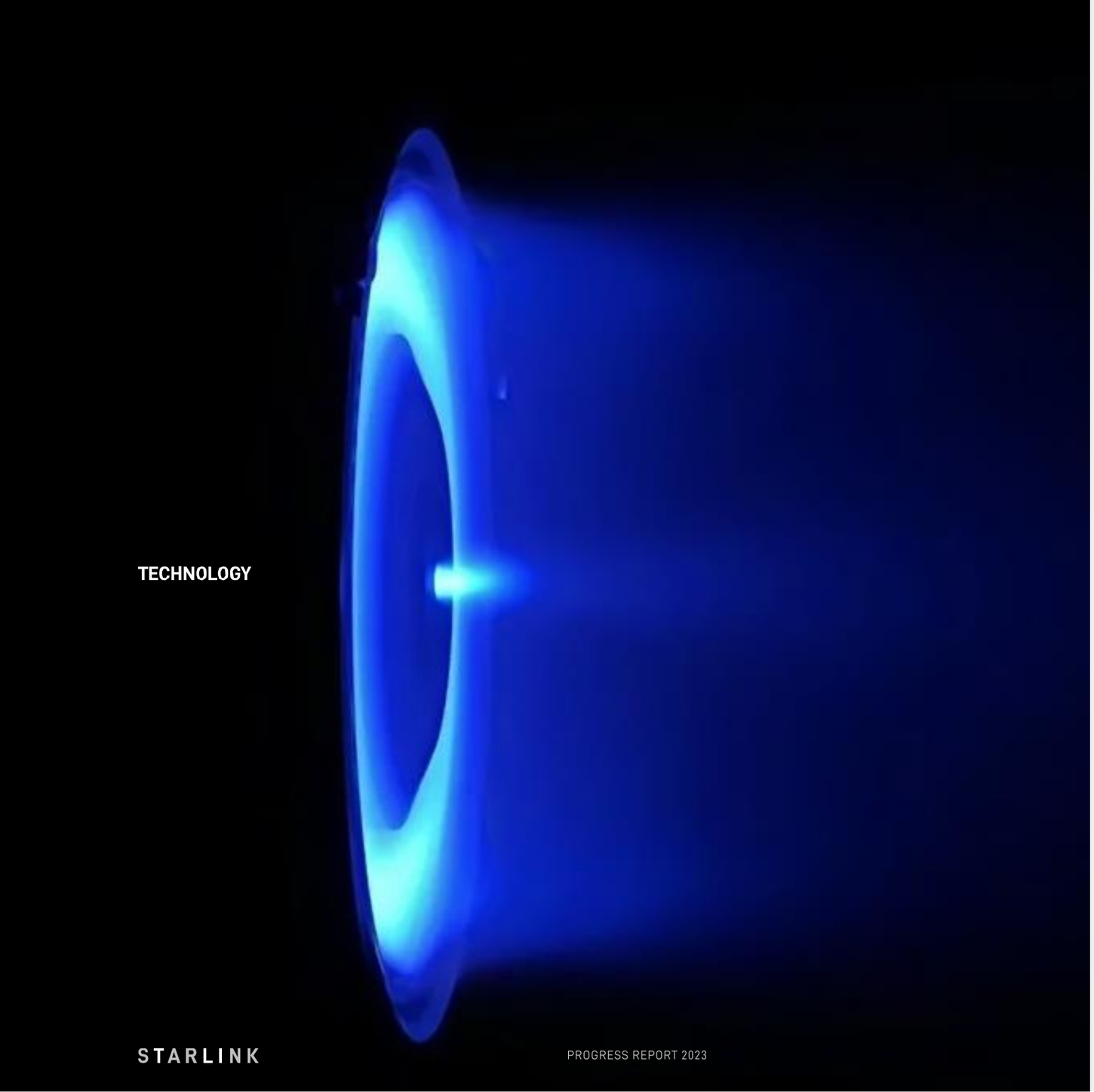
We call these satellites "V2," and there will be two separate versions of this satellite design: one that is compatible with the Falcon 9 launch vehicle, and one that is compatible with the Starship launch vehicle. When we launch V2 satellites on Falcon 9, they are not the full-size version that are designed to be launched on Starship. The V2 satellites launched on Falcon 9 are a bit smaller, so we affectionately refer to them as "V2 Mini" satellites. But don't let the name fool you, a V2 Mini satellite has four times the capacity for serving users compared to its earlier counterparts. For the end user, this means more bandwidth and increased reliability. As a result, millions of more people around the world will have access to high-speed internet no matter where they live.

TECHNOLOGY

DARK MODE

SpaceX's philosophy is not only the safe use of space, but the sustainable use of space as well. This means being good neighbors...not only to the other satellites in orbit, but to the astronomy community on the ground. Bright, reflective satellites in orbit can interfere with ground-based astronomy, and SpaceX is committed to making satellite designs as dark as possible. In our first generation, we implemented a variety of methods including sunshades, darkening reflective surfaces, applying mirror films to the underside of the satellite, changing the color of the back side of our solar arrays and reorienting satellites to minimize the reflectivity of sunlight directed toward the ground. With our second generation of Starlink satellites, we found the most effective way to minimize the brightness is to cover the bottom of satellites with a dielectric film that more effectively reflects sunlight away from observers on the ground, significantly reducing the impact to ground-based astronomy.

The next generation satellite, designed to take advantage of Starship's unique launch capabilities, will use everything we've learned in our first two generations, and will be specifically designed to minimize brightness while also increasing the number of customers it can serve with high-speed internet access. While SpaceX is the first large constellation manufacturer and operator to address satellite brightness, we won't be the last. As launch costs continue to drop, more constellations will emerge, and they too will need to ensure that the optical properties of their satellites don't create problems for observers on the ground. This is why we are working to make this problem easier for everyone to solve in the future by publicly sharing what we've learned.



TECHNOLOGY

THRUSTERS

Thrusters are critical for on-orbit operations, from raising orbits to collision avoidance maneuvers to deorbit at the end of a satellite's life. Starlink satellites use Hall effect thrusters. On the first generation, the satellites used krypton gas as propellant for these engines. With the second generation of satellites, our teams levered new innovations in propulsion technology to switch to argon gas as the propellant instead. This move enabled each satellite's engine to produce 2.4x the thrust of a first generation engine with a 1.5x increase in specific impulse — the measurement of how efficient an engine uses propellant v. the thrust it produces.

TECHNOLOGY

LASERS

The real game-changer. SpaceX is proud to be the first company to develop and deploy an in-space laser communications mesh. The Space Lasers that make up this mesh are the first of their kind and engineered completely in-house, with Starlink teams being the first to achieve mass manufacture and operation of laser terminals at scale. This technological breakthrough in both hardware and software unlocks Starlink's ability to deliver a seamless user experience, from densely populated regions to the most remote places on Earth, including maritime and intercontinental aviation routes. With more than 9,000 space lasers across the constellation, Starlink satellites are able to connect over 3,000 kilometers apart, beyond the view of ground stations, and maintain pointing accuracy to enable data transfer up to 100 Gbps on each link. This allows us to optimize Starlink's capabilities and balance peak demand in heavily congested markets between Gateways and Points of Presence thousands of kilometers apart.

NEW FACTORY

Near Austin, Texas is our new manufacturing facility for the next generation Starlink kits and accessories. This 706,000 square foot, state-of-the-art facility in the city of Bastrop will expand production of Starlink kits exponentially as we race to keep up with surging demand for connectivity all around the world.

SPACE SAFETY AND SUSTAINABILITY

SpaceX is committed to keeping space safe, sustainable and accessible, protecting astronauts and satellites in orbit and the public on the ground. SpaceX has demonstrated this commitment through action, investing significant resources to ensure all our launch vehicles, spacecraft, and satellites meet or exceed space safety regulations, standards and best practices. We design and build highly reliable, maneuverable satellites that have demonstrated reliability of greater than 99%, and we continually invest in Starlink to make sure the system is a safe as possible. There are a few ways we do this.

SPACE SAFETY

TRANSPARENTLY SHARING ORBITAL INFORMATION

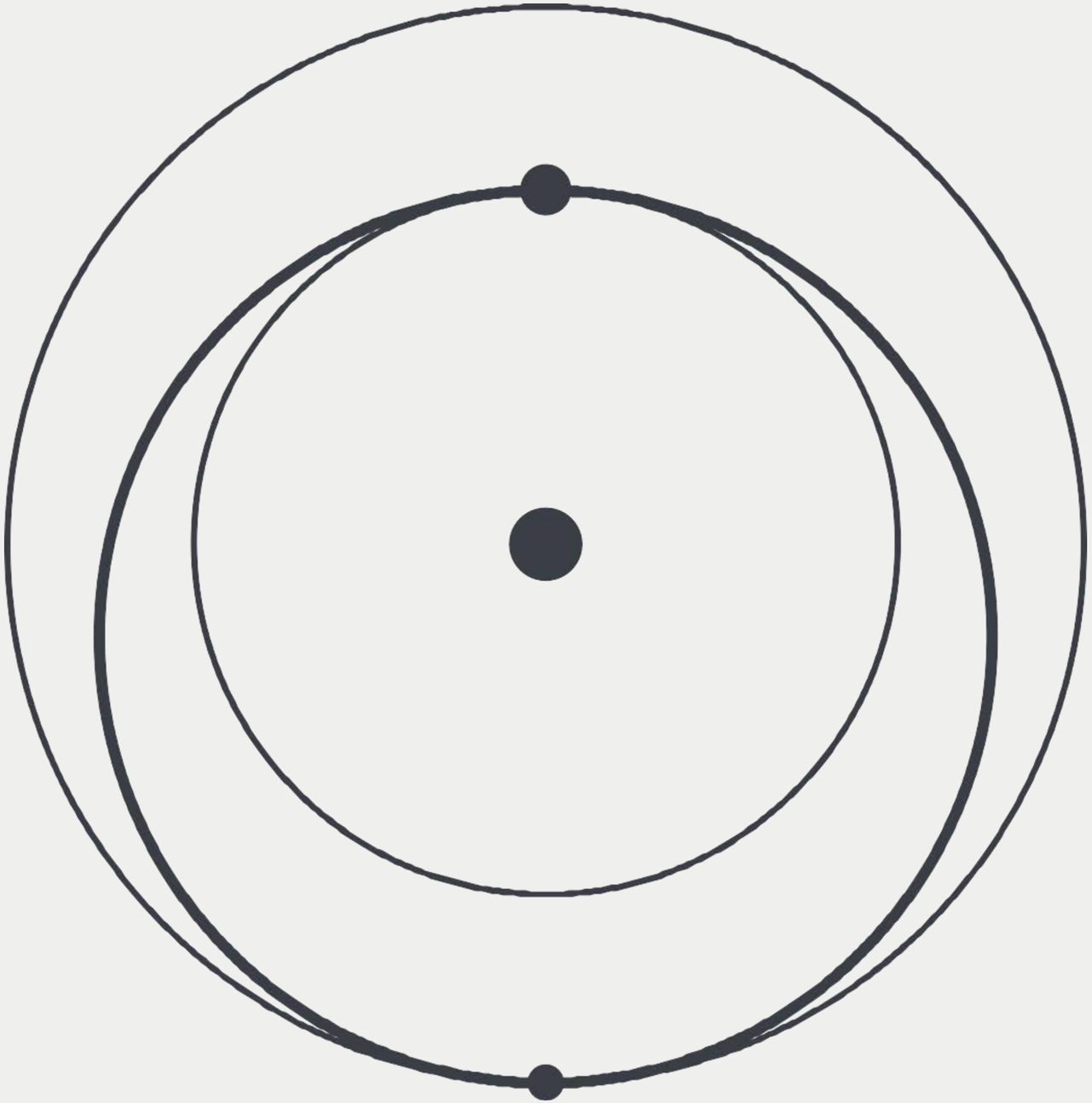
Knowing where every satellite is in orbit is critical to space safety and properly understanding the risks of conjuctions. This is true not only for SpaceX, but for every single operator in low Earth orbit. Three times per day, SpaceX shares high-fidelity, future position and velocity prediction information for all Starlink satellites publicly for anyone to access. SpaceX actively encourages every satellite operator to proactively release information on their satellites' positions, as quickly as possible after orbital insertion, including pre-launch information for which orbits satellites will be deployed into.

LOW ORBITS

Starlink operates in a low Earth orbit below 600 km altitude. Atmospheric drag at these altitudes will deorbit a satellite naturally in 5 years or less, depending on the altitude and satellite design, should one fail on orbit. While Starlink satellites have a reliability rate of 99%, and SpaceX will actively deorbit them at the end of their service, operating in low orbits is a crucial element to space safety. Additionally, Starlink satellites are initially launched into even lower orbits of approximately 300km. If a satellite doesn't pass initial checkouts, it is deorbited even more quickly than those at higher, operational altitudes. Starlink satellites are also fully demisable, meaning nothing of them survives reentry – keeping those on the ground safe.

AUTONOMOUS COLLISION AVOIDANCE

Knowing where satellites are in orbit and the risk of a conjunctions allows operators to move their spacecraft out of the way of each other when it's safe to do so. Our Starlink satellites take this one step further with autonomous collision avoidance – meaning Starlink uses known satellite tracking data to automatically determine the risk of a collision and take appropriate action to reduce that risk. If a Starlink satellite needs to maneuver, it takes the active role, eliminating the need for another company to move its satellite. Before the maneuver, automatous avoidance system screens against all known objects in orbit that might intersect the new orbit. This ensures that moving to avoid one satellite doesn't create potential collisions in the following hours or days. In the last six months, each Starlink satellite performed an average of 10 avoidance maneuvers. While that might sound like a lot, Starlink uses a higher threshold of safety than the rest of the industry. If each Starlink satellite only maneuvered based on industry standard, they would, on average, perform only one avoidance maneuver every six months. Using a more conservative threshold further ensures we keep space safe, sustainable and accessible. In addition to maneuvering to reduce collision risks, Starlink satellites can also flatten themselves out by repositioning their solar arrays. This ability takes advantage of Starlink's unique flat design to further reduce the probability of collisions when needed.



SpaceX was founded to revolutionize space technology towards making life multiplanetary.

Starlink is engineered and operated by SpaceX. As the world's leading provider of launch services, SpaceX is leveraging its deep experience with both spacecraft and on-orbit operations to deploy and operate the world's most advanced broadband system and provide high-speed internet from space for people on Earth.

THANK YOU TO THE WHOLE COMMUNITY OF EXTRAORDINARY PEOPLE USING STARLINK IN EPIC AND EVERYDAY WAYS.

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