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Shareholder/Analyst Call

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Table of Contents

Call Participants 3
Presentation 4
Question and Answer 16

Call Participants

EXECUTIVES

Mark D. Dankberg
Co- Founder, Chairman & CEO

Unknown Executive

Presentation

Operator

Welcome to the 2020 Annual Meeting for Viasat, Inc. Our host for today's call is Mark Dankberg, Chairman and Chief Executive Officer. [Operator Instructions]

I will now turn the call over to your host, Mr. Dankberg. You may begin, sir.

Mark D. Dankberg
Co- Founder, Chairman & CEO

Okay. Good morning, everyone. I'd like to now call the meeting to order. This is Mark Dankberg. I am Chairman and Chief Executive Officer of Viasat, and it's my pleasure to welcome all of you here today to our annual meeting of shareholders. And we're hosting our annual meeting virtually this year to help protect the health and well-being of our shareholders, employees and directors.

Before starting with the formal business, I'd like to take an opportunity to introduce our directors and officers. We're pleased to have them with us today. Our Board of Directors is Rick Baldridge, who's also our President and Chief Operating Officer. Bob Johnson; Sean Pak, Varsha Rao, John Stenbit, Theresa Wise and Harvey White. And before we move on, I do want to take a moment just to thank Harvey and give our appreciation. He's completing his service as a director today, and we really have appreciated his leadership and advice over the past 15 years.

We have a few members of our executive team here, including Shawn Duffy, our Chief Financial Officer; and Robert Blair, our General Counsel. Then also with us today are Glenn Bier of PricewaterhouseCoopers, our independent auditors; Craig Garner Latham & Watkins, outside legal counsel; and Brett Church, associate General Counsel of Viasat who will be serving as the inspector of elections.

So we'll start with the formal business of the meeting, which consists of 4 proposals. After voting polls are closed, the votes for each proposal will be counted, and preliminary voting results will be announced. Then after the formal meeting has been adjourned, I'll give a presentation on the state of the company. Then we'll provide time for general questions.

Should you desire to ask a question during the formal portion of the meeting, please submit your question in the designated field in the web portal. Only validated shareholders may ask questions during the meeting. Out of consideration for others, please limit yourself to one question. Thanks for your cooperation with these rules.

So all stockholders of record as of the close of business on July 10, 2020, or holders of a valid proxy are entitled to vote at today's meeting. The inspector of election has a complete list of the stockholders on the record date. If you have previously voted by proxy over the Internet or by telephone, you do not need to vote today unless you want to change your vote. If you have not previously voted, you can still vote today using the voting button in the web portal. The inspection of election has informed me that a majority of the voting power of all issued and outstanding stock entitled to vote on the record date is represented by a proxy, and that a quorum is present for purposes of the meeting. So we'll now open the polls.

There are 4 items of business on today's agenda. First proposal is the election of Mark Dankberg and Varsha Rao to serve as directors for a 3-year term expiring at the 2023 annual meeting of the shareholders. Proposal 2 is the ratification of the appointment of PricewaterhouseCoopers as our independent auditor for the 2021 fiscal year. Proposal 3 is an advisory vote on executive compensation. And proposal 4 is the approval of the amended and restated 1996 equity participation plan. Each of these proposals is described in detail in the proxy statement.

[Voting]

Mark D. Dankberg
Co- Founder, Chairman & CEO

So while we allow time for stockholders who have not already done so to complete their voting, I'd like to remind you that some of the statements during the presentation following the formal portion of the meeting may be considered forward-looking. We urge you to review the cautionary statements and other information contained in the company's SEC filings, including our annual report on Form 10-K and quarterly reports on Form 10-Q, which identify certain factors that could cause actual results to differ materially from those projected in any forward-looking statements.

Okay. At this time, the polls are now closed. The inspector of election has informed me of the preliminary voting results, and I'm pleased to report that our stockholders have approved each of the 4 proposals on this year's ballot. We will report the final voting results in a Form 8-K to be filed within 4 business days.

Okay. So our secretary will file the proof of notice of this meeting and the certificates of the inspector of election with the minutes, and the meeting is now formally adjourned. As I indicated earlier, I'll now give a presentation regarding the state of the company. And following that, I'll respond to questions submitted during the meeting.

And if you can read that, there's the forward-looking statements indeed. So Viasat's completed over 34 years of very steady financial growth, and the -- our growth in the recent years has been among the fastest in our history. I think we have a lot of good momentum. This slide gives you a sense of the track record of growth for both revenue and adjusted EBITDA over about the last 10 years. And you can see that revenue has grown at a compounded annual rate of about 13%; and adjusted EBITDA, a little bit faster at about 15%.

At the same time, we've been able to invest in research and development, and you can see that in the red line in the blue chart, in the blue chart -- bar chart at the bottom. A lot of that investment has gone into our Viasat-3 Constellation, and I'll talk about that in some more detail during this presentation. But one of the main points here, and we've discussed this in the past, is that because we're building the payloads for the Viasat-3 Satellite ourselves, we've expensed in R&D a substantial amount of money that had we taken a more normal course and just purchased the satellites from a third party, we would have been able to show hundreds of millions of dollars of additional earnings in the last 5-year period.

And in this chart, which we talked about in our earnings call a few weeks ago, gives you a snapshot of how things are going for at the beginning of the fiscal year '21. So we completed the first quarter of that in June 30. And then it also shows, just for context, the last 12 months on the previous running 4 quarters. You can see we've had only a very slight downtick in revenue in the first quarter on a year-over-year basis, as we've discussed previously, pretty much completely due to the reduction in air travel due to the COVID situation. But on a last 12-month basis, our revenue is still up at $2.3 billion for the last 4 quarters, and adjusted EBITDA is up both for the quarter on a year-over-year basis and significantly on a running 12-month basis. Another very important point is we had a very strong quarter in new contract awards in the June quarter, which, as you'll see as we go through the presentation, bodes well for continued growth over the next few years.

One point we like to make is one of the main drivers for our growth is our ability to deliver Internet from space to the hardest-to-reach places in the world. And that's a capability that's already having a big impact in many places around the world, whether it's in flight, at sea or very rural communities in the U.S. or internationally.

And just as a reminder, unfortunately we haven't updated it for 2020 yet, but we were selected on the Change The World List. And one of the points that we made is that some of the largest companies in the world that were on the list, such as IBM or JPMorgan ranked -- actually came out lower on the list than Viasat did. Viasat was #12 on the list, and I think that's indicative both of how impactful it is to be able to deliver broadband connectivity in the places that we do and what large opportunity, how much demand there is for that capability.

So we have grown pretty much every year for 34 years, and we see very good prospects for continued growth in our future. Now I'm going to go into -- out of depth on that, but one of the main points I'd like to make is that the markets that we're in are all likely penetrated and have lots of room for growth for broadband connectivity. And as Chuck gives you a sense of all the different vertical markets that we're in within home internet, being the first one that we entered because essentially we could go directly to our customers, many of the other ones are really attractive markets but often involved working with some main customer who represents the people that are going to be connected through those. So that could be airlines who choose us to serve their passengers in flight, it could be cruise lines, it could be different defense organizations. And so sometimes it takes longer to penetrate those markets than it is when going directly to consumers, but those markets are really sticky, and they've been very good for us. We've had great success in each of those markets.

So this next slide give you a sense of the way we've transformed the company in the 10 years that I showed for the recent revenue and adjusted EBITDA growth. So back in our fiscal year 2010, revenues of just under $700 million. Fiscal year 2020, $2.3 billion. So we've grown revenue by more than a factor of 3. And our collections are correct, grown adjusted EBITDA by about a factor of 4. And you can see that we have a much more diversified business base where services, subscription services, have grown to be 49% of our revenues. Those subscription services are in a number of different areas on the commercial -- mostly on the commercial side and reporting in our Satellite Services segment but also represent a significant part of our government systems revenue as well.

One of the points that we would also like to make is that we want a diverse portfolio of Satellite Services business. And you can see we've talked about these same businesses for several years now with a progression from the bottom to the top, being that the ones near the top are generally more satellite-centric. Then that means that satellite is often the only way that those top -- especially those top 3 vertical markets can be connected because of where they're located over oceans or up in -- high in the air and in dynamic motion. And also in order to deliver those services to those markets, it's generally a lot more domain-specific or market-specific integrated services that need to go along with them. That often includes integration on certain types of vehicles or air platforms, integration with the communication systems onboard those platforms and also work on cybersecurity or other aspects that are very important to each of those markets. So that makes them, as I kind of alluded to before, make the markets take a little bit longer to penetrate, but it also creates barriers to entry or opportunities for us to differentiate our services even more.

So I'll talk a little bit about each of the main vertical markets for us just for a few seconds here. So first of all, government business has seen very strong growth over a very sustained period of time with revenue in that segment reaching over $1.1 billion in fiscal year '20, the year just ended. So 15% compounded annual growth rate in adjusted EBITDA for that market over that same period of time.

And the government market can be complicated. Some of the main drivers of that market, we think, are not only still in place but are becoming more important. One of the most significant is the change in the missions that the Defense Department has to deal with now with much more emphasis now on near-peer threats that's dealing with countries that have technology capabilities very close to that of the U.S. So that's having a big impact on the way that the Defense Department will perform its missions. The missions growth is expanding because we still have to deal with some of the elements of the global war on terror, which has preoccupied our Defense Department for over a decade that it's now probably receiving relative to the near-peer threats.

The other big issue is that it's become very, very apparent in dealing with the modern threats and modern warfare that artificial intelligence is often done in cloud-based data center activities because of the intensity, the amount of computing power needed to do those calculations, very big factor, which follows much more transmission. We'll talk about that just a little bit more.

And then the other thing is that the pace of change has become so great that it's much more difficult for the defense acquisition system to keep up. So that's created opportunities for us, where we've learned to be able to work within the government regulations. We could go at a pace that's faster than the more conventional acquisition system can support. And one of the artifacts of that, that we've spoken about is, in addition to our large backlog of orders from fixed orders that I described in that chart fiscal year '21, the other thing that's been really good for us is building up a very large inventory of what are called IDIQ, Indefinite-Delivery/Indefinite-Quantity contracts, which are basically ways that the government can grow -- to acquire new, what are called nondevelopmental items without having to go through the formal acquisition system. And that's been very helpful to both us and our Defense Department customers in our Link 16 product family as well as in our Satellite Broadband products and services.

And the illustration on the right gives you a sense of the way that Link 16 or tactical data networks. Network participation has grown, where we've gone from low thousands of network participants, say, 10 years ago to tens of thousands today. And we believe based on the integrations that we're doing and the rate of growth, that will be going to the hundreds of thousands of network participants. And one of the points that I like to make here is that in the early days of Ethernet, there was a thing called Metcalfe's law, which basically said that the value of a network is like the square of the number of participants. And with these tactical data links, they're essentially used as -- think of it as Internet of Things for the Defense Department, where they can obtain situational awareness, target tracking and targeting all through machine automation over this network. And now one of the things that we've been pretty successful at doing is integrating multiple different situational awareness networks in which we participate. So that will be tactical data links, we've been able to extend that through network gateways that we've developed into the satellite space. And then we also are integrating our, what's called, Blue Force Tracking, which is a situational awareness network primarily for ground vehicles but also on some airborne platforms as well. So the power of this network and our position in these product families and in the integration of these different networks is one of the foundations of our strength, and we believe will be a big factor as we move forward over the next few years.

Another big growth area, which I think everybody is aware is depressed right now because of the COVID situation has been in-flight connectivity. And we believe that while in-flight connectivity is certainly depressed right now, that remains one of the brightest opportunities for satellite broadband and a very exciting growth opportunity for the company. And right now, the number of connected aircraft globally is in the thousands, a little -- it's under 10,000 out of a fleet of roughly 25,000. But immediately prior to the COVID situation, the market for new aircraft, I mean these would be eventually passing on these just passenger jets, was projected to dump over the next 20 years. And you can see in that lower -- in that left-hand chart, that of that fleet, global fleet, which would be approaching 50,000 aircraft, that almost 90% of them would be new aircraft deliveries, which is an area where we've been very, very strong and gaining market share.

The lower right-hand chart shows that Viasat has been the fastest growing, certainly in the North American market, which is the main market that our satellites have addressed. And we're excited about the prospects of achieving comparable growth or comparable market share on a global basis as we bring onboard our global Viasat-3 satellites, which provide large amounts and lot more bandwidth than we believe will be available otherwise, including overall of the oceans. And that bandwidth is designed for flexibility and dynamic, what we call beam steering, that is being able to follow aircraft that they fly across oceans, as an example, or ships as they traverse the oceans.

The other point, which is what I alluded to in that earlier pyramid chart, is there is projected to be a very large market for broadband-enabled value-added services associated with having connectivity in the commercial airline fleet, and those include advertising, e-commerce, streaming. And one study, very exciting from the London School of Economics, projects that market can be in the tens of billions of dollars. The good thing for us is that we're already engaged with airline partners in each of those elements. So we believe that we have good prospects of capturing a good piece of those value-added revenues, which really have not yet appeared to a great extent in our existing Satellite Broadband Services segment.

Another big area for us in our existing Broadband Satellite Services is the U.S. market for residential broadband. And as we've reported multiple times, we have around 600 -- right around 600,000 subscribers now. And this chart is from MoffettNathanson, and it shows both the number of broadband households in the U.S., which you can see has been growing steadily up to about 108 million as of the end of 2017, which is the last year for which they reported this data. But significantly, at that point, there were about 30 million U.S. homes with broadband speeds below 25 megabits, and you can see about 12 million of those had broadband speeds. So actually, more than 12 million had broadband speeds below 10 megabits per second. So with a total market penetration in the U.S. of around 1.8 million, there's still lots of room to grow as we can increase the speeds well above 25 megabits. And right now, Viasat has around

50,000 customers in the U.S. with -- on our Satellite Services with speeds of 50 megabits per second or higher. So our new Viasat-3 Satellite will be able to increase the geographic availability of those speeds to basically nationwide.

And then in addition to the markets that I've described, there are a number of markets that are really just converging. One of the biggest is land mobile broadband. So that's connected cars, buses, trains. And some of these markets, of course, are being sought after by other service providers as well. But when you think about Viasat's position in both the existing and the emerging broadband ecosystem, clearly, there are certain types of partners that may not want to do business with space [indiscernible], with other LEO operators, for instance. We're probably not going to see very many car companies working with SpaceX on connected cars, as an example. We're obviously seeing as an -- one of the new entrants that people ask other questions about would be Amazon, who certainly can be a formidable player in connectivity. But we also -- that also creates opportunities for us to work with other cloud services companies. As an example, working with Microsoft on both commercial cloud services and with their entry into defense cloud services through the JEDI program.

So one of the things that I'd like to point out is that as a broadband services company, providing network connectivity bandwidth is really the fuel for growth for us. Because bandwidth, unlike the broadcast industry, in the past with satellite, bandwidth is pretty much consumed by each individual user or platform on which you -- to which you deliver that bandwidth because it's called unicast or data primarily for that individual user or vehicle. It means that you have a finite amount of inventory. And in order to be able to grow broadband services, you need to grow your inventory of bandwidth. We're going to talk quite a bit about how we do that and the significance of that.

But this first chart, which just shows on the left-hand side, that chart shows our revenue growth from fiscal year '12 through fiscal year '21, and the 2 arrows show that the steepest growth that we've had each time in those periods in revenue has been right when we've introduced new satellites. So Viasat-1 in fiscal year '12 and then Viasat-2 in our fiscal year '18. And you can see the sharp uptick in our rate of growth. And what you see is that, that effect occurred in both our Government Systems or Defense business, which is the darker blue portion of that chart; and in our Commercial Satellite Services segment, which is the light blue above it. The other thing that's in that chart, you can see there are some black lines that are embedded within the Government Systems segment, and the increase in that occurs right below those white dotted lines shows essentially the amount of bandwidth that we introduced.

Now the chart ends in FY '21, and you can see that there's a little bit of runway that we have where we're still gaining the benefits of the introduction of the Viasat-2 bandwidth. Although those are starting, the growth rate is slowing relative to when the satellite was first introduced. But then you can see 3 steps to the right, and those are each of the 3 Viasat-3s that we currently have under construction, and this increase in bandwidth that we will have with the introduction of those satellites is far greater than we've had with the introduction of either Viasat-1 or Viasat-2. That is we expect an increase in total bandwidth inventory by about a factor of 8. And one of the things that you'll see is that we have significantly more conservative views of the increase in revenue that we might get, trying to estimate that on a conservative basis, taking into account the total amount of bandwidth and the entry of some new competitors in the broadband space. But a big part of why that is, is why we've been so successful in the market, and that is that we're sharing the productivity gains. I'm going to talk a lot about productivity. Productivity basically means how much inventory or bandwidth do we get per capital dollar investment, and that has been the formula for our success. The fact that we've outgrown other existing satellite operators over about the last 10 years that allowed us to gain market share is because of our ability to manufacture bandwidth in space at very high productivity. That is a lot of bandwidth per unit capital cost.

And this is one of my favorite quotes when it comes to economics. It's from Paul Kropman who's won a Nobel Prize in economic scientists. And his quote is, "Productivity isn't everything, but in the long run, it is almost everything." And that's because, especially if you're competing in a market where there's especially like bandwidth, there's just not enough. Pretty much any market that we're in, your ability to create that bandwidth and deliver it into places where there's demand at the lowest cost is a very powerful competitive advantage.

And so one of the questions that we get often is, wow, there's going to be a lot of money being invested in the satellite broadband space. Amazon has publicly said that they're going to invest $10 billion. SpaceX is investing, people believe, in the $10 billion to $20 billion range for their broadband constellations. And that's a lot of money, but we don't think -- it's not what you spend that counts, what really matters is what you get for what you spend. And that's essentially the definition of productivity, that is what really matters is how much bandwidth you get and where you can deliver it, and that's the area that we're the most focused on.

The other point that I really want to make around this is that productivity is not a onetime event, that especially in the information technology world, productivity is really the result of sustained innovation in technology trends that turn out to have long lives. That is that you choose an avenue for investment that scales over a long period of time. And that's -- when you think about information technology, which primarily consists of computing, storage and transmission, that the leaders in each of those areas are the ones who have been able to ride learning curves that have allowed Moore's law to unfold over a period of -- closing in on 50 years. And that's really been in semiconductor device integration, and that's really the horse that we're riding in improving the productivity of our satellites. And I want to contrast that a little bit with what's going on in the lower orbit space.

So that's this point here, is that in order to really compete over a long period of time, and we've been doing that successfully in the Satellite Broadband space for 10 years and believe we can do it for at least another 10, is by choosing a scalable architecture, that is choosing an approach that you can refine over many years and get more and more productivity. It's not about picking a point solution and having one step change.

So if you want to be good at something, you better be able to measure it, and so measuring satellite broadband productivity is a really important point. And that we've been focused on the same measure for 12 years, which is -- actually for more than that, but we've been investing in it heavily for that period of time, and we think it's the right measure. And the measure that we look at is useful bandwidth per dollar of capital investment, and there's really 2 problems that you want to be able to address. One is productivity that is getting a lot of bandwidth at an economical price. The other is scale because if you can only do that and get a small amount of the total bandwidth, you can be a successful niche player, but you may not be able to compete against people with lower scale. So what you also want is besides getting lots of bandwidth per dollar, you want to be able to scale and get very large amounts of useful bandwidth. And what we believe is that the way that we're going about it is the most scalable way, and we'll show why that is.

So this is exactly the kind of the productivity ratio that we look at. It's useful bandwidth times the life of that bandwidth. So for instance, if I were to come up and say, "Hey, I can make a terabit per second for $1 but only -- that terabit only lasts in space for a day," that's not very good, right? You -- what you'd really like is I want to -- I want to keep a measure of how long that bandwidth is useful, and I can adjust this ratio for the time value of money when those productivity periods get to be long. So this is a really good measure. And by useful bandwidth, we're going to show you what that means in the next couple of charts, it basically means that the bandwidth is in places where there's demand. And these are concepts that are absolutely essential in terrestrial broadband. And because what we're doing in space is essentially delivering the same type of capability as you would in terrestrial, this notion of delivering the bandwidth where it's needed is exactly applicable here, too.

So the best way to go about this, and this is essentially adapting the same type of analysis that's done for terrestrial systems, such as where should I build a fiber network, where I build a 5G network, it goes through the same type of geographic population and economic analysis if you go find good databases of populations, household size, economic activity and then you take geographic databases and you map all of that demand to small cells on whatever your market is. So you could do that in a city, you could do it in a state, you can do it in a country. But if you're a global broadband service provider, you then want to do it globally. So this is what you start with, and this is what anybody who wants to be in this business should start with. The global demand is pretty much the same for anybody that's going to do -- try to attract customers in the markets that we're serving.

And this gives you a little bit of a sense of how that demand is distributed, and we've shown this before. But essentially, this is primarily the population portion of it. So economic activity is very closely correlated with where there are people. There are only very few things that -- areas that have a very small amounts of total economic activity that are not closely correlated with population density. And a number of organizations that measure this have come up with statistics, so like the ones that are on here, which is about 50% of the people in the world, about 1% of the land, with land being well under 30% of the surface of the Earth. So that means something like less than a percentage of the surface of the Earth, and 95% of the people in the world lives on about 5% of the land. And the price parts of this map show where the demand is located. I'm going to -- in a little bit, I'm going to show you what happens when you overlay that with economic activity as well.

So if we were a terrestrial service provider but -- and we are providing wireless service, what this would tell us is this is where you should put your towers. If you're going to serve people and you need to have your service or your bandwidth in proximity to those people, what you would do is you would put your towers very close to where those people are. And that's exactly what you see whenever advanced cellular systems are rolled out. If you're doing fiber, you just lay the fiber where the people are.

So in the satellite, with a space broadband business, think of spacecraft as towers. The thing -- the reasons these are analogous is a tower is really just the scaffolding. It's the place where you put your network. The tower itself doesn't deliver any communication services. Only the network that's on the tower is what matters. And the other thing you have to keep in mind is that the capability of the payload that you put on a tower is very dependent on the resources that, that tower has.

So what you might see, for instance, is now with greater emergence of small cells, you may see people using streamline of towers. But they would have relatively small amounts of network, and they only reach a small amount of coverage and with only certain types of networks. You can have towers that are bigger that have more capability to reach more people with more frequency bands and using different types of network, and you can have very large towers that have far more resources than others. So when we think about building a network and it's the payload event network that delivers the value, think of the space path that you have as the towers, sort of the places that you put that network. I'm going to show you what the significance of that is in a moment.

So when I look at the demand here, the obvious question is, okay, well, where would I put my towers and where would I put my spacecraft? And this -- the answer, hopefully, is obvious is that you'd put it only around the bright spaces, and you wouldn't put many towers in places where there's no demand, right? And that is the GEO versus LEO issue.

For GEO, which stands -- it's basically geostationary or orbit, what that means is that I can put satellites in places where the satellite or the tower does not move with respect to the Earth. And so using that principle, I can aim my bandwidth exactly in the places where there's demand and put less bandwidth in places where there's little demand.

The LEO, which stands for lower orbit, the orbits are very low compared to GEO. So the satellites are in constant motion for these peers. And essentially, what that means, I'll show you in this picture, that a geosynchronous satellite, and that would be the one on the left, can put down, think of it, as a grid of beams with each of those little cells or circles that you see in that left-hand chart, being a place that I'm aiming bandwidth. And I can put, if I have a sophisticated enough satellite payload, which is exactly what we're developing, and we believe we're the only ones with this technology, is that I can put an amount of bandwidth into each cell commensurate with the demand. And just to be clear, while people don't live over the ocean, they may travel over the ocean. But if I look over a long period of time, like a day, the amount of demand in any one spot in the ocean is small on the average and transient as an airplane or a ship traverses it. So I might have a very, very thin and time-varying layer bandwidth over oceans, but I have a very persistent and thick amount of bandwidth in the population centers that we showed.

On the right, we're trying to illustrate one of the main effects with low-Earth orbit, that the satellites are constantly moving. But the way to think about it, because they're all constantly moving, you can take a snapshot or a freeze frame, which will capture where any individual satellite is, and that distribution will give you a sense of how the towers are distributed around the world. But the big, big problem, that those satellites are so close to the Earth that their field of view is very limited. So whereas a base station or we think of it as the tower in the GEO satellite arc can see essentially 1/3 of the world and aim and hold its bandwidth wherever needed, a low-Earth orbit satellite can only see a very small portion of the world. And for almost all those satellites, there's essentially no demand in sight. So even if they can aim beams wherever they want within the field of view, there's nothing to aim at.

This chart really shows what happens if you think that building lots of satellites, that low cost is a scalable architecture. So what this chart shows is, I've mentioned before that we were going to combine population with economic activity. And the best way to see that here, think of it as -- there -- you can see there's little peaks in the global map, bright yellow or orange spots and that those have some pipe to them. The height is indicative of that combination of population and economic demand. And the way you can tell that the 2 have been integrated is by looking at the difference between China and India, where the population chain are a little bit higher, but the economic -- current economic activity is much higher. So there is much more total demand in that area.

The white spots that are scattered all throughout the globe are the locations of those satellites, and think of it as those dots representative, if not exactly, because there are a couple of different orbits represented here. But the orbits that are used are the orbits that SpaceX has filed for in scaling the 42,000 satellites. There are a couple of things that are pretty striking. You can see that they've focused most of the dots in a, what I call, highly inclined orbits, essentially go from about plus or minus 55 to 60 degrees of latitude relative to the equator. And then both above and below that, so in the high latitudes, which would be, I'd say, Scandinavia, large parts of Russia, most of Canada, they have very little coverage, though they have some satellites that are in polar orbits that provide some coverage in those areas. But the most striking thing about this is that over 90% of the satellites at any instant in time see no demand. And another way to look at that is that every individual satellite, when it goes up only sees demand less than 10% of the time. That is a big drag on productivity, and that's not an artifact of the design of the satellites that we're detailing, it's only an artifact of where those towers are relative to where demand is. So it's very -- it's not something you can overcome with technology. It's an artifact of geopolitical reality.

The other point I'd like to make is even in markets like the United States, you can see that demand is pretty highly concentrated on about east of the Mississippi River and along the West Coast. And in the middle parts of the country, Kansas, Montana, the Dakotas, relatively much less demand. So even though satellites that are over the U.S. will see pretty large differences in demand. And we've seen that -- everybody has seen that, that's been in the broadband business, whether it's Europe, there's a little bit of the same effect there or the U.S., and the same thing occurs in other markets that are now being addressed, such as Brazil.

So one other point, I think a little bit reassuring, is we're not the only ones that are doing these types of productivity measures. So Morgan Stanley recently published an analyst report, looking at the competitive nature of low-Earth orbit satellites and especially measuring their productivity. And essentially, with the conclusion that they came to, which is shown in the graph on the chart on the right, is that low-Earth orbit satellites have substantially lower productivity than our -- than those -- the ones that they really compare to than our geosynchronous satellite just due to the short life of each satellite. Although the satellites are inexpensive individually, they don't last very long and their useful bandwidth is low.

So what they're showing in the chart on the right is they're comparing SpaceX, and they show essentially a cost per gigabit per second month as the same measure of productivity that I described. What they're showing is that, for instance, for SpaceX, that could be as low as $10,000 per gigabit month or as high as $27,000, $28,000 depending on the exact life of the satellite. They should consider the range of that. They compare that to what would be considered a high throughput Ku-band satellite. You can see that even if it's worse, that SpaceX would be very competitive compared to those, but then the right 2 bars show what ViaSat-2 is, that's the satellite that we launched and brought into service over 2 years ago; and ViaSat-3, which is our next satellite. And you can see that if the life of, in this case, the SpaceX Satellites were to be long, it would have been pretty comparable to ViaSat-2, but even at its best would be probably twice as expensive as their estimate on ViaSat-3.

And just to make the point that we've been working on a common architecture and steadily improving that through semiconductor integration, what I just added was it shows where ViaSat-1 was. So you can see the improvement from ViaSat-1 to 2 to 3. And then we've talked about ViaSat-4, which we've already started working on and is the next-generation of the same technology, which ought to be close to 10x better or that is more -- higher productivity than what they're estimating for SpaceX. And that is -- think of that in the 5-year time horizon.

The other thing -- the other point that Morgan Stanley makes, and it's very important, is that not only are the satellites themselves much more productive in a GEO system, but the associated network is a lot more productive. And here, they're really considering the ground network, that is the fiber network, you need to light up those towers. Think of it as the same as an interterrestrial network and the user terminals required to access the network.

So the chart on the left shows that our CPE, or Customer Premise Equipment, is substantially less expensive even with a paid installation compared to a customer premise device for a low-Earth orbit network. And you can see that in the pie chart on the right-hand side that we're -- they're projecting an advantage of, let's say, 3:1 in that, that the total cost to build the network out is actually dominated by CPE. So in the green portion of their network, we have -- think of it as about a 3:1 productivity advantage according to Morgan Stanley. And in the dark blue part, about a 3:10:1 advantage. So those are very formidable when you look at the capital investments required. And they basically tell you that if we can carry this over to other LEO systems, that if somebody else invests $10 billion in LEO system, that we could get the same amount of bandwidth for somewhere between $1 billion to $3 billion. And that's a huge factor in our view of how we're going to compete successfully against new entrants, even when they invest large amounts of money. So that's this point, the same or better capability at far lower cost.

And we've talked about this a little bit before. I just want to reinforce how it is that we achieve this, and it's basically semiconductor integration. That's what drives our productivity. So just to look at the way things were newly built by ViaSat-1. That's basically the -- you can see that satellite suspended, attached to the rocket that launched it right before launch. That's a ViaSat-1 Satellite. It gives you a sense of the size. The size of ViaSat-2, 3 and 4 will be essentially the same. The satellites from a physical mass, volume, size, perspective aren't changing. What's changing is the payload integration. It's the electronics onboard those satellites.

And this is a picture that shows all the electronics laid out during the manufacturing process. And we can see in the background, there's lots of distributed components and lots of cables and wires connecting them together because the components aren't very well integrated. So this picture shows all of the components that essentially went into ViaSat-1. And on those communications panels that are 3 brown pictures there on the left, you can see in the lower right-hand corner of that top panel, there's a person standing there, which will give you a sense of the scale. Now we've essentially integrated in ViaSat-3 all of that electronics, except for the power lines into that module that a person is pointing to on the right. So that's a large amount of integration, and that's what accounts for that big gain in productivity, about a 10x gain, close to 10x gain compared to ViaSat-1. In fact, there's -- I tell you that there is still more advantage in integration to come, and that's what's making ViaSat-4 and beyond that possible.

So those are -- you can see the payload modules of ViaSat-3 on the left-hand panel. They look just like from a mechanical outline, the ViaSat-1, the electronics that are different. And what you can see on the right, the coverage patterns that come from 3 of those satellites. And you can see that they cover essentially the whole world, except for the very, very northern parts, those parts of the poles.

And as I said, there's still substantial integration gains to come. And the other thing that's really interesting about GEO is it doesn't require replacing an entire constellation, which can require dozens or hundreds of rocket launches in order to be able to get instantly the productivity gains of each generation. Just one satellite brings that to market.

The other point I mentioned is scalability. So how do you -- we talked -- last is now about productivity, how do you get scale? And in the GEO world, the way you get scale is you just replicate those satellites. What we've chosen to do is we could have a lot of scale, for instance, by having built multiple ViaSat-1s or multiple ViaSat-2s. Now when we go one ViaSat-3, we get multiple ViaSat-1s at a much, much lower cost. So think of that as a way of getting both scale and productivity. As we -- if we start reaching the limits of the productivity gains, we can start populating orbital slots. And so right now, today, the largest geosynchronous satellite operators in the world have 50 satellites. We have 4. If you take the productivity of an individual satellite like a ViaSat-3 or ViaSat-4 and multiply that by tens, you'll exceed the total capacity, by far, the total useful capacity, but also the total capacity of these low-Earth orbit systems, again, at far lower cost.

The other -- there's another big issue that's looming on the low-Earth orbit front. And just to be sure, we'll talk about it. It's not something we think low-Earth obit is inherently bad. It's just not as productive, and it has constraints. And one of the most important ones and one that's getting increasing attention from a number of places is the question of orbital debris. And this is -- on the left-hand side, you can see a picture, an image from NASA of basically space junk. So think of that as failed or abandoned or expired satellites, rocket parts, fragments from things that have blown up in space or have deteriorated in space. There are hundreds of thousands of these tracked items. And you can see, actually, there's like a ring around the Earth. That's the geosynchronous arc, and so those are satellites that are expired and have been pushed farther out from geosynchronous arc. Then above the Earth, you can see remnants of things that are highly elliptical orbits, and you can see especially that white cloud that's immediately around the Earth, that's the amount of debris in low-Earth orbit, those were extensor and a lot more parts, pieces and expired satellites. And the way to think about that is if you saw the movie Gravity and you saw the themes where there's debris that's intersecting with the space station, think of that as a storm. And even a chip of paint traveling at 25,000 miles an hour is devastating to any space platform. So this is the way things are now before the launch of thousands or tens of thousands of satellites in low-Earth orbit.

So the big issue is that if there are collisions in the space, that creates more debris that can cause more collisions and a cascading effect. And that can be a devastating consequence, causing what's called a Kessler Effect that's basically unstoppable. So more satellites creates more risk and occupies scaler space real estate. Spacecraft reliability is critical. If a satellite fails, you can't try to steer it away from other objects, and that creates that collision risk. In the early satellites for mega constellations are failing at an alarming rate. So that is definitely getting attention. There have been new regulatory rules proposed, and this is a huge issue for all space-faring nations because what any one country does impacts everyone in the world because space is shared. So there is now a lot more interest and emphasis on rules for sharing orbital resource that would, if implemented, very likely constrain the ability to scale these mega constellations appropriately so.

So those are the 2 big challenges for these mega constellations. That is choosing an architecture that says, "Hey, the way I'm going to scale, it's just by making more and more satellites at lower and lower costs at faster and faster rates." You have 2 big problems. One is where do you put them into space in a way that they're actually delivering useful bandwidth, and then the other is how do you make them safe and meet these space safety regulations. For us, that will be a very risky way to scale to large amounts. And that's not really about rockets, it's about network architecture that you want the satellites for towers and view of demand that a really better way to go is to have fewer satellites and payloads with more bandwidth. That is to constantly iterate on the integration of the payloads and then to have space safety, which means to make those satellites highly reliable so that they don't fail and they don't present collision risk.

The question that people ask all the time is what about latency, that's the big advantage of low-Earth orbit satellites. And so one advantage of them is that because they're closer to the Earth, they have less round-trip delay or latency. And so the thing that we've been working on for a number of years are what I call hybrid networks. That is using geo satellites, which are enormously productive to deliver very high speed and very large amounts of bandwidth and then using an alternative network which, in many places, can be terrestrial that is wired or wireless or in other places can be low-Earth orbit satellites that do have low latency. So you can combine those 2 to get those speed and low latency. The issue is that if you look at what makes up Internet traffic, the vast majority of it is streaming video. And that's an increasing portion of traffic, which is not latency sensitive. So the most productive bandwidth deals with the vast majority of demand, and that's a really good combination.

So we did our own LEO filing, which we're doing in exactly the way that we just described. The capacity of each of those satellites is much higher than in any other LEO filing and increases the productivity. And it also increases -- because we have fewer satellites, we don't have as many in areas that have no demand. The satellite -- we can afford to make those satellites more reliable so they're safe, and we can leverage our extensive ground network.

So one of the points that we've made is that we have a very diverse business. We have multiple markets that depend a lot on domain-specific skills or market-specific skills, including logistics, support, value-added services, and it makes our business resilient. So that as new entrants come into the market and even if they throw money at it, and that is sales services that's far below the cost in an effort to displace us and to overcome our productivity gain, we still have a very broad base of business. And there are substantial synergies that come from having multiple businesses, and the most obvious one is that providing broadband service, hopefully, I think everybody can relate to this from their own experience, is a lot like delivering electricity. What really matters is not the average amount of electricity you get during the day, it's the amount that you get in peak hours. And the failure mode to that, that is not having enough supply to serve peak hours. In the electricity domain, we're seeing it in California right now are brownouts that because of the short periods of time during the year when it's really, really hot, those time frames, electricity demand for air conditioning is so high that the supply can't meet it and you have brownouts. That's a bad failure mode.

In broadband, you see that in evening hours, where streaming can become unreliable. Airlines, for instance, they see it at their hub airports. When you have large numbers of airplanes that congregate at a single airport because that's where flight connections are, the amount of demand that you need, and that is the peak of demand, is much higher than the average demand during the day. But those peaks only occur maybe 4 times a day, for instance, at Dallas, up for American Airlines or Denver with United Airlines. So you need to be able to meet those peak demands. And if you've got the ability to see all of the Earth, you can move your capacity around to meet those peak demands. And then you also have, pile on top of that, the unpredictable peak demands that customers like the Defense Department have. So we get big synergy gains from being able to manage these countercyclical demand and locations, that is move our bandwidth around to deal with all these different peak demands. And you don't get them if you don't have a broad, broad range of applications. So that's what we're working on. We have a broad base of applications both from a vertical markets perspective and a geographic market perspective.

So what are we trying to do? What could success look like? This gives you a little bit of a sense of that. Let's look at our revenue for FY '20 today, and we've divided it up in this chart into government revenue. That's the largest part on the right. Then mobility is the orange. Things like space and ground network, earth sensing, space electronics that we do for the government and commercial customers. And then the light blue is our fixed U.S. services. That's what we look like today.

Well, we're projecting, I'd say call it about 3 years from when the first -- from the second ViaSat-3 is launched. That would be U.S. and Europe. So call that around 2025, we think we can roughly double revenue and expand our margins. That is have higher adjusted EBITDA as a percentage of sales than we do now. And our business mix would look a little bit different. The amount of international bandwidth -- at that point, we have all 3 ViaSat-3s in place -- 3 years -- so 3 years after the first ViaSat-3 is in service. So by that time, we have -- essentially, we have almost no international coverage today. So you can see that light green area have become meaningful because of the amount of bandwidth. The U.S. Fixed Services business has become a smaller portion of the total. And we expect large growth in our total mobility business because of our unique ability to provide very high speeds dynamically over oceans, as an example, places where LEOs have little or no coverage because they can't reach their outside of the range of their ground network.

And so this chart on the right shows, okay, if we were, call it, $2.3 billion today and we roughly double in that 2025 time frame, where does the growth come from? And that's what that pie chart is on the right. And you can see that most of the growth comes from things like international, mobility, government, a little bit in the space and ground networks side, but we're not really expecting a large amount of growth in the U.S. fixed broadband market. We do think we'll get some, but we'll still be very -- we expect to be lightly penetrated in each of the markets in which we participate. Lots of room for growth even beyond there. And to the extent that others invest far amount, more amounts of money and throw money to make up for productivity, still a lot room for multiple participants in each of these markets.

So you see we've been very, very focused on the fundamentals of our business, what is that makes us valuable, how are we building value. And I really love this often attributed to Warren Buffett but really came from his mentor, Benjamin Graham, it says, "In the short run, the market is a voting machine. But in the long run, it's a weighing machine." That is if we can do things that create economic value, bring them to market and capture that value, I think that's how we're going to make the company prosper and our shareholders prosper.
So thanks. Really appreciate everybody's time and attending the meeting, and now the opportunity for questions.

Question and Answer

Unknown Executive

Okay. Mark, the question we have on the board right now is, what, if any, is the predicted snowballing of demand and economic growth once LEO constellations start providing connectivity to traditionally economically nonviable areas in the world?

Mark D. Dankberg
Co- Founder, Chairman & CEO

Okay. That's a little bit of a tricky question. I would say that's already happening, right? I mean what we're seeing is -- I'm going to just refer to -- in terms of snow volume, what we think is that when you can deliver broadband economically in places where it wasn't before, and that can be in-flight maritime, it can be in rural parts of Mexico and Brazil, that, that does increase demand. And it increases the opportunity, especially for these value-added services. And that -- I think that was especially shown in the in-flight connectivity chart, where we showed what the opportunity is for building additional value on top of pure connectivity.

So we think that's happening already. We think that because of the productivity of our satellites, that that's actually not going to be accelerated by the LEO constellations, that really -- that being able to deliver the most bandwidth at the lowest cost is what's already starting to trigger that.

Unknown Executive

Would you say that we're seeing economic growth occur in those areas where we've been able to provide services where it didn't exist where it wasn't economical when we deliver those services before?

Mark D. Dankberg
Co- Founder, Chairman & CEO

Yes. I mean, yes, we believe we're seeing that. But I think even more importantly, when we go into new countries, the governments in those countries see the same effect. So that's giving us basically good support in places like Mexico, Brazil and getting us invited into a number of other countries in Latin America that we'll be entering very shortly.

Unknown Executive

Thank you.

Mark D. Dankberg
Co- Founder, Chairman & CEO

I think that's all the submitted questions that we had. So thanks, everybody. Thank you very much for your attendance, and we look forward to doing the same thing again next year.

Operator
This now concludes the meeting. Thank you for joining, and have a pleasant day.