

**REMARKS OF FCC CHAIRMAN AJIT PAI  
AT THE “LAUNCH: THE SPACE ECONOMY” SUMMIT**

**U.S. CHAMBER OF COMMERCE**

**WASHINGTON, DC**

**DECEMBER 3, 2019**

Good morning. It’s great to be at the U.S. Chamber of Commerce’s second annual space policy summit. And speaking of seconds, this is actually my second visit to the Chamber this year to discuss the space economy. In July, I was here for a roundtable on small satellites, where I discussed how the FCC is promoting American innovation and investment in space. The fact that you’ve asked me back suggests my presentation couldn’t have been *that* bad. That’s the good news. The bad news is that many of you have already heard my favorite Star Trek quotes.

Fortunately, the final Star Wars movie in the Skywalker saga comes out this month. And Star Wars offers a useful reference point for today’s discussion. If you think about our culture, it’s hard to imagine anything being bigger than Star Wars. It’s the most profitable franchise in movie history, generating an estimated \$68 billion in revenue since 1977. But consider that the global space economy generates about \$350 billion in revenue *each year*. And some analysts project that number could grow to \$3 trillion annually in 30 years. Everybody on Twitter might be talking about Baby Yoda, but the space industry—even if it’s not as adorable—is a much bigger deal economically, with tremendous potential for future growth and innovation.

Why is that? Here’s a quick example that gets at the answer. Across the country, farmers and ranchers are using connected technologies to reduce waste, improve sustainability, and increase yields, all to the benefit of American consumers. Many companies are deploying machine-to-machine and Internet of Things technologies in rural environments to collect and analyze data in real time, improving operational efficiencies. The FCC recently established a Precision Agriculture Task Force to explore ways to promote these trends—to enhance the productivity and efficiency of our nation’s farms and ranches through broadband-based technologies. And this Task Force includes a representative of the satellite industry because these advances in the agriculture sector are being powered, in part, by growth in the space sector.

For the longest time, cost-effective technologies needed to support precision agriculture have been largely restricted to the geographic footprint of cellular networks. But that’s changing. For instance, the FCC recently licensed a small company named Swarm Technologies to provide non-geostationary mobile satellite service, via 150 small satellites operating in low-Earth orbit. This satellite connectivity will enable farmers to have sensors where there is no cellular coverage, supporting new precision agriculture applications. We’ve entered an era in which innovation in the heavens is changing how our farmers work the earth.

Across the economy, we will increasingly see satellite services integrated with other technologies. Consider 5G, the next generation of wireless communications. In the past, integrating satellite technologies with prevailing standards like 4G LTE often happened after-the-fact. But 5G will offer a common network architecture that is accessible to a broader range of technologies, including satellite services. Rather than playing catch-up, satellite services will be interoperable with 5G from the get-go. Many people expect 5G to unlock advances with autonomous cars, thanks, in part, to satellite technology. Satellites’ ability to multicast will help reduce congestion to base stations by offloading non-time-sensitive traffic from terrestrial facilities, such as on-demand video streaming and software updates that can be distributed to millions of cars simultaneously.

At the FCC, we have been working hard to help our nation and our industry seize the opportunities of the new space age. At a 1,600,000-foot view, we see a space industry that is changing, and we're trying to make sure our regulations change with it. Now, a satellite can be built in a matter of months, weeks, or even days, and launched by a private provider on demand. A byzantine licensing and regulatory approval system is a bottleneck that hurts businesses and consumers alike. That's why under my leadership, the FCC has been committed to matching the tempo of the industry we regulate. Our space agenda involves cutting red tape and giving green lights.

One area where we've been particularly active has been the promotion of new and expanded services using new non-geostationary orbit satellite, or NGSO, constellations. Instead of sending one "bird" in a high orbit, we can now send a whole bunch of them into low- or mid-Earth orbit. These constellations will create a mesh network of satellites in space that hold the potential to provide consumer-focused residential broadband at a speed and price-point that is competitive with terrestrial broadband offerings.

Of course, we can't and won't endorse any one particular business plan. What we are doing, however, is giving every company a fair shot at innovating and competing in the U.S. market. That's why we have approved a number of applications for this new generation of low-Earth orbit satellite constellations. OneWeb and SpaceX have successfully launched their first groups of low-Earth-orbit satellites. And our hope is that if you open up the doors to innovation, many companies will figure out how to make it work.

The Commission has also seen an increase in applications for low-Earth-orbit satellites proposing Earth-imaging services. Spire and Planet are two examples of companies licensed by the Commission to compete in the Earth-observation industry. These rapidly growing space-enabled services are revolutionizing the oil industry, agriculture, maritime, and disaster relief.

We're also excited about the new possibilities of small satellites. Short duration small-satellite systems have myriad uses, including scientific and research missions as well as communications and remote sensing. But despite these advances, as of this summer, the Commission still required small satellites, which have minimal mass and short orbital lifetimes, to jump through the same regulatory hoops as larger, heavier satellites that may stay in low Earth orbit for many years.

To fix this regulatory mismatch, the FCC adopted a new, separate, streamlined licensing procedure for small satellites. It enables small-satellite applicants to choose a streamlined alternative to existing licensing procedures which features, among other things, an easier application process, a lower application fee, and a shorter timeline for review. It also offers potential radiofrequency interference protection for critical communication links.

To this point, I've talked about all the ways the Commission is making it easier to put new satellites in orbit. However, this does raise a legitimate risk of increased orbital debris. In space, even a centimeter-wide object can wreak devastating damage. If you want a graphic illustration of the problem, just re-watch the movie *Gravity*. That's why, under my leadership, the Commission is currently undertaking its first comprehensive review of our orbital debris rules since their adoption in 2004. Our aim is to improve and clarify these rules based on improvements in mitigation practices and also address recent market developments.

I would note that our new application process for small satellites also promotes orbital debris mitigation. In order to qualify for our streamlined process, smallsats must be able to burn up completely in the Earth's atmosphere if something goes wrong and ground operators lose contact.

Increasingly, American consumers want and expect to be connected wherever they are. This trend is opening new market opportunities in connecting vehicles on land, on sea, and in the air. That's why the Commission has made it easier for satellites to target Earth Stations in Motion, or ESIMs, improving the transmission of data to moving vehicles like ships, airplanes, or school buses. I saw a great

example of how this technology can make a huge impact on a trip out West last year. I was in Moab, Utah, doing a videoconference with the superintendent of the Kane County School District in the southern part of the state. We discussed how kids from remote, rural regions can have long, multi-hour bus rides to and from school or sporting events. During these long trips, many kids would like to do their homework, take a test over email, and use all of the Internet-connected tools that other kids in the United States have at their disposal. ESIMs could help a lot of these students, and indeed many others who are on-the-go in rural America, improve their lives.

I know I've talked mainly about new and emerging technologies, but the Commission has also been working to boost the satellite service with which we are most familiar: GPS. Last year, the Commission voted to allow American devices to access the European global navigation satellite system, known as Galileo. Enabling the Galileo system to work in concert with the U.S. GPS constellation should make GPS more precise, reliable, and resilient—a boon to consumers and businesses alike.

On top of the Commission's efforts, I wanted to highlight recent gains won by the U.S. delegation at last month's World Radiocommunication Conference in Egypt. This event comes around every four years, so you can think of it as the Spectrum Olympics. I was honored to be part of the U.S. delegation and to work with international leaders to create a flexible regulatory framework that allows for continued growth of a multi-trillion-dollar global ICT industry.

The majority of the conference's agenda focused on satellite issues, and we made meaningful progress on these issues. Notably, we secured additional flexibility for ESIMs to operate in additional bands; established a regulatory framework for NGSOs to operate in the Q and V bands; and allocated 1 GHz of spectrum for fixed satellite service in the 51.4-52.4 GHz band. This global collaboration will mean new opportunities for U.S. companies.

When I spoke to the Chamber in July, I closed by talking about the upcoming 50<sup>th</sup> anniversary of the Moon landing. And since that seemed to work well, I am going to close my remarks today by going back to the 60s yet again. When we think about the Space Race, we usually think about legendary astronauts like Neil Armstrong, Buzz Aldrin, and John Glenn. What many people forget is that they were part of a larger story. When I became FCC Chairman, I had the opportunity to meet Newton Minow, who was Chairman of the FCC during the Kennedy Administration. To me, the most interesting part of our conversation was his description of how the FCC helped spur the beginning of the U.S. commercial space industry. Chairman Minow famously believed that putting satellites into space was more important than putting a human being into space. As he put it, "Communications satellites are more important than sending a man into space because they will launch ideas, and ideas will last longer than men and women." That's sort of the way I see it for the 21st century. We're setting the stage for a new space age. There's no telling what kind of innovation can be realized for the benefit of American and global consumers if we put the right policies in place. And I look forward to working with you to seize the opportunities presented by this new frontier.