Viasat India Private Limited
Module 1&2, 5th Floor, Block C, Global Infocity Park
No. 40, MGR Salai, Kandanchavadi, Perungudi, Chennai, India 600 096

21 Sep 2020

Dear Sir or Madam,

On behalf of Viasat, I am pleased to provide the below comments in response to the public consultation on the "Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed." We appreciate the opportunity to respond to the Telecommunications Regulatory Authority of India and look forward to further discussion.

Sincerely,

Ryan Johnson
Sr. Director, Regulatory Affairs
Viasat

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Subject: Viasat response to TRAI Consultation on the "Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed"

Viasat welcomes the opportunity that the Telecommunications Regulatory Authority of India (TRAI)'s has provided to comment on the "Roadmap to promote Broadband connectivity and enhanced broadband speed" and applauds TRAI's attention to this issue. As a global Internet Service Provider, we wish to offer our experience, perspective, and vision to TRAI and look forward to further partnering with the Government of India to work towards affordable, high-quality broadband for all. We hope that our responses to the consultation, contained below, are the beginning of a fruitful conversation with TRAI.

We agree wholeheartedly with TRAI's assessment that the COVID-19 pandemic is creating an increase in overall broadband demand. In fact, our own network in Europe, Latin America, and the United States has seen tremendous growth in data usage from subscribers, as well as a significant increase in overall subscribers during this period. Broadband is a critical part of modern life, even though significant divides in the availability, quality, and affordability of broadband remains. The challenge demands cooperation from all stakeholders, to leverage the "faster and cost-effective rollout of telecom networks" and devise the "innovative approaches to infrastructure creation" that TRAI rightly mentions in section 1.5 of the paper.

We would note that section 1.7 of the paper outlines several types of connectivity to provide broadband, but misses the kinds of direct-to-consumer satellite enabled broadband that Viasat provides around the world. For example, in Mexico, Viasat pioneered its Community Internet solution, which provides a local area coverage through WiFi or other last-mile technologies from a central location in a village or neighborhood. This model (which is demonstrated in figure 1, below) allows for low-cost, high-speed connectivity and scales very rapidly. Satellite is particularly useful for the kinds of large-scale, rapid deployment that TRAI envisages in this paper. For example, the cost of a single Community Internet site is about 1% of the cost of a rural cell phone tower, and can be deployed in approximately 3 hours.

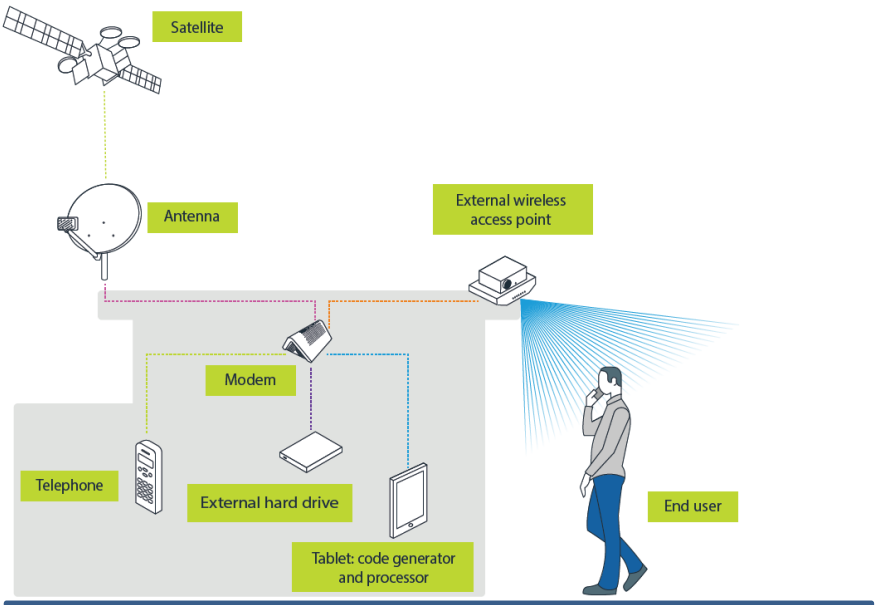

Figure 1: A diagram of the Viasat Community Internet network)

The Community Internet technical architecture is straightforward: a VSAT terminal (connected to our satellite network operating in the Ka Band) provides download speeds of up to 100 Mbit/s to the Wi-Fi network. Customers pay on a prepaid basis for access to the WiFi network, and can navigate with no data caps during their session. Viasat's ability to provide this solution is based primarily in the High Throughput Satellites (HTS) that it operates. These HTS satellites have dramatically reduced the cost per Gigabit to rates that are affordable to hundreds of millions of new users around the world, primarily in developing countries (as demonstrated in Figure 2). This allows the Community Internet program to run without subsidies from government. The advent of the ViaSat-3 class satellites, which will begin operation in 2021, will represent a game-changing increase in space capacity, and therefore reduce the cost of data delivered from space to new levels of affordability. This in turn will spur further demand for broadband in the areas we serve.

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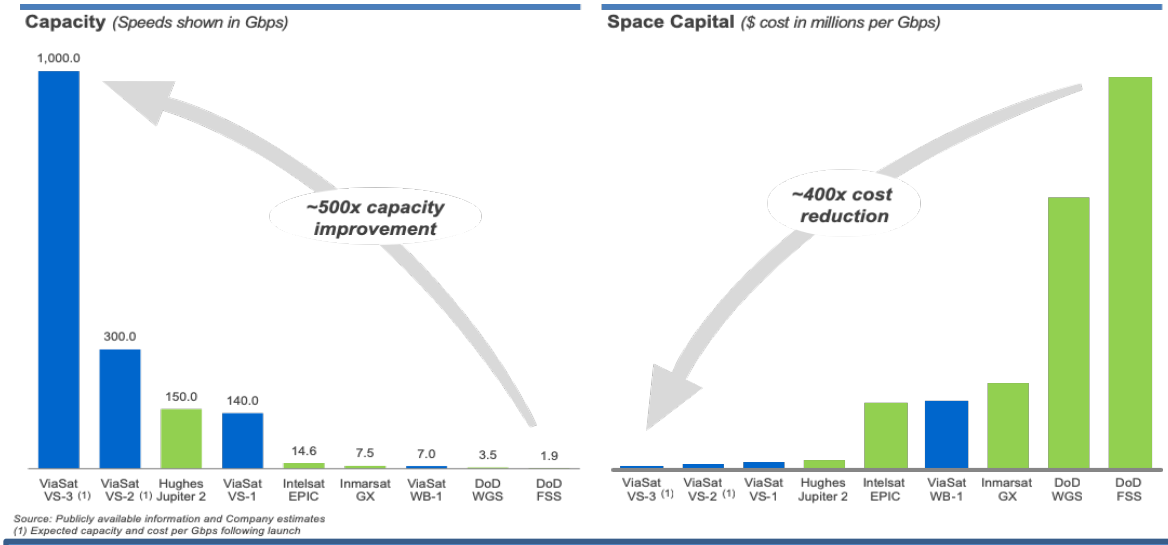

Figure 2: The relative change in satellite capacity drives a proportional change in cost per gigabit per second delivered.

In terms of policy considerations, Viasat agrees with TRAI that societal applications, including e-health, education, and e-government are perhaps the most important facet of broadband access, as they enable people to have access to services that are necessary to the good functioning of society and to economic growth. In fact, Viasat has made strategic investments and partnerships in each of these areas, working to deploy services that can meet the needs of the world's underserved population with innovative use of ICTs. For example, we have invested in 19Labs, a telehealth and tele-education startup that leverages broadband connectivity and low-cost diagnostic equipment to ensure all people have access to quality preventative care.

2.15:

Viasat agrees that ensuring available spectrum for services is essential. We believe that having access to unlicensed WiFi spectrum is important for fostering adoption of innovative solutions. Further, we fully support the recommendation for the use of public consultations for the management and planning of spectrum use.

2.16:

In response to the very astute questions laid out in section 2.16 of the consultation, we agree wholeheartedly with TRAI's assessment that the Ka Band is enabling large capacity and greater speeds. We believe that a truly competitive telecom market will include an open market for satellite broadband services to operate across the country, in urban as well as rural areas. TRAI is absolutely correct, of course, that satellite is often times the only solution that can reach certain areas due to geographic constraints (mountainous, jungle, or island areas, for example), but also in areas where

economic conditions prohibit the deployment of terrestrial networks. These areas include areas of large urban environments where consumers can't afford the cost of mobile or fixed line access, but solutions like the Viasat Community Internet described above may be suitable.

We agree with the recommendations of "Delivering Broadband Quickly" as outlined in section 2.16 of the consultation document. The recommendations to enable foreign satellite operators to provide ISP services would attract significant investment from companies like Viasat into India. Additionally, the separation of functions would further promote the investment of satellite companies into India. We firmly believe that opening the Ka Band for satellite operations is a positive step, and wish to remind TRAI that ensuring that the spectrum which India has allocated to FSS (in the Ka Band, this is 17.7-20.2 GHz / 27.5-30 GHz) is an essential step to ensuring a robust satellite industry interest in India. Because satellite systems take significant capital and time investments to design, build, and launch, stable access to spectrum is critical to the satellite industry.

Section 3

Speed of broadband is an important tool to measure the services available to consumers, and consumers continue to demand greater speeds. However, we note that speed should only be one feature that TRAI contemplates: providing great speed to some consumers while leaving others behind, or building out networks that cost more than the economic impact they generate would not improve India overall. In particular, we believe that India has set the bar very high for its definition of broadband, and that this definition will become difficult to achieve in many places, and may be too inflexible over time. The European and U.K. definitions that describe a quality of service may be a better suited definition for India.

While TRAI is correct in stating (in 3.20) that upload speeds are increasingly relevant, our analysis of user traffic indicates that while the amount of traffic being uploaded has increased, download speeds are still more critical, and an asymmetric model is still suitable for the vast majority of customers. Further, we believe that overall throughput (capacity) is more relevant to the vast majority of consumers than latency. In our analysis, approximately 95% of all global Internet traffic is not latency-sensitive, while most traffic is throughput-sensitive. This has informed the way Viasat has built out its network, opting for providing the largest possible throughput to ensure our customers have the metric for quality of service they feel is most important.

Based on the above, provide the following answers to the questions in section 3:
Q1) The definition of broadband should be rooted in user experience, rather than a specific speed. Broadband speed should also be separate for fixed line, wireless, and mobile solutions, and should be dependent on the technology in use. Asymmetric speeds are still relevant, although both upload and download speeds should be considered.
Q2) N/A
Q3) While different categories of speed may be useful for considering different classes of service, we believe that tying these categories to absolute speeds would not necessarily serve the intended purpose.

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Section 5:

Q 21: WiFi is a good complement to mobile broadband and can be made readily available. In fact, our experience in countries like Mexico and Brazil suggests that some percentage of people are satisfied to remain primarily on WiFi. This is usually because the WiFi hotspot provides a lower-cost, higher-speed solution than 3G/4G technology, and because users tend to operate on a mixed-mode basis, using fixed wireless, WiFi hotspots, and other technologies throughout the day, instead of relying on a singular technology. Given the capital expenses needed to provide 5G, this situation is likely to persist. We would recommend that TRAI focus on overall usage patterns for consumers rather than mobile subscription penetration. This more technology neutral metric would likely provide greater clarity into how Indian broadband users connect and their priorities when purchasing broadband connectivity.

Section 6:

Q32: We believe that it would not be prudent for TRAI to mandate any sort of checks for consumer devices. In many parts of India, users rely on low-cost devices, and tend to keep them for a long period of time. If a given network operator wishes to ensure that only certain efficient devices are permitted on their network, this may be up to the operator. Other operators may have higher tolerance for the less efficient devices and would be able to meet the demand of those customers.

Q33: Technical standards should be related to conformity, interoperability, and ensuring a device doesn't cause unacceptable interference to other devices or systems. Adopting internationally harmonized marks, including the FCC, ECC, and some private marks such as UL might be the most appropriate course of action.