November 17, 2014

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Notice of Oral *Ex Parte* Presentation
Protecting and Promoting the Open Internet, GN Docket Nos. 14-28, 10-127

Dear Ms. Dortch:

On November 13, 2014 Michael Calabrese of the New America Foundation's Open Technology Institute (OTI) and Andrew Afflerbach, CEO and Director of Engineering at CTC Technology and Energy (CTC), met with Brendan Carr, wireless legal advisor to Commissioner Ajit Pai, concerning the above-referenced proceeding.

We briefed staff on the attached engineering study, prepared by CTC, showing that LTE mobile broadband providers have the capability today to implement strong network neutrality rules that prohibit any discriminatory treatment of third-party applications or content. We asserted that the study demonstrates the fallacy of wireless industry claims that adherence to strong network neutrality protections for consumers and for edge providers is not technically feasible for mobile carrier networks.

The CTC study, commissioned by OTI, concludes that Long Term Evolution (LTE, or 4G) technology is capable of managing *moderate* congestion through prioritization protocols that are application-agnostic (e.g., user-directed prioritization) and is capable, when faced with *severe* congestion, of prioritizing delay-sensitive traffic while avoiding discrimination among like applications, content, or services and without favoring carrier-sponsored or carrier-affiliated applications, content or services.

The study acknowledges, as OTI has in its comments, that because of unpredictable and localized surges in demand, such as at a major sporting event, the dynamic prioritization of delay-sensitive applications like video chat and VoIP calls can be a reasonable means of ensuring quality of service in a capacity-constrained network. Nevertheless, and contrary to the claims of mobile carriers, the study demonstrates that LTE technology has the capability now to manage even situations of severe network congestion by ***treating like applications alike***, without favoring carrier-sponsored or carrier-affiliated applications, content or services. As an example, the study describes in detail how LTE networks could, as needed in severely congested cells or sectors, prioritize the category of VoIP applications ("OTTphone") in a manner that both treats like applications alike *and* provides third party providers essentially the same quality of service as comparable carrier-provided or carrier-affiliated applications (e.g., VoLTE).

Of course, at most times and places, the capacity of mobile broadband networks is ***not congested*** and there is little if any need to prioritize any user or use. In fact, the report observes that nearly all mobile carrier traffic today is carried on a "best effort" basis, including streaming video applications.

The study shows that ***moderate congestion*** can be handled with application-agnostic prioritization, such as by "throttling" certain categories of users, or by offering user-directed prioritization that allows consumers to choose to pay for a premium speed tier. As the FCC declared in its 2010 Open Internet Report & Order, "[u]se-agnostic discrimination (sometimes referred to as application-agnostic discrimination) is consistent with Internet openness, because it does not interfere with end users' choices about which content, applications, services, or devices to use. Nor does it distort competition among edge providers."[1] The Commission suggested "end-user control" (i.e., user-directed prioritization) as a reasonable tool to manage network capacity constraints.[2] LTE technology permits carriers to offer differentiated tiers of service to subscribers that can include a "premium" service that prioritizes an individual subscriber's traffic in times of congestion. For example, earlier this year the Austrian mobile carrier Drei announced it would offer this user-directed prioritization at varying premium service tiers beginning in June 2015.[3]

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[1] Report and Order, *In the Matter of Preserving the Open Internet*, GN Docket No. 09-191, FCC 10-201 (Dec. 23, 2010), at ¶ 73 ("Use-Agnostic Discrimination"), *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1.pdf (accessed Nov. 12, 2014).

[2] *Id.* at ¶ 71. The Commission stated: "Maximizing end-user control is a policy goal Congress recognized in Section 230(b) of the Communications Act, and end-user choice and control are touchstones in evaluating the reasonableness of discrimination. . . . [E]nabling end users to choose among different broadband offerings based on such factors as assured data rates and reliability, or to select quality-of-service enhancements on their own connections for traffic of their choosing, would be unlikely to violate the no unreasonable discrimination rule, provided the broadband provider's offerings were fully disclosed and were not harmful to competition or end users."

[3] "LTE-Leistungsklassen statt Drosselung?" *LTE-Anbieter.info*, October 17, 2014, http://www.lte-anbieter.info/lte-news/lte-leistungsklassen-statt-drosselung (accessed Nov. 12, 2014).

Even when faced with ***severe congestion***, the study details how LTE networks have the capability to dynamically prioritize delay-sensitive applications in a completely non-discriminatory fashion that does not favor carrier-affiliated content or services. Therefore, if the FCC determines it is "reasonable network management" to prioritize delay-sensitive applications at times of severe congestion, the study shows that the Commission can also confidently determine that LTE network providers can do this in a manner that "treats like applications alike." The study outlines an approach that can be implemented now using standards-compliant LTE technologies and which could entail the following steps and safeguards (see pp. 5-6):

1) Standards bodies or another industrywide process approved by the FCC create generic QoS profiles related to latency sensitivity or other attributes that need similar QoS treatment, and make them open to all like applications, such as toll-quality voice and video communications.

2) Mobile carriers define the type of network management each profile will receive, understanding that the management may be dynamic and complex, but that all like applications within the profile will receive the same treatment.

3) The FCC or standards bodies create a streamlined process through which edge providers can identify their content and applications to the wireless carriers for treatment according to a QoS profile, with best-effort packet inspection as the fallback for edge providers that do not affirmatively participate.

4) The FCC or an industry standards body creates a process, such as a periodic audit of active QoS rules, to transparently verify that the defined management structure is being implemented consistently. At a minimum, this should be triggered by a complaint.

5) The FCC or standards bodies approved by the Commission revisit the profiles regularly, and revisit the need for QoS and prioritization as spectrum efficiency increases and other technological improvements enter the marketplace.

In Section 3.8, the report also explains why the Open Internet protections that apply to mobile networks should certainly be no less strict for carrier-grade Wi-Fi networks that are integrated with mobile networks, whether for data traffic offload or other purposes.[4] Section 3.9 of the report discusses the importance of transparency and outlines strategies to verify that wireless carriers are complying with the rules.

[4] OTI's comments and reply comments in this proceeding proposed that the Commission explicitly apply open Internet protections to commercial operations on unlicensed spectrum by *any* "broadband Internet access service" (whether primarily fixed or mobile) *and* adopt the same protections in Part 15 of the Commission's rules as a general condition of operation. At a minimum, the definitions that determine any difference in the scope of open Internet protections between different types of networks should state that a broadband connection over Wi-Fi that is integrated into a fixed *or mobile* ISP's offering is nomadic (not mobile) and should be subject to the same open Internet protections as a "fixed" service. *See* Comments of New America Foundation's Open Technology Institute, GN Docket No. 14-28, GN Docket No. 10-127 (July 17, 2014), at 53-56.

Finally, we observed that the attached CTC study reinforces the widespread support among comments in the record for the view that the Commission's existing exception for reasonable network management provides sufficient flexibility to accommodate the unique constraints or challenges of any particular network technology, whether fixed or mobile.[5] The same fundamental principles and obligations should apply to *all* broadband ISPs, even if the resulting rules are *applied* differently based on what is reasonable network management for a particular Internet access technology.

The Commission recognized in the 2010 *Order* that the policy rationale for open Internet protections is as relevant for mobile as for fixed broadband service.[6] The 2010 *Order* also adopted a definition of "reasonable" network management that could accommodate any unique constraints faced by mobile carriers, particularly with respect to managing congestion.[7] The only issue would seem to be whether *all* ISPs should be required to manage congestion *in a competitively neutral manner* and whether there is a reasonably feasible way for mobile carriers to do so. We believe the attached study by CTC Technology & Energy will help the Commission determine that a common regulatory framework is indeed technically feasible.

Respectfully submitted,

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[5] *See* Reply Comments of New America Foundation's Open Technology Institute, GN Docket No. 14-28, GN Docket No. 10-127 (Sept. 15, 2014), at 32.
[6] *See 2010 Open Internet Order* at ¶ 49.
[7] *Id.* at ¶ 82 ("A network management practice is reasonable if it is appropriate and tailored to achieving a legitimate network management purpose, taking into account the particular network architecture and technology of the broadband internet access service").