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January 12, 2015

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

**Re: Notice of *Ex Parte* Presentation  
GN Docket No. 14-28 – Protecting and Promoting the Open Internet**

Dear Ms. Dortch:

On January 9, 2015, Sprint Corporation (Sprint) representatives Stephen Bye, Charles W. McKee, and the undersigned met with Scott Jordan and Antonio Sweet from the Office of Strategic Planning and Policy Analysis, and Roger Sherman, Jim Schlichting, Joel Taubenblatt and Chris Helzer, from the Wireless Bureau, on issues related to the above-captioned proceeding and detailed in the attached presentation.

We discussed the significant differences between mobile networks generally and fixed broadband networks that require that mobile operators have more flexibility than fixed network operators in terms of network management. We also discussed matters unique to Sprint's spectrum holdings and network architecture requiring additional flexibility and the tools and policies that Sprint currently employs to manage use of its network to maximize the user experience for the highest number of users. Sprint explained that mobile operators need to be able to explore varying strategies for network management to adapt to different conditions in different markets, adjust for changing consumer application preferences and innovative new uses, and account for multiple other variables affecting Sprint's mobile network.

Sprint also discussed differences between the fixed and mobile broadband marketplace and the need to permit mobile carriers to differentiate their products and services to compete in the mobile marketplace. Sprint emphasized that the FCC should permit mobile operators to define their service terms of service, differentiate and experiment with differing rate plans and accommodate user choice. Finally, Sprint urged the FCC to make clear the parameters within which mobile carriers can differentiate and compete without the need to seek prior Commission certainty.

Secretary Dortch  
January 12, 2015  
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Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed for inclusion in the above-referenced docket and provided to the Commission in attendance at the meeting.

Sincerely,

A handwritten signature in black ink, appearing to read "J Breck Blalock", written over a horizontal line.

J Breck Blalock

cc: (each electronically):

Scott Jordan  
Antonio Sweet  
Roger Sherman  
Jim Schlichting  
Joel Taubenblatt  
Chris Helzer



# Sprint's Mobile Network Overview

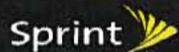
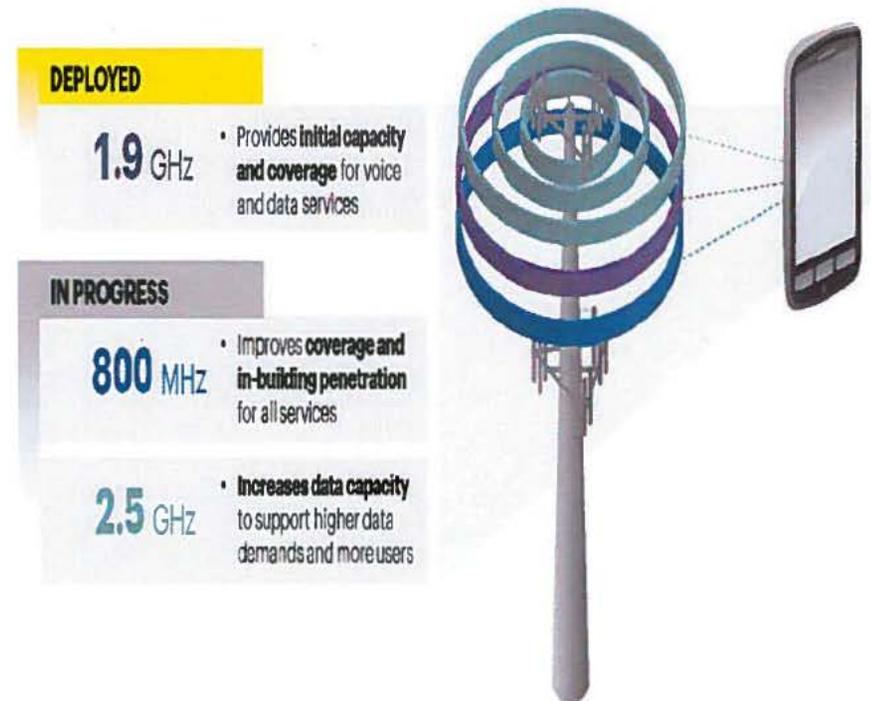
Sprint's network requires agile, flexible management of multiple frequencies and air interfaces

- Enabling mix and match spectrum and network uses, running various protocols on any spectrum
- LTE network capability utilizing three bands of LTE to create a competitive tri-band network experience
- 3G CDMA and LTE on 800 MHz & 1.9 GHz
- TD LTE on 2.5 GHz

Sprint's practices include

- Transparent policies disclosing network practices
- Equal rights management
- Traffic management policies & techniques based on congestion

All of these techniques are based on user (mobile) and Radio Frequency (RF) conditions which are dynamic



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# Differences in Mobile & Fixed Networks

Wireless Handsets & Networks are Dynamically Tuned to Optimize End User & Capacity Behaviors



VS

Fixed Internet/Wireline Networks Have Less Variability in End User Behavior and Capacity



## Mobile

### • End User/Device Behavior

- The user is not always in a fixed location and are free to move
- Devices vary in their behavior and performance; iPhone behaves differently than a Galaxy from Samsung vs a mobile hotspot
- Consumers select what device to use

### • Capacity/Connectivity

- Coverage from each of the spectrum bands varies by market
- Needs optimization in that cluster where capacity is added every single time
- Capacity is generally added based on aggregate usage from collection of users using the cell site
- Cost is higher due to spectrum acquisition, tuning, optimization, etc.

## Fixed

### • End User/Device Behavior

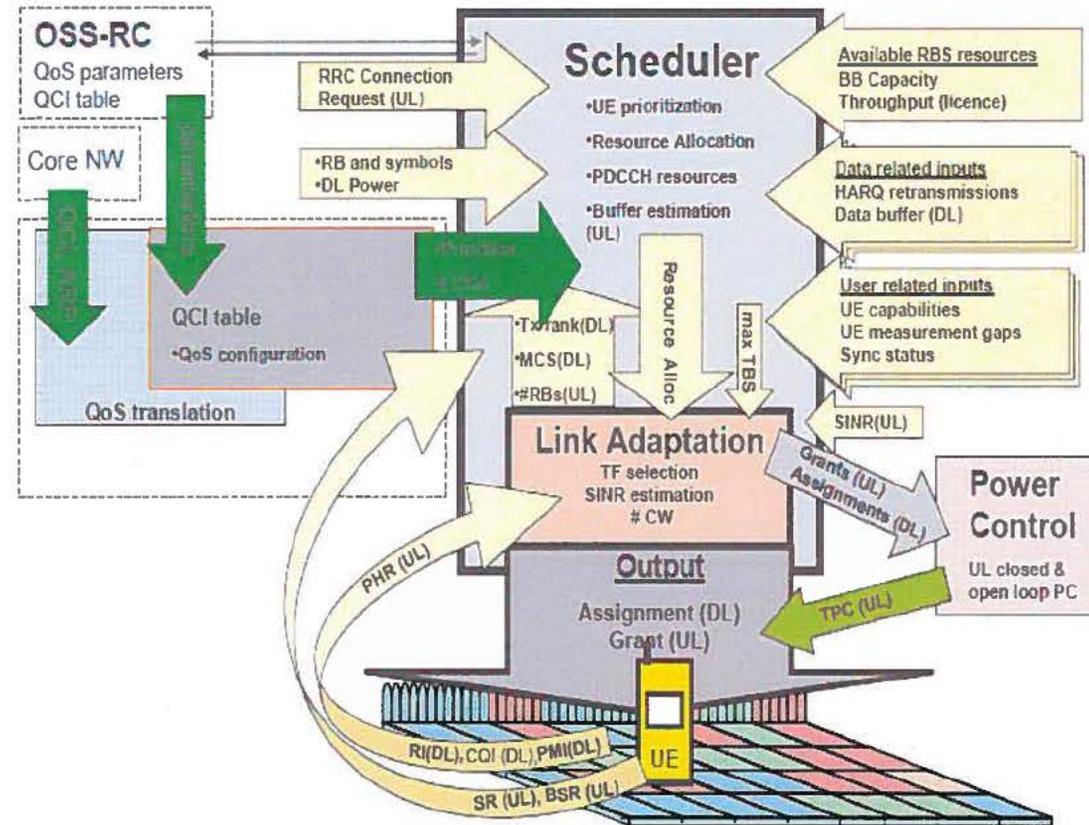
- Houses don't move; fixed connection from location to the operator
- The traffic traversed from the house to the operator is deterministic as defined by the operator
- The end user devices/modem are usually provided by the operator, optimized per their requirements
- Modem vendor does not exert control over the operator

### • Capacity/Connectivity

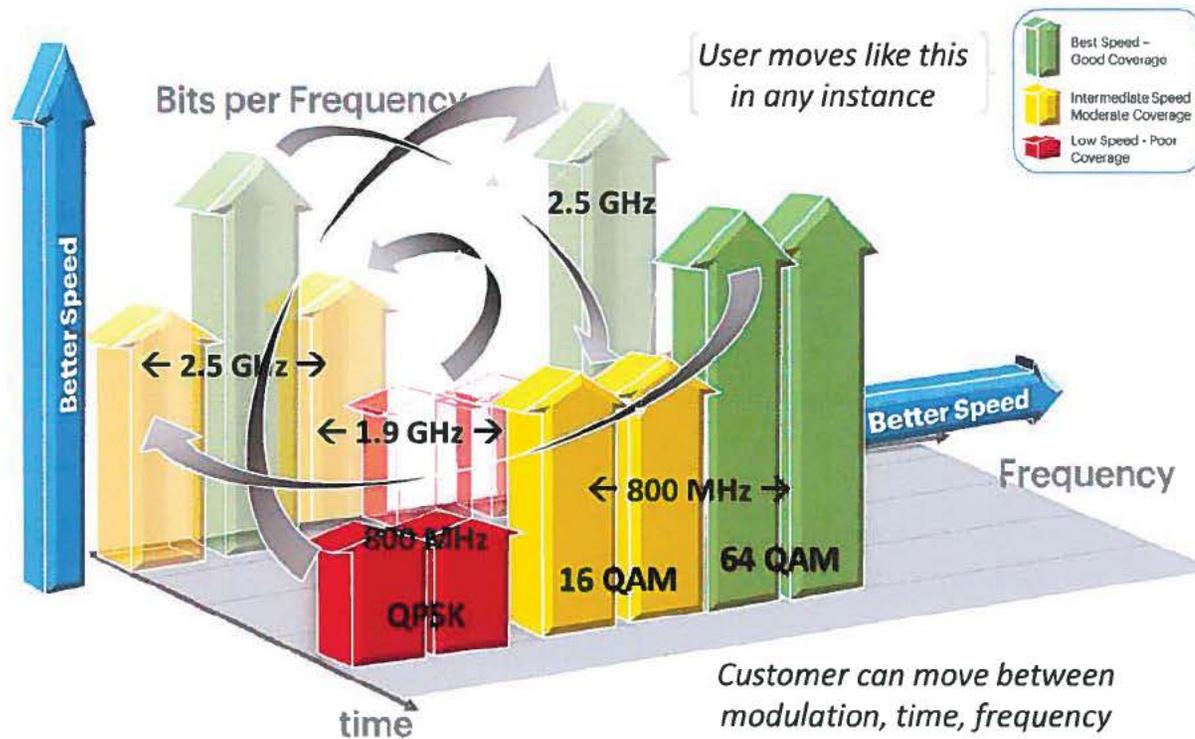
- Only variable is amount of traffic on a given link making network management relatively simple
- Capacity add usually achieved thru provisioning change

# Mobile Technology Variables

- Base Station (BTS) dynamically manages the spectrum/capacity allocation for the users; scheduler and Link adaptation functions that reside within the BTS control the effective data rate that a user gets
- UE (User Equipment/Mobile) must have same intelligence to work with the network but also has power constraints (battery limitations)
- UE manufacturers exert more control on how a device should perform based on their own service offerings
- Ability to adapt to rapid adoption of new applications and services by mobile users



# Managing Customer Experience is More Difficult as Mobile Networks Add Capacity



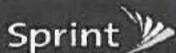
As mobile carriers scale to support user data demands the addition of spectrum bands makes mobility harder to control

- Mobile has to hand off between various modulation schemes
  - Mobile behavior is controlled by various trigger points based on spectrum band, user location, and device type
  - Each RAN OEM has their own algorithm on how to utilize/maximize scheduler schemes
- Spectrum allocation differs city by city
  - Spectrum availability varies by market and subject to other incumbent spectrum positions
  - Mobile behavior is affected by where user is in spectrum coverage

# Mobile Networks Need More Flexibility in Controls & Management Practices

Mobile systems have to deal with more variables than the wireline systems

- End user mobility
- Congestion changes rapidly over time at any given location
- The load a user places on the mobile network changes as they move within the cell (users at edge draw many more resources than users in the cell center)
- Sprint does not control the applications users use on mobile nor the application developers' application behaviors; can lead to large fluctuations in traffic
- Spectrum availability in any given market dictates how capacity is added; varies by market
- New carrier purchases require reconfiguration, retuning, optimization, & licenses
- Sprint does not dictate which devices users use on our network and all devices do not behave the same



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# Light Touch Is Good for Mobile Broadband Customers

Light touch is working and mobile broadband needs more flexibility due to these things

- **Mobile broadband needs different regulatory environments because it's harder to manage**
  - Mobile network has to adapt to rapid innovation and change cycles from the application and content providers
  - Spectrum is finite and not consistent across markets
  - Need to be able to take full advantage of innovation
  - Improve signal transport efficiency
- **Mobile must adapt operations based on based on changing conditions**
  - Number of users
  - Fragmentation of spectrum
  - Disparate device types
  - Variable affecting transmission (human body loss, seasonal conditions, in building losses, etc.)
- **All is dependent on the application user data rates; application adoption has dramatically accelerated**
  - Text messaging vs video delivery
  - Facebook vs Internet browsing
  - Launch without user permission



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# Specific Position Recommendations

- **FCC should re-adopt the 2010 “no blocking” rule for mobile broadband.**
  - Mobile providers must be able to define their services by prohibiting applications that are not suited for their respective networks like Peer to Peer file sharing or applications that bypass billing for services
  - Mobile providers need to be able to control the devices permitted on their networks to ensure quality customer experience and mobile device and network functionality
- **The FCC should adopt a broad definition of “reasonable network management practices” that takes into account network architecture and technology.**
  - Mobile providers need to be able to compress, optimize, and otherwise manage high bandwidth content
  - Mobile providers need to be able to manage users to ensure equitable use of network resources and to maximize the user experience for the highest number of users on the network
- **For mobile broadband Internet access providers, the FCC should adopt a presumption that a network management practice is reasonable if it is applied to similarly situated users (devices, price plans), applications, and/or content in a nondiscriminatory manner and is intended to protect the network, alleviate congestion, ensure a quality user experience, and/or ensure equitable use of network resources.**

# Specific Position Recommendations

- **If the FCC applies a rule concerning the “reasonableness” of certain practices, it should ensure that a mobile provider can:**
  - Freely define their internet product including:
    - **Permitted and prohibited uses, and other terms and conditions**
  - Enforce its terms of and conditions
  - Differentiate rate plans
  - Differentiate its services from the services provided by other mobile ISPs
  - Accommodate user directed prioritization or customization
- **The FCC should give Mobile ISPs some certainty by making it clear that a practice is reasonable if:**
  - It does not result in the favoring or exclusivity of content vertically affiliated with mobile carriers
  - It does not have a demonstrably negative impact on competition among mobile carriers
  - It does not have a demonstrably negative effect on public discourse or civic engagement