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Device Neutrality: Lessons from History and Technology

Christopher S. Yoo
University of Pennsylvania

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Introduction

- Neutrality is not just a matter of networks
 - FCC (2010) rejected that neutrality applied only to networks
 - Market power may result from different sources
- Devices pose difficult problems: lessons from U.S. enforcement history
- Regulation must deal with the fact that non-neutrality can yield consumer benefits and changes dynamically



Example 1: MetroPCS/YouTube

- Was the first net neutrality claim in 2011
- Offered low cost unlimited voice and data plans
- Had 3% market share, zero rated YouTube
- Deployed 4G on 1G channel (1.4 GHz vs. 40 GHz)
- Relied on Samsung Craft running BREW
 - Many video CODECs did not create players for BREW
 - Platform could not support all forms of video



Example 2: AT&T/Apple FaceTime

- AT&T only offered FaceTime (FT) over 3G and 4G to consumers who purchased higher end data plans in 2012
 - Low data plan users could use FT only over Wi-Fi
 - FCC: one FaceTime user consumes 1/3-1/2 uplink capacity
- FT is part of the operating system, not an application
 - Is similar to competition case against Microsoft browser
 - Raises difficult remedial questions



Example 3: Verizon/Google Wallet

- Google Wallet is not an Internet mobile payment app
 - Is built into the chip
 - Uses near field communications (NFC)
- Verizon refuses to preload Google Wallet in 2013
 - Concerned about integration of functionality into hardware
 - Concerned that passwords were too easy to crack
 - Accused of trying to protect telco-backed payment system



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Other Neutrality Issues

- Device exclusivity (e.g., AT&T and iPhone)
- Radio design and roaming (e.g., limits of iPhone 5)
- Location of functions based on law, not benefits
- Incentive to rely on proprietary architectures
- Ambiguity of practices in terms of consumer welfare
 - Similar to vertical integration
 - Similar to technological tying



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The Need for a Dynamic Perspective

- Neutrality requires actor to carry any traffic provided in the appropriate format
 - Can lock location of interfaces into place
 - Can lock formats into place
- Optimal architecture determined by interdependencies
- Optimal architecture will inevitably change over time
- Object lesson is cross-layer design in wireless



References

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