Mobile Broadband Working Group

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## Two Studies: Depth and Breadth

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AT&T/FaceTime

• Apple FaceTime
  – High-quality video chat
  – Originally only on WiFi
  – Cellular starting Jun’12

• AT&T restrictions
  – Initially limited to MobileShare plan
  – Claims that AT&T violated the OIO
  – AT&T disagreed with these claims
  – AT&T gradually relaxed restrictions
AT&T/FaceTime Issues

• Pre-loaded application
  – Available to all users of popular phone
  – Accessed via device’s core calling features

• High bandwidth requirements
  – Symmetric usage, with asymmetric capacity
  – Limited adaptation in the face of congestion

• Staged deployment
  – Rapid adoption could lead to unpredictable load
  – Initially limit the number of users accessing an app

• Enforcement point
  – Usage limited on the device, not in the network
AT&T/FaceTime Perspectives

• Application developers
  – Blocking lawful applications chills innovation
  – Better to manage congestion directly
  – E.g., rate limits or usage-based pricing

• Carriers
  – AT&T has many “unlimited plan” customers
  – Staged deployment to prevent an overload
  – Apple allowed carriers to manage the app

• Equipment vendors
  – Pre-installed app that aggressively uses bandwidth
  – Alternative traffic-management approaches could have reduced overall quality of the customer experience
Mobile Broadband Ecosystem

• Seemingly virtuous cycle
  – Networks, mobile devices, apps, and users
• Complex inter-relationships
  – Apps, operating systems, and devices
  – Carriers and network equipment vendors
• Small number of dominant players
  – Smartphones: Apple, Samsung, LG
  – Operating systems: Google Android, Apple iOS
  – Carriers: Verizon, AT&T, Sprint, T-Mobile
  – Radio net: Ericsson, Alcatel-Lucent, Nokia-Siemens
Four Case Studies

• App stores
  – Screening, revenue sharing, app promotion,
  – Longer-term trend of HTML5
• Carrier service agreements
  – Device locking, tethering and app restrictions
  – Trend toward two-sided pricing (EU, Asia)
• Network-unfriendly apps
  – Chatty, unfair, or inefficient apps
  – Educating app developers and users
• WiFi offloading
  – Low-cost alternative for wireless broadband
  – Variable performance, security, and mobility
  – Enables greater competition and user choice
Conclusions

• Consider interactions between all players
  – Even those not subject to the OIO
• Track the trends affecting competition
  – HTML5, WiFi offloading, two-sided pricing, …
• Foster healthy mobile broadband ecosystem
  – Transparency
  – Education
  – Competition