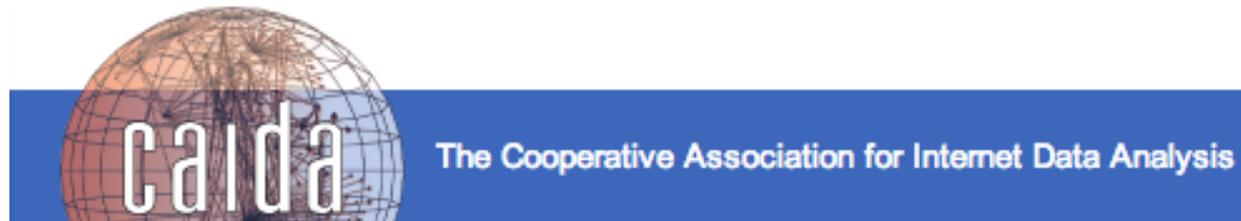


Mobile Broadband and Metrics Challenges

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MIT



The 3rd Workshop on Internet Economics (WIE 2012): Definitions and Data

December 12-13, 2012
San Diego



MIT Communications Futures Program

*"Defining the roadmap for communications
and its impact on adjacent industries."*

Mobile Broadband

Mobile BB is a game-changing

Mobile/Fixed: Complements or Substitutes?

Regulatory Agenda for Mobile BB

Mobile BB is game-changing....

Mobile BB = convergence personal communication + computing

- pervasive computing: always on/everywhere connected
- Internet of things/smart everything
- wireless (of all types....not just LTE)

Post-PC

- Smartphones, tablets, eReaders, sensors, connected homes,

Traffic growth

- spectrum scarcity
- Next 6B

Edge-based control (end-user deployed networks)

- wireless offers new model for building networks
- multihoming, route selection : who makes the choice?

Mobile v. Fixed BB: substitutes or complements?

What is BB?

- 100s MBps v. 10s MBps?
- per HH or per user?
- QoS strategies: down-coding? Buffering? MIMO? (network mgmt?)
- Reliability?

Competition? Universal Service? Interconnection?

- Substitutes? low-invest equilibrium (??)
- Complements? HDTV/multi-devices v. Mobility; Cost sub or demand aug?
- (AT&T v. VZ, VZ-Comcast, ...)
- USF subsidies?
- WiFi offload and infrastructure sharing, tethering, roaming, backhaul

Metrics issues

- Averaging over coverage area: how to weight?
- Crowd sourcing - Device heterogeneity - WiFi v. Cellular
- Pricing (device+usage pricing+??) - Privacy (how to anonymize?)

Mobile BB Policy Issues

Mobile v. Fixed Regulation Convergence

Spectrum Policy : future shared spectrum

- Novel management regimes: LSA/ASA, TVWS, ...
- Spectrum utilization and rights trading, dbases, sensing, ...

Public safety

- Commercial/Public safety integration and sharing

Small cell (DAS) architectures (Internet architectures...)

- Infrastructure & spectrum sharing
- Conduit/antenna site access (Zoning, municipal planning)
- Backhaul

Privacy, mobile identity management

Additional Slides

References

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INTERNET TRENDS

@ STANFORD - BASES KICK OFF

12/3/2012

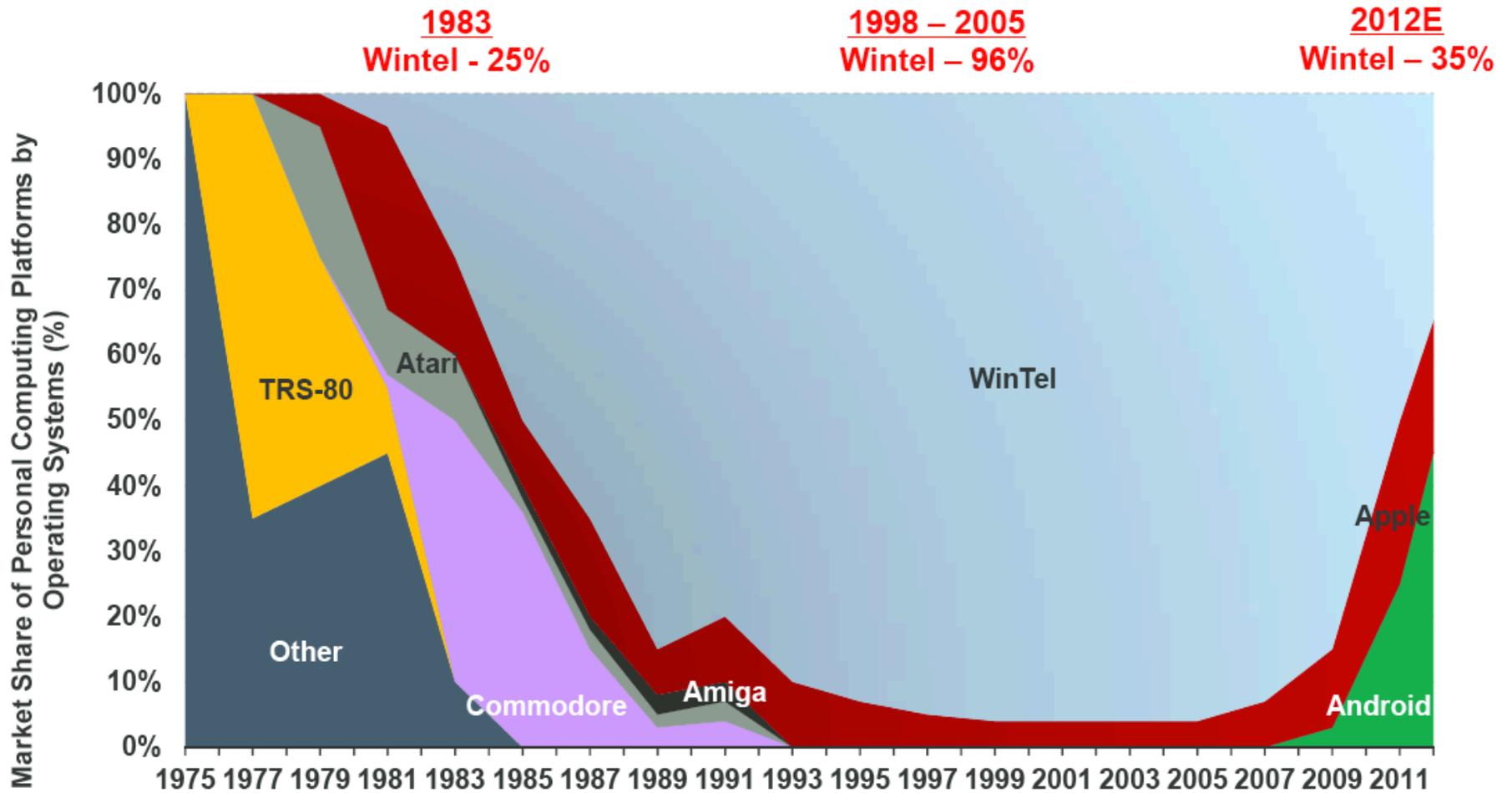
Mary Meeker

KPCB

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Source: http://www.scribd.com/document_downloads/95259089?extension=pdf&from=embed&source=embed

Global Market Share of Personal Computing Platforms by Operating System Shipments, 1975 – 2012E

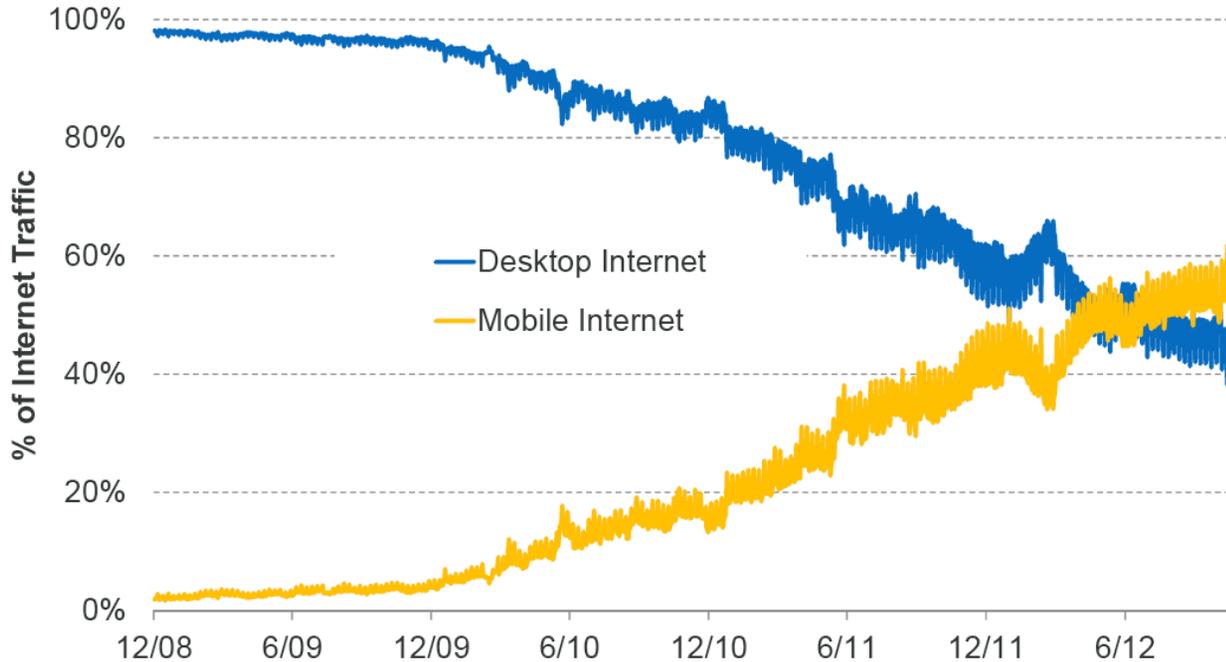


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Source: Asymco.com (as of 2011), Public Filings, Morgan Stanley Research, Gartner for 2012E data. 2012E data as of Q3:12.

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India Internet Traffic by Type, Desktop vs. Mobile, 12/08 – 11/12

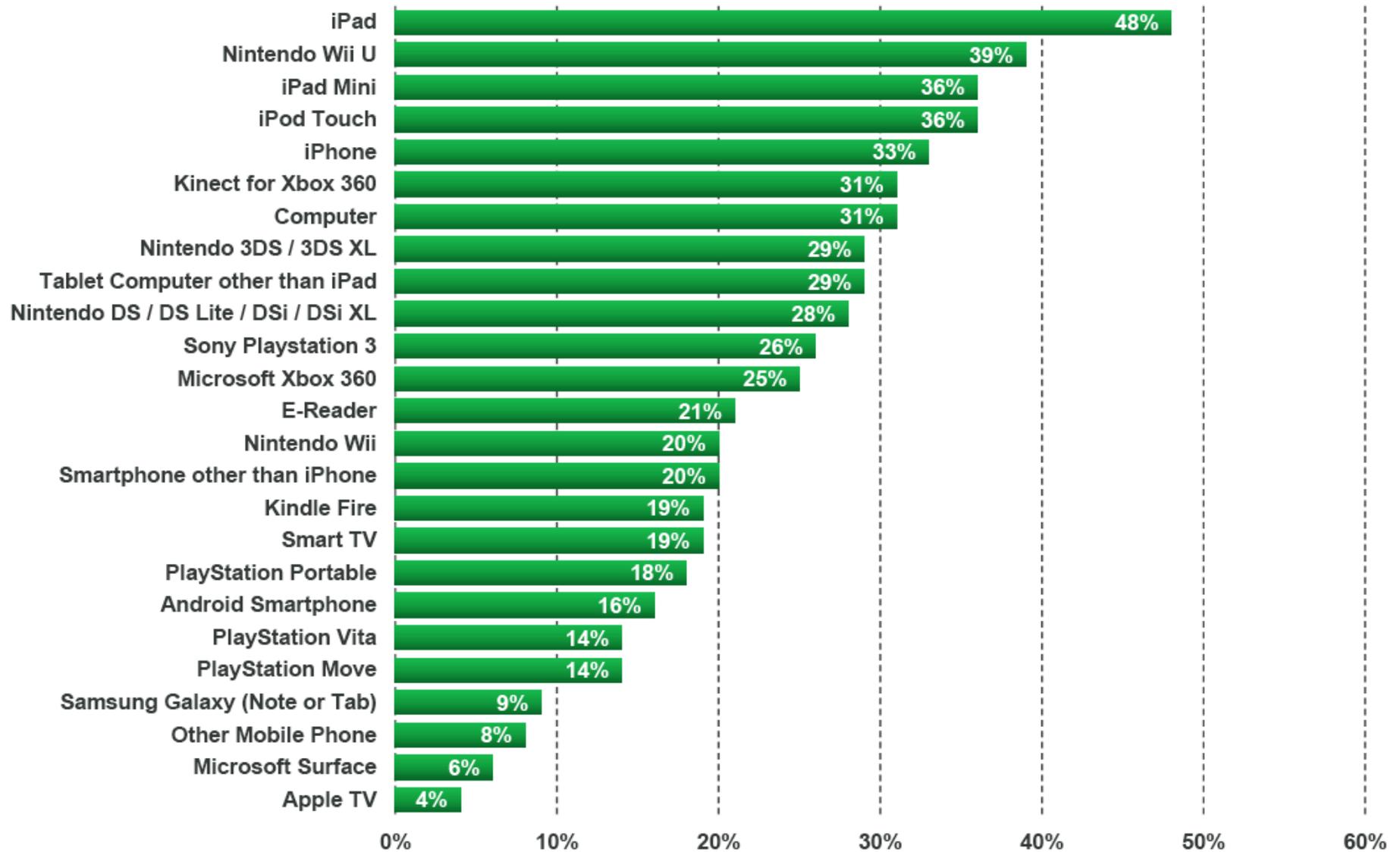


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Source: StatCounter Global Stats, 11/12 16

- US is 3rd in Internet users, but 78%; China #1/2 with 40%/14%
- China/US #1/2 in mobile subs; but 24%/48% smartphone
- Mobile as % global traffic: 4% (Dec2010), 13% (Nov2012)

Interest in Buying in Next 6 Months Among USA Kids Ages 6-12



Mobile Changes way we work/play, all industries...

Re-Imagination of Connectivity...

THEN...

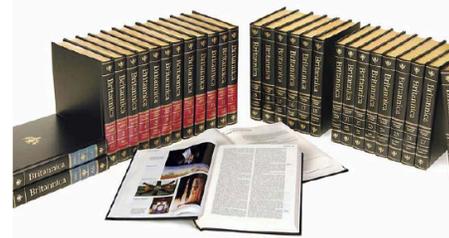


NOW...



Re-Imagination of Knowledge...

THEN...
(Print Copies / Updated Annually)



NOW...
(Accessible Everywhere / Updated Real-Time / Everyone Can Contribute)



Asset-Light Lifestyle Frees: Space...

Asset-Heavy...



Asset-Light...



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Amount of global digital information created & shared – from documents to pictures to tweets - grew 9x in five years to nearly 2 zettabytes* in 2011, per IDC.

Global Digital Information Created & Shared, 2005 – 2015E

