Convegno organizzato da:
AICT
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Introduzione alla Tavola Rotonda

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Net neutrality: who is right?

- Points of view from politics:
  - «“Net neutrality” has been built into the fabric of the Internet since its creation. That is why today, I am asking the FCC to **answer the call of almost 4 million public comments**, and implement **the strongest possible rules** to protect net neutrality.».

    ***Barack Obama**,“The President's message on net neutrality,”* November 10, 2014

  - «I think downloading YouTube can wait a few seconds. I think we can let the game at some times be less than perfect on the screen. But road safety, health and a few others come to my mind: **They should be able to deviate from net neutrality, this Taliban-like issue**.»

    ***Günther Oettinger**, EU Commissioner for Digital Economy and Society,* March 5, 2015

Net neutrality: who is right?

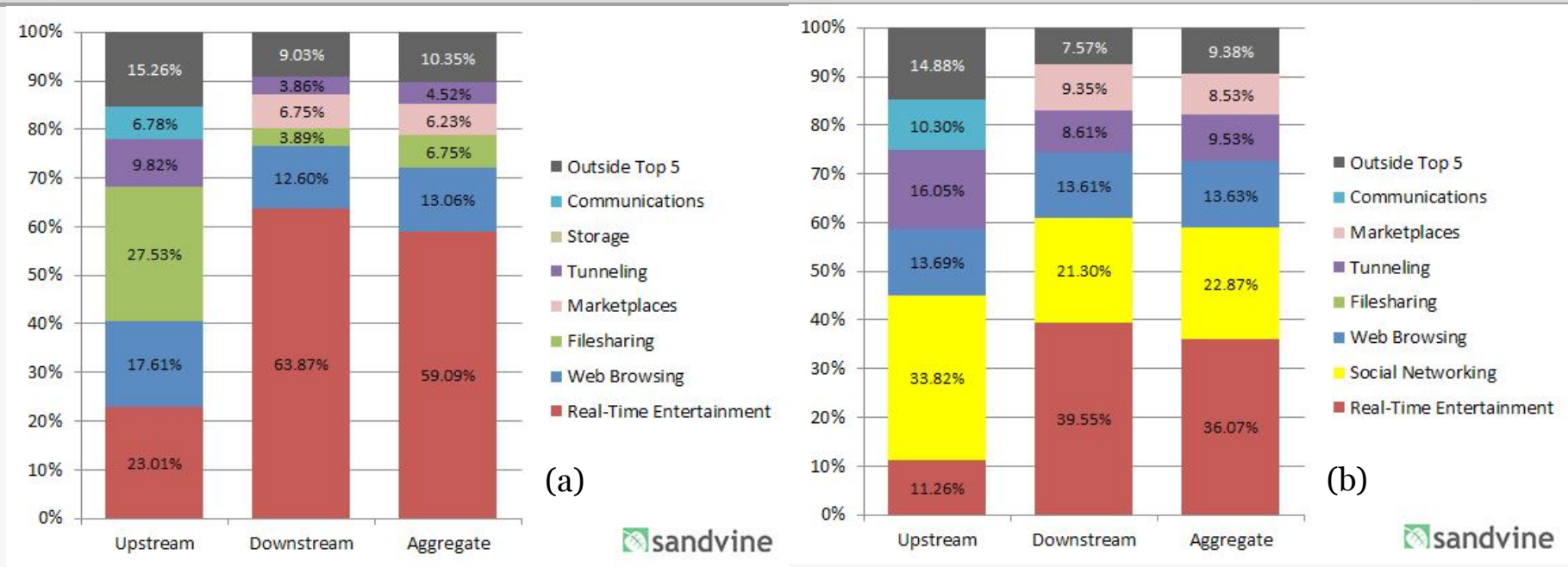
- Points of view from ICT experts:
  - «A bit is a bit» (1999)
  - «The truth is **all bits are not created equal**» (2014)

Nicholas Negroponte.

  - «Among the misinterpretations of neutrality, we find "every packet must be treated identically".The network should be essentially **indiscriminate with regard to origin or traffic destination**, and should supply its best efforts to deliver packets **while considering limits to capacity**.»

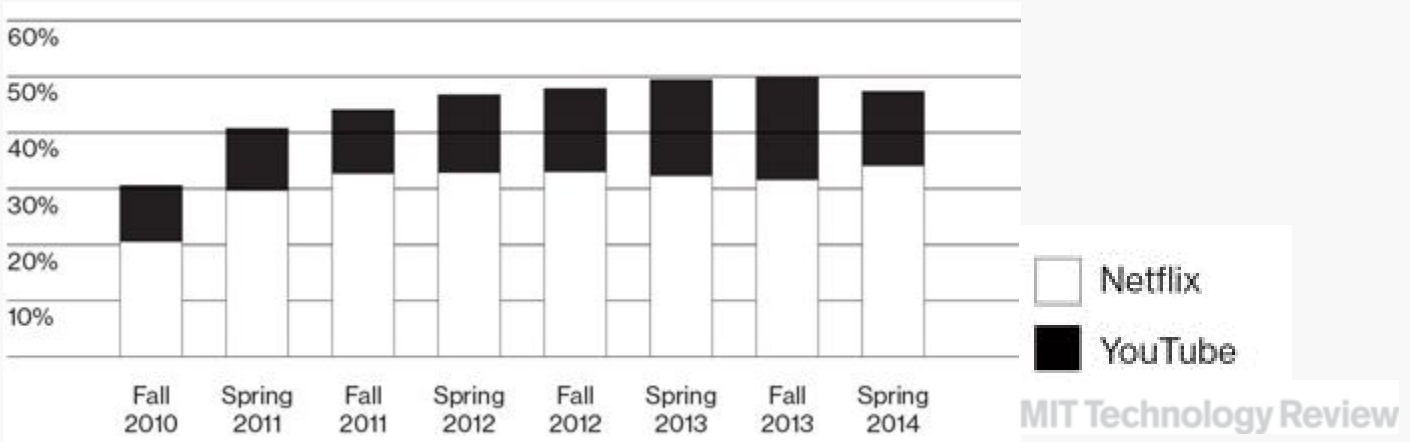
***Vinton Cerf**, 2014.*

Which traffic in Internet?

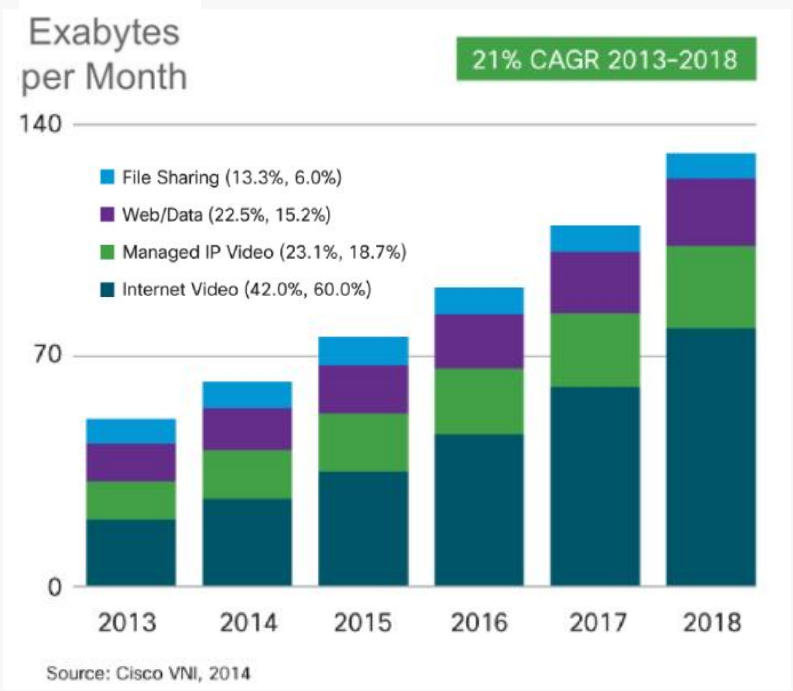


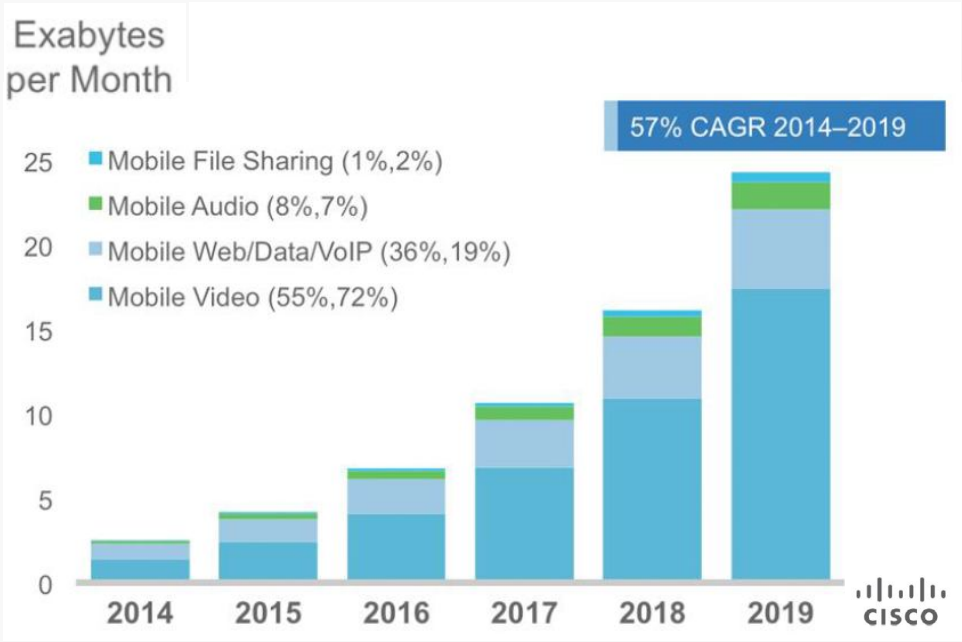
Peak period traffic composition in North America (1H 2014): (a) fixed; (b) mobile

Real-time entertainment (downstream)
- Fixed: 63,9%
- Mobile: 39,5 %



Predictions





Ratio fixed/mobile: **~20** (2014)
~ 6 (2019)

Mobile video will generate **about 70 percent** of mobile data traffic by 2019.

- Mobile traffic grows at a larger pace than fixed traffic…
- No Net neutrality for mobile operators…
- Is Net neutrality sustainable in a future scenario of 5G and fixed/mobile convergence?

Today's Net Neutrality Paradox

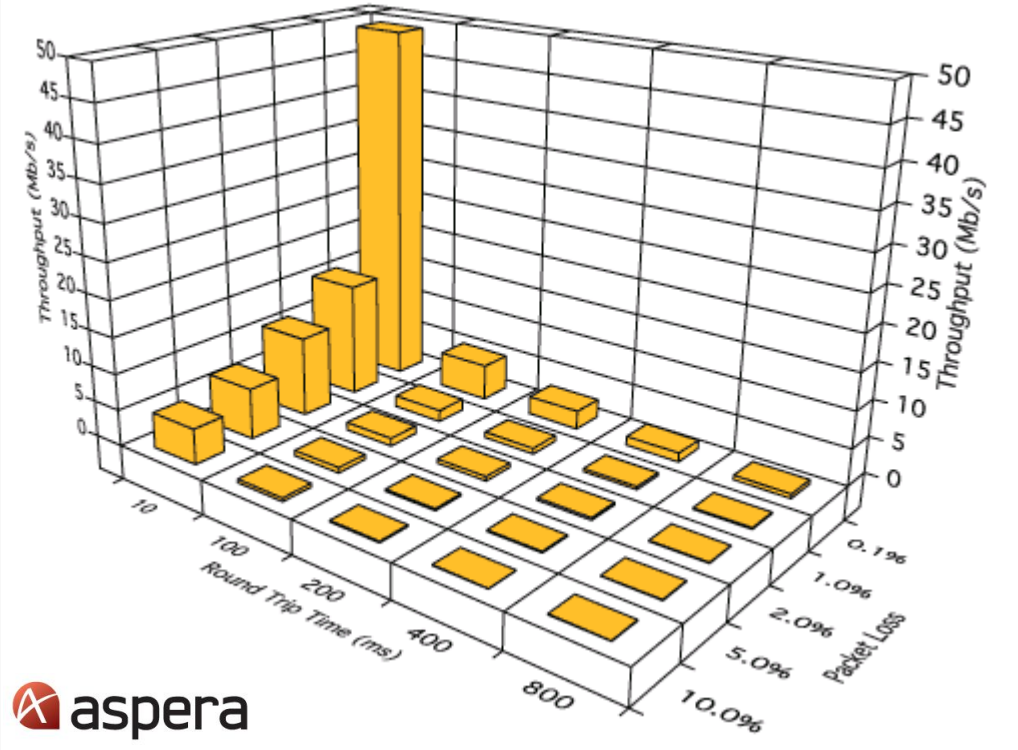
Neutrality definition	Narrowband services	Wideband services
Strict sense - SSD ("all bits are equal")	Implies WSD	Does not imply WSD
Wide sense - WSD ("no discrimination")	Implies SSD	Does not imply SSD

Condition: finite network capacity — Agreement — Disagreement

Condition: infinite network capacity — Agreement

Possible conclusions?
1) SSD Net neutrality violates Openness and Free speech
2) WSD the only definition congruent with Freedom and Sustainability

Max TCP throughput as distance increases

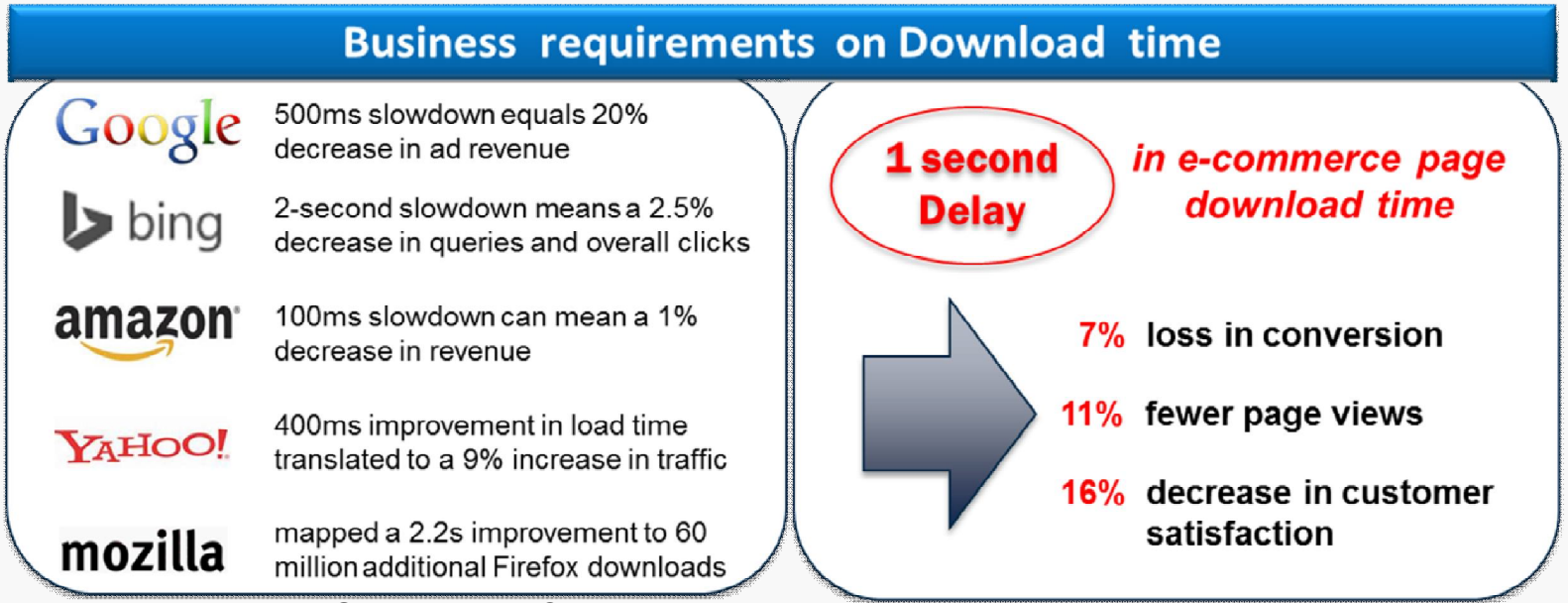


Maximum throughput achievable under various RTT and PL conditions on a 155 Mb/s link for file transfer using TPC.

Roughly 90% of overall traffic is TCP traffic.

How can we put together QoS/QoE requirements of Wideband services inside a single "best effort" network without a proper definition of "specialized services"?

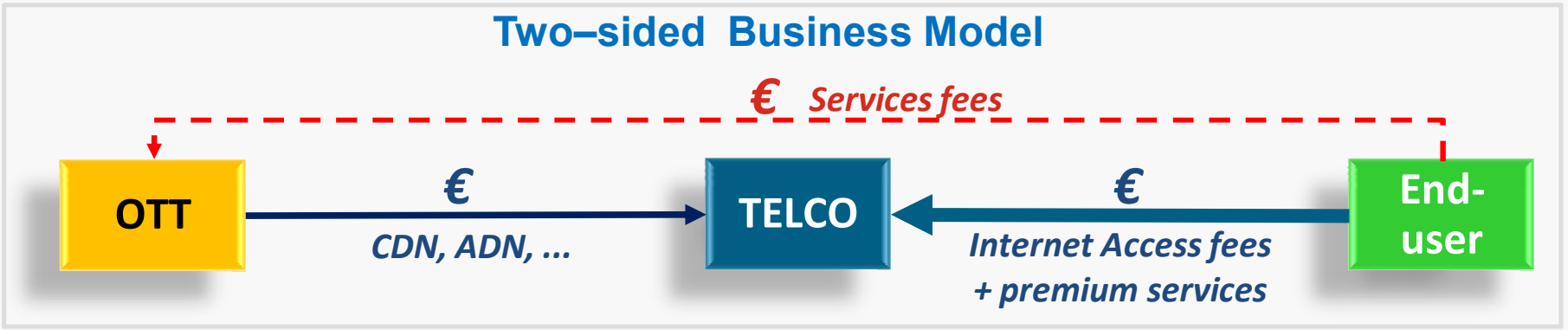
Requirements and New Business Models



Source: EdgeCast – Feb. 2013

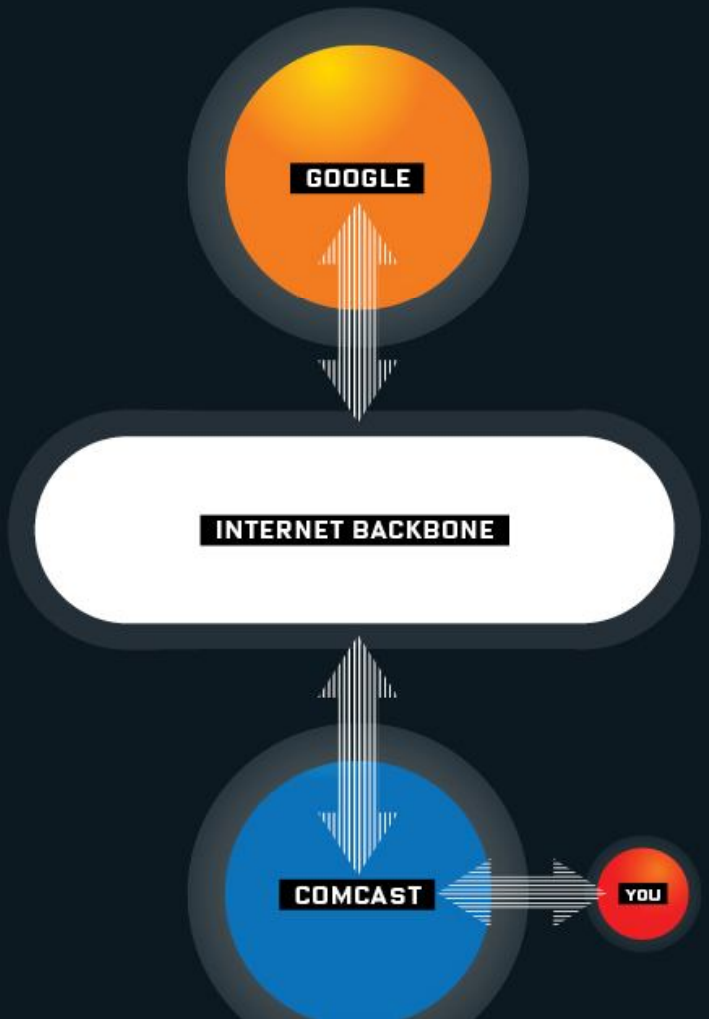
Source: RADWARE - July 2014

Do Telcos and OTTs disagree on how to handle Net neutrality?



What you think the Internet looks like

If you think at all about how Google and other web services arrive at your home, you probably think that Google sends stuff into a massive "internet backbone" of cables and data centers, before it streams into your living room through Comcast or Verizon or some other home internet service provider. But it's more complicated than that.

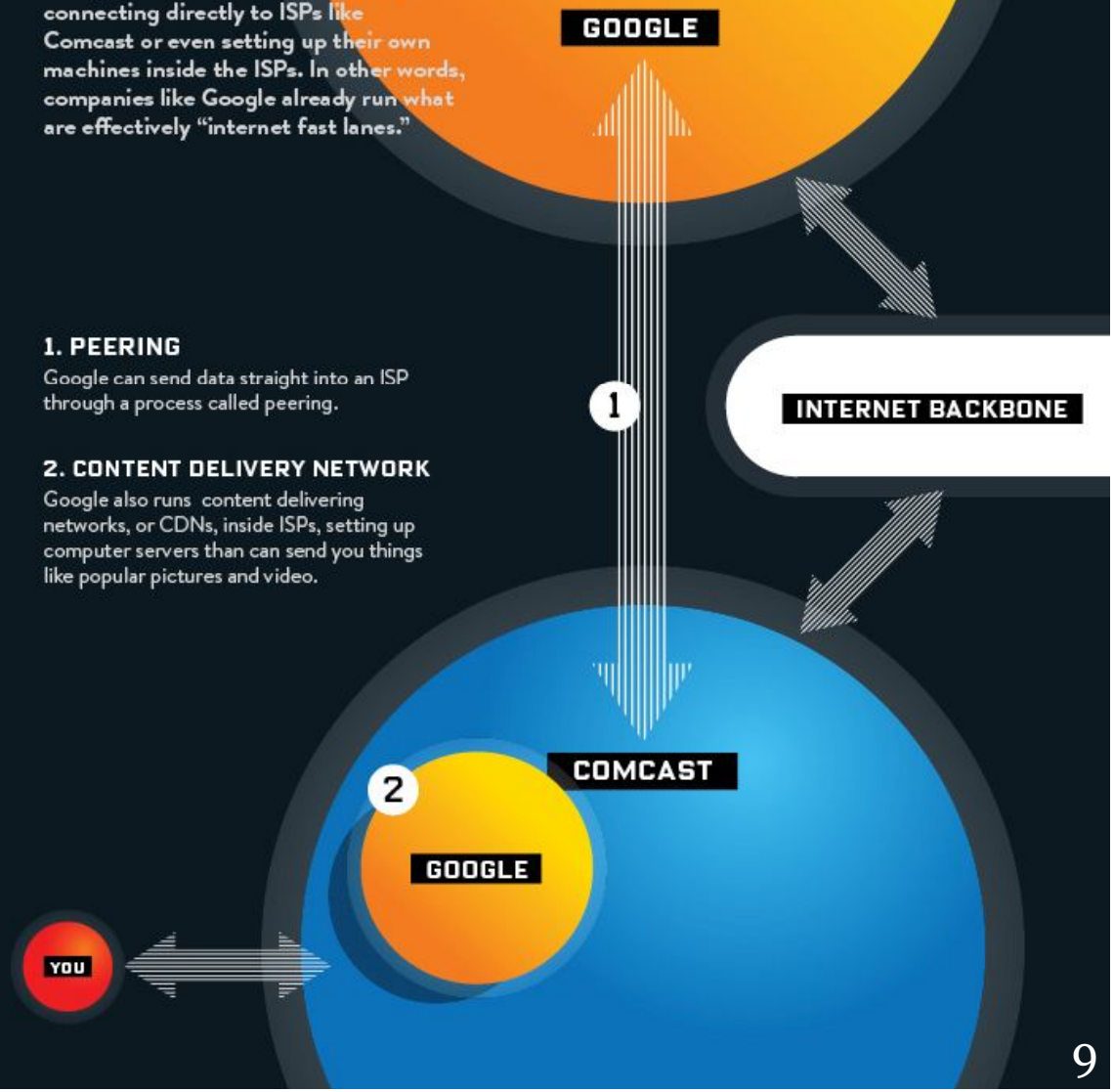


What the Internet really looks like

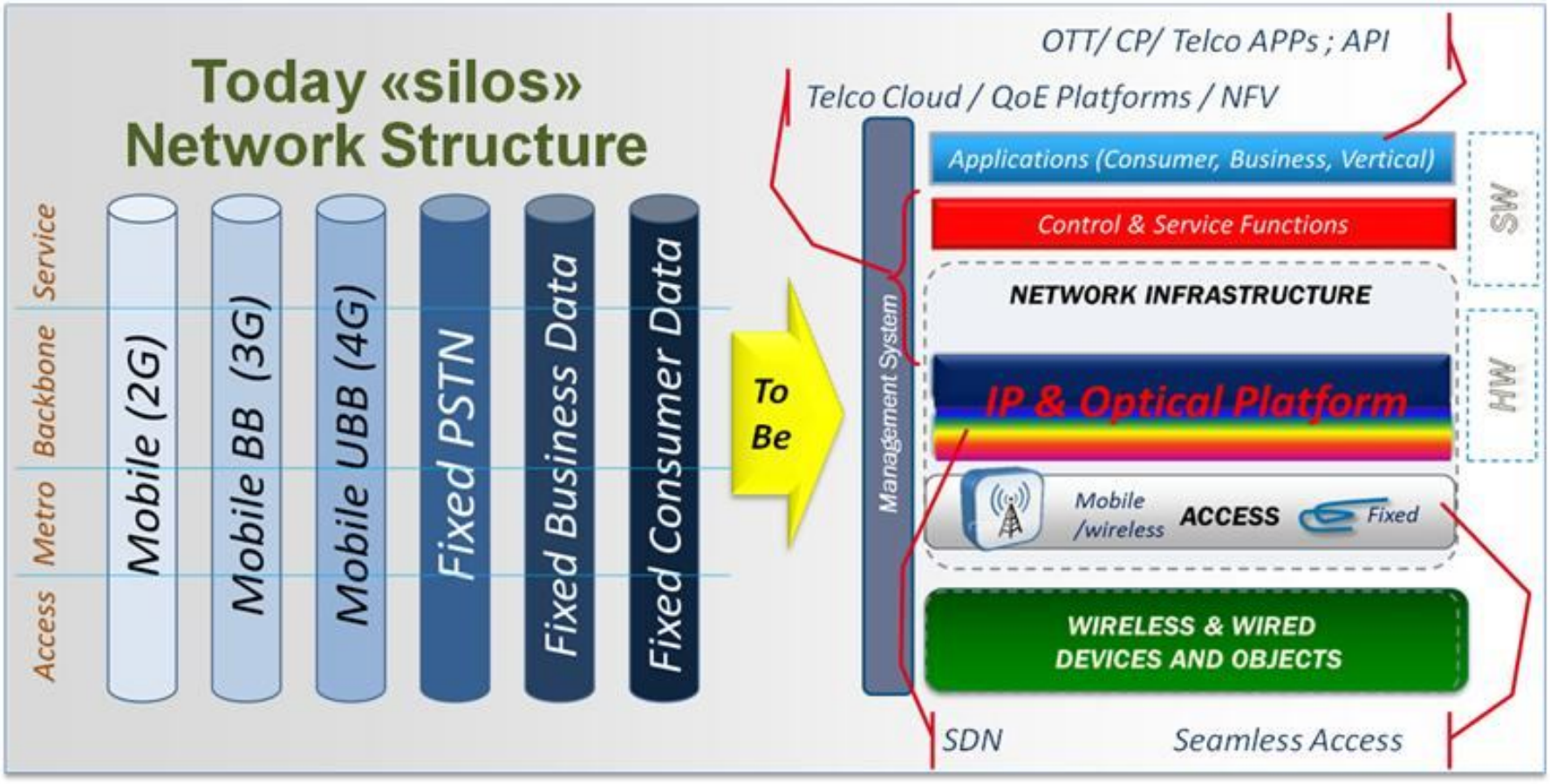
Today, so that they can get you stuff quicker, massive web services like Google will bypass the internet backbone, connecting directly to ISPs like Comcast or even setting up their own machines inside the ISPs. In other words, companies like Google already run what are effectively "internet fast lanes."

1. PEERING
Google can send data straight into an ISP through a process called peering.

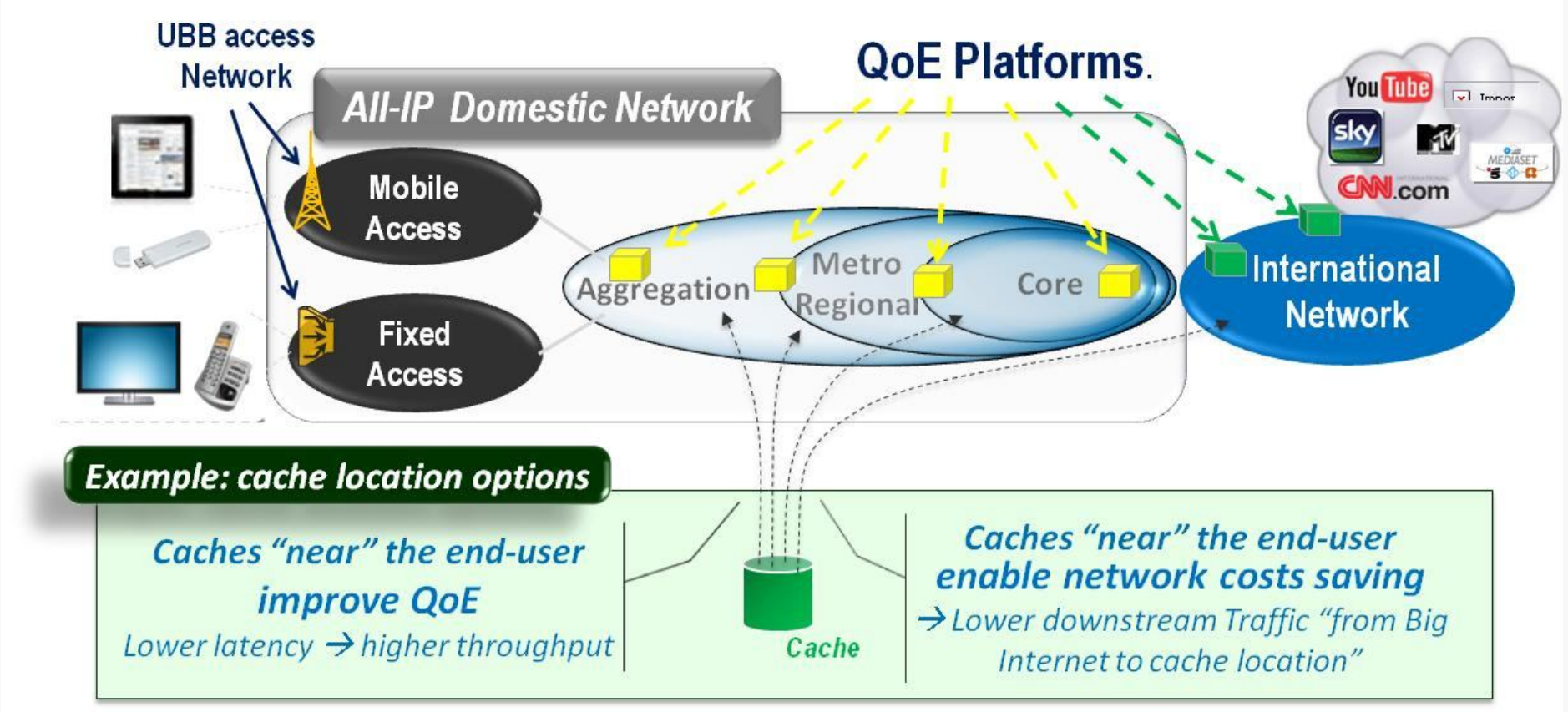
2. CONTENT DELIVERY NETWORK
Google also runs content delivering networks, or CDNs, inside ISPs, setting up computer servers than can send you things like popular pictures and video.



ALL-IP Target Network Architecture



Need for QoE Platforms



QoE platforms near to end users improve throughput *(lower latency, & packet loss + protocol optimization)* and enable network cost saving

“Core” Net Neutrality vs “Border” Net Neutrality

- Net neutrality (i.e. non discrimination) problem moving from the “core” of the Internet towards its “border”:
  - Technical:
    - How to handle possible crypto of contents at application layer (e.g., SPDY): should this practice regulated? If yes, who and how?
  - Economic:
    - Is there a problem with the “neutral” transport of third party contents (monopsomy)? See controversies on prices between Amazon and Book publishers: who decides?

Partecipanti alla Tavola Rotonda

- Giovanni AMENDOLA, Telecom Italia
- Massimo LA ROVERE, Wind
- Antongiulio LOMBARDI, H3G
- Stefano NOCENTINI, AICT
- Michela RACO, Poste Italiane
- Luca REA, Fondazione Ugo Bordoni
- Michelangelo SUIGO, Vodafone