

Net Neutrality, Zero Rating and applicability in low internet conditions

Helani Galpaya

Katmandu, March 2015



This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada.



FORD FOUNDATION



IDRC | CRDI

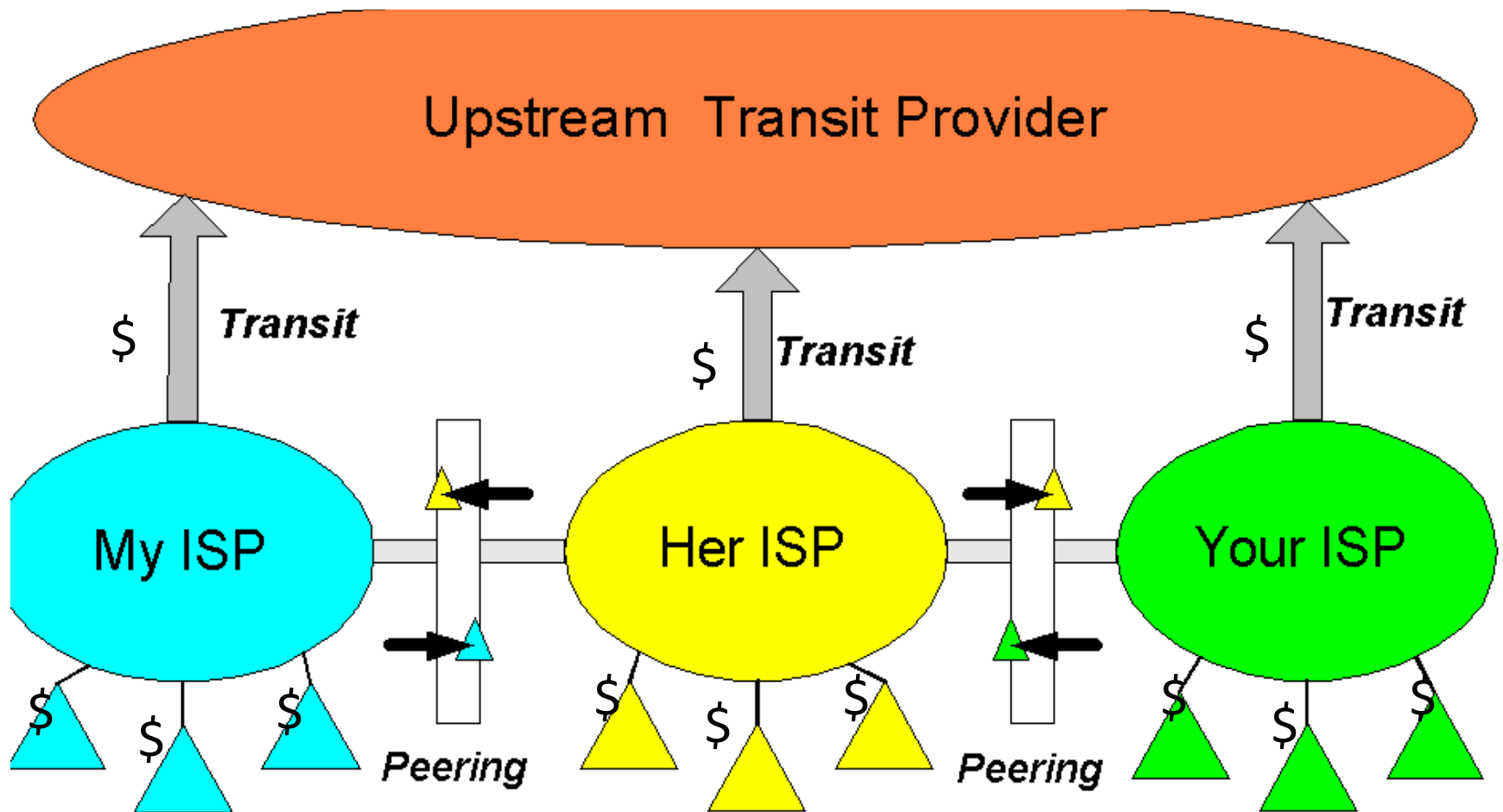
International Development Research Centre
Centre de recherches pour le développement international

Canada

The internet as a ‘generative’ network

- Meant to be content agnostic
 - Video, voice, books, music, etc. all can be transmitted
- Allowed anyone to connect at the edges
 - With any equipment
- Governed by a basic set of rules
 - Routing tables, protocols
- Anyone (any machine) to connect to any other machine
- “open”

Traffic routing and payments in best-effort networks



Peering & Transit: bilateral business and technical agreements

- Transit: one ISP (sells) connectivity to all destinations in the global internet
 - In most cases, transit provider will carry traffic to/from its customers to other customers AND to every destination on the internet
 - Traffic from 3rd parties to 3rd parties
 - Defined price: usually on volume basis
 - From customer point of view: simple relationship; paid; governed by a SLA (service level agreement)
- Peering: 2 providers agree to accept traffic from one another and from one another's customers (and their customers customers)
 - No cash payments, no cash settlements (usually within 150% of agreed upon amount)
 - No SLA

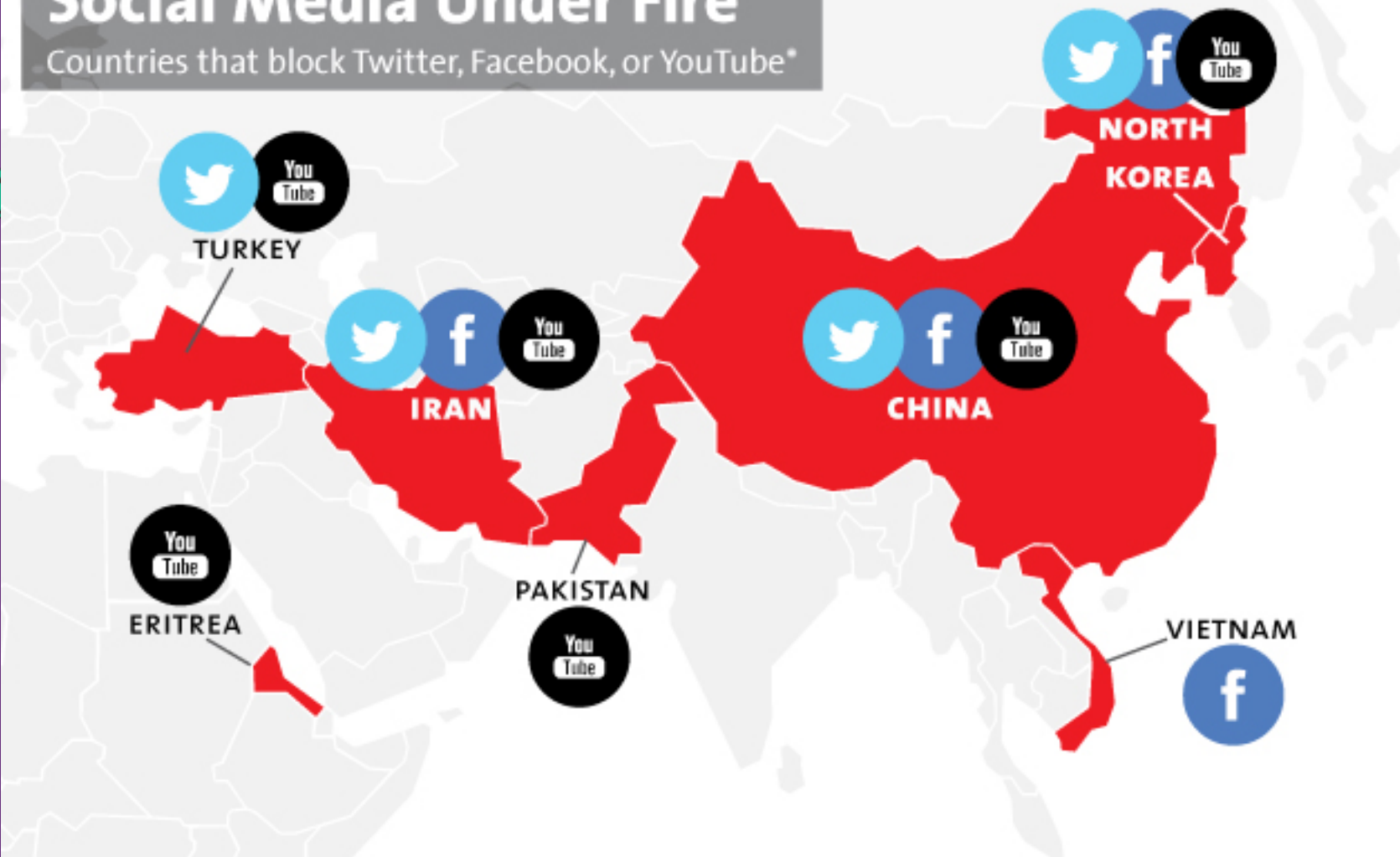
What is Net Neutrality?

- Do we know it when we see it being violated?
- Minimal case definition:
 - NN = no block of content
- Therefore blocking is = is this a violation?

FREEDOM ON THE NET 2013

Social Media Under Fire

Countries that block Twitter, Facebook, or YouTube*



*Full or partial blocks, as of March 2014
Sources: Google, Twitter, OpenNet Initiative

Mother Jones



But are we unhappy with all traffic blocking or prioritization?

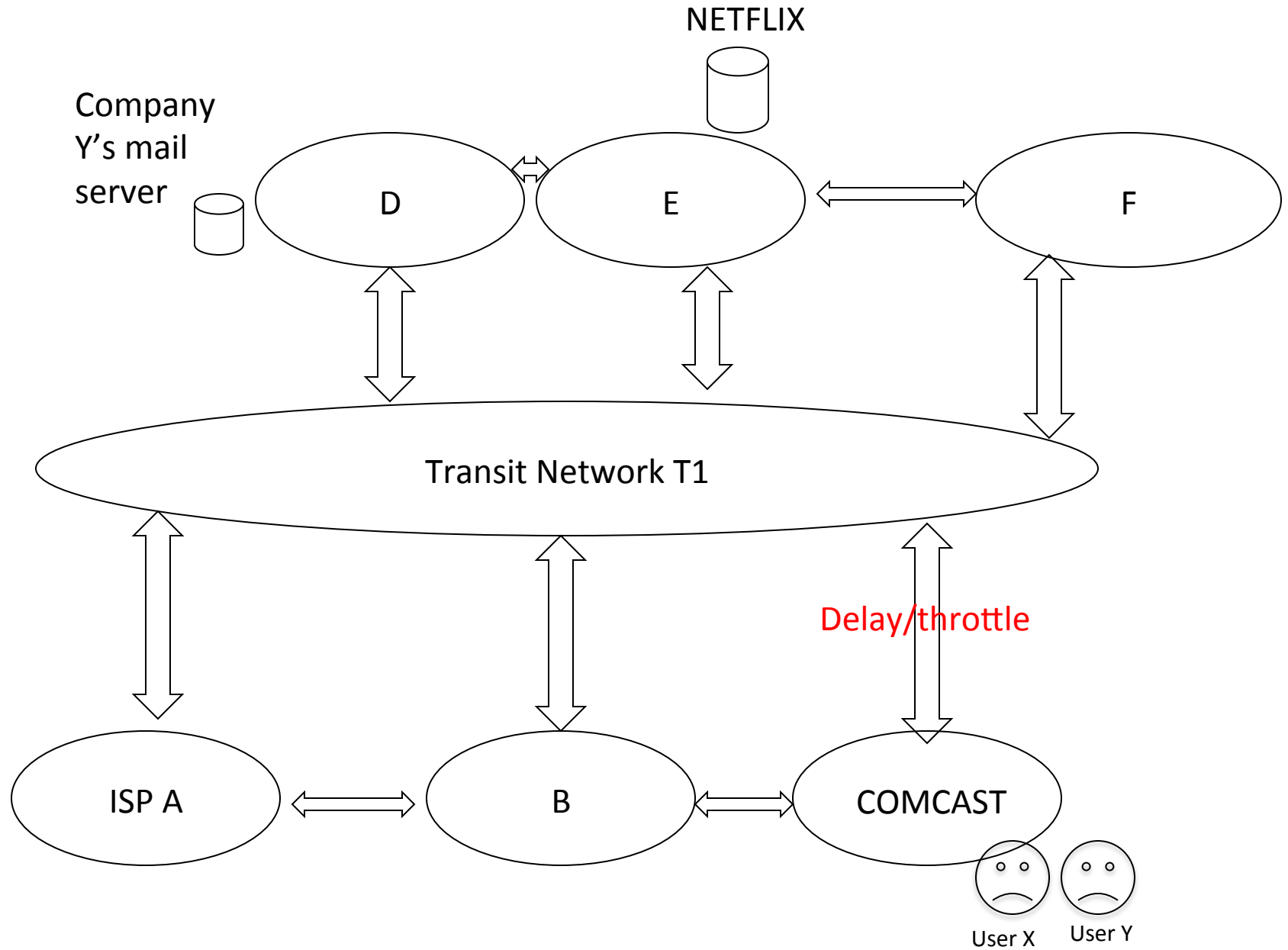
- Most people happy when some content is blocked by their ISP
 - Child pornography
 - SPAM

Govt are not only people who want to control content

- Not necessarily block
- But to determine the speed of certain content

In the US, videos (Netflix, YouTube) ~ water park

- At peak, > 80-90% of traffic Netflix, YouTube, Google
- Should ISPs (e.g. Comcast) increase the size of the pipe?
 - Rational, yes
- Who should pay?
 - 2013 WCIT debate: “suppliers” (e.g. Google/Netflix/YouTube) should pay the BB service providers
- Why is this a bad idea?



What did Comcast (allegedly) do?

- How is traffic routed?
 - Interconnection, Peering, transit
 - Eye-ball networks (users who demand content)
 - Content networks (providers of content)
- Throttling ALL traffic of transit provider
 - Via which Video was being routed
 - Until Peering Agreement was 're-negotiated'
- What happens to others on the network?

Railroads, people, movement

- Sleepy town, rail road runs through
- New waterpark opens in sleepy town
 - Visitors increase x 100 fold
- What should the rail network do?
 - Increase capacity: run more trains per hour?
 - Increase capacity: build an extra train line?
- Who should pay for increased capacity?
 - The rail company?
 - The waterpark?

Comcast's defense

- Comcast says
 - Peering arrangements are commercially negotiated
 - Roughly equal (or +150%) traffic
 - If this changes, re-negotiate
 - Because upgrading interconnection is costly
- Counter argument (of sorts)
 - Upgrading interconnection point is cheap (new network cards is less than USD 400?)
 - Rest of the network should be upgraded anyway as sound business practice

Was that an example of a violation of network neutrality?

- Go back to trying to define NN
- Minimal definition: No blocking
 - Not this example.
- Next nuance: No throttling (downgraded speed)?
 - This is what happened
 - Is it a violation of NN?

But are we unhappy with all prioritization?

- ‘Reasonable’ network traffic management
 - Prioritizing delay-sensitive traffic (voice before e-mail)
 - Reserving bandwidth for delay-sensitive traffic (voice over LTE)
 - Prohibiting high-bandwidth traffic (video on airplanes)
 - Rendering resolution dynamically (video over wireless)

Are these violations of NN?

- A country's government blocking certain types of content
 - E.g. Certain social media (China, routinely)
 - Block YouTube during riots in PK
- Differentiating speed/price bundles?
 - 100 Mbps for USD 20 per month
 - 200 Mbps for USD 30 per month
 - Etc.
- All you can eat (uncapped) packages vs. limited (capped) packages?
 - All you can eat was the norm in the US
 - changing now, e.g. US iPhone packages by AT&T
 - Not uncommon for fixed BB
 - Rarely found in emerging Asia

What is Zero-Rating?

- Some type(s) of content does NOT count towards data cap
- Buy a basic (entry level) data plan, and get
 - An unlimited (or very large) quantity of some specified content (i.e. 'Zero Rated') for free (or for a nominal price)
- Facebook, WhatsApp or other apps/content popular as zero-rated offering
 - Social media and certain applications/content drives usage
 - Operators use it as a 'honey pot': to attract users
- Category of PAID PRIORITIZATION as violation of NN

Examples

- Turk cell in 2010
 - Unlimited use of Facebook Zero (0.facebook.co and zero.facebook.co)
 - Only text; pop up warning when user wants to view photos/videos or any link outside of Facebook
- Airtel India, 2010
 - m.facebook.com zero-rated; no other data connection/subs required
 - Beyond FB Zero, allowed photos (not just text). But no games or chats
- AirCell, Idea, other operators, since end 2014
 - FB Zero free, OR
 - FB App for INR 40 when you buy basic data (for about INR 100)
 - Etc.
- Telenor in Myanmar since 2014
 - O.facebook.com free

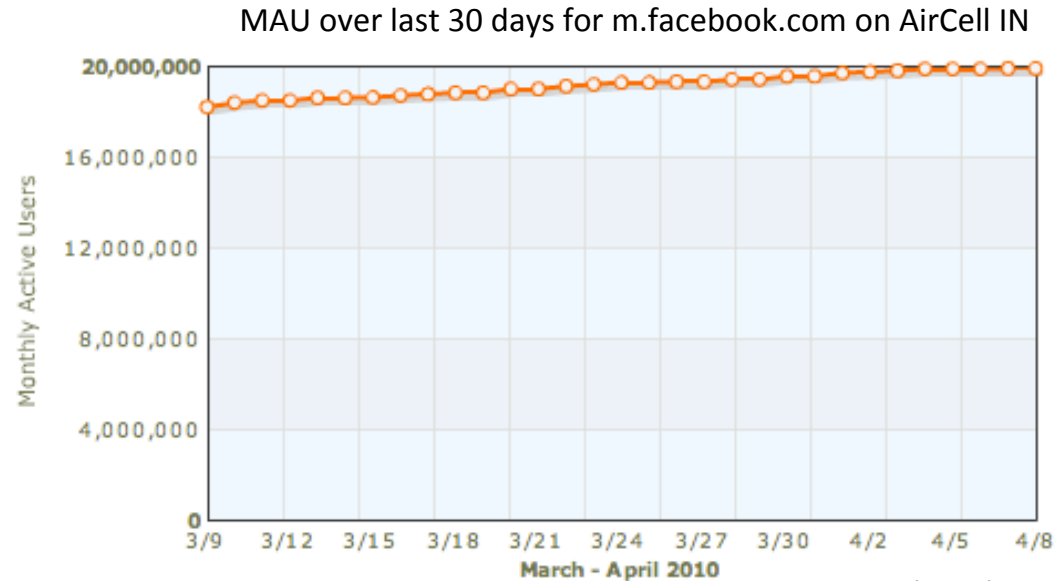
Why is this attractive?

- To users
 - Free content
 - Free content that is EXTREMELY attractive (social media is most popular content)
- To telecom operator
 - People are not coming online (even when prices are low)
 - Suddenly, attractive content is offered to users
 - Users are attracted/hooked → Eventually convert to paying users
- To Facebook, Google and other content
 - More eyeballs → increased ad revenue

Is there money
changing hands?

What are the results

- TurkCell
 - 6.5 million people getting online via FB
 - Revenue/sub up 9%
 - 34% increase in mobile Twitter use (in 2012 promotion)
- Aircell India 2010 promotion
 - +2Million MAUs in 30 days
- Myanmar
 - 40% of SIMs are DAUs



Source: AdWeek

Early indications: ZR content increases people's willingness to consume (i.e. pay for) data

How might ZR violate network neutrality?

- “FB- packets are given priority/favored because they are free”
- Are users of B at a disadvantage?
- What could happen?:
 - Say avg. user consumes 0.5MB/day
 - 5MB used up in 10 days
 - On package A: If user is price sensitive, those on A can’t go online after day 10. No internet Day 11 – 30 each month
 - On package B: If user is price sensitive, he doesn’t go online after day 10. But continues to use FBO till the end of the month
 - A period (20 days) where ‘internet’ = FBO for Package B users
- Is this a problem? How can it be ‘corrected’?
 - Banning package B?
 - Avg. consumption (0.5 per day x 30 days) = 15 MB per month; insist all ZR plans have to offer 15MB as base package?
 - Should we even TRY to correct this?

Package A	Package B
5MB per month, for Rs. 100; each additional MB Rs 50 each	Same as A + unlimited 0.facebook.com (FBO)

How might ZR violate network neutrality?

....contd.

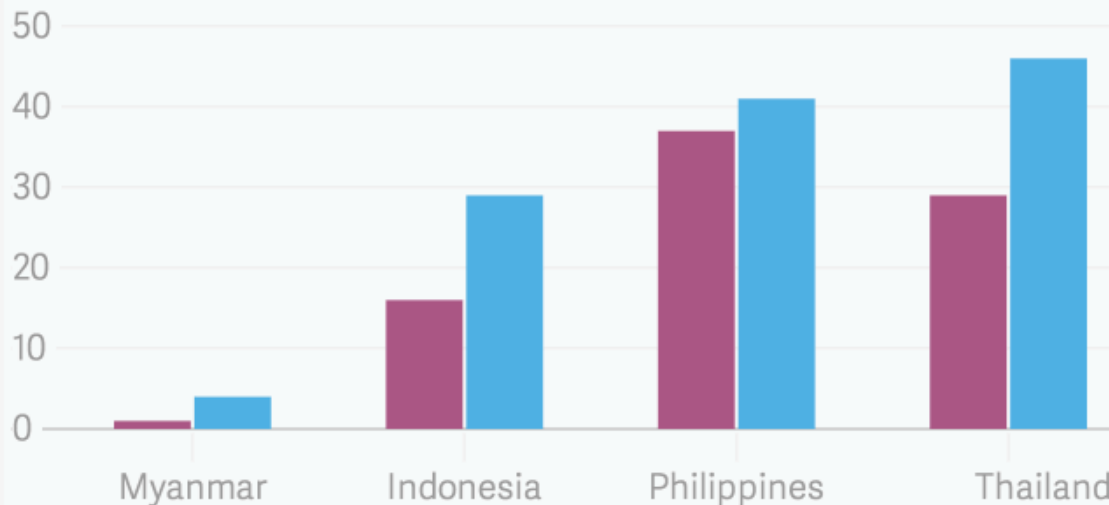
- “People will stay in FB. And think FB = internet. That is a disadvantage to developing country users. Their rights are violated”
 - “In developed economies people came online with the full internet” (everyone could access everything; every packet/byte cost the same as another)
 - AOL/CompuServe short-lived exceptions?
- FB = internet is not new
 - Indian operators: 65-85% of avg users data use is for Facebook, YouTube and WhatsApp. Before ZR phenomenon
 - LIRNEasia and RIA research from 2011/12

Millions of Facebook users have no idea they're using the internet

It was in Indonesia three years ago that Helani Galpaya first noticed the anomaly.

Internet users and Facebook users per 100 people

■ Internet users ■ Facebook users



Quartz | qz.com

Data: LIRNEasia

Reported in

- Quartz (qz.com)
- Telegraph (UK),
- DailyMail (UK),
- Smithsonian.com
- AdWeek
- Investmentwatch
- etc.

Indonesians surveyed by Galpaya told her that they didn't use the internet. But in focus groups, they would talk enthusiastically about

1

Competitive dynamics: platform lock-in

- “Facebook will become the dominant/only platform. Gives too much power to FB”
 - Network effects: FB popular → more content on FB by app developers/governments/pvt sector/individual users → FB even more popular
 - Worry of Telcos (becoming the dumb pipe)
- FB as preferred platform
 - Who can get on it? Apps FB approves

Competitive dynamics: operator walled-garden lock-in

- Can young app developers ever have “win”?
 - Negotiating skills with the telco (and ability to pay?) drives if you are in/not
 - Not necessarily what the users think is ‘best app’
 - Is this ok?
- AT&T’s 2014 ‘Sponsored Data’ program
 - Anyone can participate (pay AT&T, then their content is ZR)
- Does commercial vs. non-commercial content make a difference?
 - WikiZero thinks so
- Internet.org: Facebook’s App of free content, Zambia
 - FBO + some other data (AccuWeather, Airtel, eZeLibrary, Facebook, Facts for Life, Google Search, Go Zambia Jobs, Kokoliko, MAMA (Mobile Alliance for Maternal Action), Messenger, Wikipedia, WRAPP (Women’s Rights App) and Zambia uReport.
 - Unclear if other apps can get in/ZR’d

Competitive dynamics: At times, implementing ZR has been good; At times, banning ZR has been bad;

- Australia
 - 4 large ISPs 'Gang of Four' refusing to peer with smaller ISPs.
 - Smaller ISPs having to buy transit → high costs → low roll-out
 - ZeroRated entertainment content from top/popular channel
 - Traffic, subscriptions increase. Network rolls out. Dominance of big guys becomes less
- USA
 - MetroPCS (5th largest operator) struggling financially
 - New package: USD40/month for unlimited voice + small amount (capped) data + ZeroRated (uncapped) YouTube
 - Worked with Google to optimize Streaming
 - NN advocates protest → ZR-based plan abandoned
 - By 2012 no option but to sell to T-Mobile (reducing competition)

Should regulators/policy makers act?

- Is it increasing welfare?
 - Are people who would otherwise not consume, consuming due to ZR?
 - Appears so. But strong causality not established.
 - Is new economic activity being enabled by this?
 - Possibly. E.g. Syntonics, US startup that manages sponsored data for others
 - Anecdotal evidence of ‘innovative’ impacts
- Is it having negative competitive impacts?
 - Are people(users)/app developers/governments/firms getting pushed towards one platform?
 - Is it reducing the possibility of alternate platforms?
 - Evidence not conclusive; but indications are it could.

What might a regulatory response to ZR be?

- What should regulators do when evidence is unclear?
- Watch, research, be ready for action
- In the meantime: o all the other stuff that they were supposed be doing all this while
 - increase competition at all points in the value chain, give enough spectrum → decrease prices
 - Release government data → locally relevant content/apps