Converged OTT using 5g broadcast : India use case

Video Consumption is exploding

56% Video

2017
15 Exabytes/Month

73% Video

2023
107 Exabytes/Month

Legend:
- Video
- Audio
- Web Browsing
- Social Networking
- Software Download
- Other Segment
- P2P File Sharing
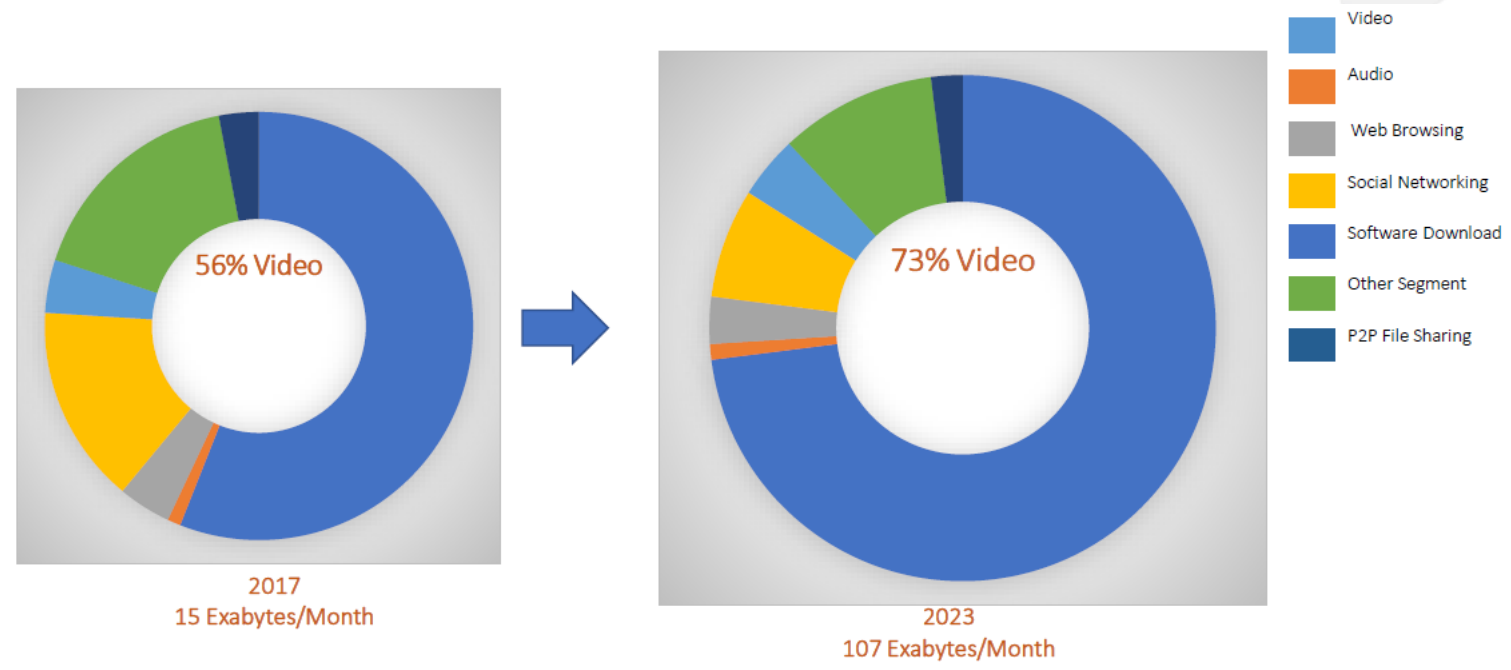
Mobile data traffic by application category per month (percent) [1]

Exponential growth of video consumption on mobiles

Unicast Video results in poor User Experience

- ➢ Non-Linear relationship between download speed and video quality

  - ➢ Video quality depends on "Instantaneous" speed not "Average" speed
  - ➢ Video needs a "constant quality" pipe

  - ➢ Operators throttle speed

Comparing Overall Video Experience and Download Speed

No Significant Effect on Video Quality
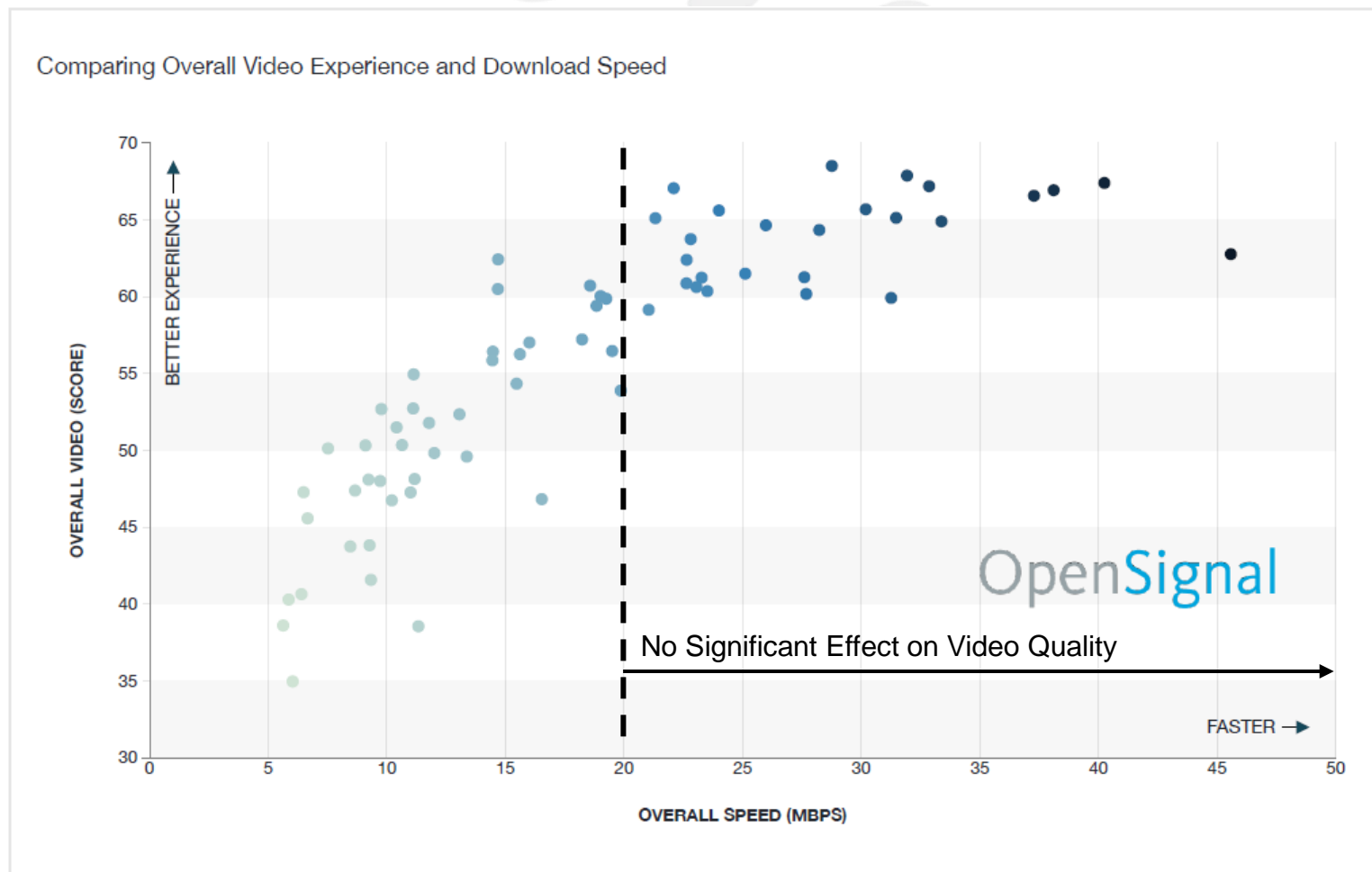
OpenSignal

Source: Open Signal
"The State of Mobile Video" Report

Broadcast Infrastructure is barely utilized

- There is **ZERO** demand for traditional DTT to fixed Televisions in India
- Current transmit architecture doesn't
  - Link budgets for mobile reception
  - No native support for OTT content
  - Not **Cloud Native**
- Conventional High Tower DTT is very wasteful of spectrum (Reuse ¼)
  - Based on legacy "masks"
  - No localization support
  - Low data pipe

Cheap Data ... not forever

Drivers of the war in OTT
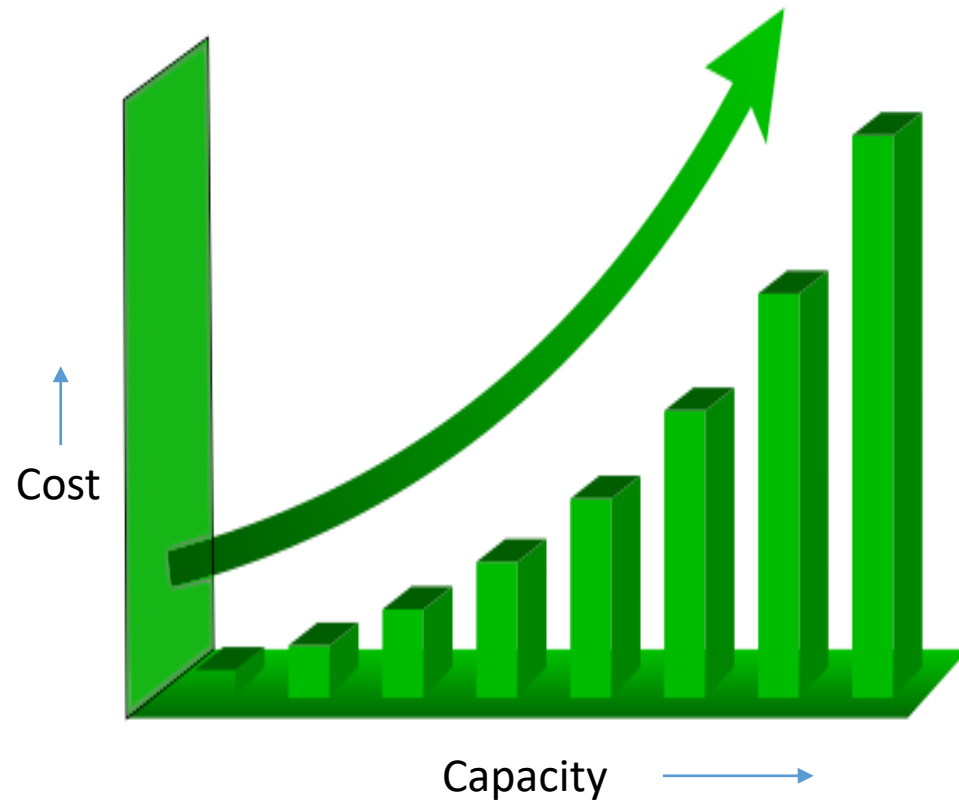
ajuniorvc.com

source: lok sabha questions
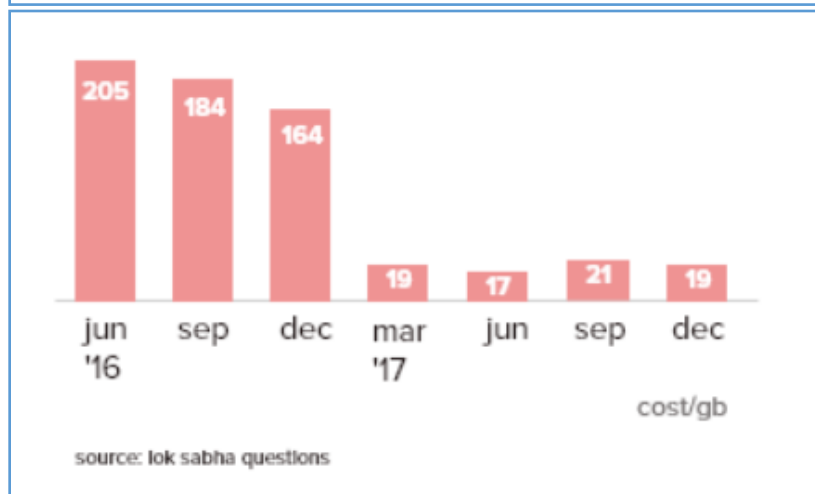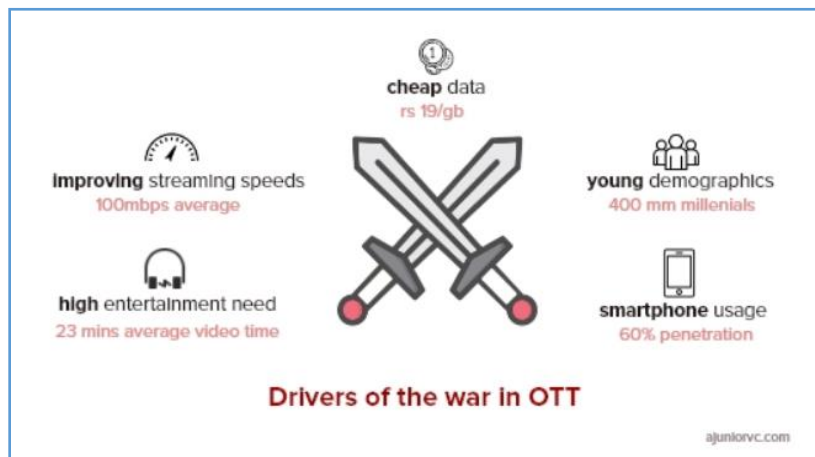
Video viewing has exploded due to disruptive pricing.

Key driver, "Cheap Data" will no longer be available.

Airtel, Jio and Vodafone Idea to raise tariffs by up to 47%

OTT players will require smarter alternatives for Video/data delivery

Unicast is Expensive … and getting worse

0.5 GB/day has cost JIO 40B$ yet supply constrained

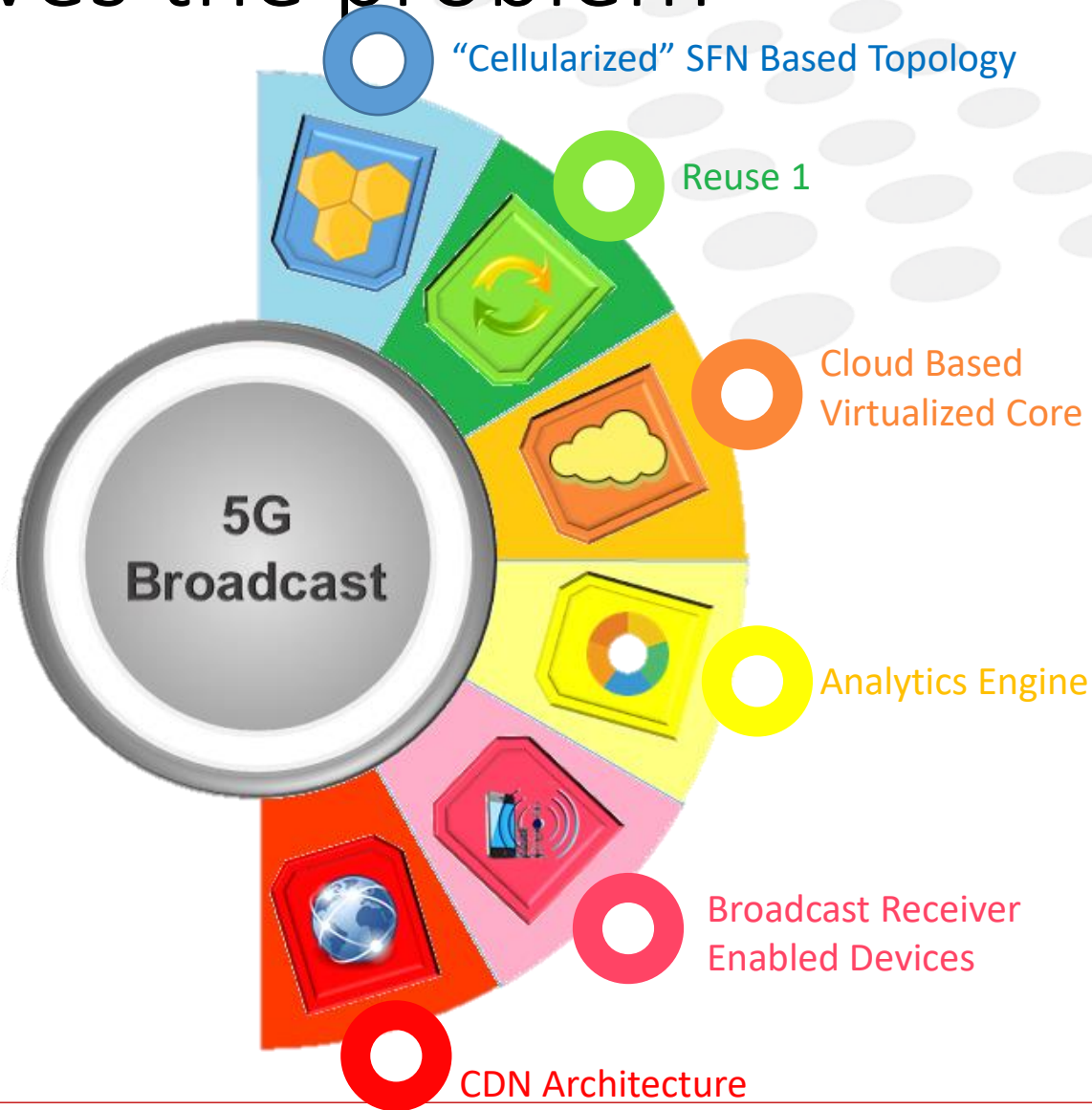** From Mukesh Ambani's address at RIL's 42nd AGM*

2 GB/day is required for good user experience

Unicast congestion will significantly worsen further. (Cisco – 18 GB/day*, 850 million subs by 2025)

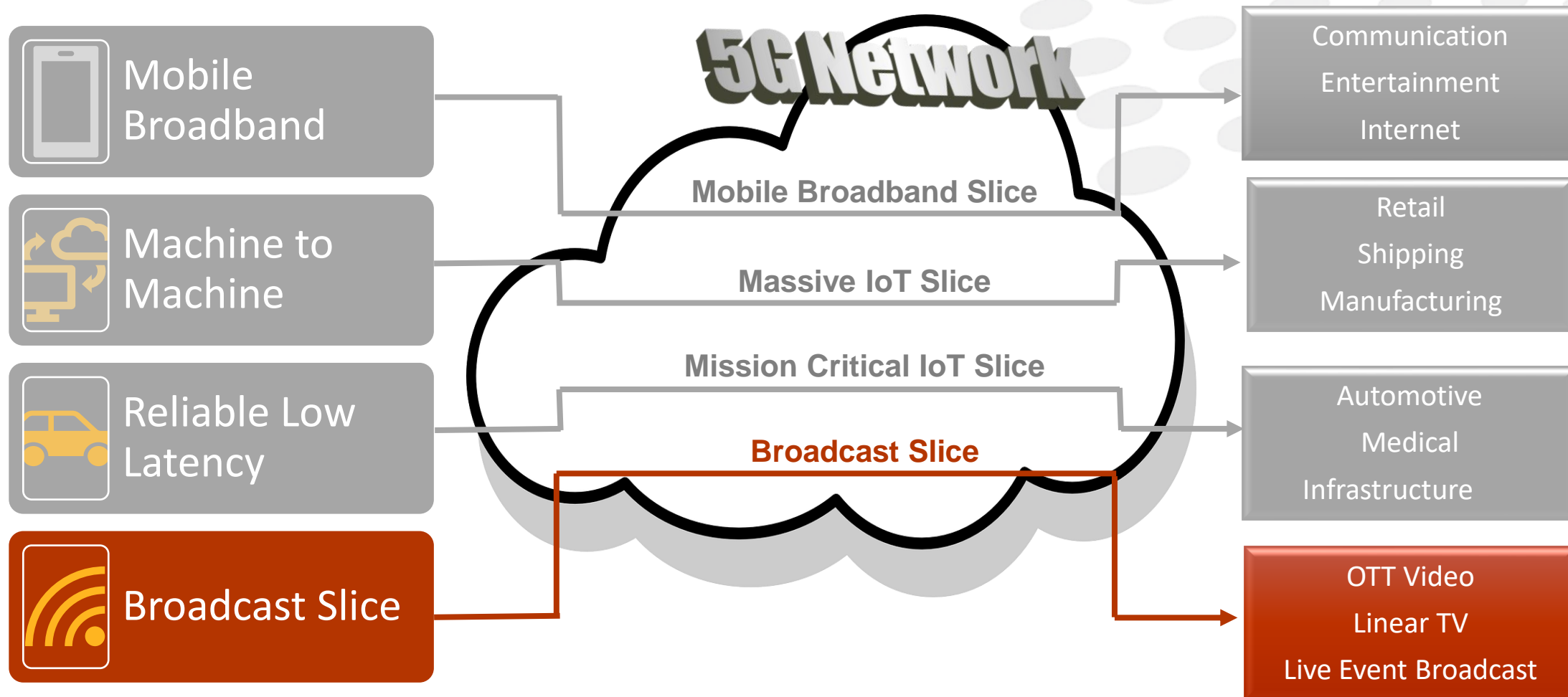** From Cisco's 13th annual Visual Networking Index (VNI).*

5G Broadcast solves the problem

- Convergence of broadcast and broadcast networks
- Not just "fat" but "smart" pipes

- Efficient use of the traditional UHF broadcasting spectrum

- Broadcasting pipe has infinite "elasticity"

- Lower cap-ex for a "giga byte" pipe
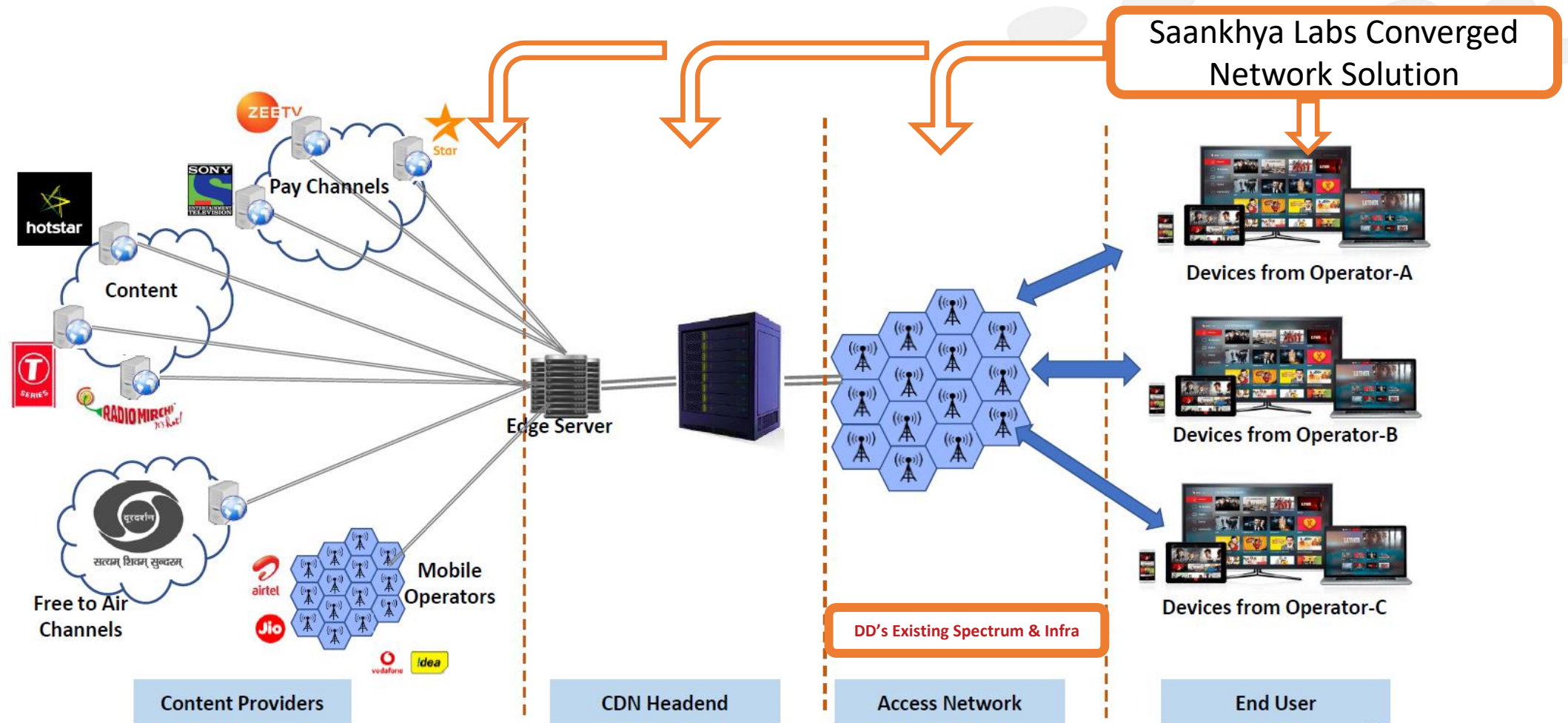
- L1 vs L3 convergence
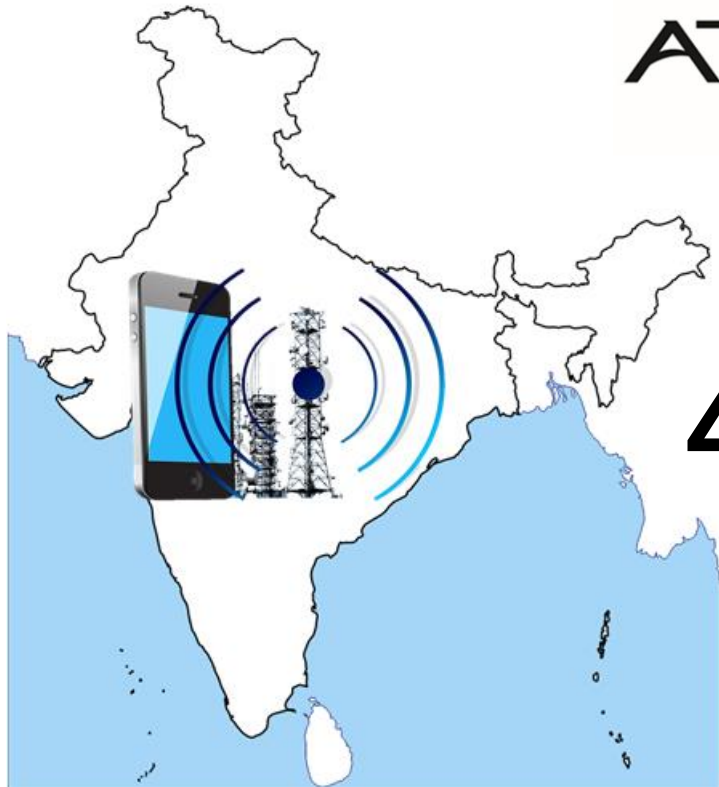   - 3.0 or T2 or FeMBMS

5G Broadcast

- "Cellularized" SFN Based Topology
- Reuse 1
- Cloud Based Virtualized Core
- Analytics Engine
- Broadcast Receiver Enabled Devices
- CDN Architecture

Broadcast as a **5G** "Slice"

Broadcast-OTT Topology using BRH

Saankhya Labs Converged Network Solution

DD's Existing Spectrum & Infra

Devices from Operator-A

Devices from Operator-B

Devices from Operator-C

Content Providers

CDN Headend

Access Network

End User

Comparative Roll out costs – 3.0 vs 5g for India

Nationwide Rollout

ATSC3.0 Instantaneous throughput – 10 Mbps per subscriber

ATSC 3.0

480 Million → $

4G LTE

20 Mbps aggregate throughput per channel = 0.02 Mbps Instantaneous throughput
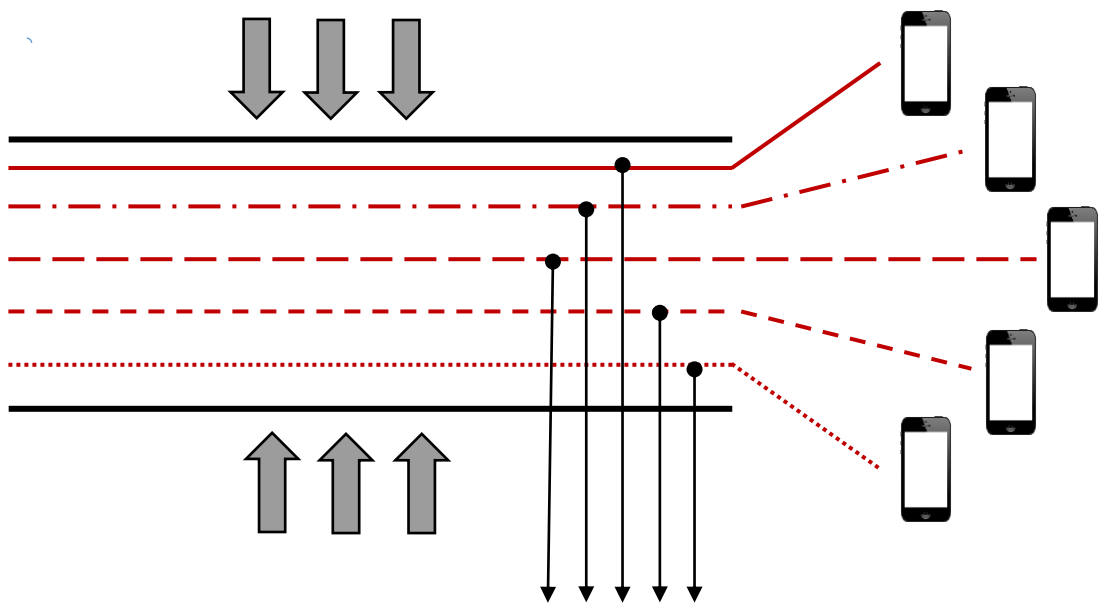
3465 Million → $

Assumptions -
1. Sites Ratio - LTE : ATSC3.0 – 250,000 : 125,000
2. Spectrum Cost not included for LTE / ATSC3.0.
3. Backhaul Cost (fiber/microwave) not included for LTE / ATSC3.0.
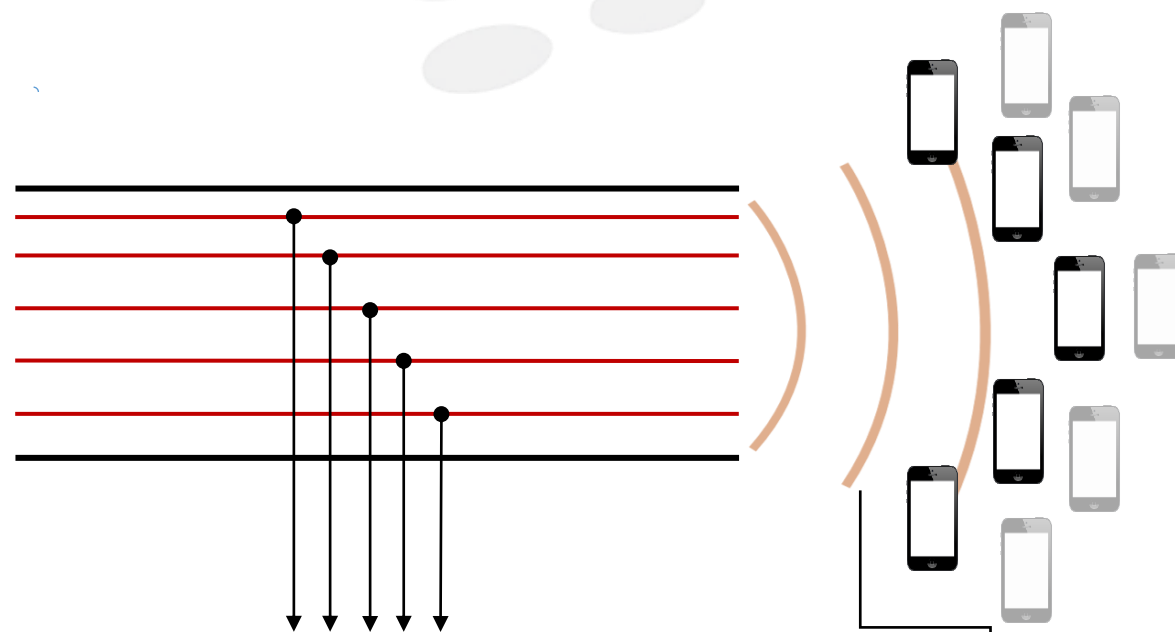4. GBT Excluded. RTP / RTT - 50 / 50. ATSC3.0 on existing LTE sites. No additional RTP / RTT costs.

3 Million Subscribers

Broadcast provides better Video User Experience

Unicast

Broadcast

v/s

Varying "Instantaneous Speeds"
(inversely proportional to #subscribers)

Constant "Instantaneous Speeds"
(independent of #subscribers)

Infinite Elasticity

Thank you

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