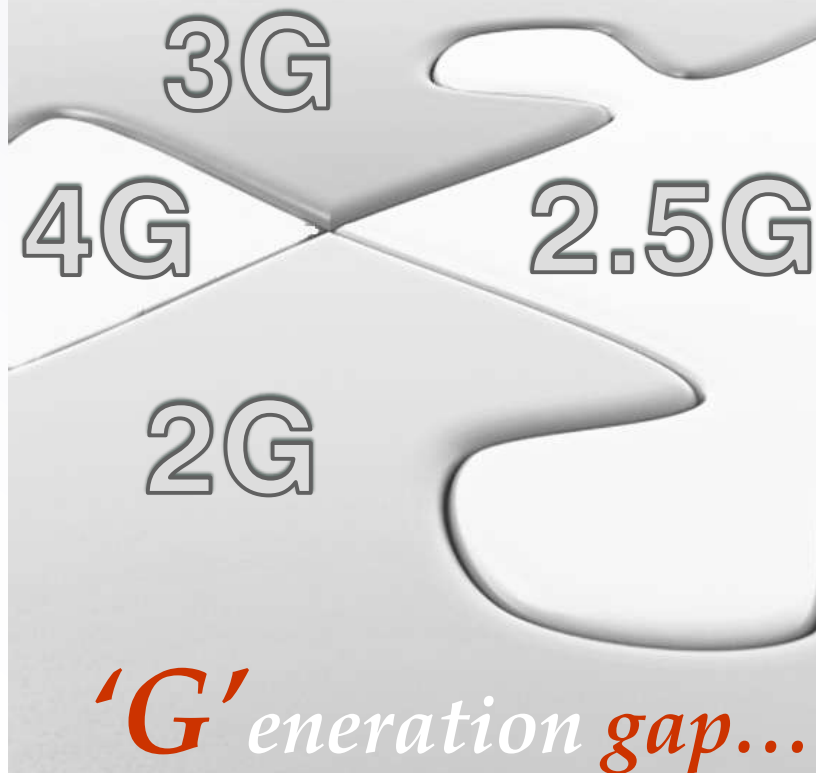


Indian Telecom



SEPTEMBER 2012



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3G coverage will be much more than 25% ...in less than one year



Considering single digit 3G handset penetration and that services are new...in 2-3 years we may have spectrum crunch



India will have 150 million 3G connections by 2014

In a couple of quarters you would find 3G as you travel all across this country

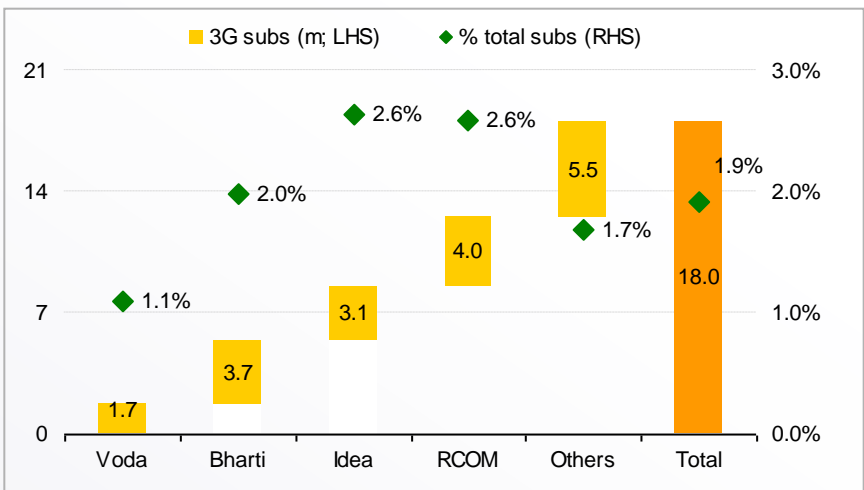


...do not believe there is any reason to think in terms of discounting 3G prices

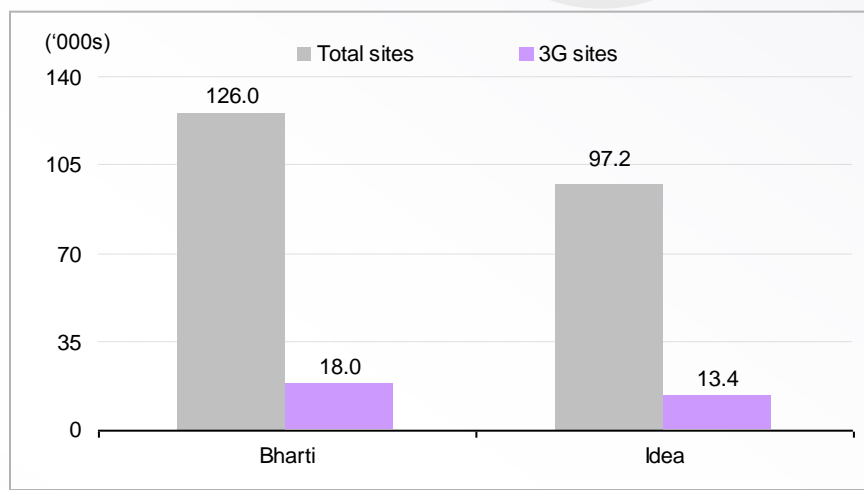
Expansion of ecosystem for 3G is a slow process



The 3G ecosystem will take a while to reach critical mass



Source: Company, IDFC Securities Research



Source: Company, IDFC Securities Research

Incumbents slash 3G tariffs by up to 80% - June 2012

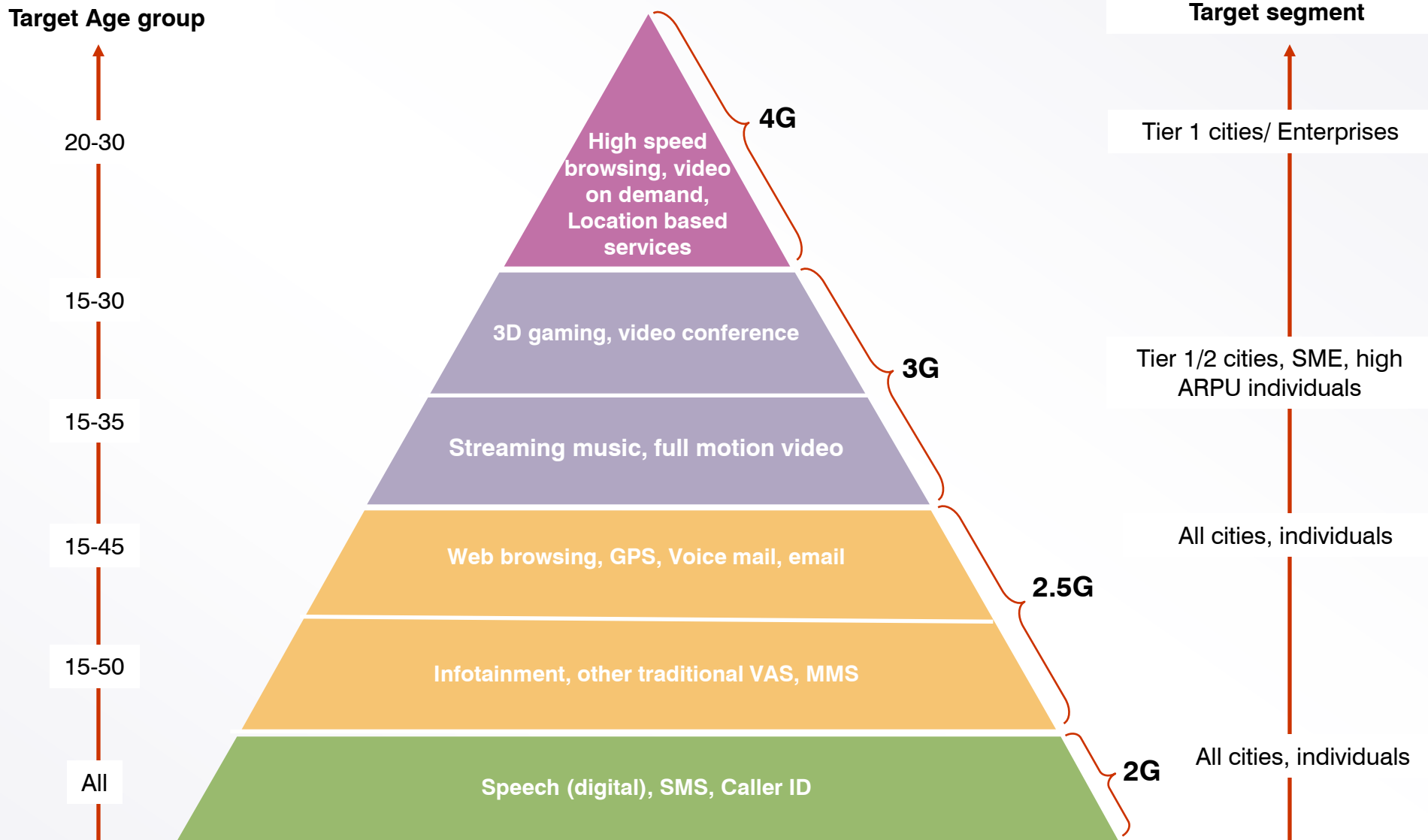
3G penetration in India still sub-2% after 20 months of launch

3G network coverage on an average ~15% of total sites on ground

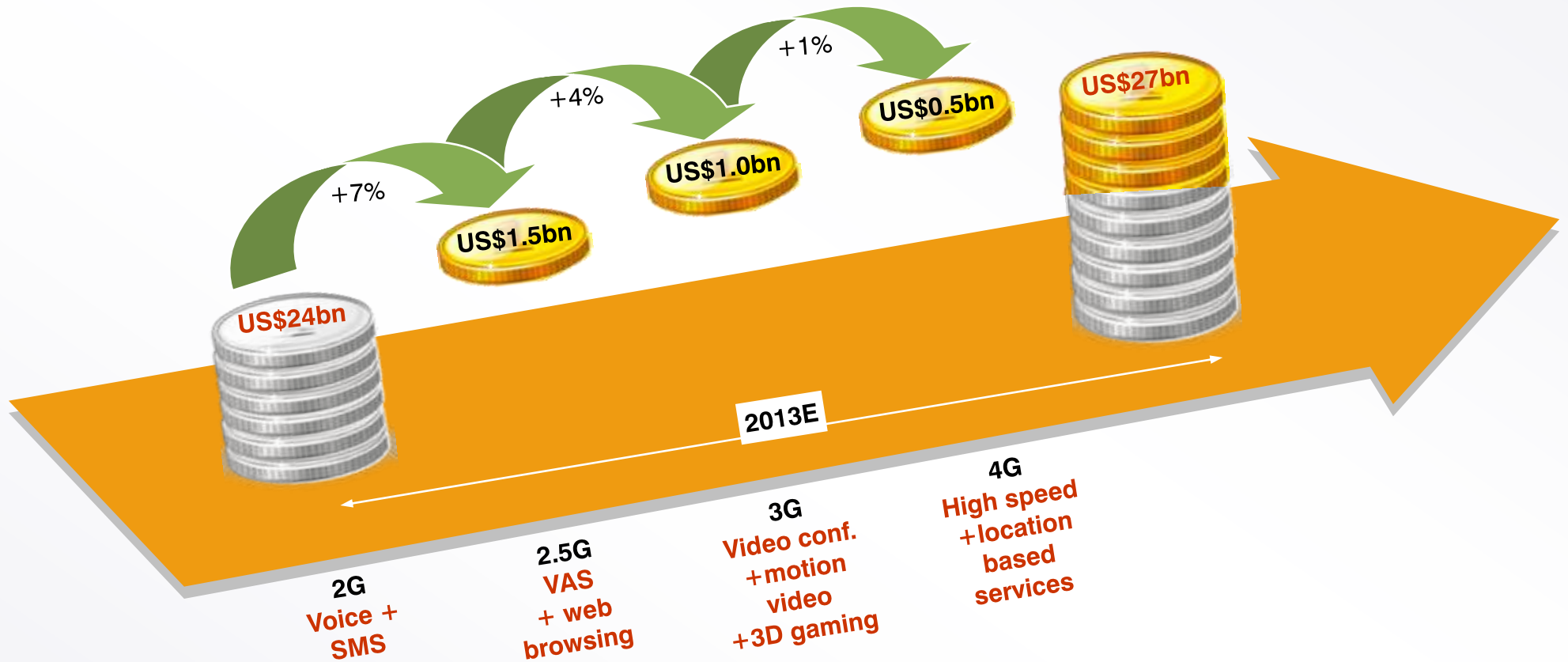
Share of smartphone sales in India estimated at only 12-15%

What are the 'Speed Guns' all about...?





We see limited incremental market



Source: TRAI, IDFC Securities Research



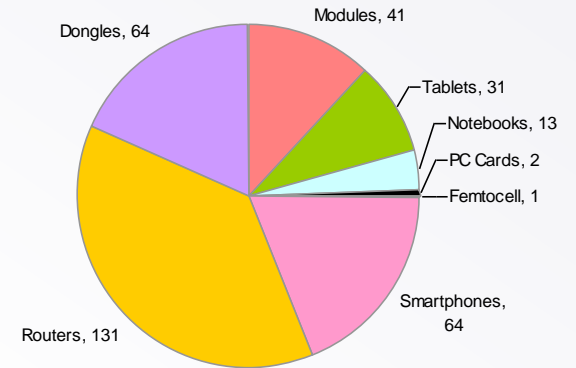
What is inhibiting adoption of 3G/4G?



1 Devices

- 8-10% Indian subscribers have 3G phones
- Low single digit PC penetration to restrict adoption of dongles
- Cheapest 3G smart phone ~US\$100 in India; ASP for handsets ~US\$40
- 1800Mhz / 2.6Ghz frequency - favored LTE bands globally
- India BWA spectrum 2.3Ghz

Handful LTE smart phones globally

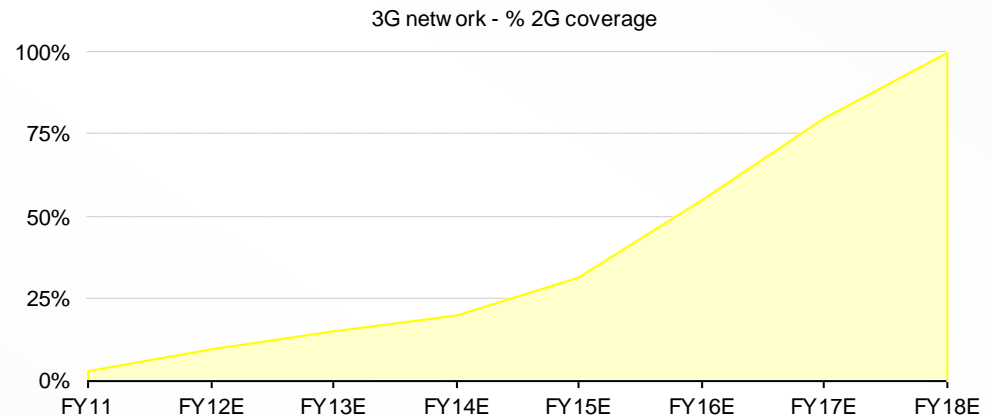


Source: Global Mobile Suppliers Association (GSA), IDFC Securities Research

2 Network

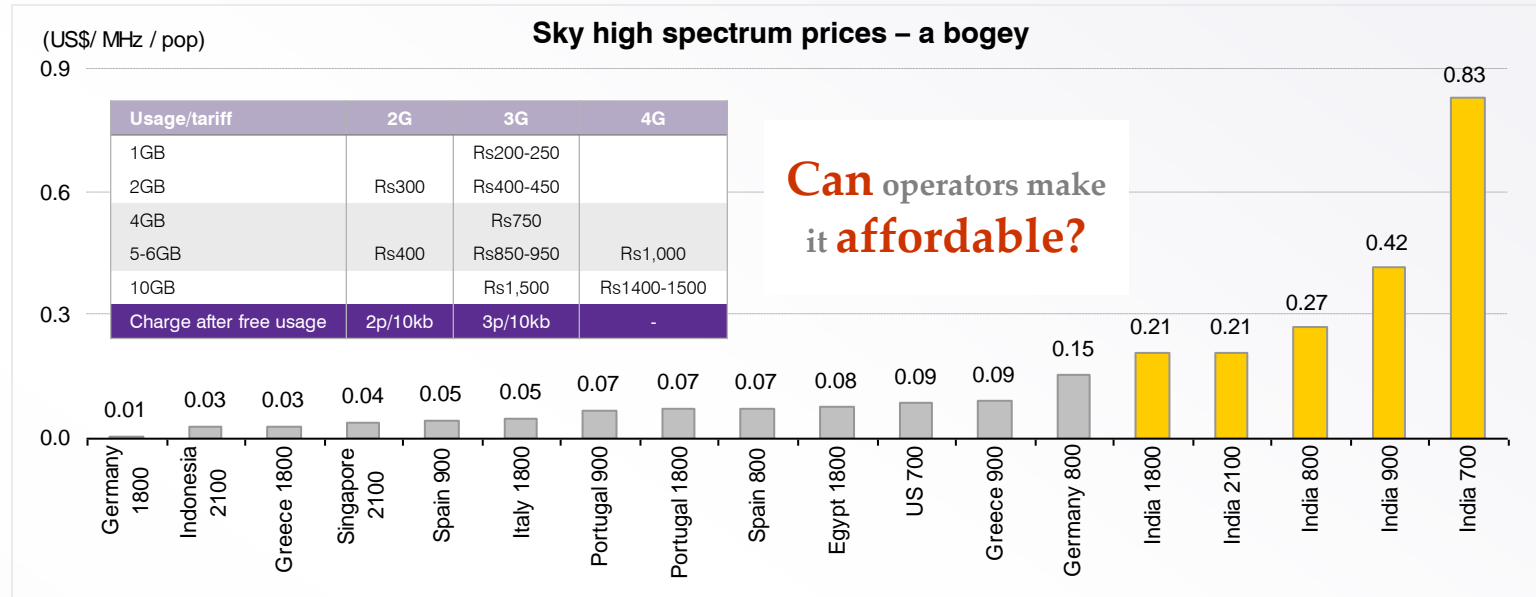
- 3G coverage to gradually map 2G network in 6-8 years
- 4G coverage likely to be limited to urban or tier1 cities till 3G attains mass

3G network to map 2G coverage completely within 8-9 years of launch



Source: Company, IDFC Securities Research

3 Pricing

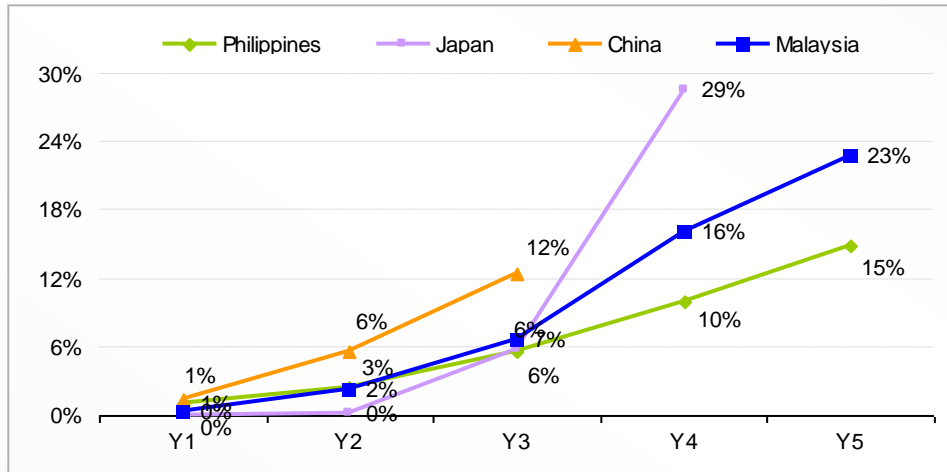


Source: COAI, TRAI, Company, IDFC Securities Research

4 Applications

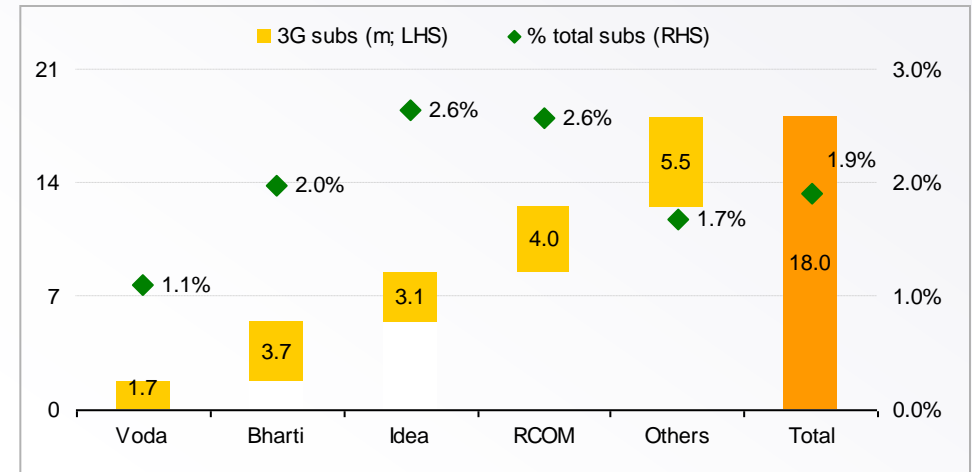
- 3G - video conferencing, e-education, e-medicine, e-governance, mobile banking, etc; market lacks depth
- Limited applications at enterprises demanding LTE speed; costs to outweigh benefits of higher speed
- Voice on LTE smart phones (VoIP) currently not permissible in India

Globally the inflection point for 3G uptake is the 4th year



Source: Global Mobile Suppliers Association (GSA), Company, IDFC Securities Research

The journey so far for Indian operators



Source: Company, IDFC Securities Research



India a special case

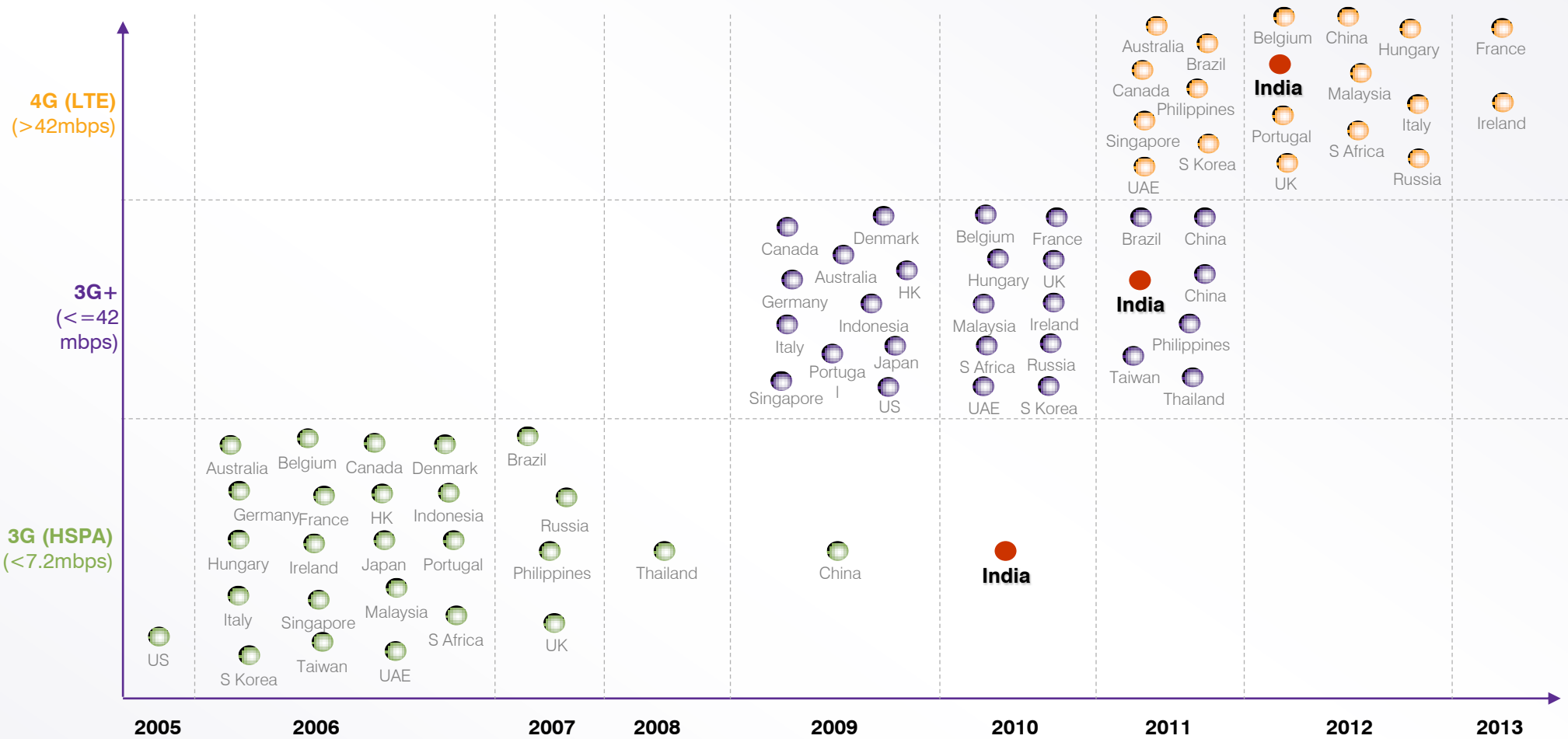
3G spectrum auction was to **decongest 2G networks**

GoI had **exhausted 2G spectrum in 2008** with the entry of six new players

No single pan-India 3G player: intra-circle roaming litigation withholding promotions

Japan, after a shaky start, has 98% of subscriber base on 3G network after 11 years of launch (2001)

India had a near-simultaneous launch of 3G & 4G...



Source: Global Mobile Suppliers Association (GSA), IDFC Securities Research

Simultaneous 3G and LTE launch leave limited room to milk 3G investments; network deployment to overlap over the next decade

Yes

Dongles (USB broadband) will move to 4G

✓ Consumer taste & preferences less critical for device adoption

✓ Speed is the key driver for demand

✓ Caters to higher-end of the market – less price sensitive

No

Voice users unlikely to jump to 4G services

✗ Limited handset availability

✗ Consumer taste & preferences a key demand driver
Failure of CDMA technology a case in point

✗ Speed is not an important criteria for primarily voice users

✗ Majority of the market is price sensitive

Convergence of technologies

- 2G / 3G to co-exist on the mobile platform with high ARPU individuals moving to 3G smart phones
- With limited LTE-voice enabled smart phones, LTE to be adopted initially via dongles

*“3G is just a technology and is going to **co-exist with 2G** and (it is not) as if there are **two business models**”*

- Sanjeev Aga, Idea Cellular 2010

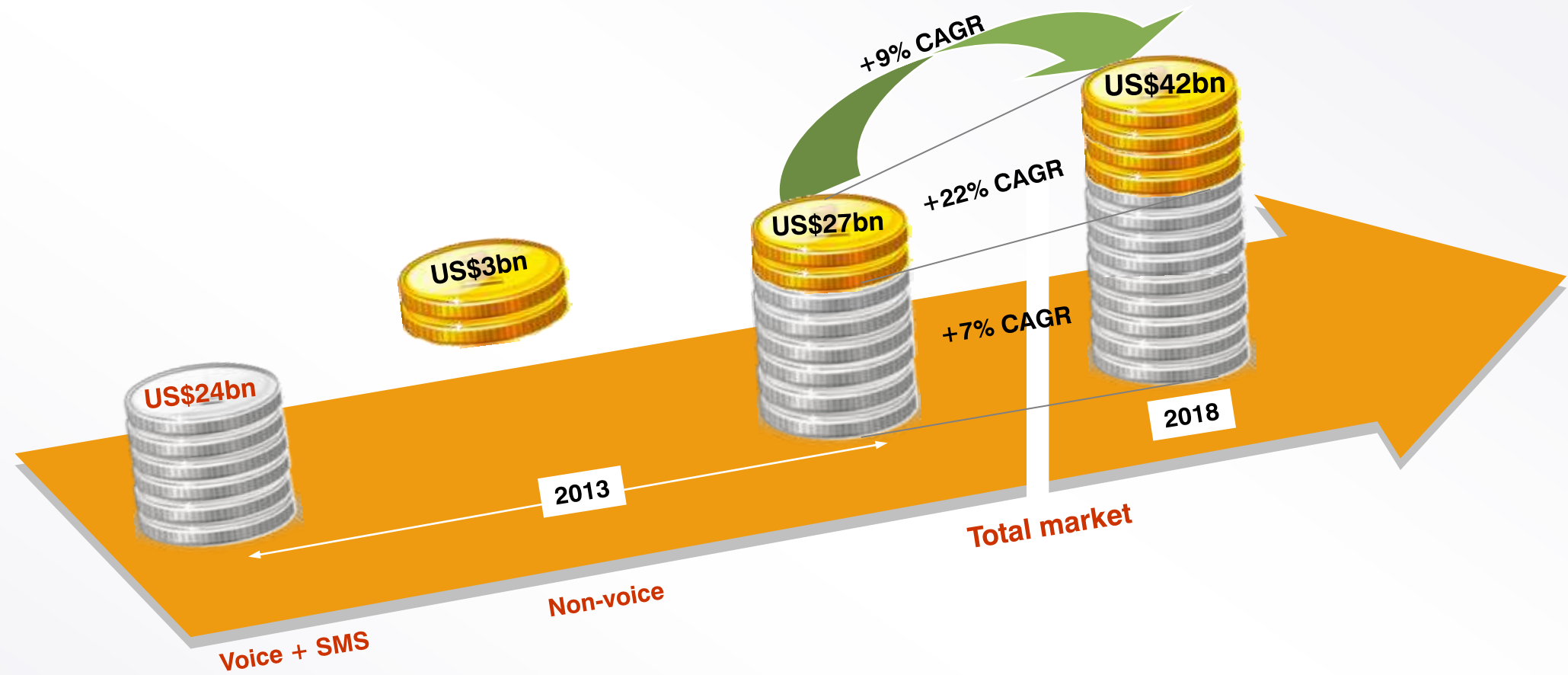
Technology roadmap

1994 2002 2006 2010 2011 2012 2014 2018 2022 2025





Muted growth seen over the medium term...



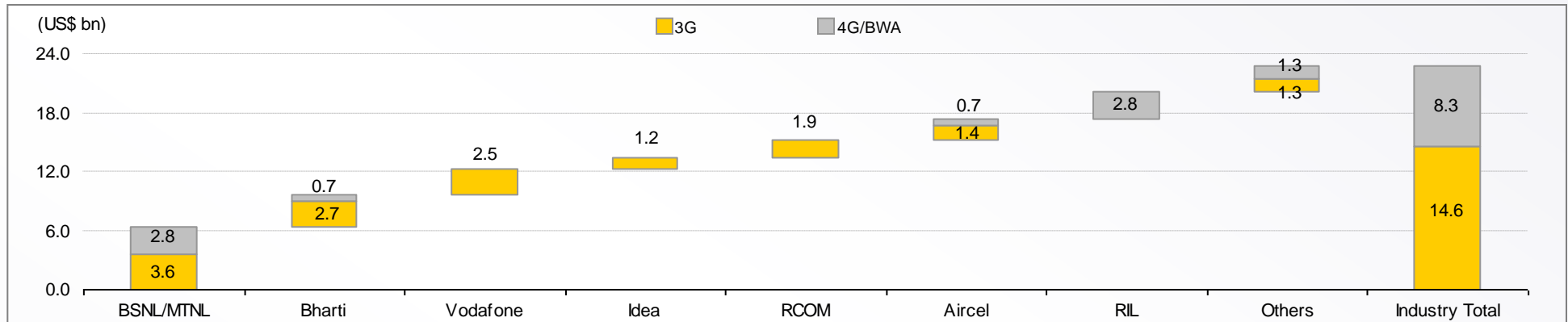
Source: TRAI, IDFC Securities Research

Younger population and rising income levels to be key drivers for adoption of new technologies



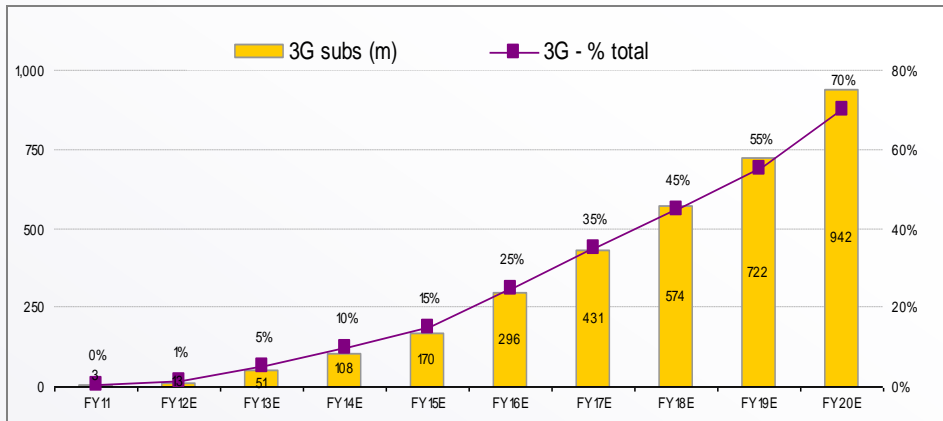
IDFC ...are the hefty investments in 3G+4G then justified?

Indian operators invested cumulative of ~US\$23bn on 3G+4G spectrum



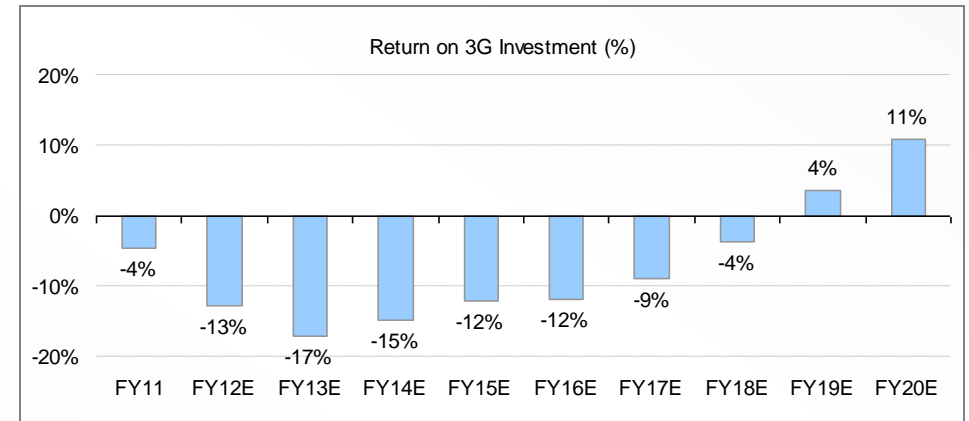
Source: Department of Telecom India, IDFC Securities Research

India estimated to have ~150m 3G subscribers by 2015



Source: Company, IDFC Securities Research

Sub-optimal returns not due to convergence but heavy investment



Source: IDFC Securities Research

Recommended reserve prices will indirectly drive operators to opt for sub-optimal frequencies!

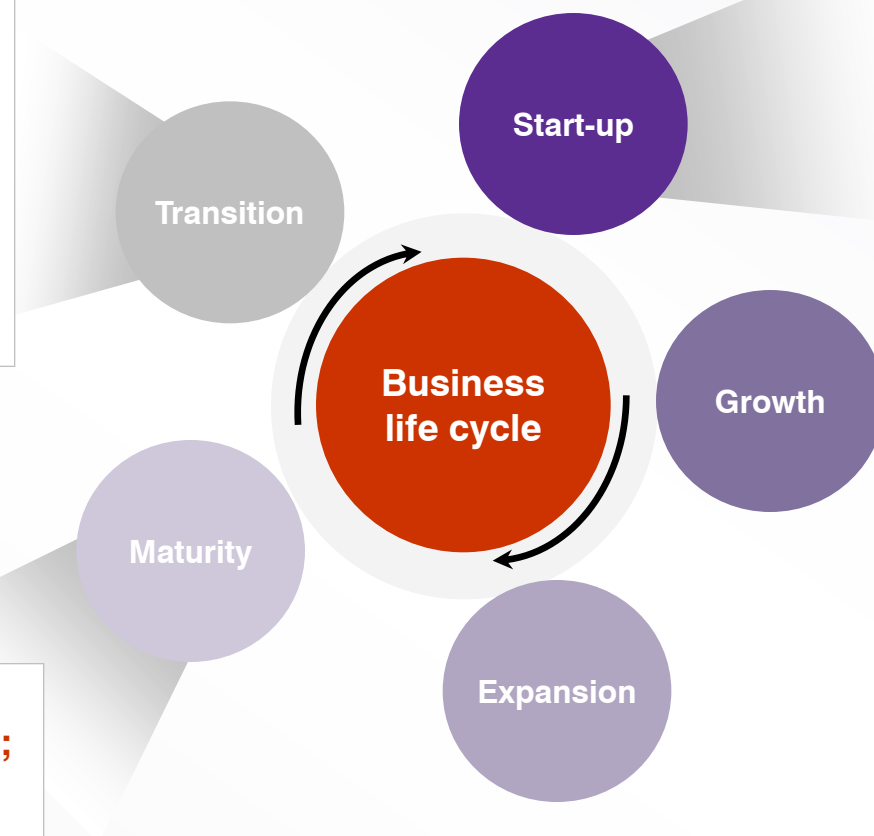
Regulatory uncertainty to clear up by end-FY13

- 2G auctions to settle competition in the lower end of the market
- Additional regulatory payouts could derail India plans of 5th -7th players

Data still in infancy

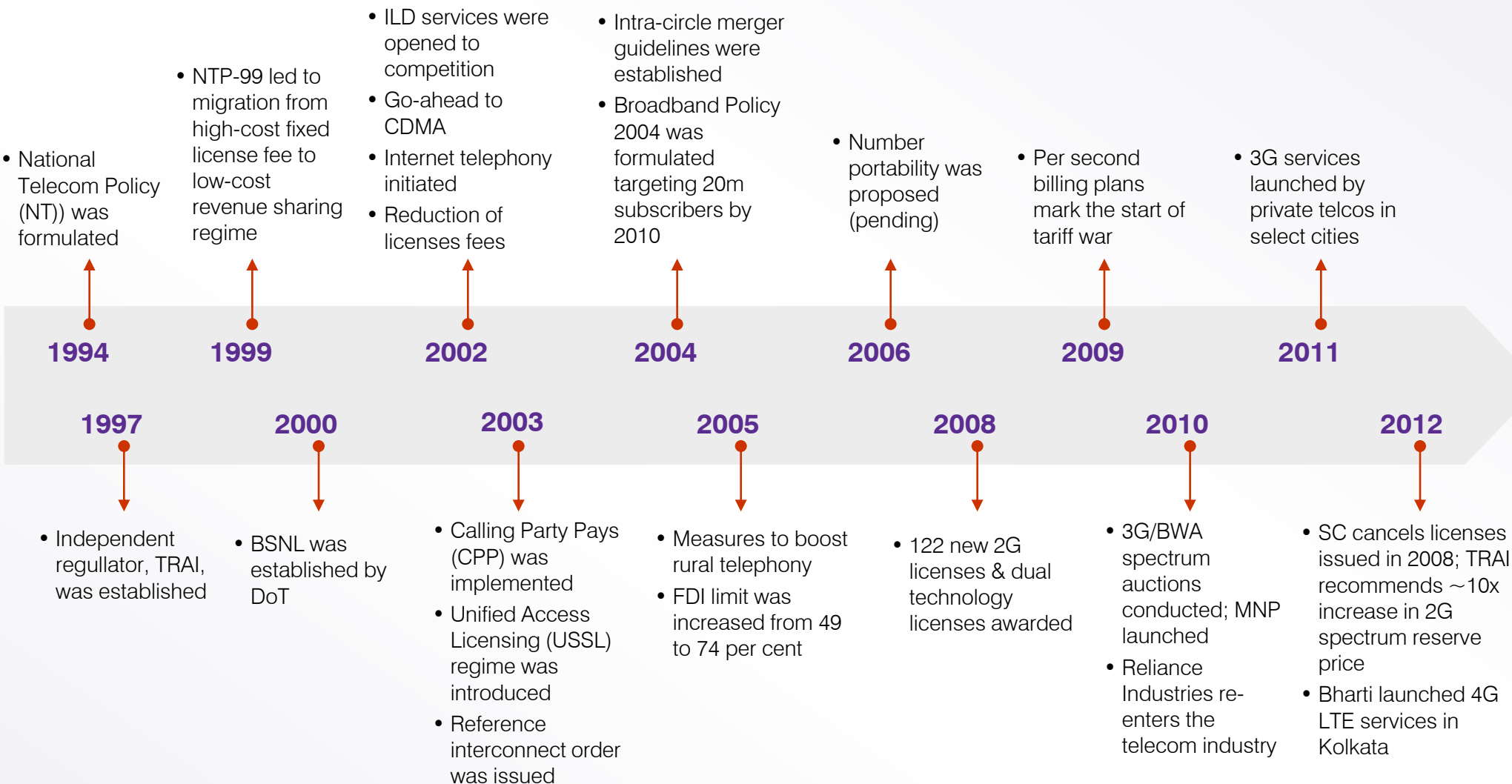
- 3G inflection point at least two years away
- 2G/ 3G/ 4G to co-exist
- Sub-optimal returns on 3G/4G investments
 - ✓ Not because of convergence; but due to over investment

Voice business is saturating; limited pricing power



Prefer market leaders with rich spectrum assets, integrated businesses and deeper pockets

Appendix 1: Eighteen years of Indian Telecom



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