

CHARTING THE FUTURE OF MOBILE

How spectrum and competition policy will drive the future of the mobile industry

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Network transition brings new opportunities



LOGISTICS



TRANSPORT



RELIABLE COMMS



MANUFACTURING

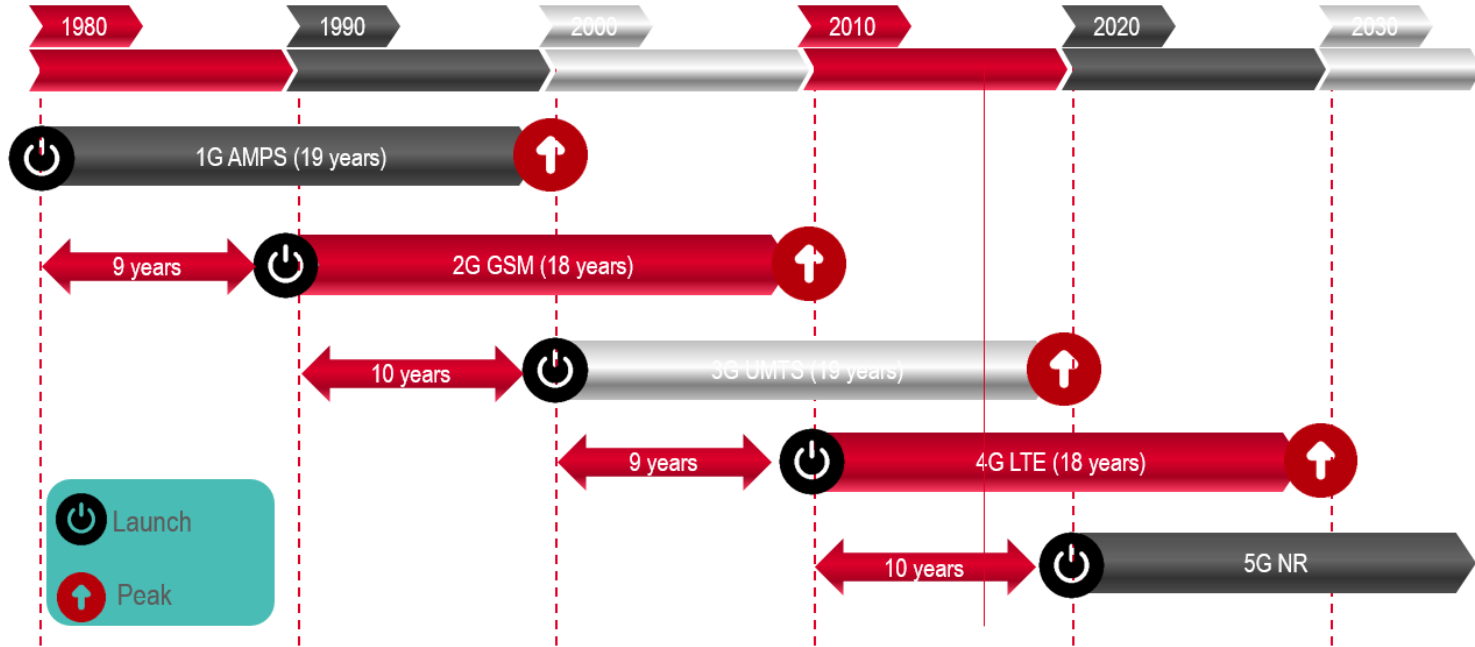


AR / VR



AGRICULTURE

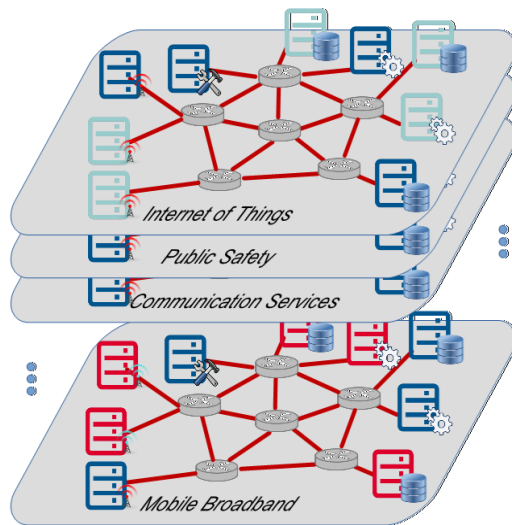
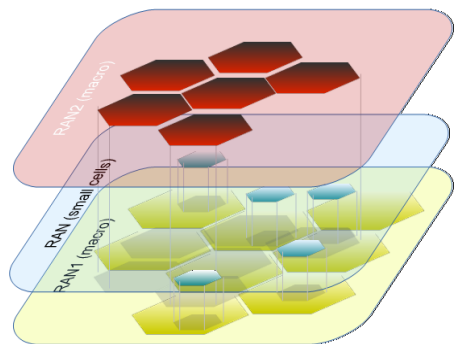
Network evolution is nothing new



Like network evolution, regulation is not new



Public policy plays a key role



What changes with 5G?

- **Network Slicing**
 - Different slices /different needs
 - Net neutrality?
- **Small Cells**
 - Case for asset sharing
 - Allowed by law?
 - Local deployment regulations a barrier?
- **New Data Services**
 - Privacy and localisation rules
 - Same for everyone?

Competition Policy: Why competition matters

Mobile Consumers: What do they value?

Innovation

Introduction of new or improved services

Quality

Network coverage and performance

Price

Mobile tariffs

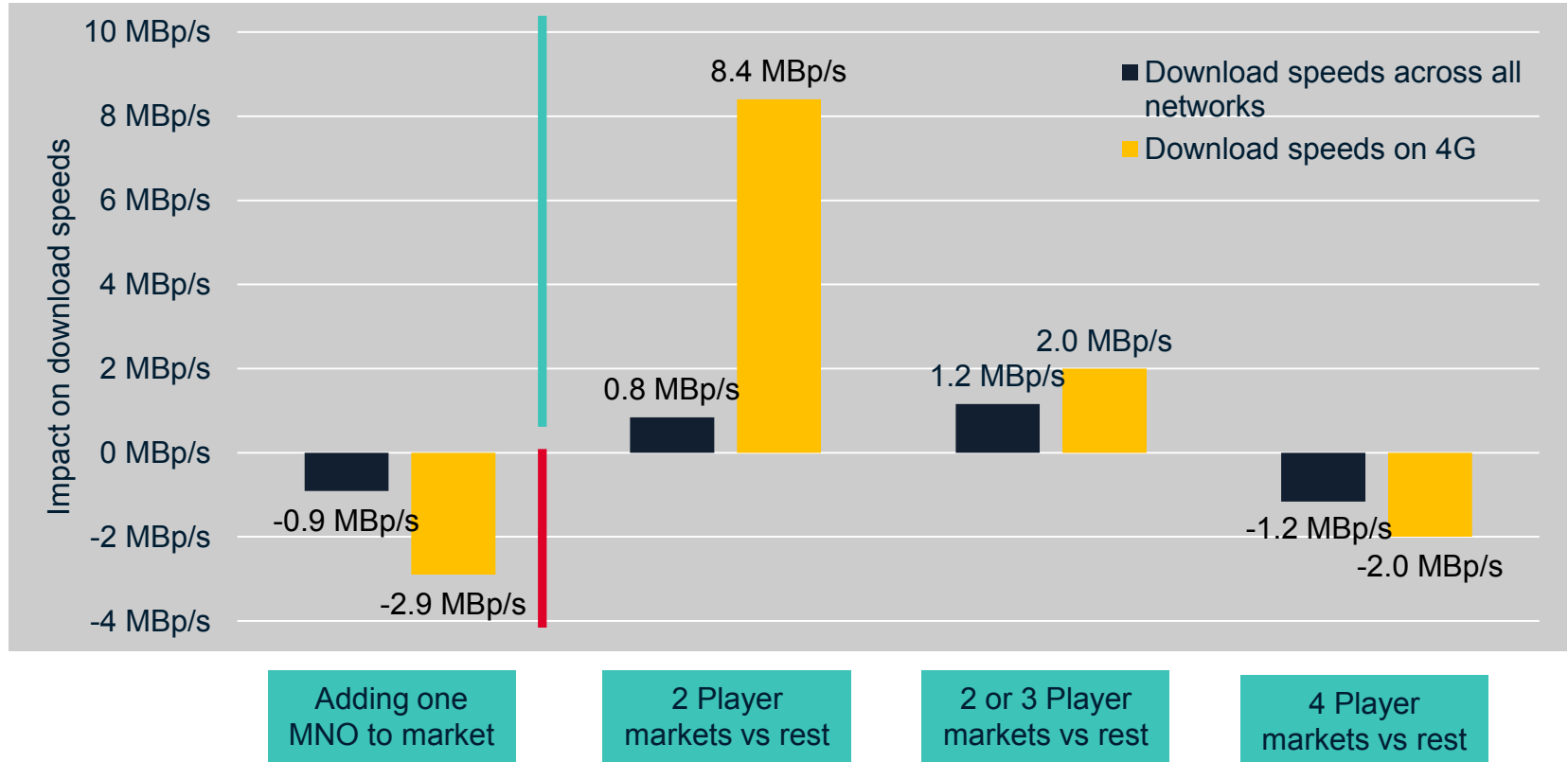
Quantity

Allowance and usage of voice, SMS and data

Range

Wide choice of products and services

Competition Policy: More is not always more



Competition Policy: Mergers can facilitate faster roll-out



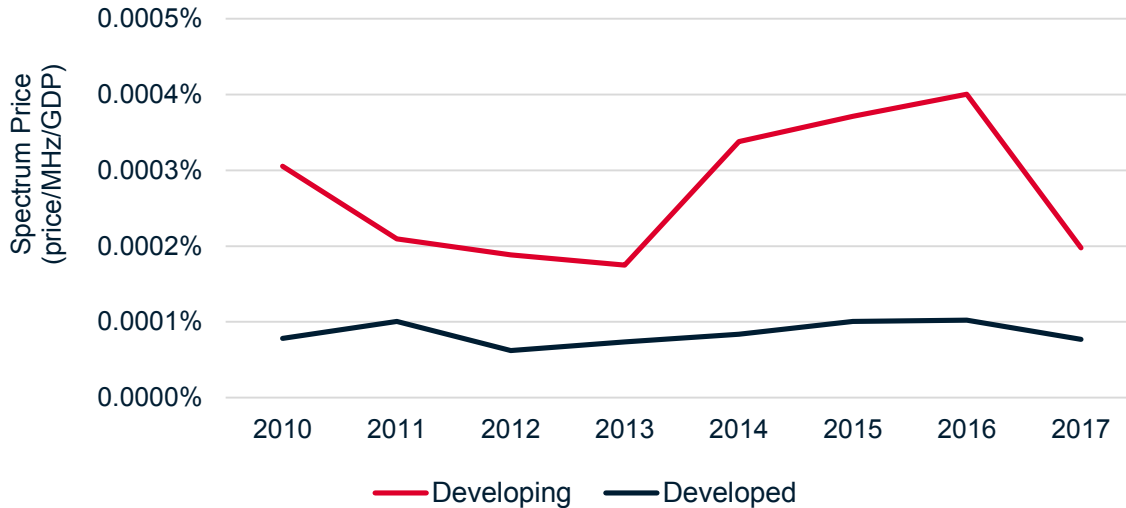
4G Coverage	+ 15% to 30%	???
4G Networks	Download: +15% (7 Mbps) Upload: +20% (3 Mbps)	Download: +25% (13 Mbps) Upload: +25% (5 Mbps)
3G Networks	Insignificant	Download: +15% (1.5 Mbps) Upload: -10% (0.2 Mbps)

Spectrum Policy:

Spectrum prices in developing countries

More expensive when income is considered

Final Spectrum Prices as % of GDP per capita



- When income is factored in, spectrum prices in developing countries have been **three times higher** than developed markets

What is driving higher spectrum prices?



Demand and willingness to pay (market factors)

But also spectrum policy...



Very high (reserve) prices



Limited supply of spectrum

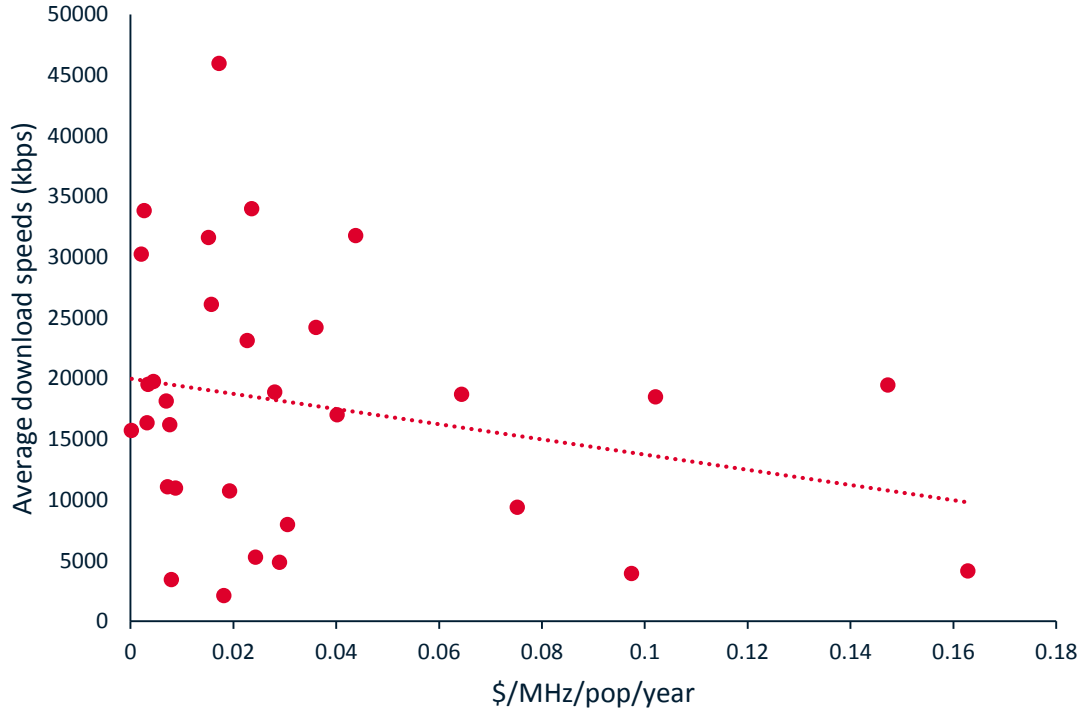


Not publishing a spectrum roadmap



Poor award rules (such as auction formats)

Spectrum Policy: High prices can constrain investment



High spectrum prices are often driven by short-term public revenue needs.

What Does This All Mean:

- **Concentrated Markets:** Promoting innovation and investment
- **Investment:** Leading to new and better services
- **Competitive Impact:** Looking beyond price effects of mergers
- **Spectrum Pricing:** Limiting network investment capital and options
- **Spectrum Availability:** Delivering a roadmap and the resources to improve 4G and launch 5G



THANKS!

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