

# Regulatory and Policy Implications of Advanced Wireless Technologies to Spectrum Management



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Regional Government Relations,  
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Workshop on Radio Spectrum Management for a Converging World  
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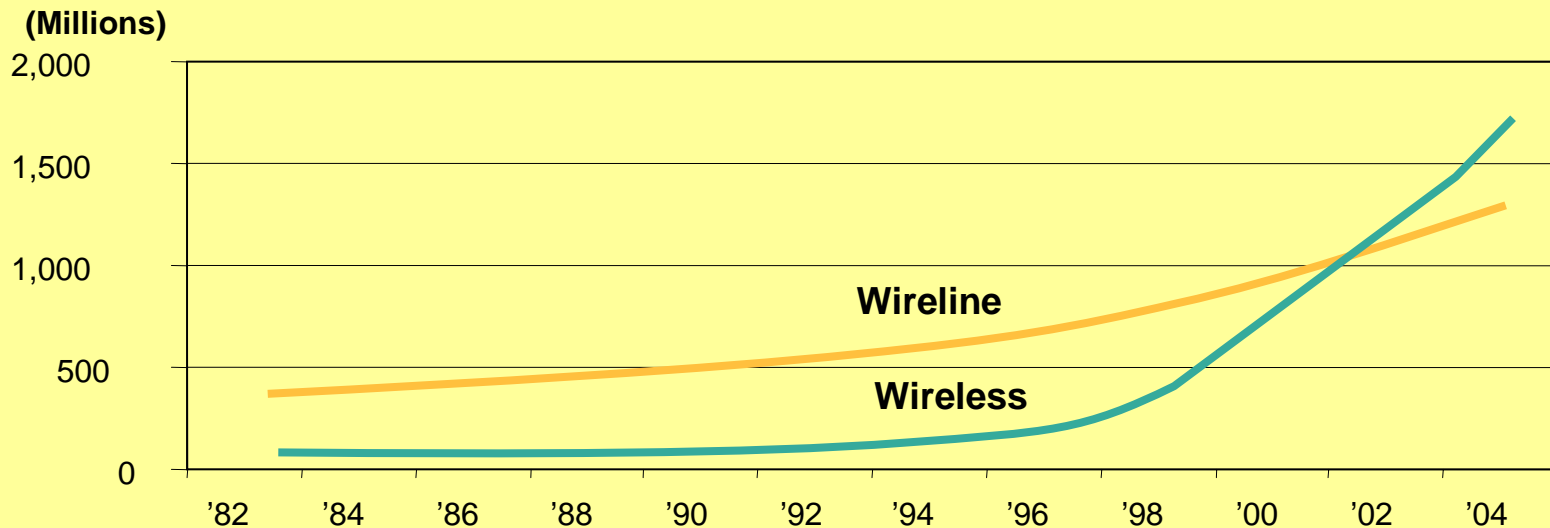
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**Today there are more users of wireless spectrum than ever in the past and this trend is growing.**

**Global Telephone Subscribers**  
*Wireless Subscribers Surpassed Fixed Lines in April 2002*



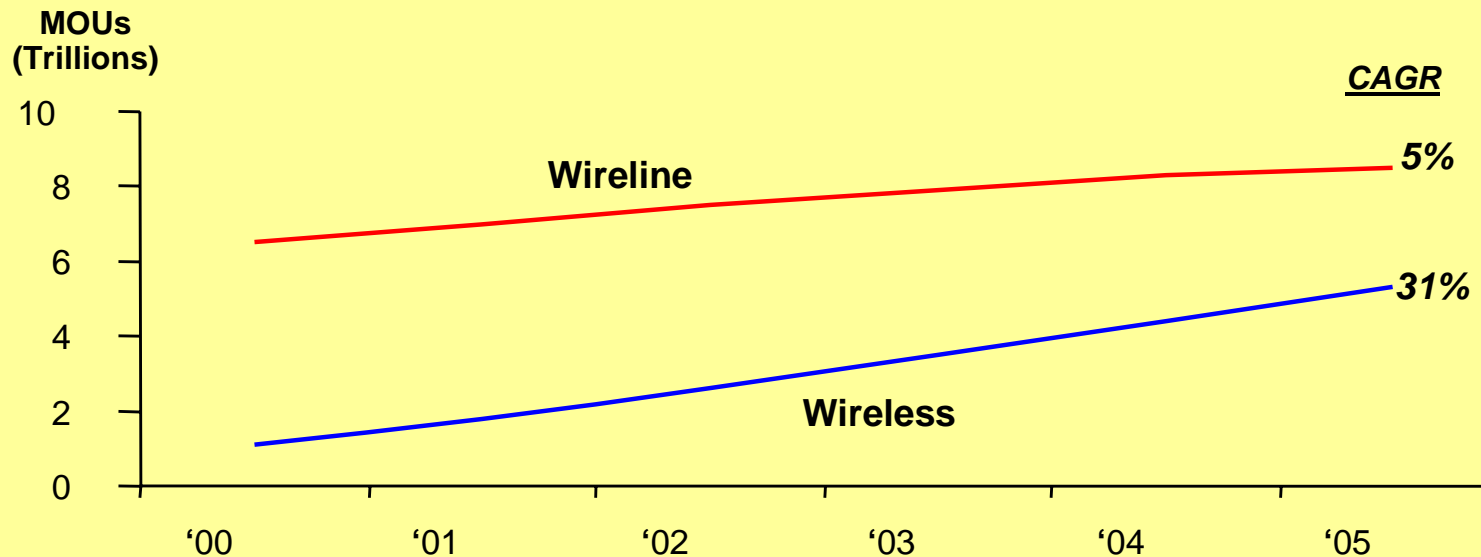
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# Today Each User Spends More Time on Wireless and This Trend is Growing

**Global Telecom Voice MOUs**  
*Wireless MOUs 38% of Total in 2005*



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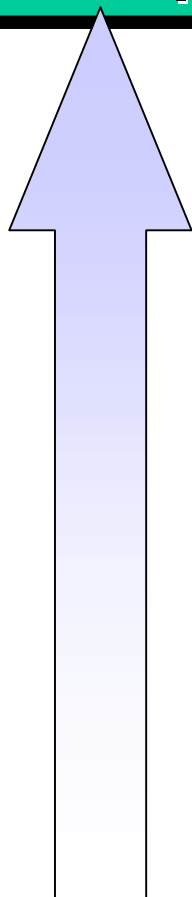
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# Today the Mobile Phone Has Become a Way of Life and a Necessity



# Today New Wireless Technologies are Driving Global Information Society **NEEDING** More Bandwidth



Increasing Value

**4G**

**3.5G**

**3G**

**2.5G**

**2G**

Shared Environments

Mobile Television

Video on demand

Video Streaming

Still Imaging

Audio Streaming

Mobile Video Conferencing

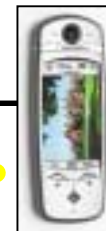
Mobile Radio

E-Mail

E-Commerce

Text Messaging

Voice



Data Transmission Speed - kbps  
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9.6

32

64

128

144

384

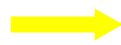
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# Today New Mobile Technologies Have Changed How we Live and Work

## “Everything, Everywhere ” Communicates

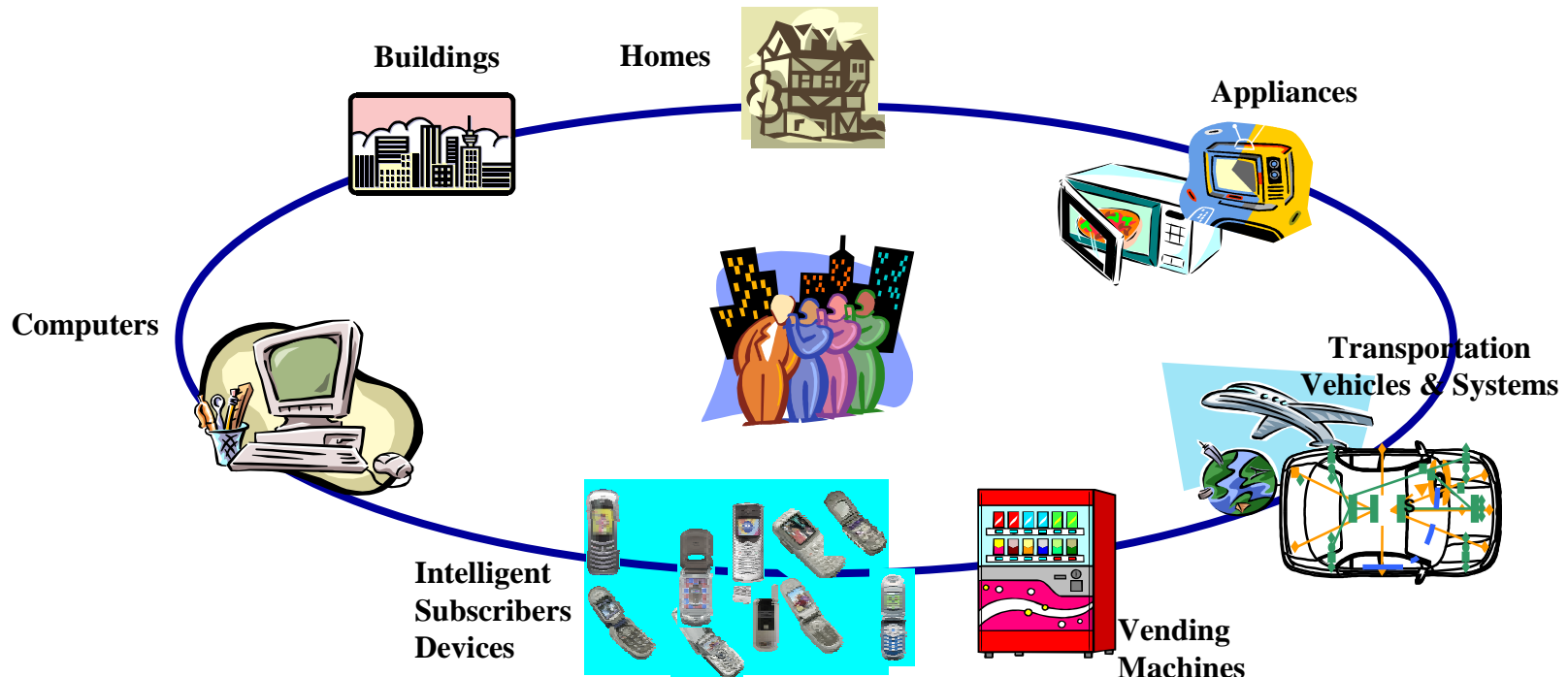
People to People



People to Things



Things to Things



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# Spectrum Management needs to keep pace with this new paradigm in wireless usage

- The traditional design of spectrum management that has emerged since early 1900 was based on **high signal to noise ratios.**
- Future Spectrum management needs to focus on:
  - License free operation
  - Spectrum harmonization
- Spectrum auctions introduced in some markets had created a major setback in the growth of wireless technologies. APT has recommended against the use of spectrum auctions

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# In the Past ITU used to Play a Leading Role in Global and Regional Spectrum Harmonization

- International Radio Regulations have driven global/regional harmonization for many services driving lower service costs and other benefits
  - Broadcast bands
  - Amateur Bands
  - Aeronautical bands,
  - Space services
  - etc.

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# National regulations and regional bodies have driven global/regional harmonization where ITU did not keep pace with Technology

- International Standards and or National regulations leading to global harmonization has brought in economies of scale and lower costs of wireless systems for consumers
  - GSM
  - PCS
  - CDMA
  - IDEN

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# **In the recent years, ITU has tried to play a limited role using alternative regulatory approaches to harmonize global/regional spectrum for new services/technologies**

- IMT 2000 spectrum “identified” at WARC1992 and WRC 2000
- PPDR in spectrum “identified” at WRC2003
- Spectrum for “Beyond 3G” to be considered at WRC-07

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# But ITU is still finding it difficult to accept new “converged” terrestrial services

- New Technologies using globally harmonized bands promise to deliver the future high bandwidth wireless services
  - 802.11b technologies in 2.4
  - WLAN and FWA in 5GHz bands

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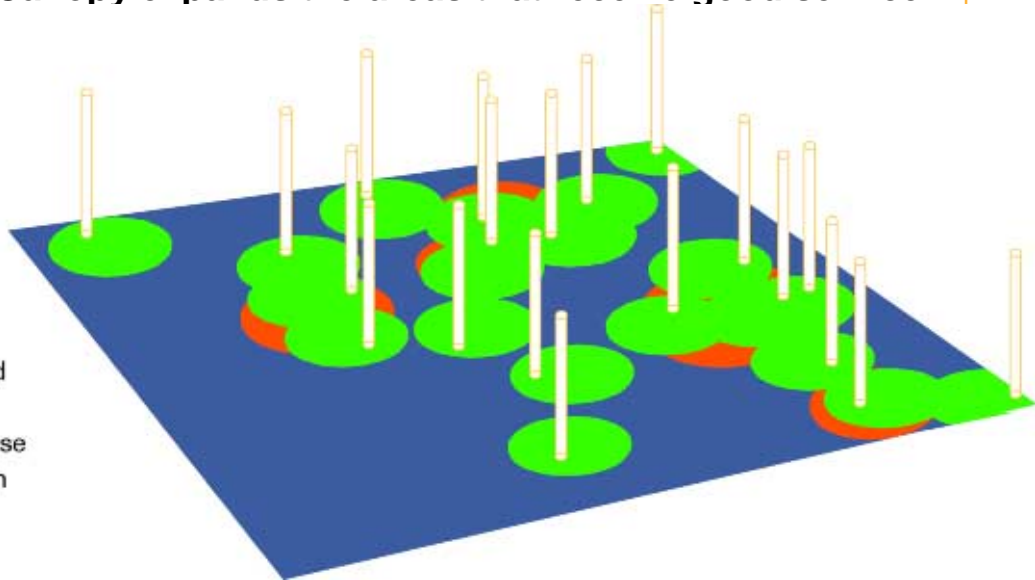


# New Interference rejecting technologies such as Motorola Canopy make delicensing as the optimum spectrum management solutions for high bandwidth needs

## Interference Rejection

With its high interference tolerance and directional antennas on all access points, Canopy expands the areas that receive good service

- Areas in **green** can expect good service.
- Areas in **blue** are not in range of a transmitting signal, so they do not receive good service.
- The areas in **RED** suffer degraded service due to interference from other transmitting stations. Because of Canopy's interference rejection this area is nearly erased.



CANOPY

Motorola Wireless Internet Platform

# Is this the time for an overall review of Terrestrial Services under the Radio Regulations?

Thank You

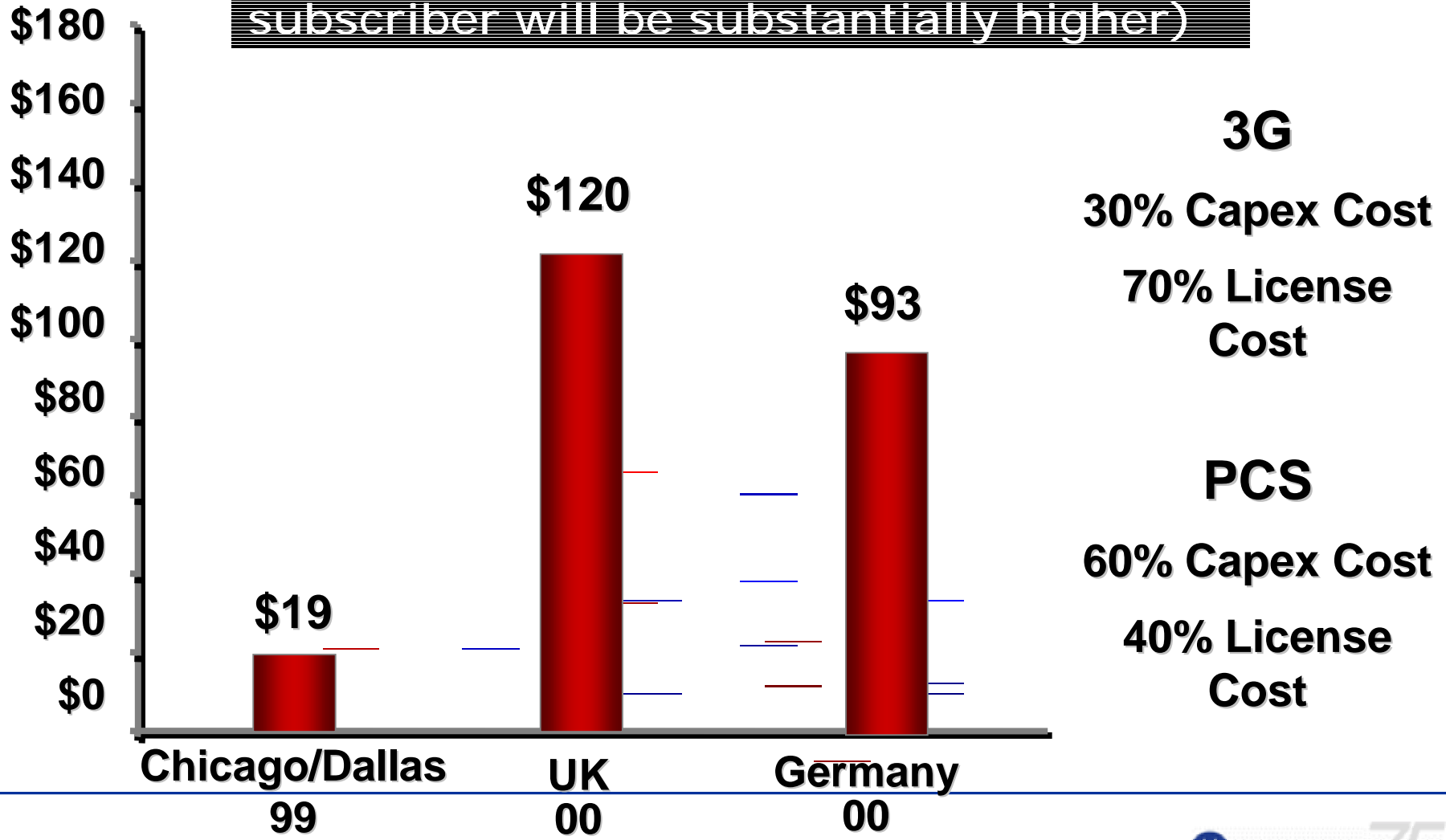
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# Auctions in 99/00 drove Up Cost of Licenses

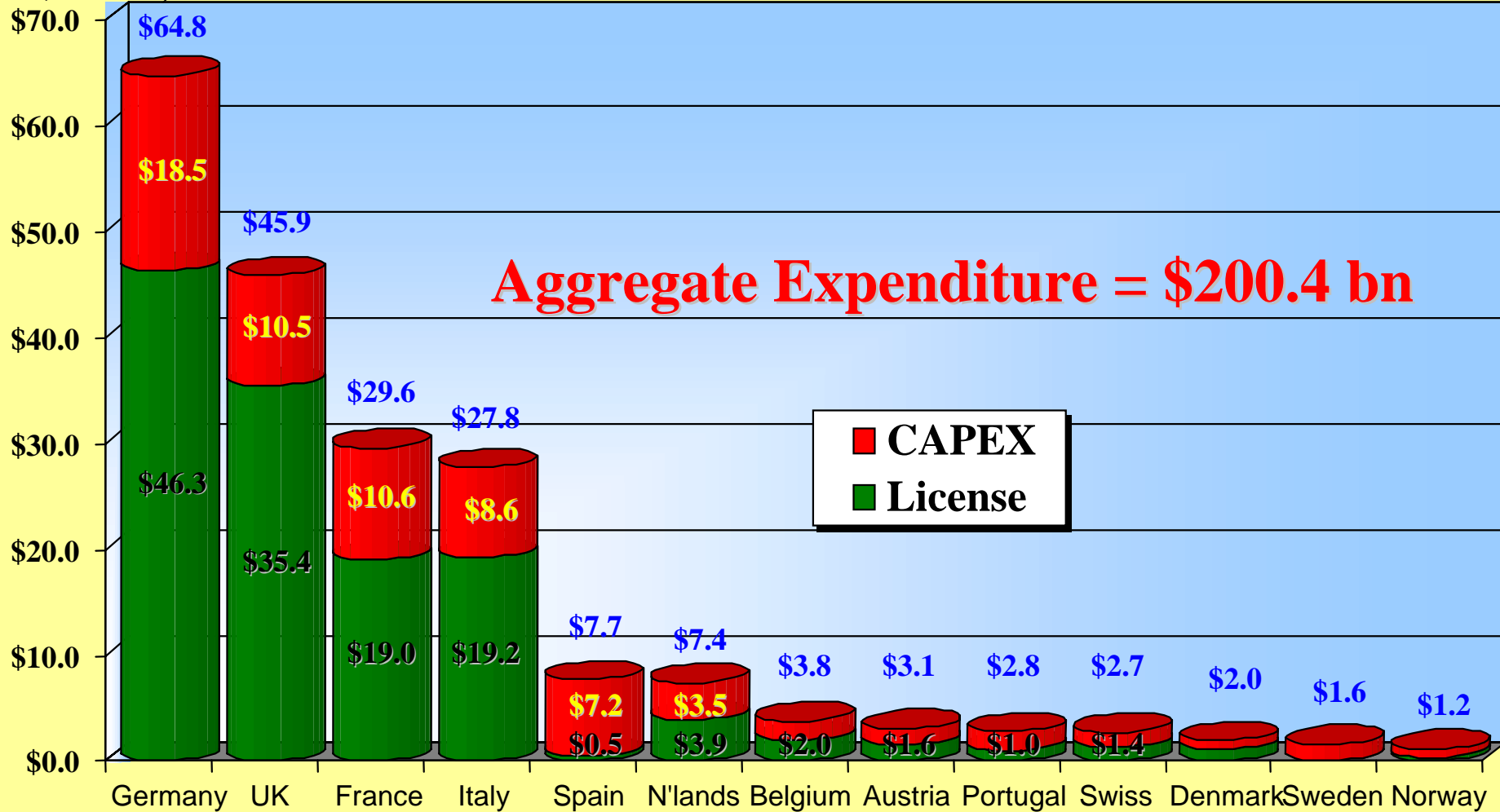
License Cost per POP (cost per subscriber will be substantially higher)



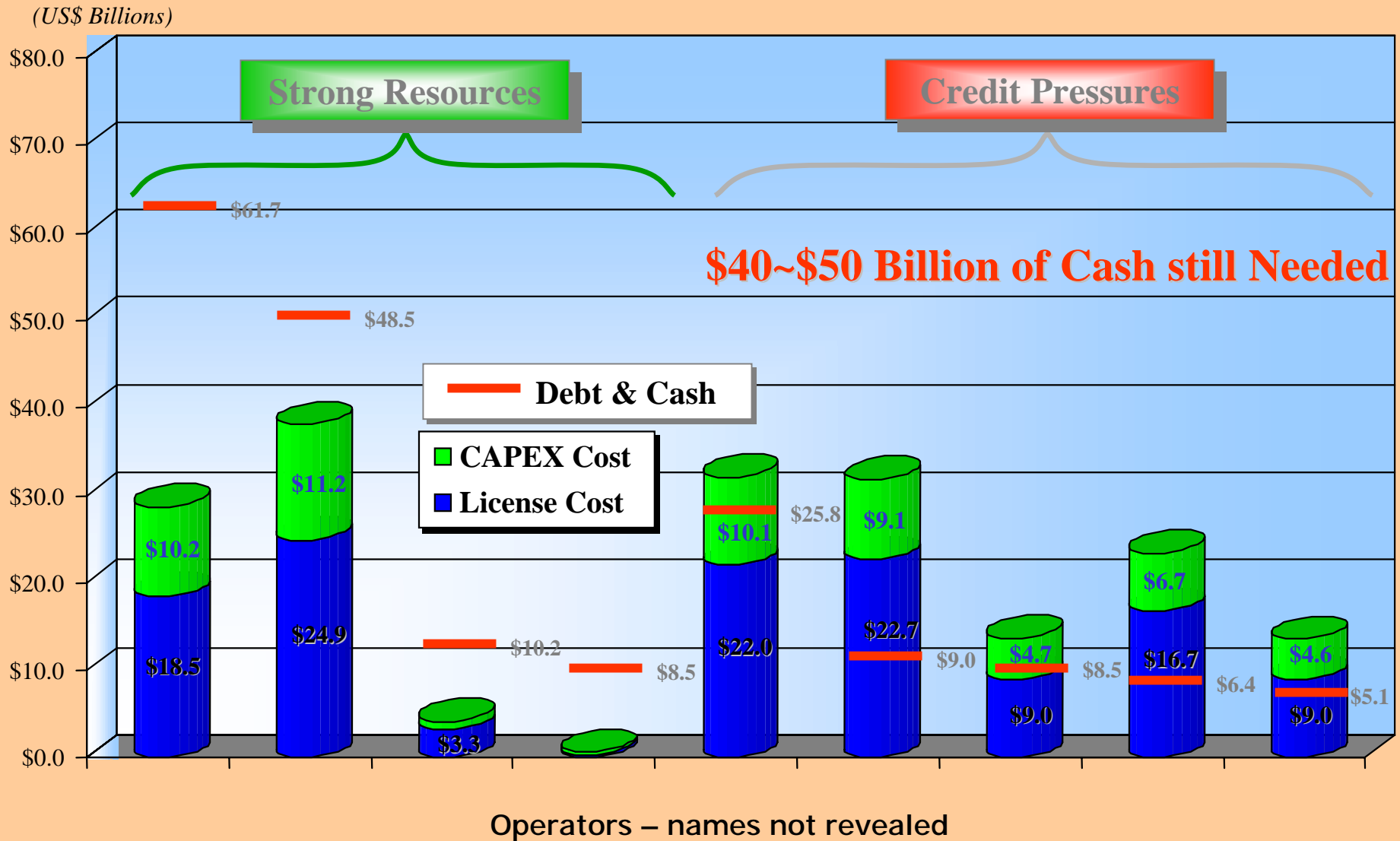
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# Shrinking Capital Available Based on Cost of 3G for Europe Alone

(US\$ Billions)



# Financing "Gap" Faced By Some Operators



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