



# The Need for Spectrum

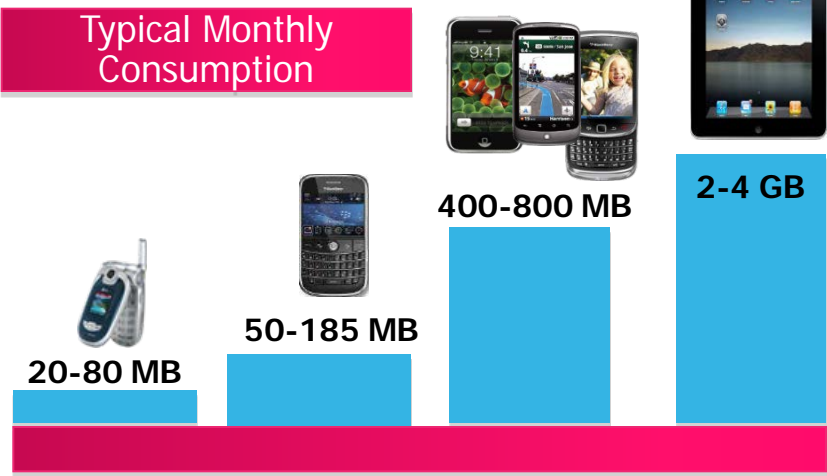
Rick Krock

CQR - May 14, 2012

..... Alcatel-Lucent 

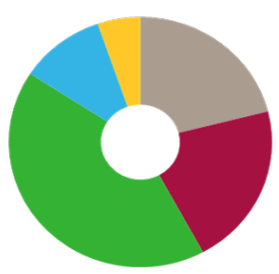
# Bandwidth needs today and tomorrow

Alcatel-Lucent Forecasts



Devices In Use

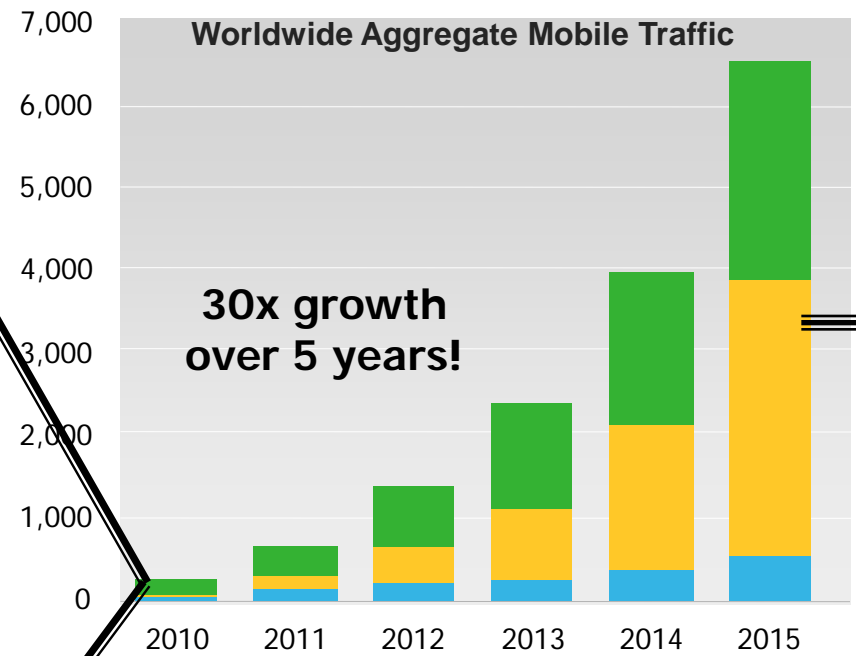
Bandwidth Utilization



- Android
- Blackberry
- Other

- iPhone
- Feature Phone

## Forecast consumption by device type



- Dongle/tablets
- Smartphones
- Feature phones

**More tablets**

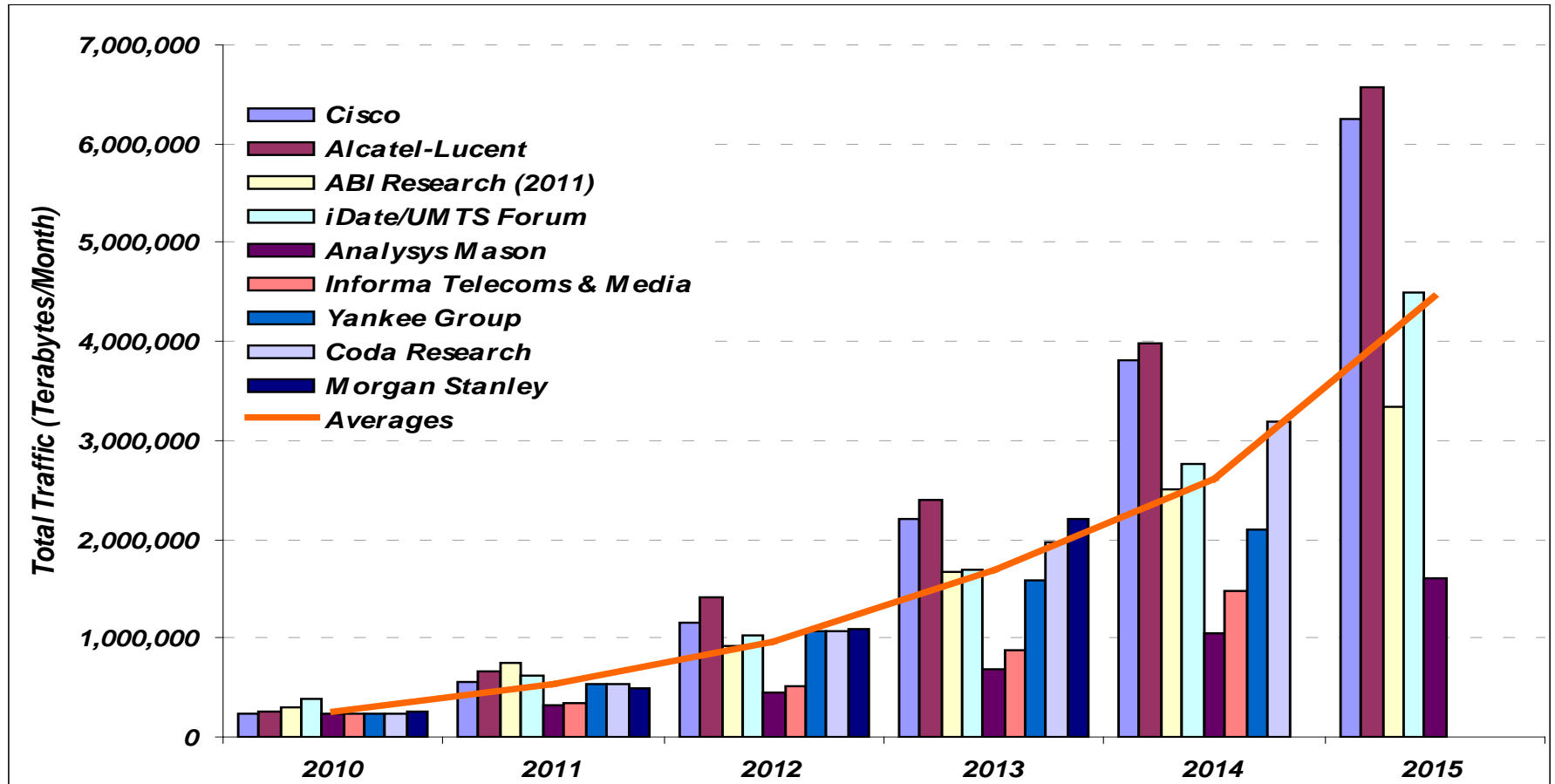
**80% Smartphone**

Source: Alcatel-Lucent measurements using 9900 WNG within live networks and Bell Labs analysis

100b App downloads globally M2M Devices

# Comparing Forecasts from Multiple Sources

## Worldwide Aggregate Mobile Traffic 2010 - 2015

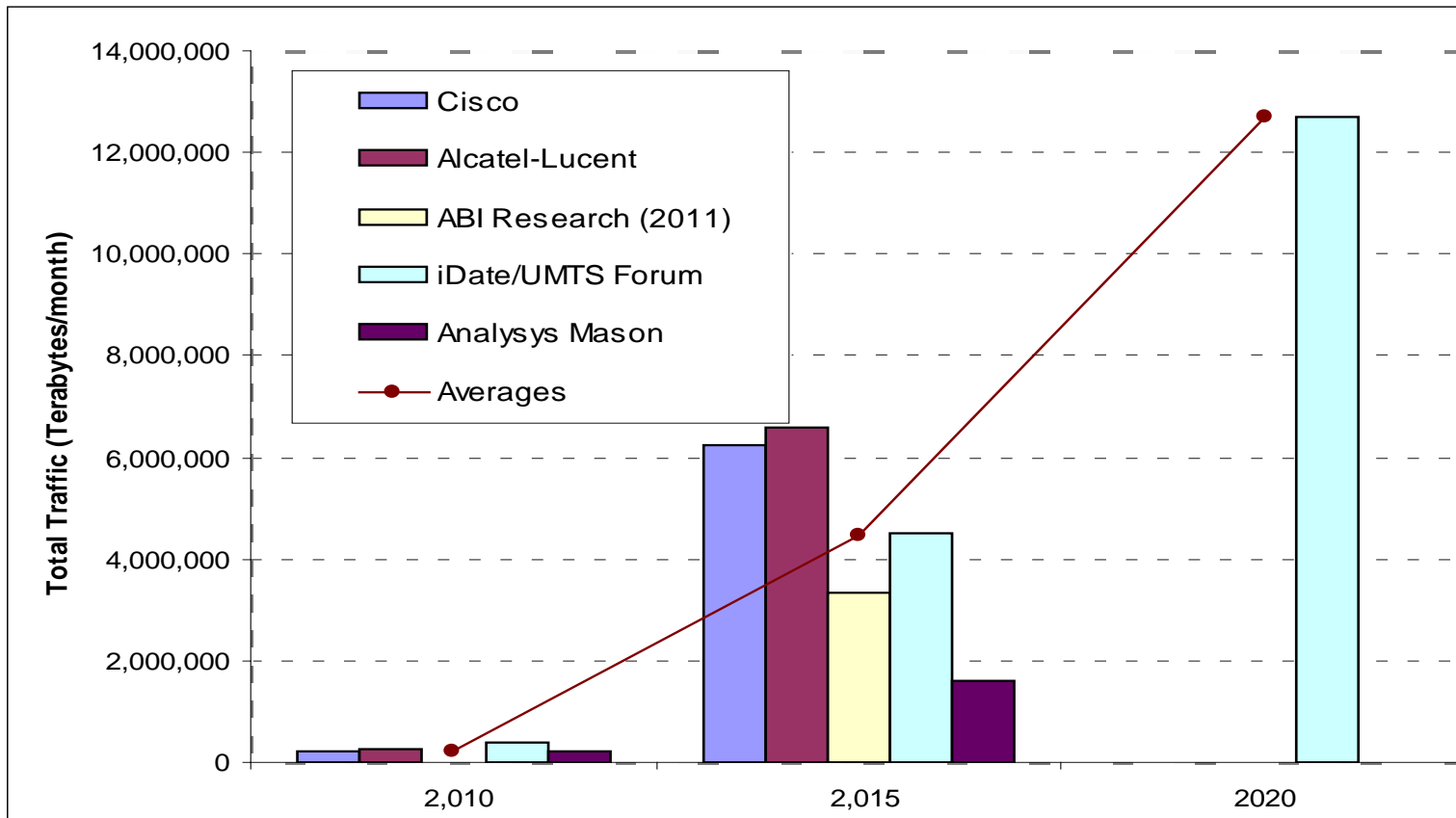


Discrepancies in forecasts partly attributable to differing assumptions on Wi-Fi off-loading

*Various forecasts including Alcatel-Lucent figures indicate that mobile data traffic in 2015 will be around 30 times of that in 2010 and growth is expected to continue significantly between 2015 and 2020 by factor of 4.*

# Looking Deeper into the Future

## Worldwide Aggregate Mobile Traffic 2010 - 2020



**UMTS Forum forecasts 127 Exabytes of Traffic in the year 2020**

# Providing Additional Spectrum

## 1. Government Initiatives – Freeing up 500 MHz

- Relocating government services
- Incentive Auctions
- TV Band Sharing
- TV White Space

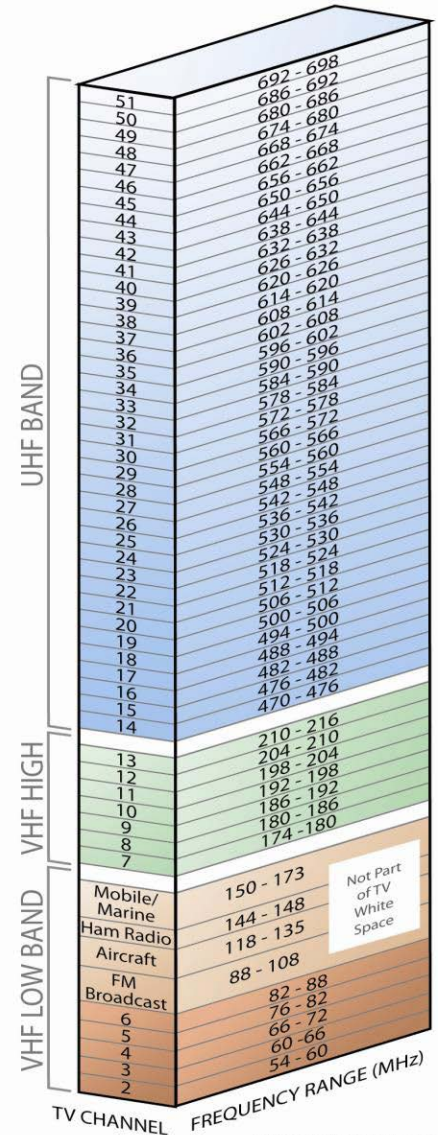
## 2. World Radio Conference (WRC 12)

- New agenda item for WRC 15 to study frequency-related matters to make more spectrum available for International Mobile Telecommunications
- WRC 15 items for Digital Dividend Allocation



# Understanding White Space Spectrum

- Each TV channel in USA is 6 MHz
- Old NTSC band → Channel 2 to Channel 69 (54 MHz to 806 MHz)
- New DTV ATSC Band → Channel 2 to Channel 51 (54 MHz to 698 MHz)
- All TV Channels that are unused in a given region are called “White Space”
- The FCC made TV white space available when the US transitioned to digital TV in June 2009.
- Located in the VHF and UHF band:
  - (54 MHz to 698 MHz) or from (channel 2 to channel 51)
- Upcoming Incentive auctions are expected to free up some of the TV bands for other dedicated uses, which will eliminate white space in these bands. Sharing of TV bands by broadcasters is also expected make more efficient use of TV spectrum.



Source “Spectrum Bridge, White Spaces Report 2Q 2010, [4]”

# More Spectrum

- The need for more spectrum is a world-wide issue
- Technology will help, but additional spectrum needs to be made available
- The sooner the better

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