



CORNING

# Smashing together Next Gen HFC Architectures and Small Cells

Future proofing your Network – Fiber Optics and more

*Vanesa Diaz*

*Market Development Manager, EMEA*

# Future proof still means high data rates

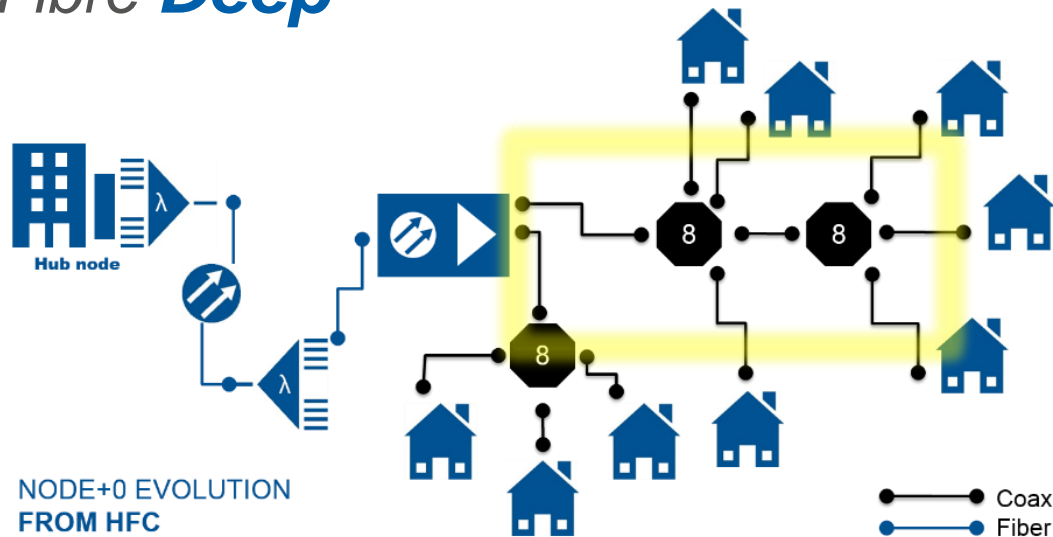


Source: [www.cablelabs.com](http://www.cablelabs.com)

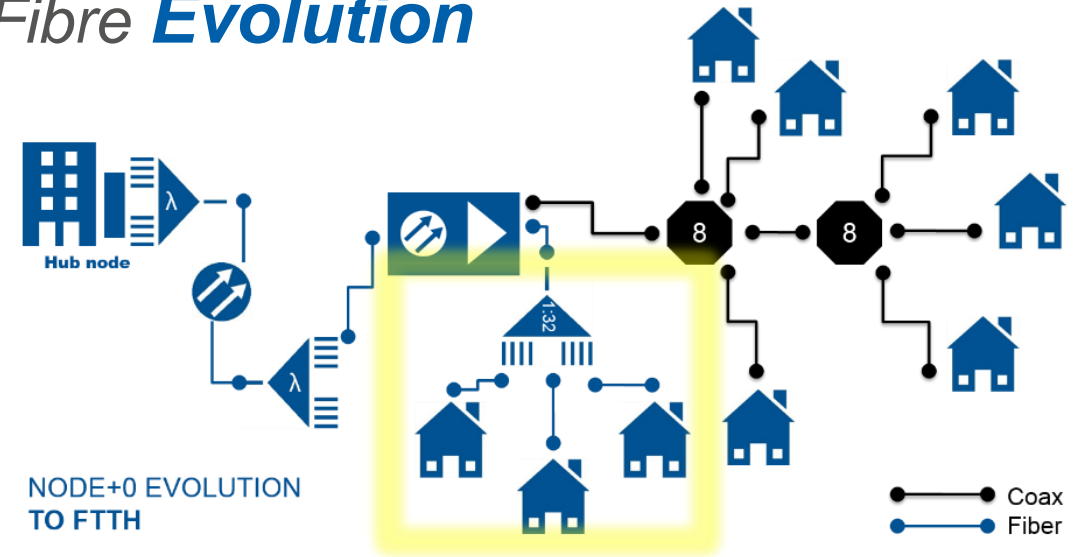
# Beyond Gigacities

Foundation of 10G is already proven

## Fibre *Deep*



## Fibre *Evolution*



It is key to ensure that the next HFC outside plant upgrade prepares the fibre plant for the next disruptive technology... 5G



# The new kid on the block

## Enhanced Mobile Broadband (eMMB)



### High-speed mobility

*4K/8K UHD TV, 3D video, holograms*

**User Experience: 1Gbps**

## Massive Internet of Things (MIoT)



### Massive connectivity

*Remote sensors/actuators  
Smart-city/home, remote health*  
**Connection Density:  $10^6$  per km<sup>2</sup>**

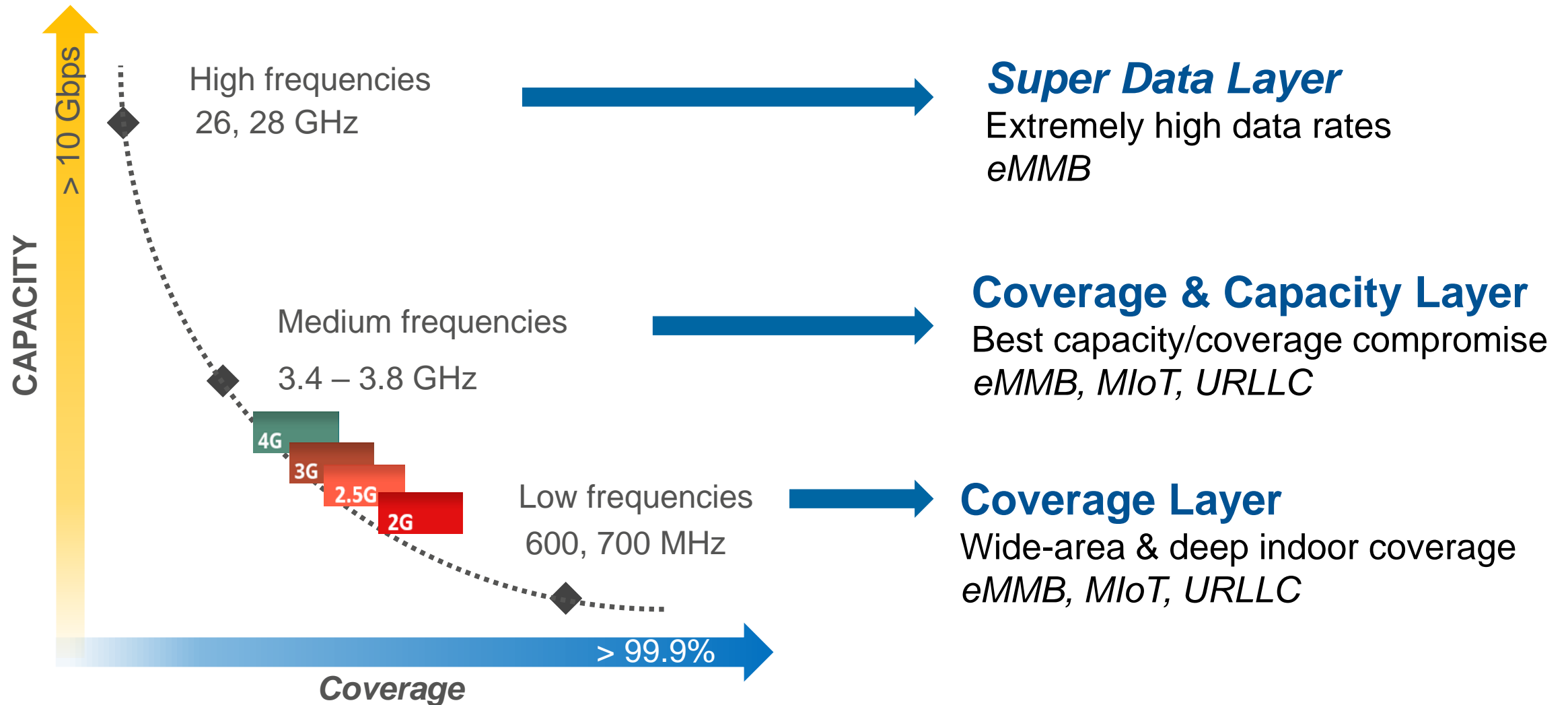
## Critical Communications (URLLC)



### Ultra-high-reliability and low latency

*Automated factories, assisted and  
autonomous driving, remote surgery*  
**Latency: 1ms Mobility: 500km/h**

# Basics to understand 5G

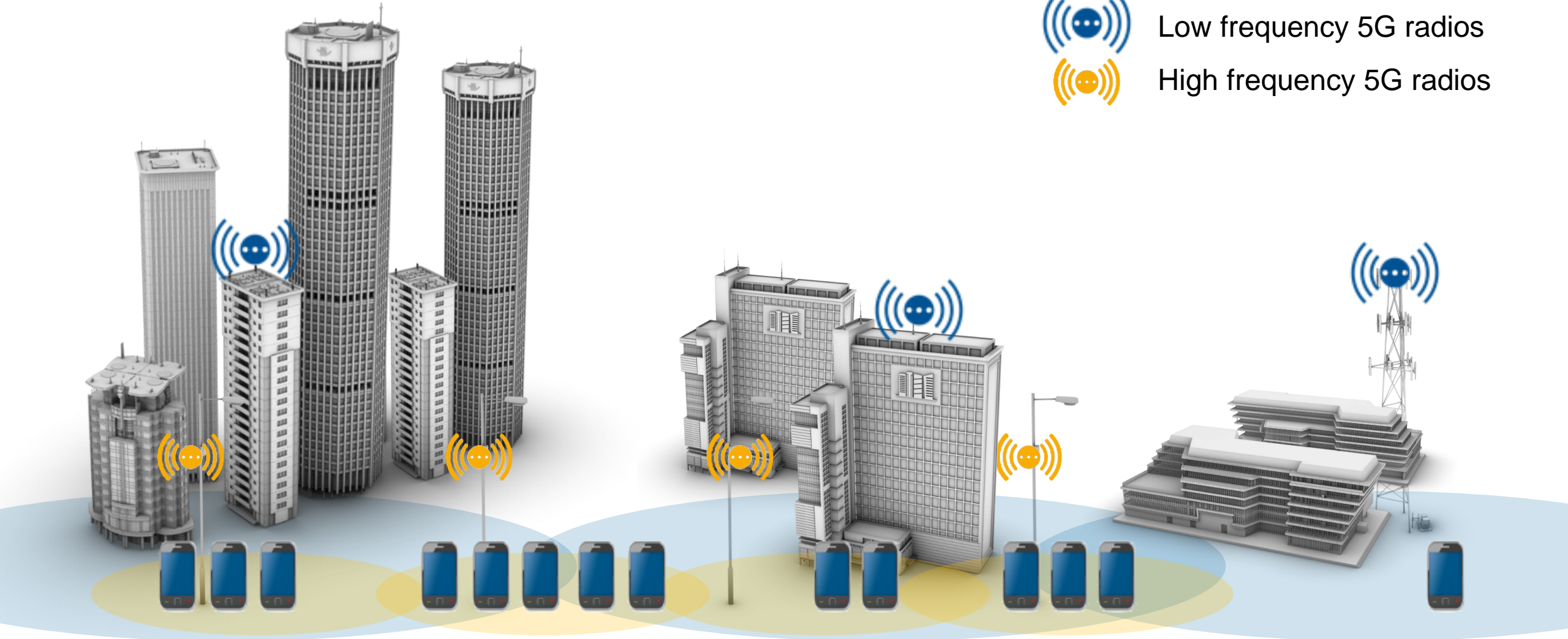


# 5G needs densification



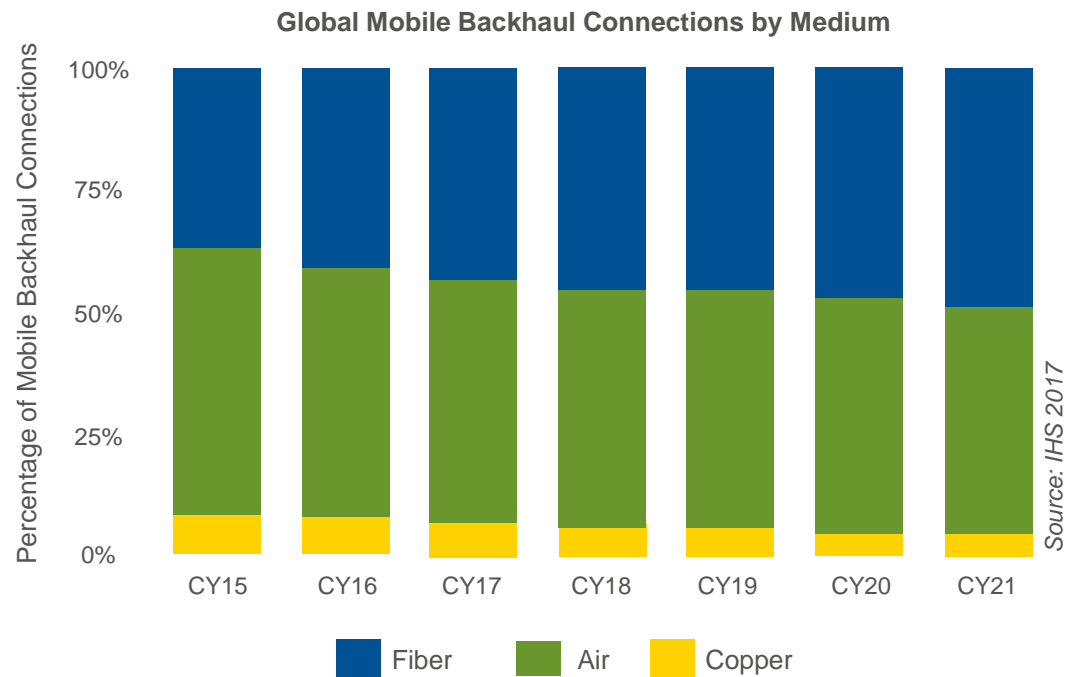
Low frequency 5G radios

High frequency 5G radios

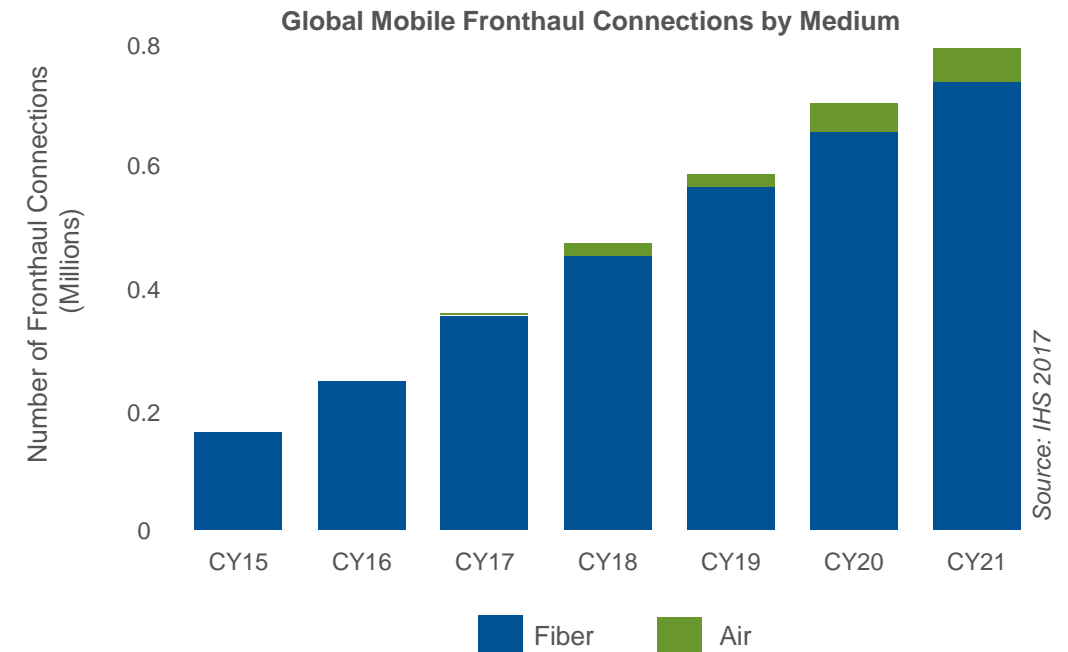


# And to connect all those cells 5G needs fiber

***“Antenna brain” co-located with radio***  
*Backhaul link*



***“Antenna brain” centralized remotely***  
*Fronthaul link*



Enhanced Mobile Broadband  
Massive Internet of Things



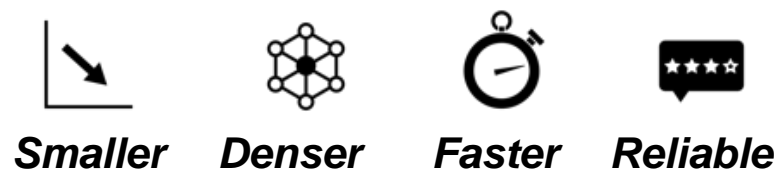
Critical Communications  
(URLLC)

# Fixed-Mobile Network Convergence

1. Consumer is becoming technologically agnostic



3. Both networks need optical fiber like never before



2. Telecom industry is consolidating in fewer mobile-fixed-TV integrated operators

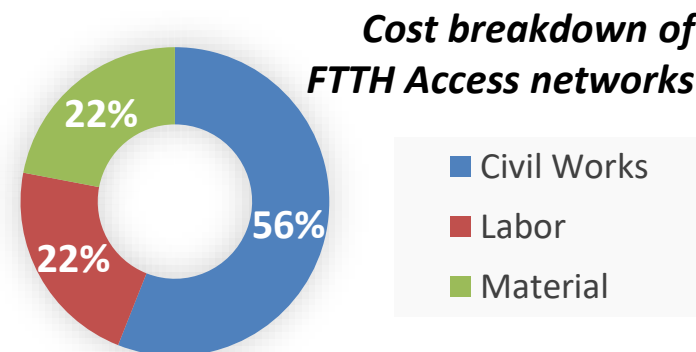
Vodafone – ONO  
*Spain*

SFR - Numericable  
*France*

Liberty Global – Ziggo  
*The Netherlands*

BT - EE  
*UK*

4. Fiber requires important CapEx investment



Source: FTTH Council

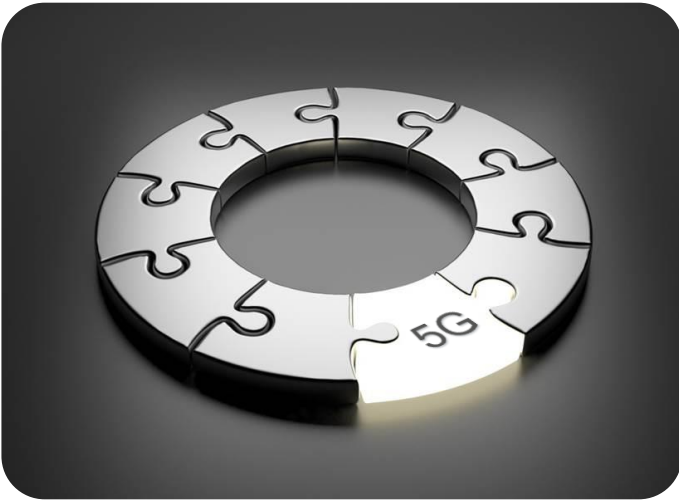
HFC networks are an excellent vehicle for convergence because it provides right of way, backhaul (and even power) to connect small-cell radio equipment



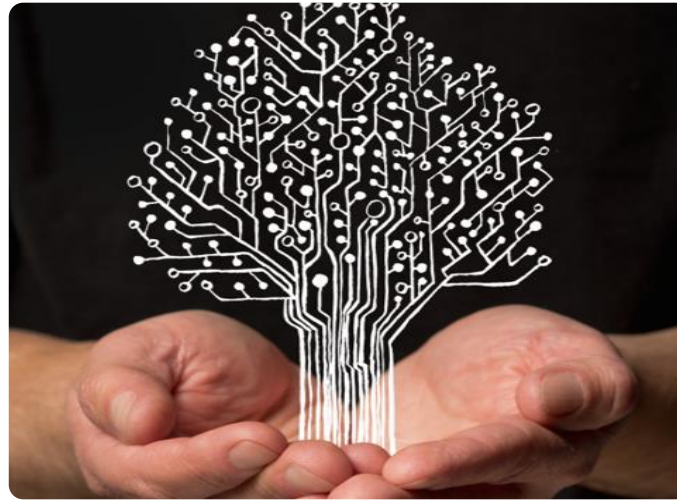


# Future proofing next upgrade cycle

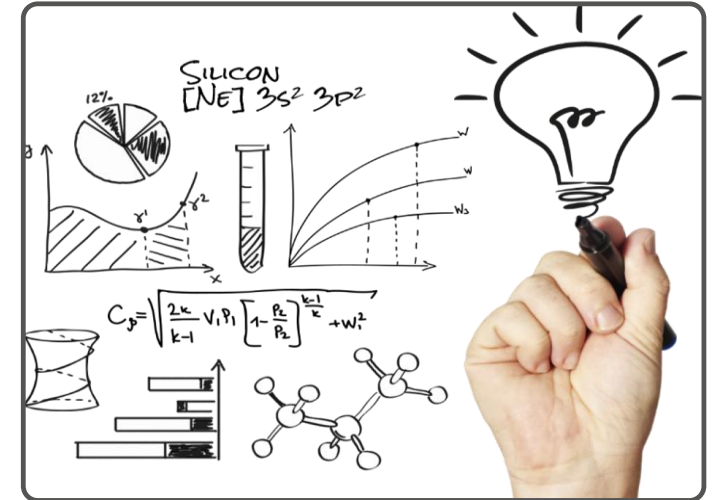
## Keep going smaller, denser, faster... and CONVERGE



Challenging yet an  
OPPORTUNITY

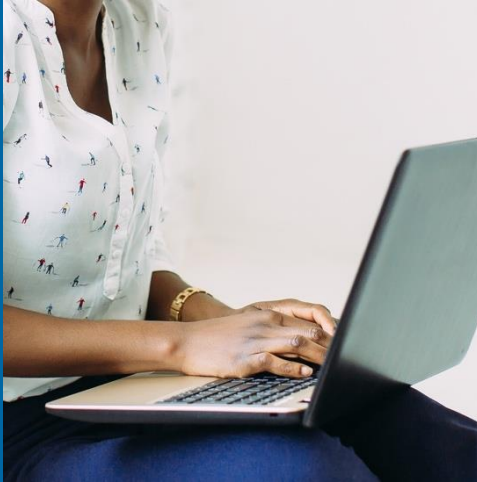


A converged approach can  
enable SAVINGS up to 40%



There is an optical SOLUTION  
that meets each network  
specific NEEDS

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Vanesa Diaz

[diazvg@corning.com](mailto:diazvg@corning.com)

**#FiberToThePeople**

A low-angle, upward-looking shot of a modern glass skyscraper. The building's facade is composed of a grid of dark metal frames and large glass panels, which reflect the sky. The lines of the building converge towards the top center of the frame, creating a strong sense of height and perspective. The sky is a clear, vibrant blue. The word "CORNING" is superimposed in the center of the image in a white, serif typeface.

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