

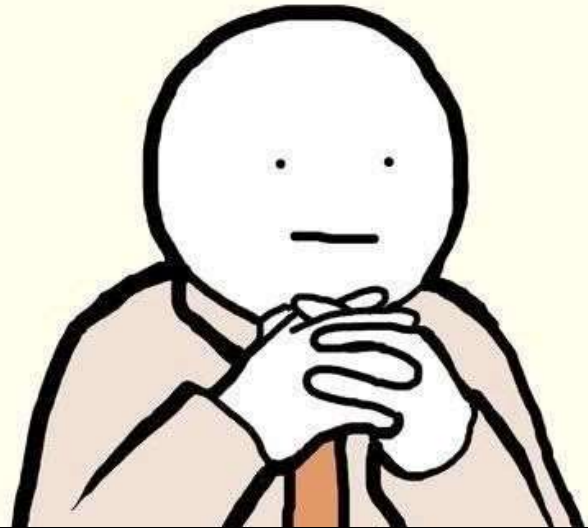
# **Evolving Telecom**

**Shyam Mardikar,  
CTO Mobile Networks,  
Airtel**

# Evolving Telecom

## Part 1 – Customers

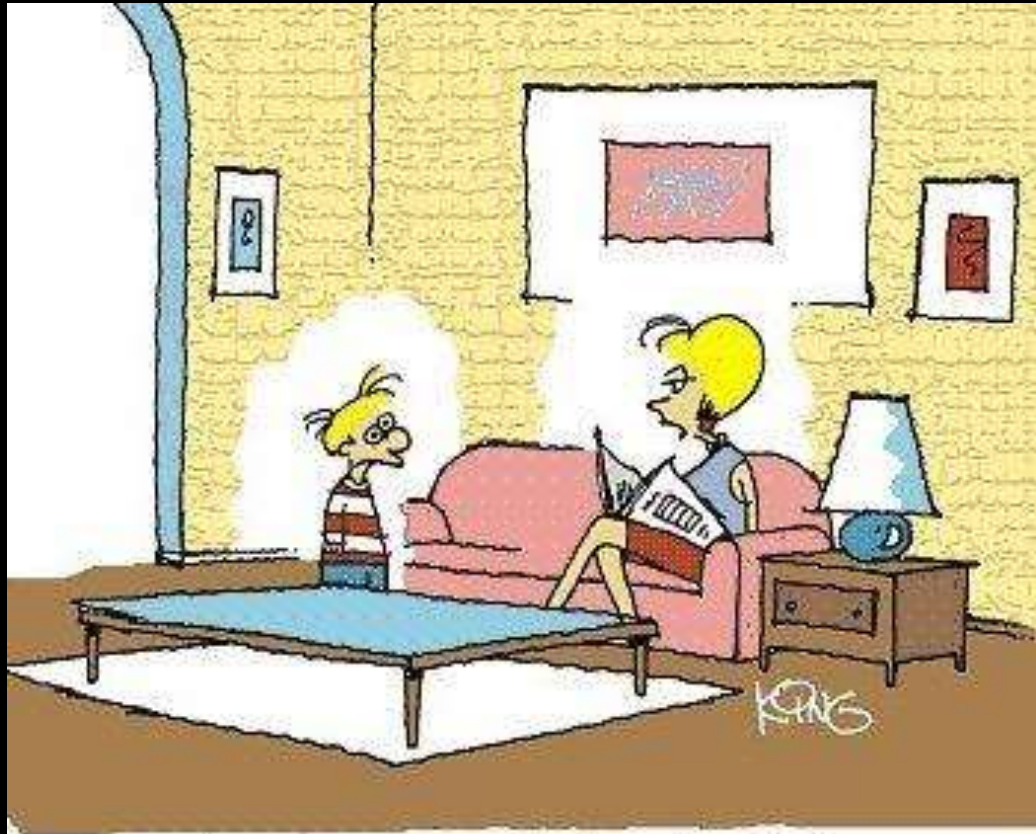
In 20-30 years, one of the hardest things our kids will have to do will be finding a screen name that hasn't already been taken.



# Smartphone - part of Human anatomy



# Digital natives have arrived



*"No, you weren't downloaded.  
You were born."*

# The rise of the machines



**Online is the new matrix**

**reality**

*(noun)*

**the annoying time between**

**sleep and online**

# And customers are behaving differently

Past – less than 10% online

Make and receive calls

Present – more than 50% online

Make and receive calls

Watch videos and play games

Send pictures

Navigate through traffic

Read books and news

Blog and communicate socially

Plan travels, movies, meals

Bank, sell and purchase

.....

Future – near 100% online

All of these +

Digital identity management

Security

Virtual reality

Virtual assistant and record keeping

Medicine and education

IoT

Cryptocurrency

.....

# The story of 3 V's

**V**oice

2001-2010



Real Time  
connectivity

**V**ideo

2010-2020



Real Time  
consumption.  
Location  
Aware

**V**irtuality

2020-2030



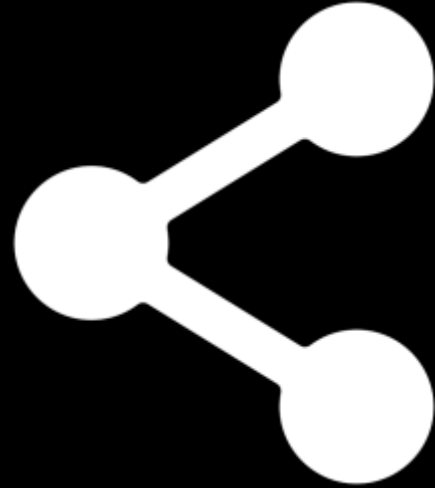
Real Time  
consumption.  
Location  
Analysed

Per Capita Consumption is growing 1000X per 10 years

# Existential crisis has moved



I think therefore I am



I “share” therefore I am

# Evolving Telecom

“ ....your phone today has **more computing power** than **all of NASA** in 1969.....”

*A tweet by George Bray*

## Part 2 – Technology

# The three wise men



**Gordon  
Moore**

**George  
Gilder**

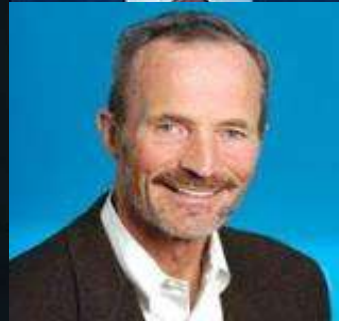
**Mark Kryder**



...number of transistors in a dense integrated circuit doubles approximately every two years...

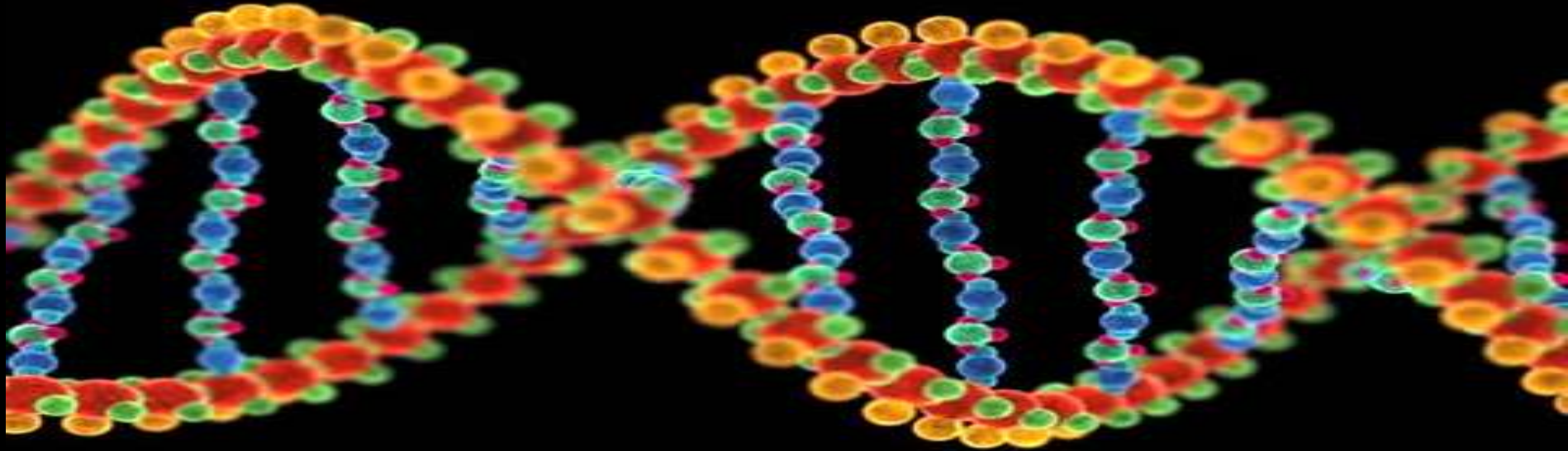


...bandwidth grows at least three times faster than computer power...



...inside of a decade and a half, hard disks had increased their capacity 1,000-fold...

# Awareness over control – the new DNA



**Devices**

**Network**

**Applications**

# The new network

## 1. Ubiquitous Coverage



## 2. Real-time awareness



## 3. Massive Capacity



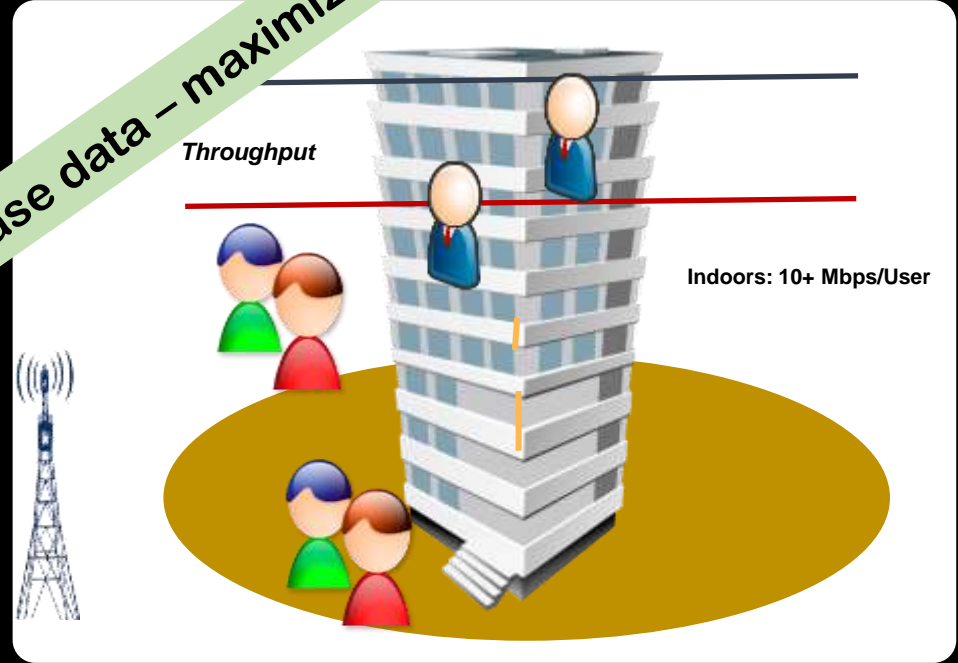
# The new network

## 1. Ubiquitous Coverage



Horizontal and vertical land base data – maximizing experience

Optimised for coverage and capacity



Multi-layer hetnet model to cover on-street, indoor and hotpots as coverage layers

# The new network

## 2. Real-time awareness



- Understand network performance through analytics
- Optimize network topology to serve closest to customer

Real time actions for network to adopt to traffic

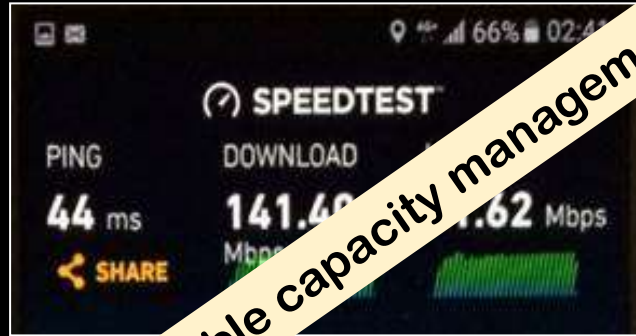
Location analytics and machine learning – Converging space and time

# The new network

## 3. Massive Capacity



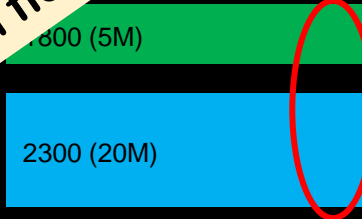
2016



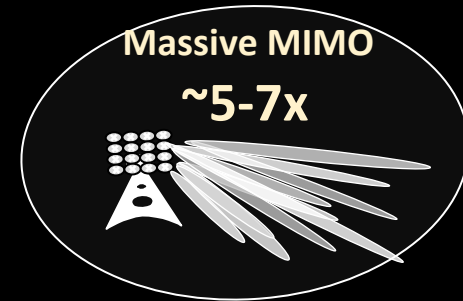
2017



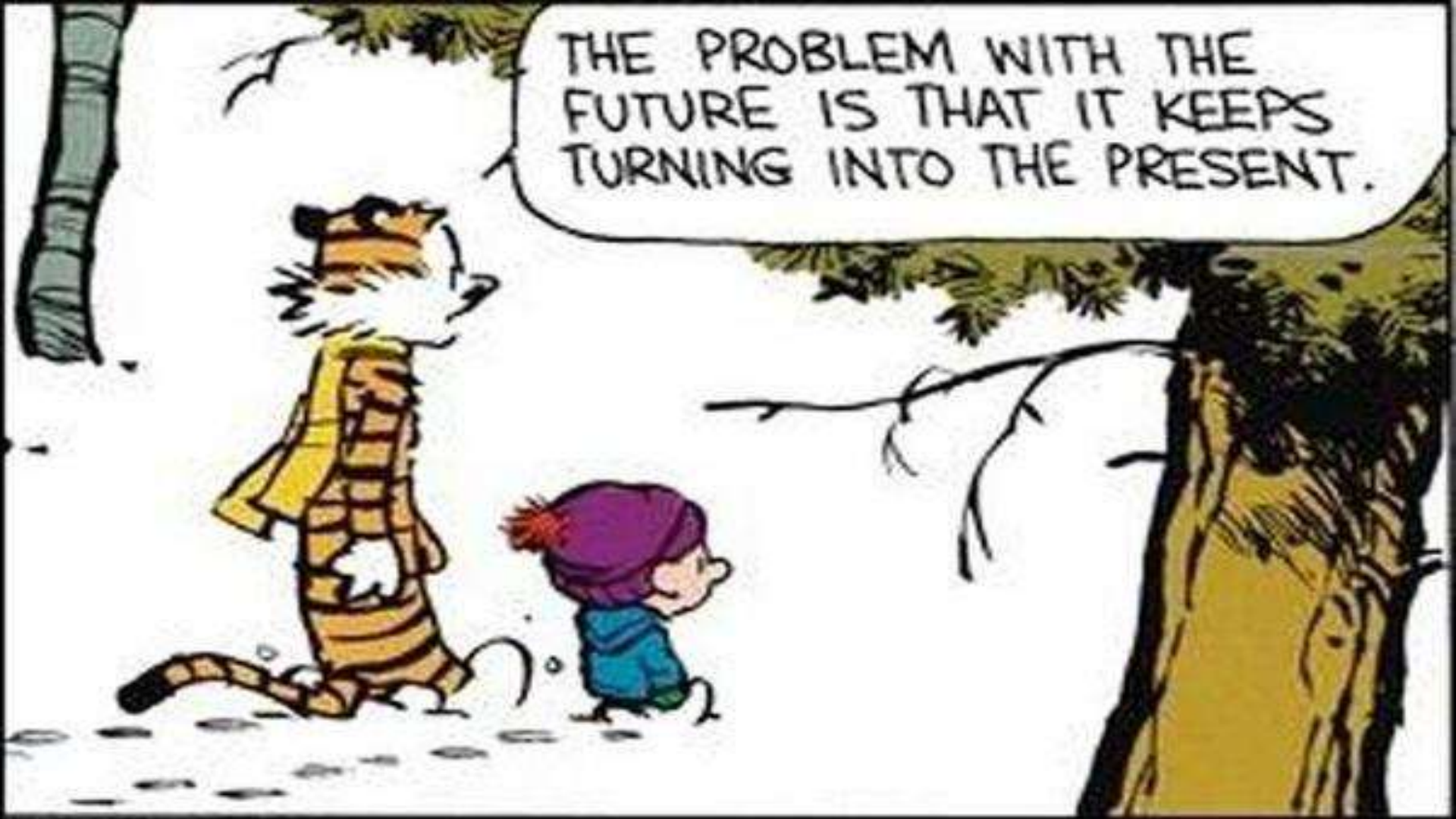
LTE Advanced with  
3CC (LTE TDD + TDD + FDD)



India's first LTE advanced  
network (TDD+FDD CA)



Location coherent and flexible capacity management



THE PROBLEM WITH THE FUTURE IS THAT IT KEEPS TURNING INTO THE PRESENT.