

# REAL PERFORMANCE IS ALL THAT COUNTS

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# CONTINUED GROWTH IN MOBILE DATA TRAFFIC

9.5  
BILLION

mobile subscriptions  
by the end of 2020

8X

growth in smartphone  
traffic between 2014  
and 2020

55%

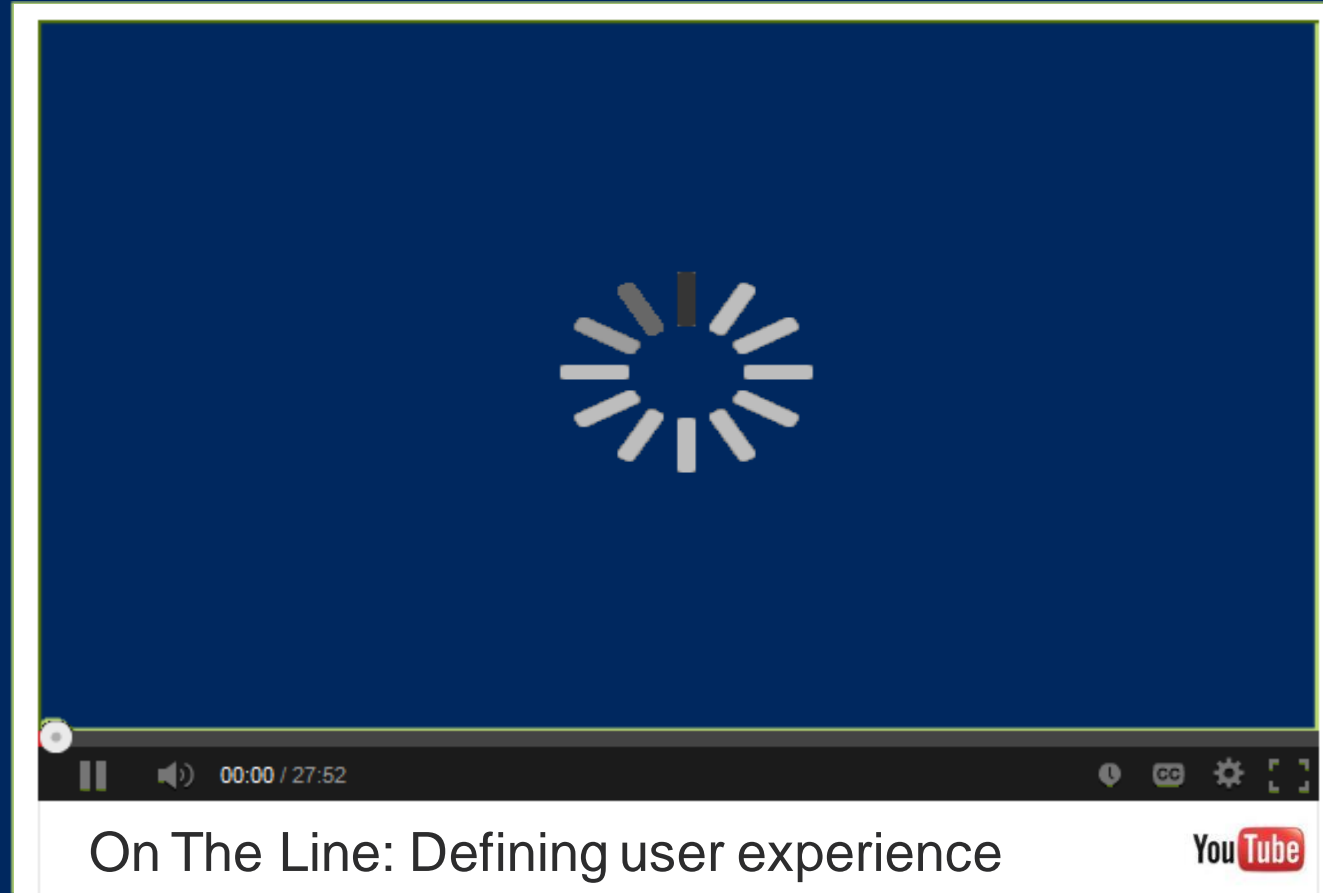
of mobile data traffic will  
come from video in 2020



# *"JUST A SECOND PLEASE"*



AFTER  
4 SECONDS  
10 % OF USERS  
ABANDON  
ONLINE VIDEOS



AFTER  
10 SECONDS  
40% OF USERS  
HAVE GIVEN UP....

For Web browsing:

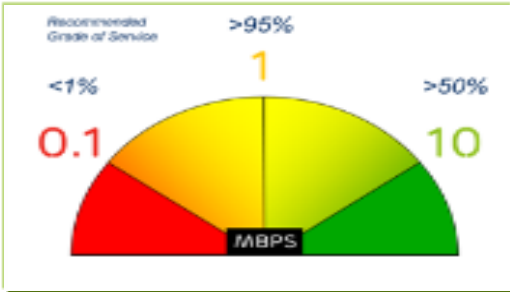
25% of users abandon after 4 seconds  
50% of users give up after 10 seconds





# APPLICATION COVERAGE

## A NEW DIMENSION OF PERFORMANCE

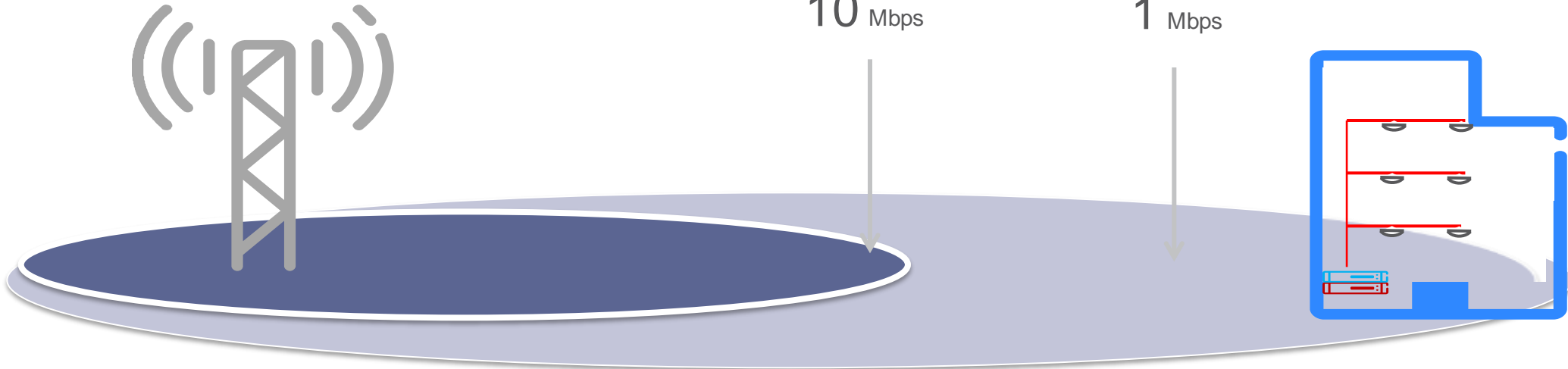


APP COVERAGE – PERFORMANCE  
RELEVANT TO THE USER



10 Mbps

1 Mbps



APPLICATION COVERAGE RETHINK PERFORMANCE

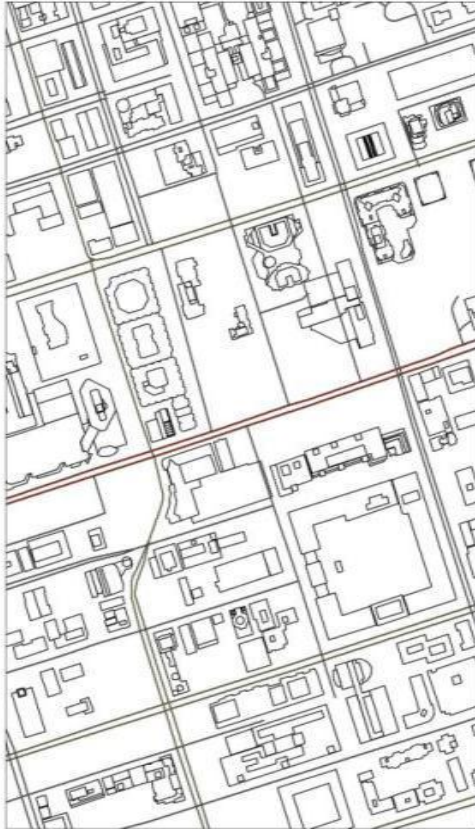


# APPLICATION COVERAGE

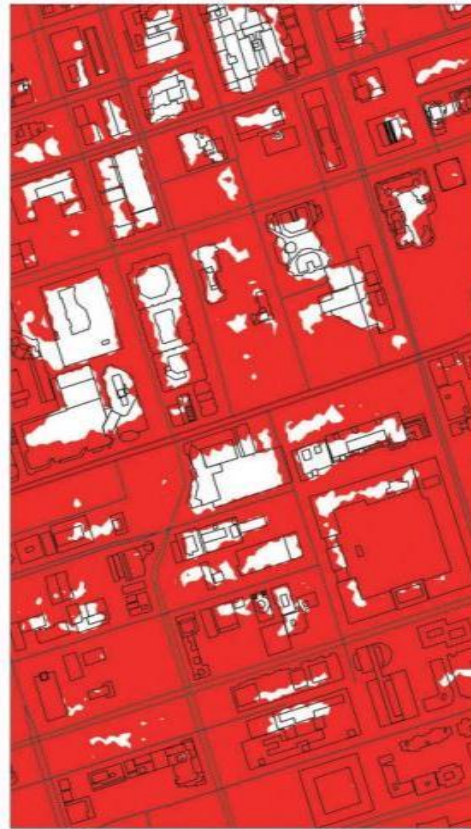
## A NEW DIMENSION OF PERFORMANCE



*City plan view without mapped coverage*



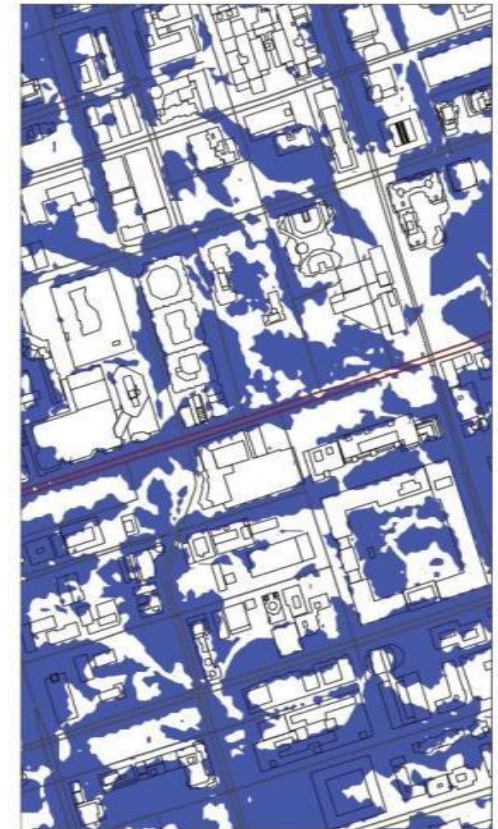
*Voice coverage  
(12.5 Kbps)*



*Music coverage  
(160 Kbps)*

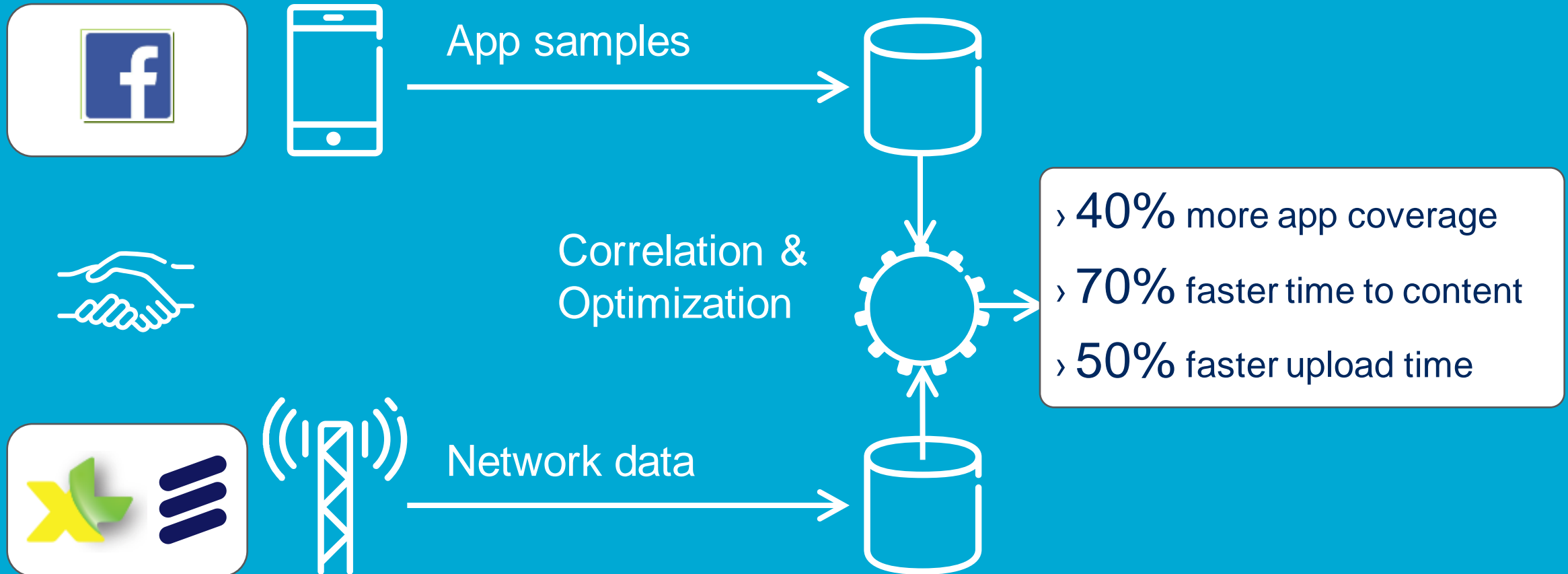


*Video streaming coverage  
(720 Kbps)*



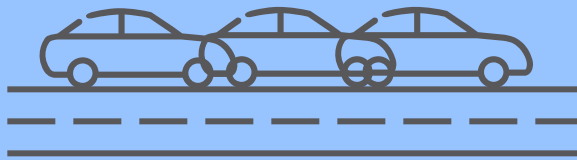
*“Every app has its own coverage map”*

# USE CASE: FACEBOOK EXPERIENCE OPTIMIZATION



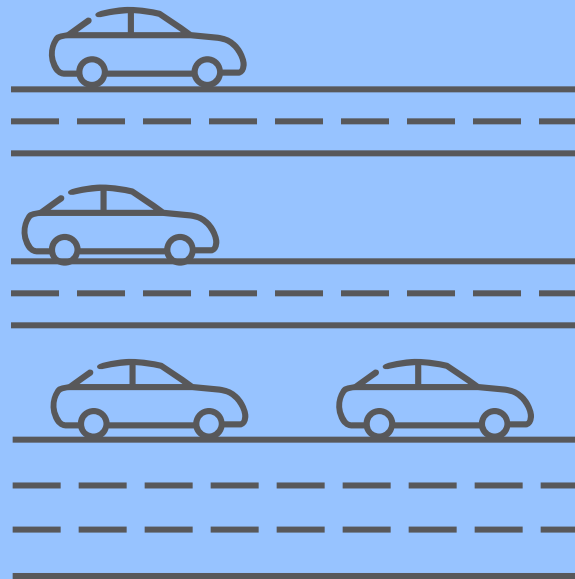
*“...correlating Facebook application use cases with network-wide statistics has proven to be an innovative and efficient way to detect and address network optimization opportunities” CEO, XL Axiata*

# SPECTRUM EVOLUTION- LTE CARRIER AGGREGATION



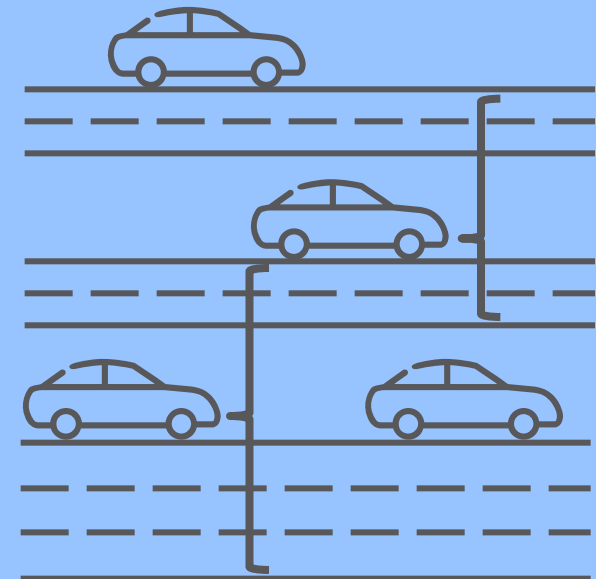
## SINGLE CARRIER

ALL UEs COMPETE ON  
SAME CARRIER



## MULTIPLE CARRIERS

UEs ARE DISTRIBUTED



## MULTIPLE CARRIERS & CARRIER AGGREGATION

- UEs ARE DISTRIBUTED
- CA UEs USE MULTIPLE  
DOWN LINK.



# 3GPP – WIFI COEXISTENCE



Licensed  
Spectrum

3GPP/LTE



Using LTE Advanced Technology to  
Aggregate Licensed & Unlicensed Spectrum

Wi-Fi



Unlicensed  
Spectrum



LTE Macro  
Performance

LAA Unlicensed  
1+ Gbps

LTE Small Cells  
improved performance

LTE Primary Carrier  
Licensed Spectrum

LTE Secondary Carrier  
Unlicensed Spectrum



# EVOLUTION TOWARDS 2020





# 5G USE CASE EXAMPLES



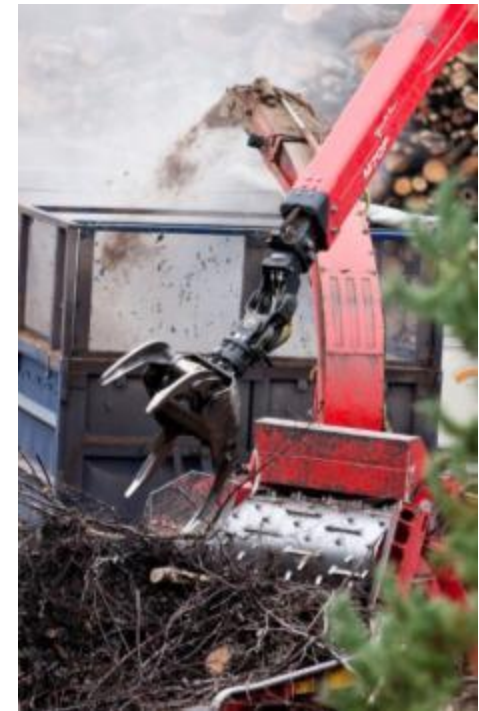
Broadband experience  
everywhere anytime



Massive Machine  
Type Communication



Mass market  
personalized TV



Critical Machine  
Type Communication

NEED 4 APP EXPERIENCE !

*LET'S MAKE IT HAPPEN*