

NETWORK PERFORMANCE

An Operator's Competitive Differentiator

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July 26, 2015



CONSUMER DEMAND TRENDS

GREATER DEMAND THAN EVER



8.4B

mobile broadband subscriptions
2020

700M

WhatsApp users

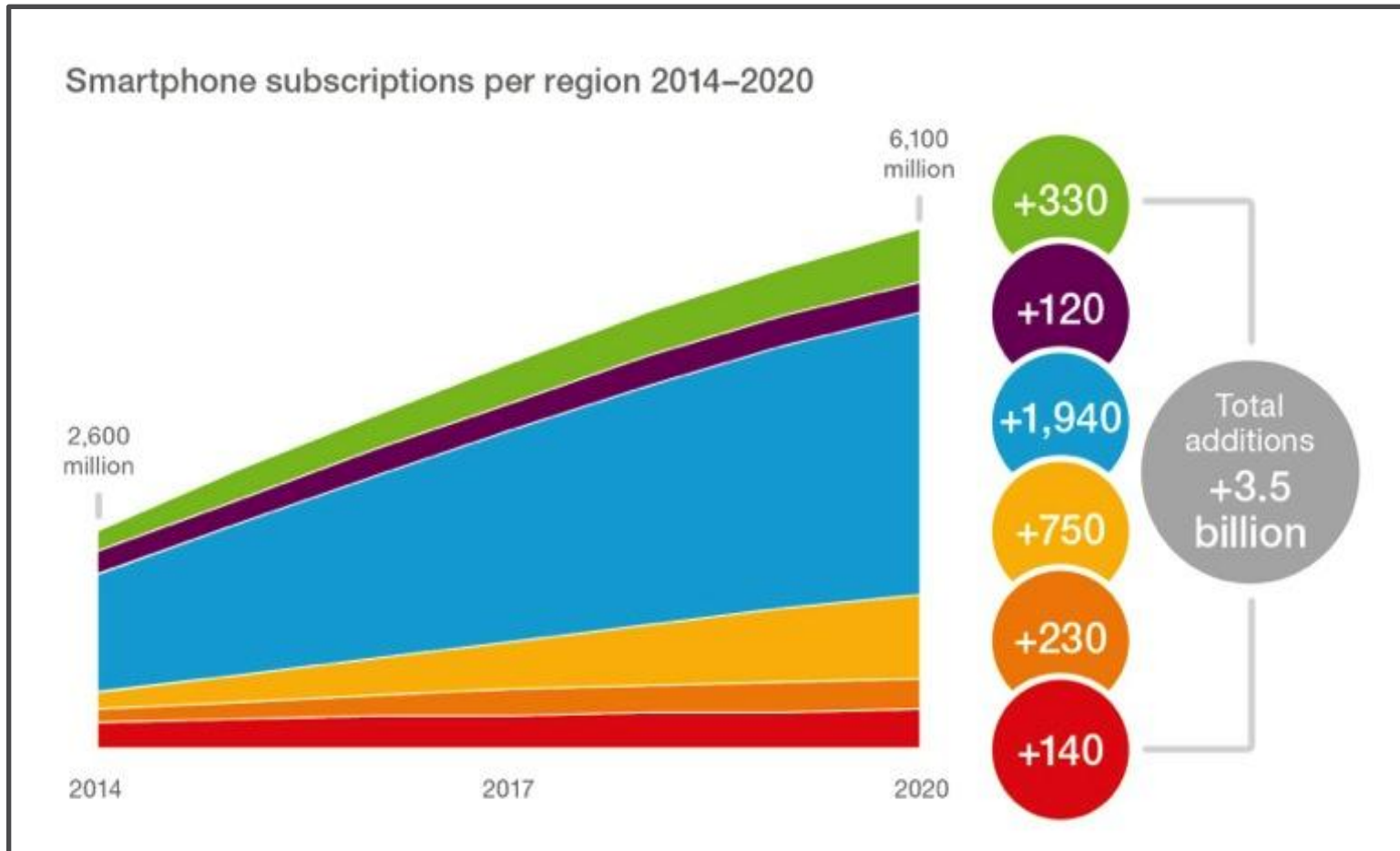
1.3B

Smartphones shipped 2014

1.2B

mobile Facebook users

70% OF THE WORLD'S POPULATION WILL BE USING SMARTPHONES IN 2020

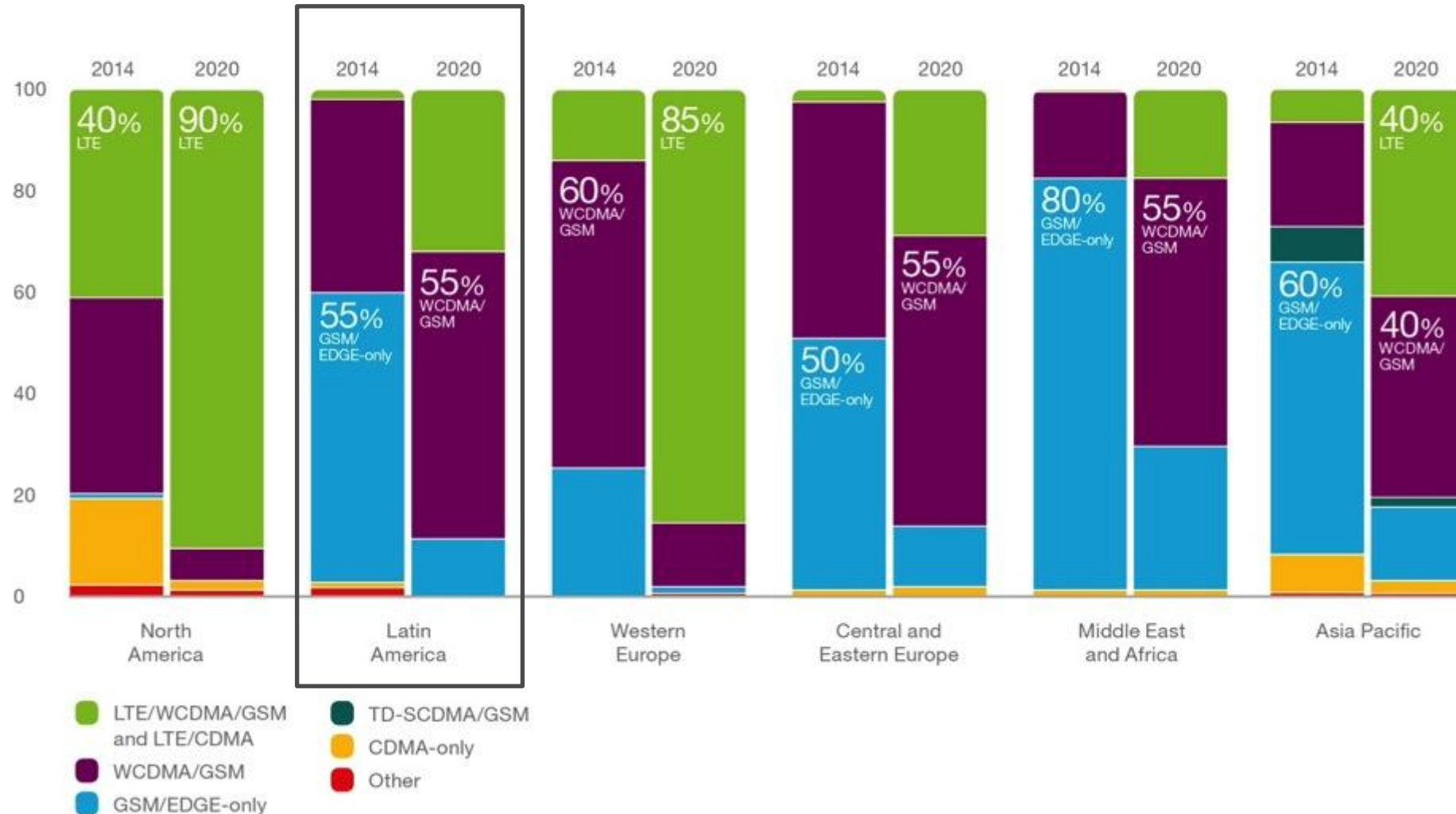


Almost 10% of smartphones will be added from LATAM



90% of the world's population will have a mobile phone by 2020

LATAM: 3G AND 4G REPRESENT 90% OF SUBSCRIPTIONS BY 2020



North America has the highest share of LTE subscriptions in the world due to rapid migration from CDMA-based networks and HSPA

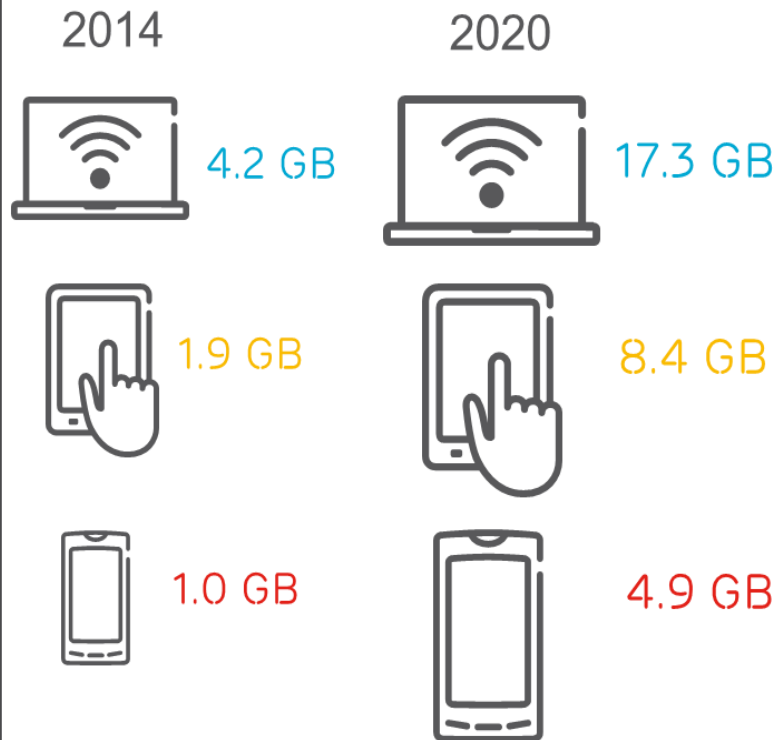
Western Europe is at the forefront of mobile broadband due to early LTE roll-out, and well-developed 3G networks

Asia Pacific, Latin America and Middle East and Africa will move from mainly GSM/EDGE-only markets to WCDMA/GSM and LTE

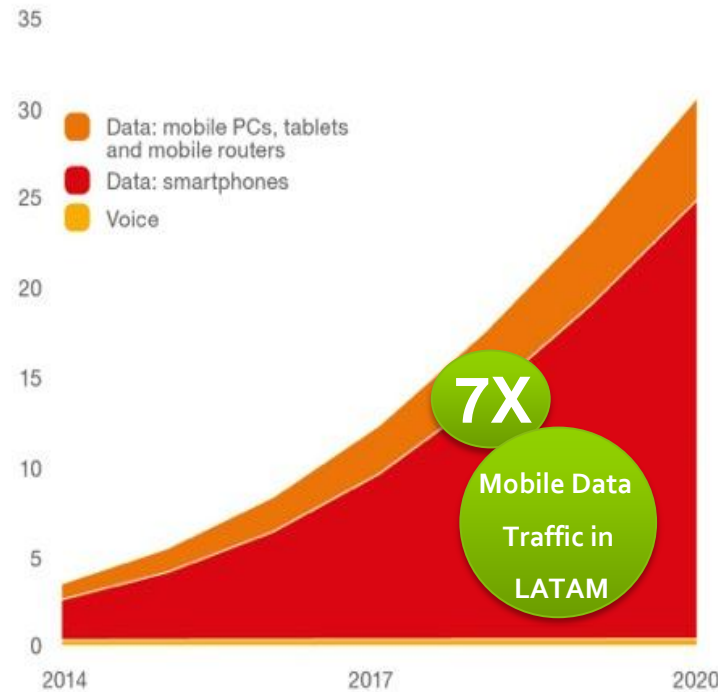
MOBILE DATA TRAFFIC WILL BE MULTIPLIED BY 9X BY END OF 2020



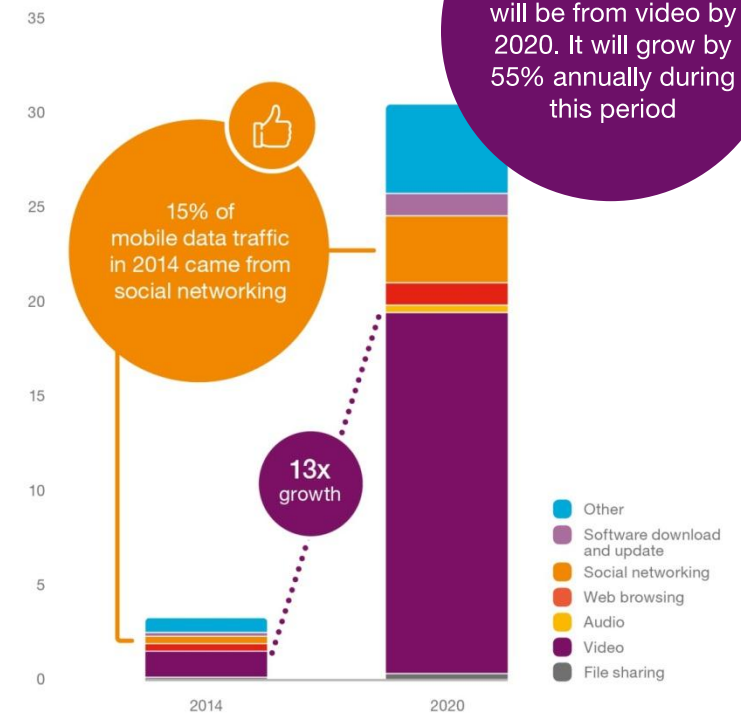
Monthly consumption per device type



Global mobile traffic (monthly ExaBytes)



Mobile data traffic by application type (monthly ExaBytes)





GROWING DEMAND FOR EXPERIENCE

GROWING DEMAND FOR EXPERIENCE



Social
experience



1 Mbps



Premium
experience



3 Mbps



Professional
experience



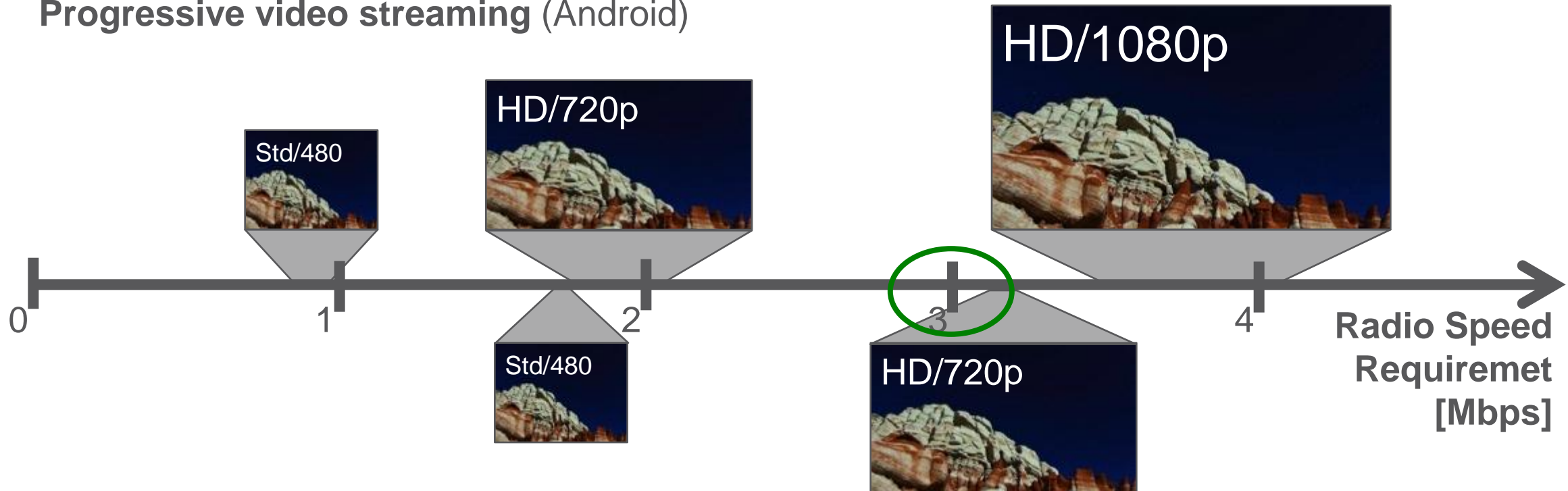
10 Mbps

Demand drives need for speed
Differentiation & segmentation opportunity

HD VIDEO DRIVES NEED FOR SPEED



Progressive video streaming (Android)



Adaptive video streaming (Apple)

Source: IOS8 YouTube measurements by Ericsson Smartphone Lab (2014)

Before: IOS7 cellular YouTube speed max 250 kbps

APP EXPERIENCE REALITY



42%

MORE TIME SPENT BY
SATISFIED USERS ON
STREAMING ONLINE
VIDEOS COMPARED TO
UNSATISFIED USERS

33%

STOPPED USING APPS
DUE TO POOR COVERAGE

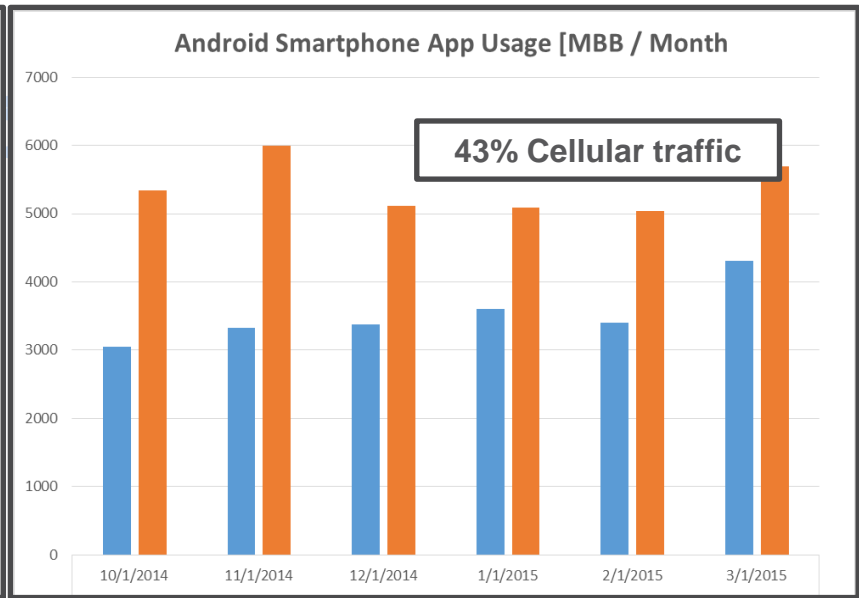
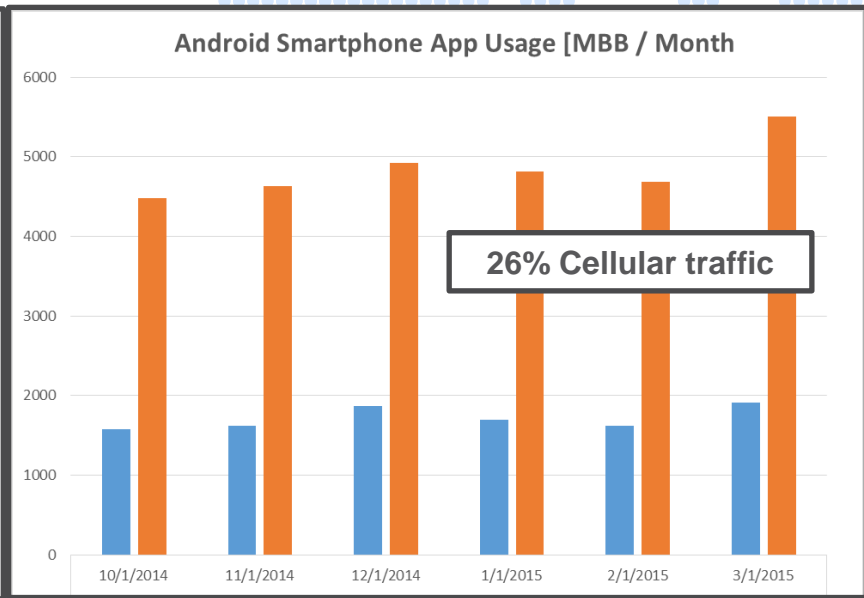
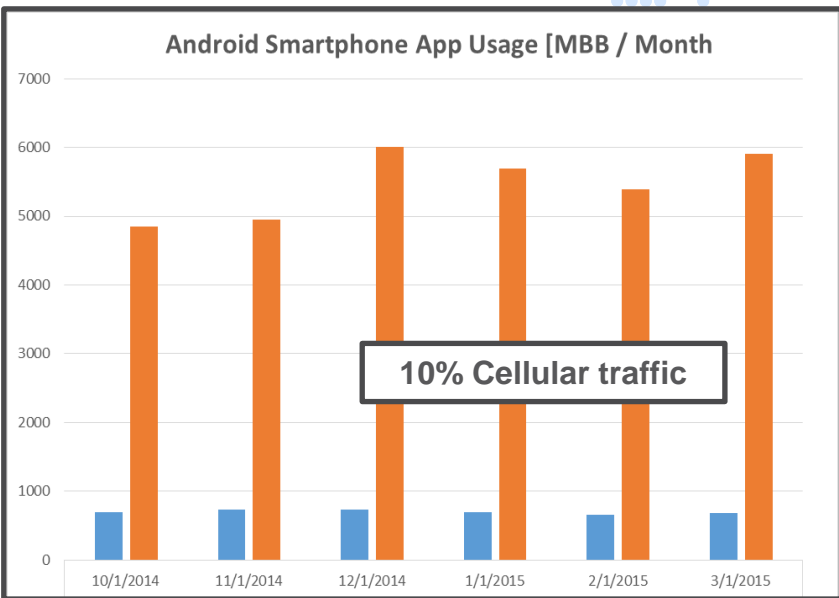
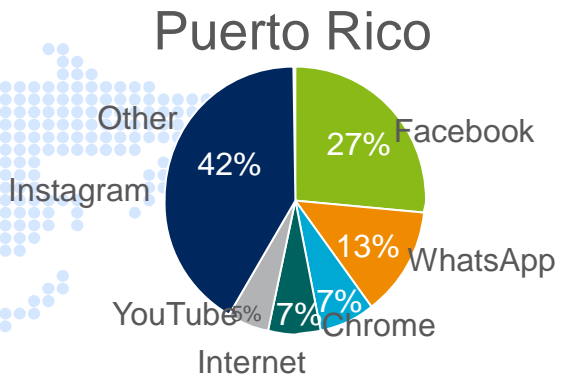
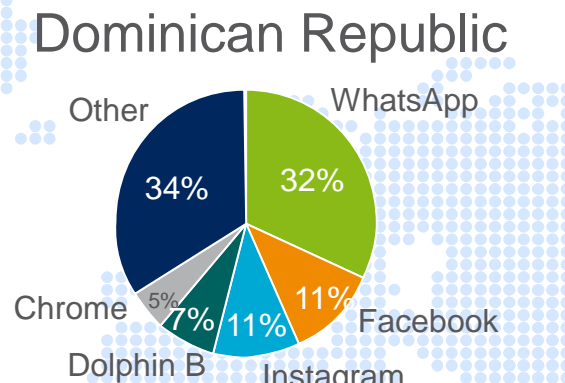
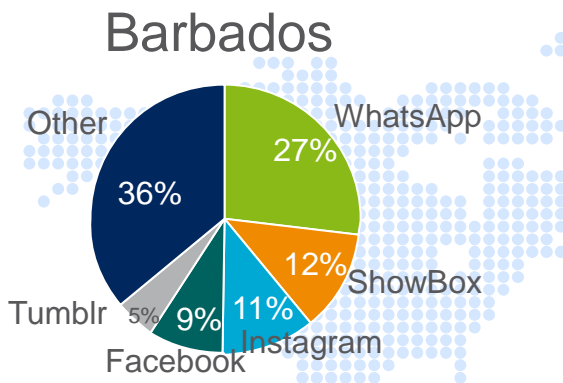
56%

OF POWER USERS
STOPPED USING APPS
DUE TO POOR COVERAGE

USERS FOCUS ON A FEW APPS – WITH MARKET VARIATIONS



Wi-Fi
Cellular





THE VALUE OF PERFORMANCE

VALUE OF PERFORMANCE

Recognized by financial analysts



9 January 2014 | 72

Pan-Asia T Network Advant

- Better networks ec
~~importance of netw~~
growth and share pr
and establish who p
in turn allows us to i
structural competitiv

J.P.Morgan

Asia Network

Telco Conversations: A

- More and better: This r
analysis (December 2014)
improved city analysis allo
over time periods and the a
major Asian operators. Th
than geographic coverage, a
coverage where you are v
discussion of this global
differentials allow open
structure, critical in an er

Asia Pacific Equity Research
19 March 2015

MORGAN STANLEY BLUE PAPER



~~Mobile Data Wave~~

Who Dares to Invest, Wins

Exponential growth in data usage could challenge network capacity by 2014. Tablet

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2 Morgan Stanley & Co. LI

3. Morgan Stanley MUFG

IMPORTANCE OF NETWORK QUALITY

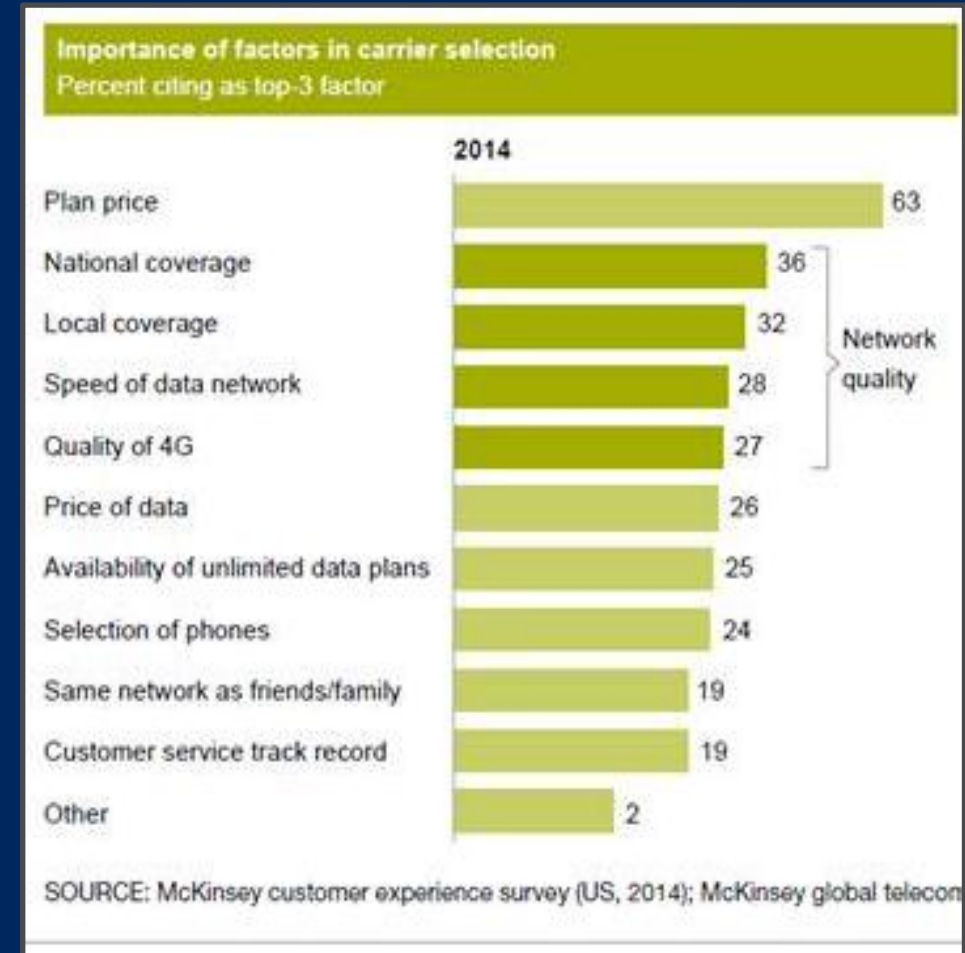
Recognized by consulting firms

› McKinsey&Company, Q1 2015 report:

- “*Mobile broadband has made network quality a priority and differentiator for operators(...)*”
- Off the 11 decision factors used in a **McKinsey** consumer survey, network quality now occupies spots 2 through 5
- Operators need a new approach to network quality, one that optimizes customer experience

› Financial and industry analysts (Phil Goldstein):

- Removal of unlimited plans unlikely to happen while network quality doesn't improve



1. Analysts: Sprint unlikely to change unlimited plans until network improves

By Phil Goldstein

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Sprint ([NYSE: S](#)) CEO Marcelo Claure said last week the carrier might raise the pricing of its unlimited smartphone data plans later this year and could eventually get rid of the option altogether. Financial and industry analysts say Sprint is unlikely to remove the unlimited option until it significantly improves its network quality, though analysts are split on how such a move would impact Sprint's subscriber base.

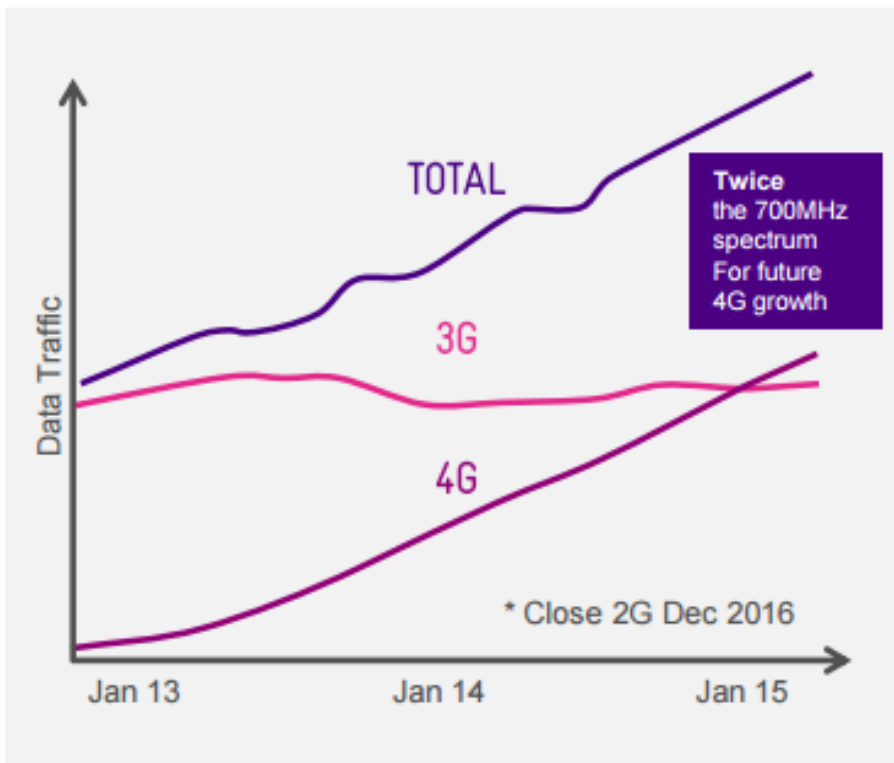


IMPORTANCE OF NEW TECHNOLOGY IN PERFORMANCE

HOW DOES AN OPERATOR ADDRESS \$/GB?

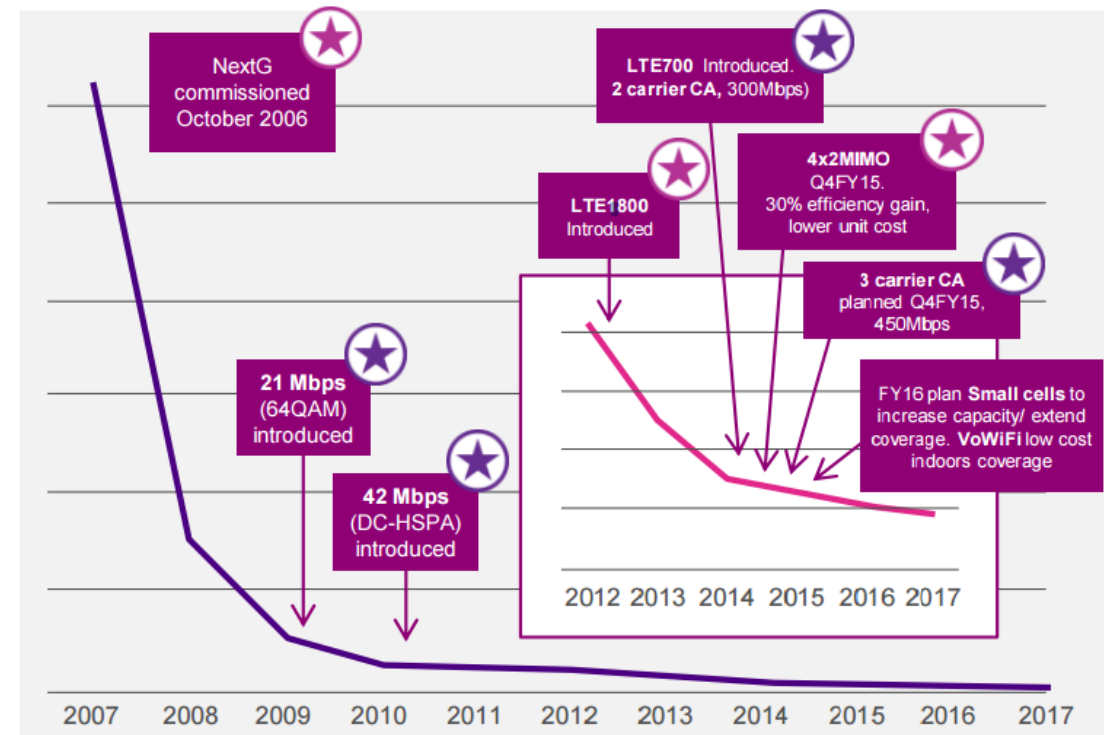


TELSTRA TRAFFIC BY NETWORK TYPE



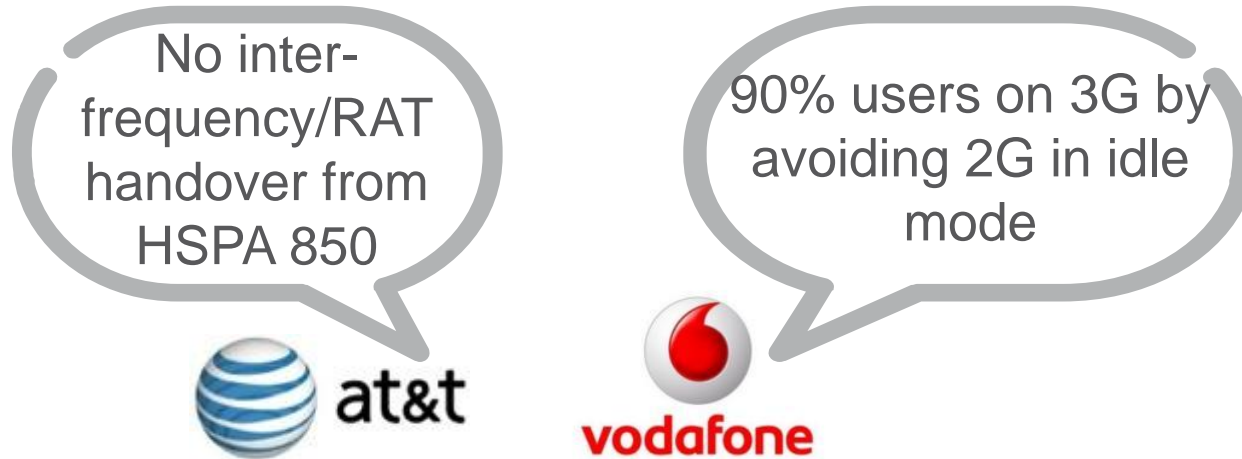
World First Australian First

WIRELESS DATA PRODUCT UNIT COST (PUC) - \$/GB



Leveraging spectrum & technology to lower cost, optimize spend & differentiate experience

ENSURING SMARTPHONES ARE ALWAYS BEST CONNECTED



Key insights

- › Use 3G as fallback to 4G, speech and data
- › 2G is not good enough for Smartphones
- › Inter-layer handovers risk dropped calls & promotes poor user experience.

Traffic management principles

› Aim for “Highest G”

- 4G when coverage is good
- 3G at cell edge or LTE congestion
- 2G ONLY when 3G does not exists

› Avoid inter-layer handovers

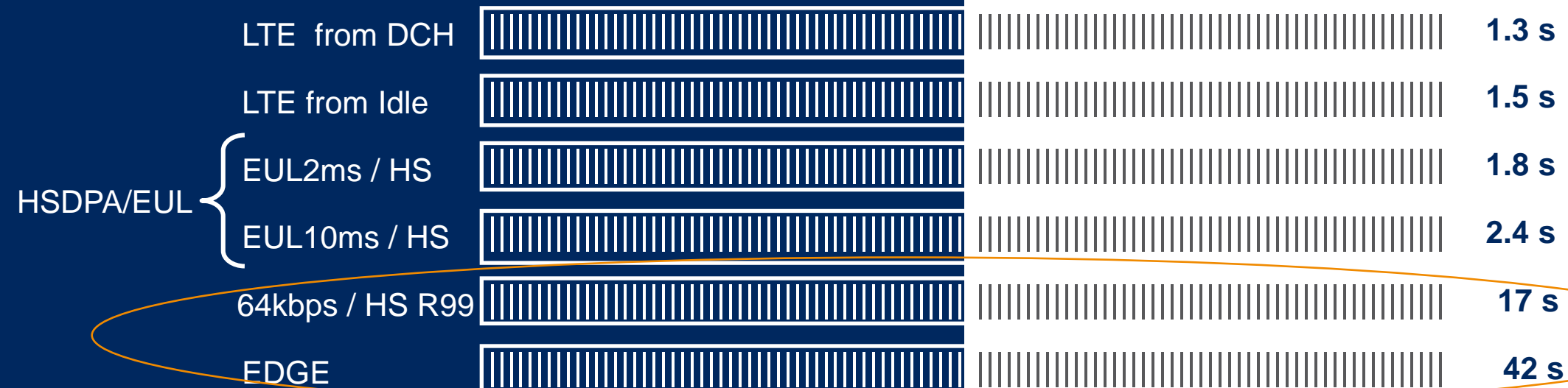
- All services in all layers
- Load sharing primarily in idle mode
- Stay at coverage layer even when radio condition is poor

YOU HAVE A TOP END IPHONE 6 THIS IS WHAT YOU GET

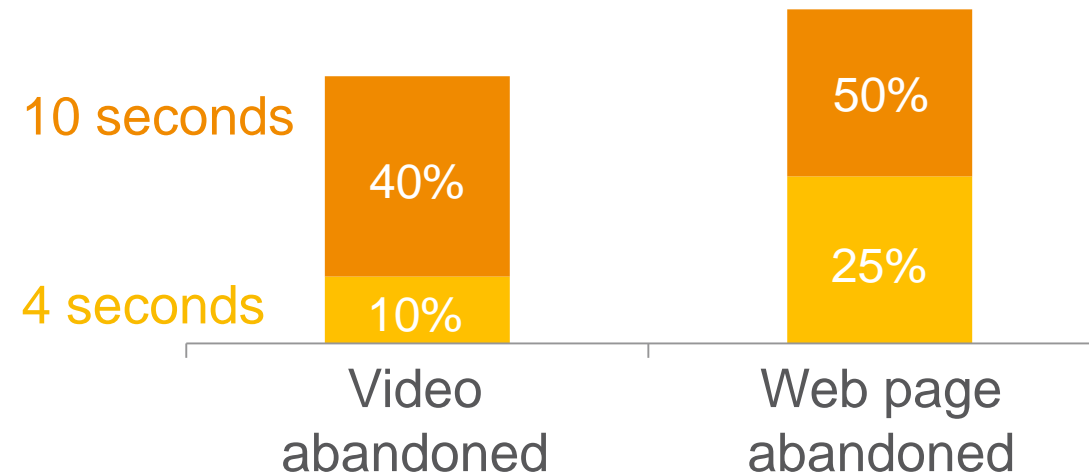


- › All users will be trapped if connecting using
- › AVOID R99 or EDGE

Download of KEPLER
webpage from etsi.org



TIME TO CONTENT IS CRITICAL



Keys to success

- › Proactively remove end-to-end bottlenecks
- › At minimum deploy HSPA 21 / 5.8 Mbps everywhere
- › Connect to highest G, apply flow of users recommendations

VALUE OF NETWORK

› Network performance improvement...

- Time on 3G up from 90% to 98%
- Downlink speed improved 50%
- Triple uplink speed

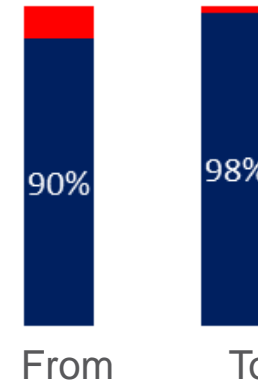
› ... higher customer satisfaction

- NPS up 4 points
- Churn indicator improved 2 points

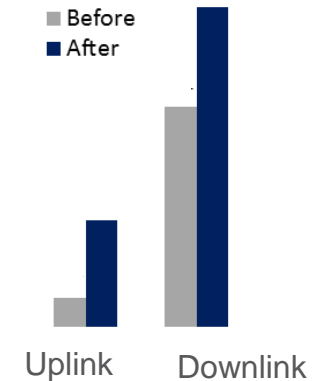
PERFORMANCE



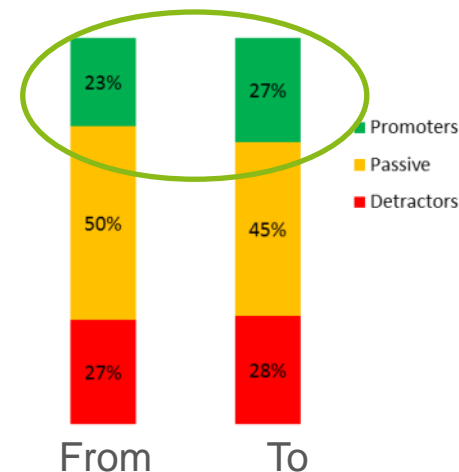
% of time on 3G



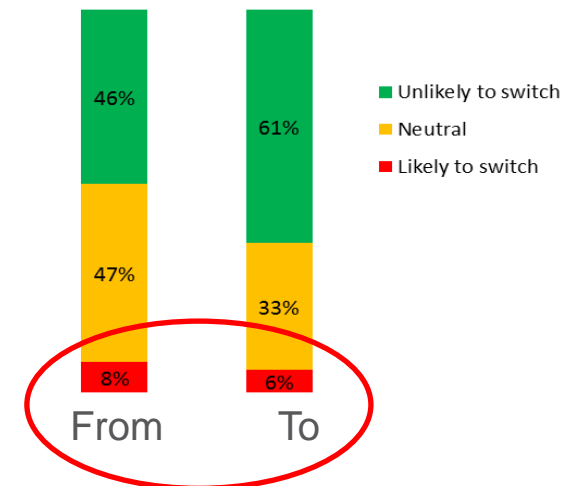
User Speed



Net Promoter Score



Churn



HELPING OPERATORS BECOME PERFORMANCE LEADERS



Terminal Strategy



Terminal Strategy MUST be aligned with Network Strategy



Dimension Network

- High traffic scenarios
- Forecast Traffic scenarios
- License, Densify (Carrier Expansion, New Sites (Small Cells))

Activate

- Latest SW Releases
- Improve Flow of users
- High Capacity and performance Features

Optimized Network

- RF Tuning
- Parameter Tuning
- IRAT Tuning
- * E2E Monitoring
- * Focus on End User KPI

Evolved Network

- Evolve to new Technology
- Evolve Network to Enhance User Experience

JOIN THE CONVERSATION

A woman with dark hair, wearing a green and white patterned top, is leaning over a purple wooden balcony railing. She is smiling and looking at a smartphone in her hands. The background is a light blue wall with horizontal siding. To her left is a large window with a purple frame divided into many small panes. To her right is a circular window with a purple frame and a dark, abstract painting inside. A white three-line menu icon is in the top right corner.

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