GROWTH CODES – HOW FRONTRUNNERS MONETIZE DATA
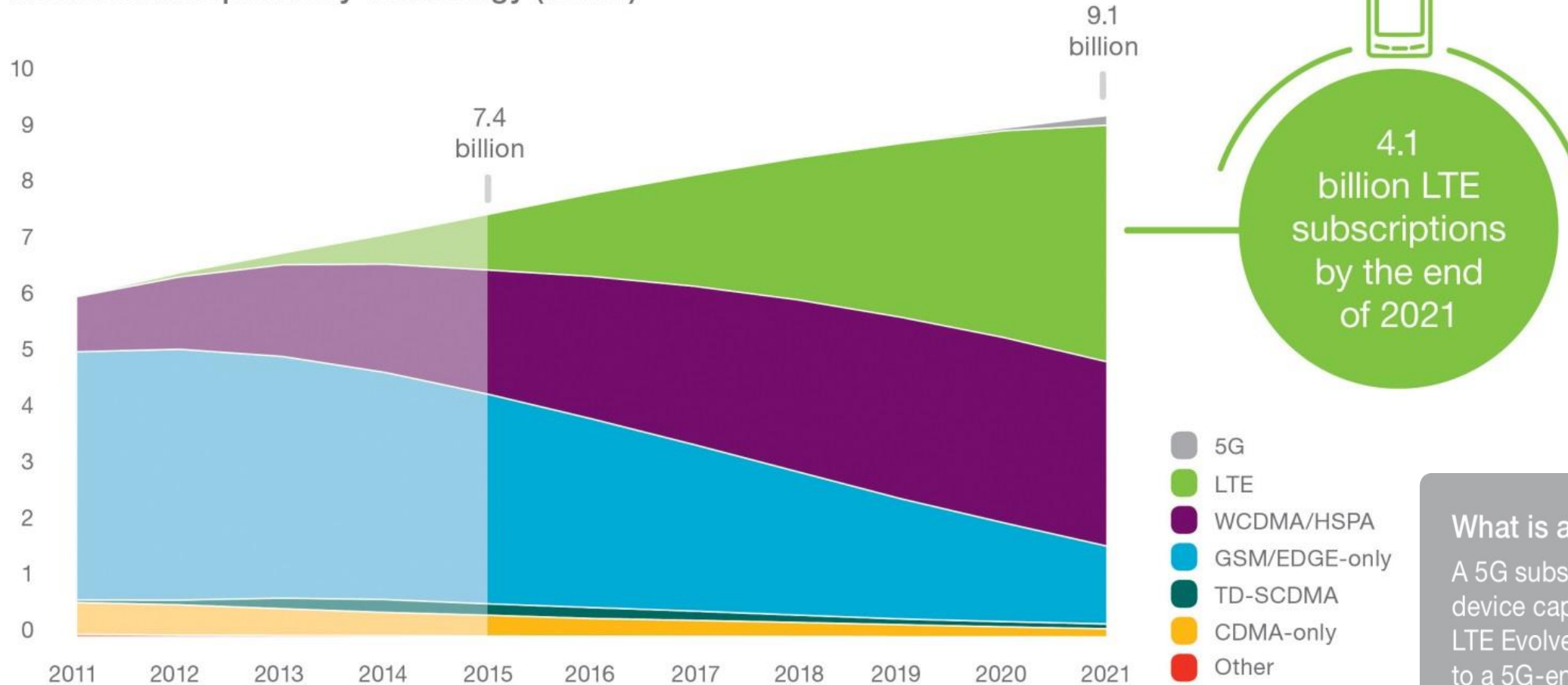
ON THE PULSE OF THE NETWORKED SOCIETY

Greger Blennerud
Head of Marketing, Mobile Broadband

9.1 BILLION MOBILE SUBSCRIPTIONS BY 2021

Mobile subscriptions by technology (billion)

What is a 5G subscription?

A 5G subscription requires a device capable of supporting LTE Evolved or NX, connected to a 5G-enabled network, supporting new use cases.
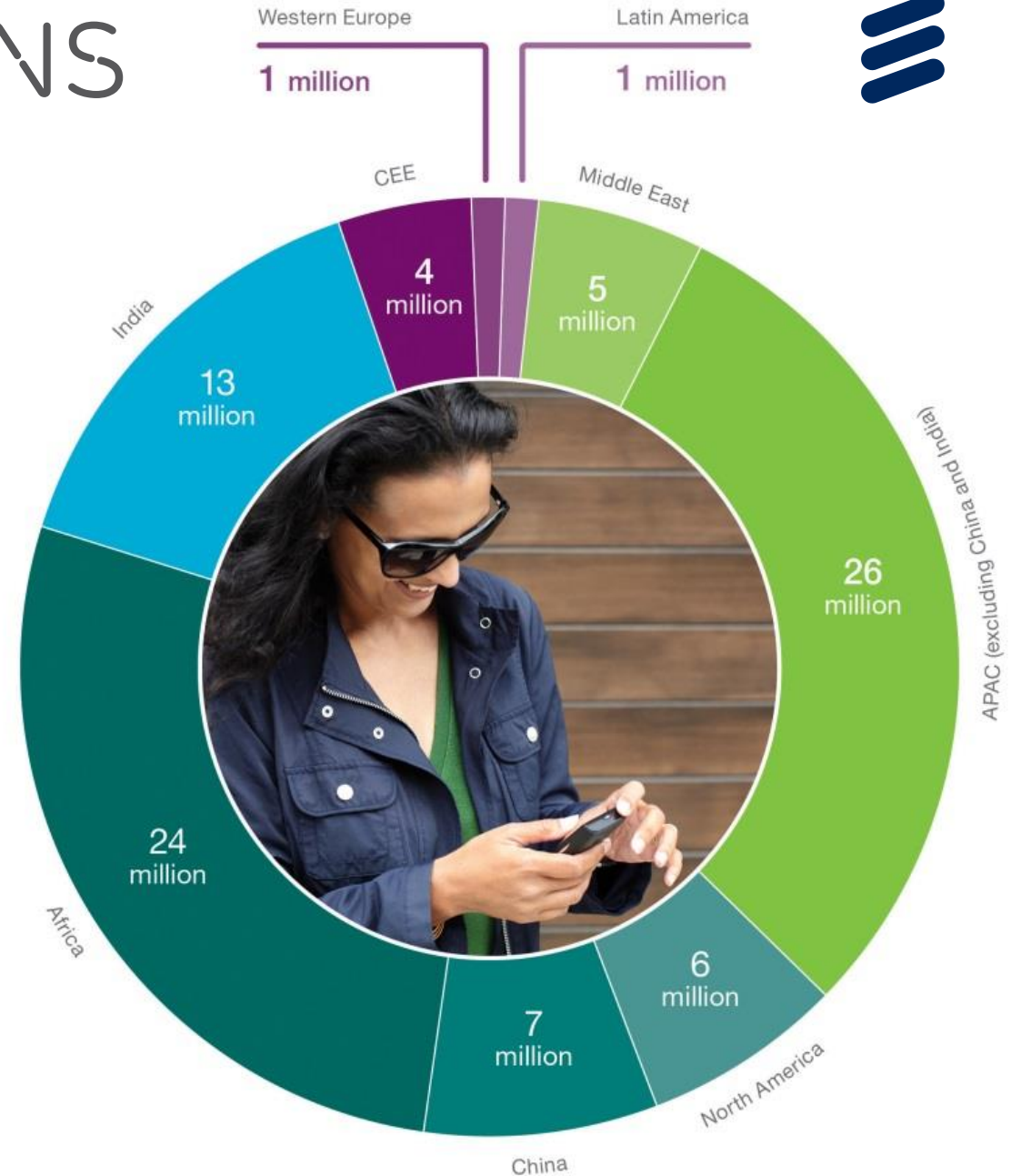
4.1 billion LTE subscriptions by the end of 2021

Legend:
- 5G
- LTE
- WCDMA/HSPA
- GSM/EDGE-only
- TD-SCDMA
- CDMA-only
- Other

MOBILE SUBSCRIPTIONS

› APAC, India, Africa drive net additions
› Smartphone subscription uptake is strong
  – 75% of all mobile phones sold in Q3 2015
  – By 2016 the number of smartphone subscriptions will surpass those for basic phones

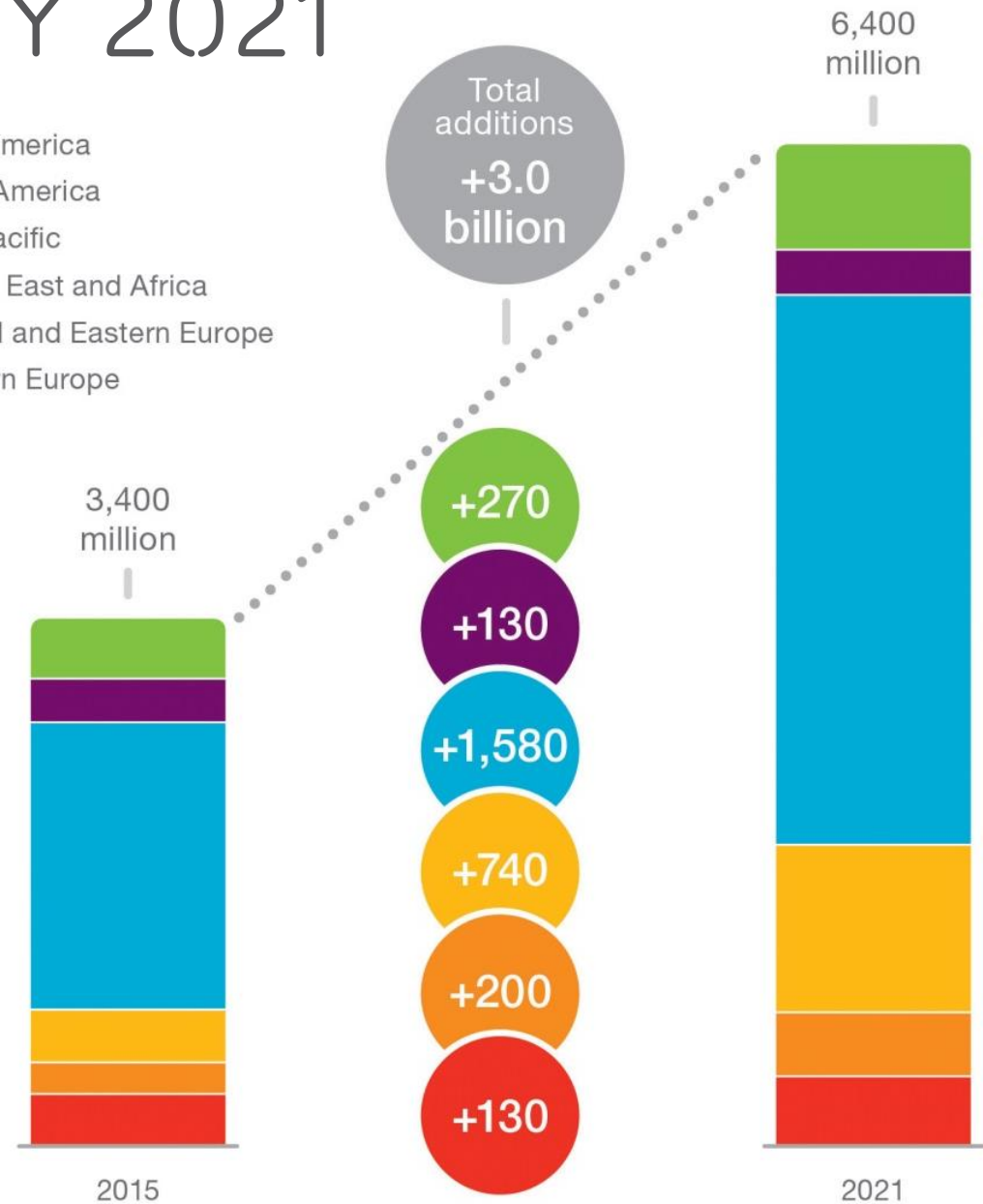87 million new mobile subscriptions globally in Q3 2015

Western Europe
1 million

Latin America
1 million

CEE
4 million

Middle East
5 million

India
13 million

APAC (excluding China and India)
26 million

North America
6 million

China
7 million

Africa
24 million
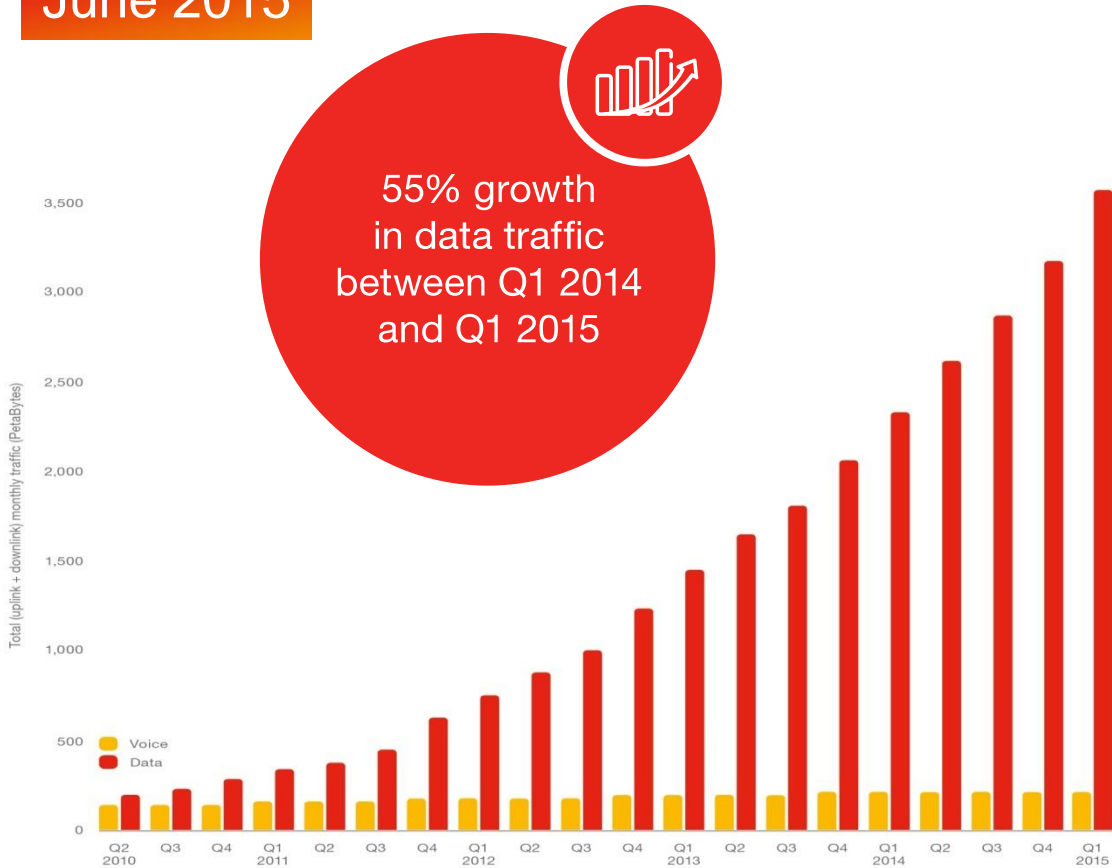
SMARTPHONE SUBSCRIPTIONS SET TO ALMOST DOUBLE BY 2021

Legend:
- Latin America
- North America
- Asia Pacific
- Middle East and Africa
- Central and Eastern Europe
- Western Europe

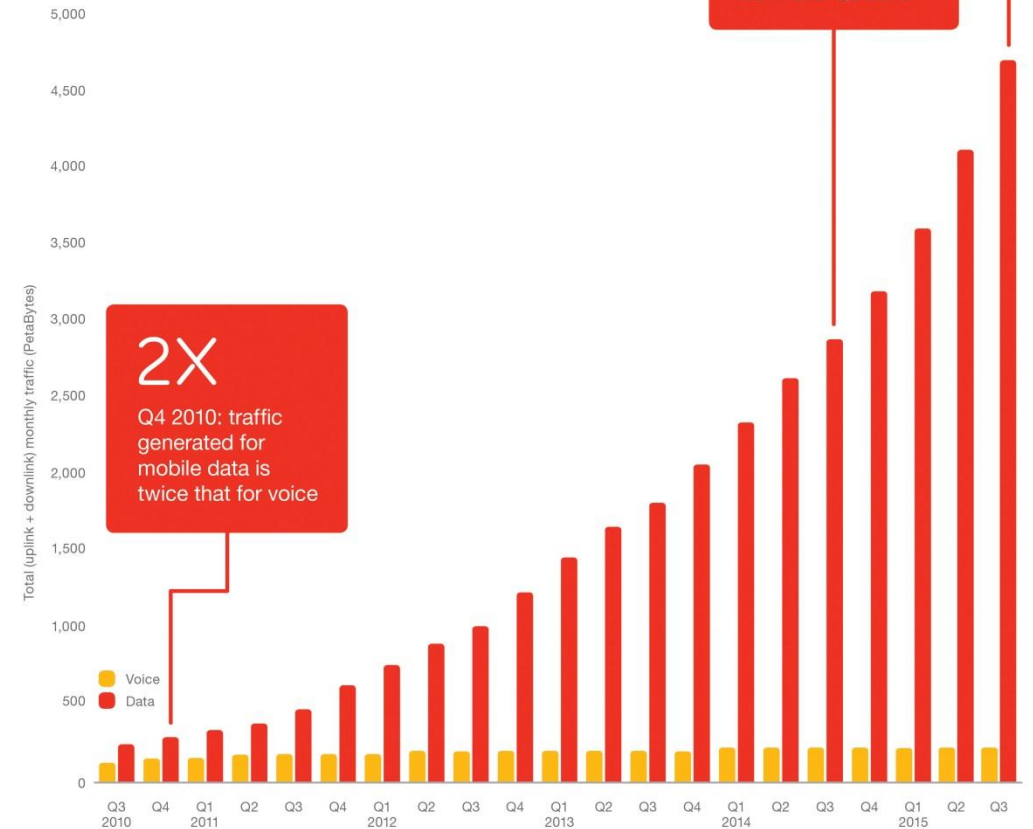Total additions **+3.0 billion**

6,400 million

3,400 million

+270
+130
+1,580
+740
+200
+130

Smartphone subscriptions in the Middle East and Africa region will grow more than 200% between 2015-2021

2015

2021

MOBILE TRAFFIC GROWTH – INCREASING AGAIN

June 2015

55% growth in data traffic between Q1 2014 and Q1 2015

Total (uplink + downlink) monthly traffic (PetaBytes)

- Voice
- Data

Q2 2010 Q3 Q4 Q1 2011 Q2 Q3 Q4 Q1 2012 Q2 Q3 Q4 Q1 2013 Q2 Q3 Q4 Q1 2014 Q2 Q3 Q4 Q1 2015

Nov 2015

65%
65% growth in data traffic between Q3 2014 and Q3 2015

2X
Q4 2010: traffic generated for mobile data is twice that for voice

Total (uplink + downlink) monthly traffic (PetaBytes)

- Voice
- Data

Q3 2010 Q4 Q1 2011 Q2 Q3 Q4 Q1 2012 Q2 Q3 Q4 Q1 2013 Q2 Q3 Q4 Q1 2014 Q2 Q3 Q4 Q1 2015 Q2 Q3

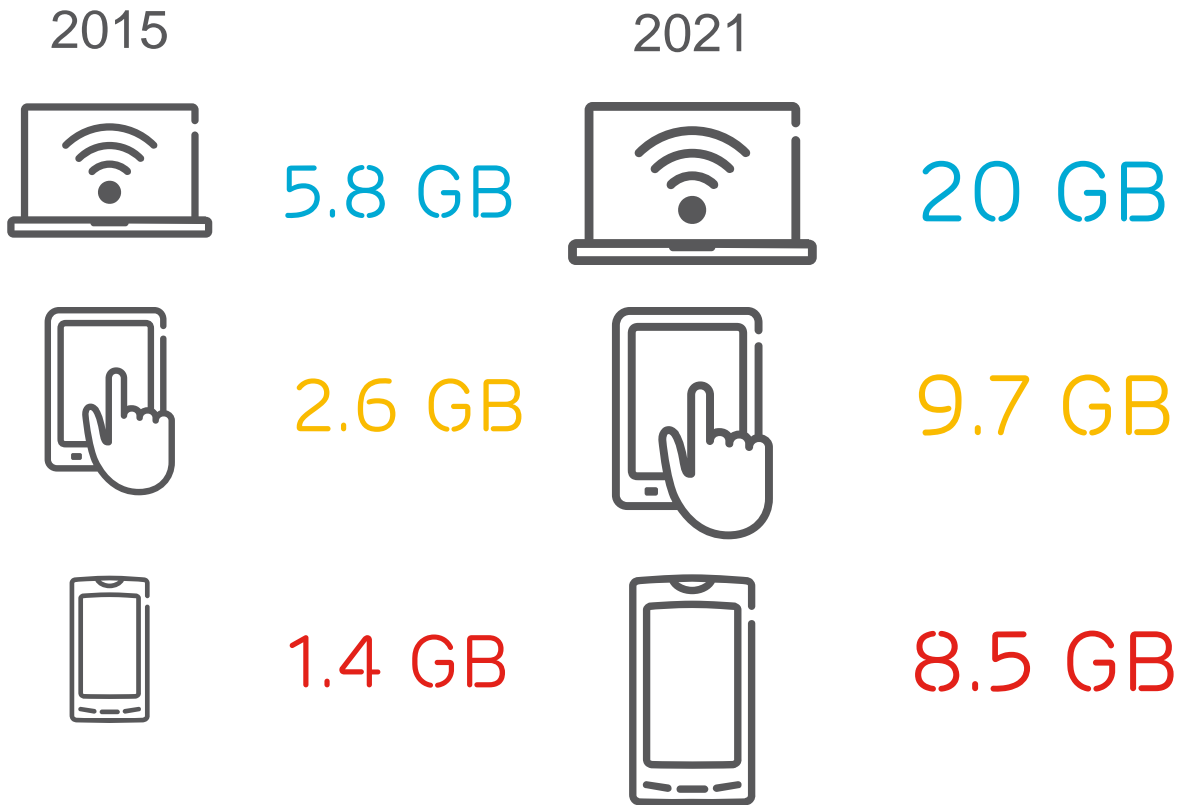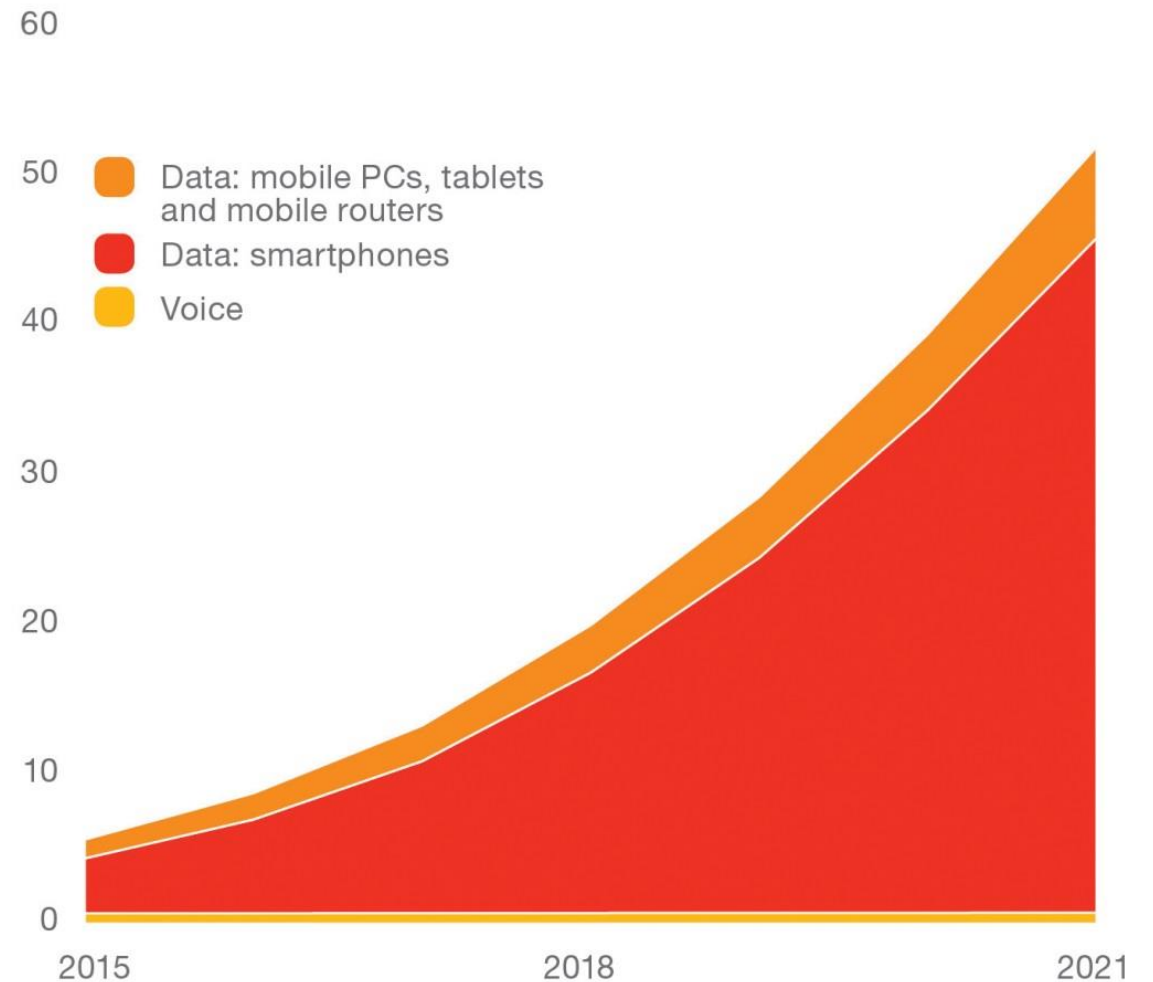**Global total monthly traffic in mobile networks, June vs November, 2015**

› Note: Based on actual measurements.

› Traffic does not include DVB-H, Wi-Fi, or Mobile WiMax. VoIP is included in data traffic.

10 TIMES MOBILE DATA TRAFFIC BY END OF 2021

2015

2021

5.8 GB

20 GB

2.6 GB

9.7 GB

1.4 GB

8.5 GB

Monthly consumption per device type

Global mobile traffic (monthly ExaBytes)

- Data: mobile PCs, tablets and mobile routers
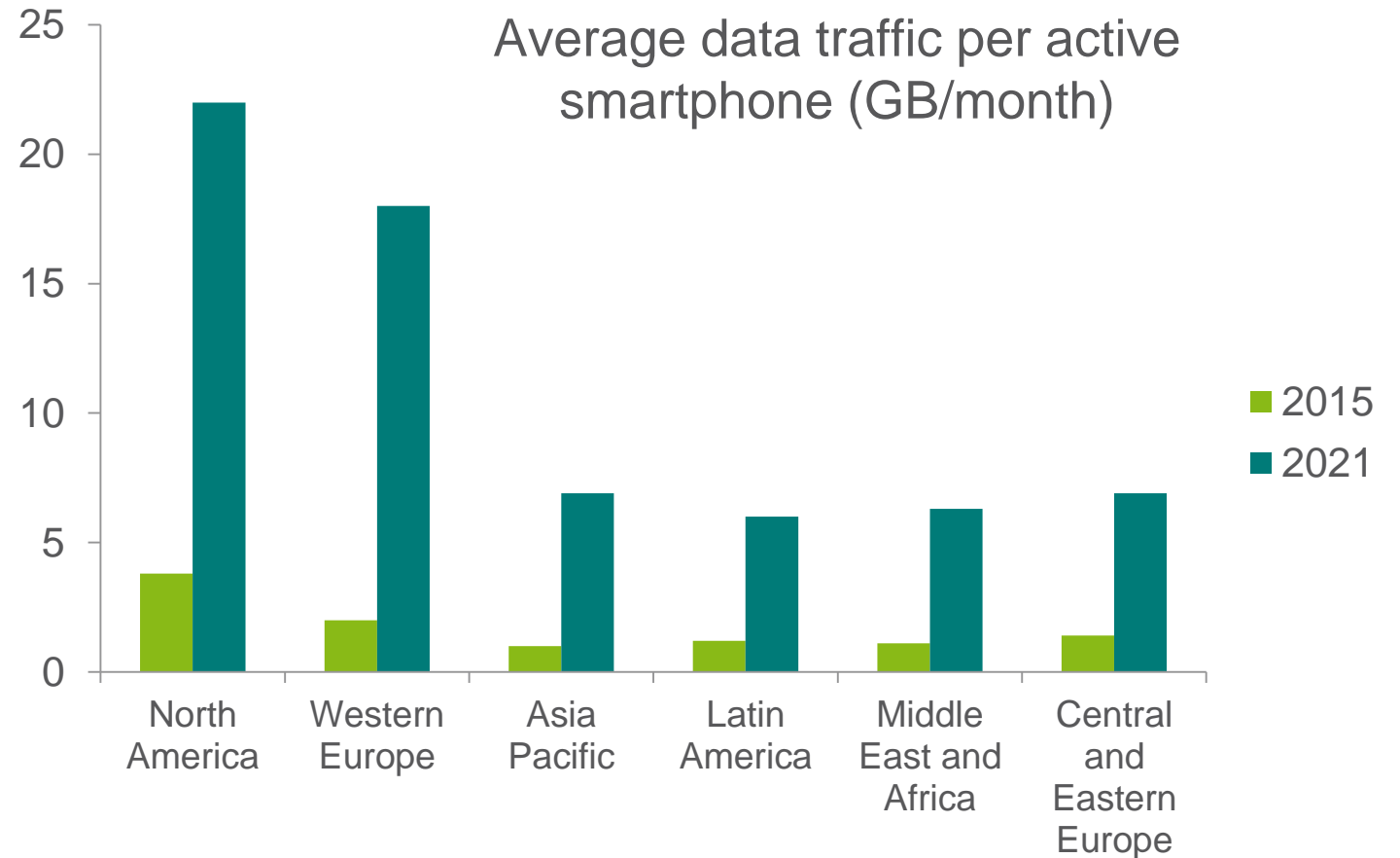- Data: smartphones
- Voice

SMARTPHONE TRAFFIC GROWTH

2GB

› Stream video* 30 min/week
  › Browse 15 websites/day
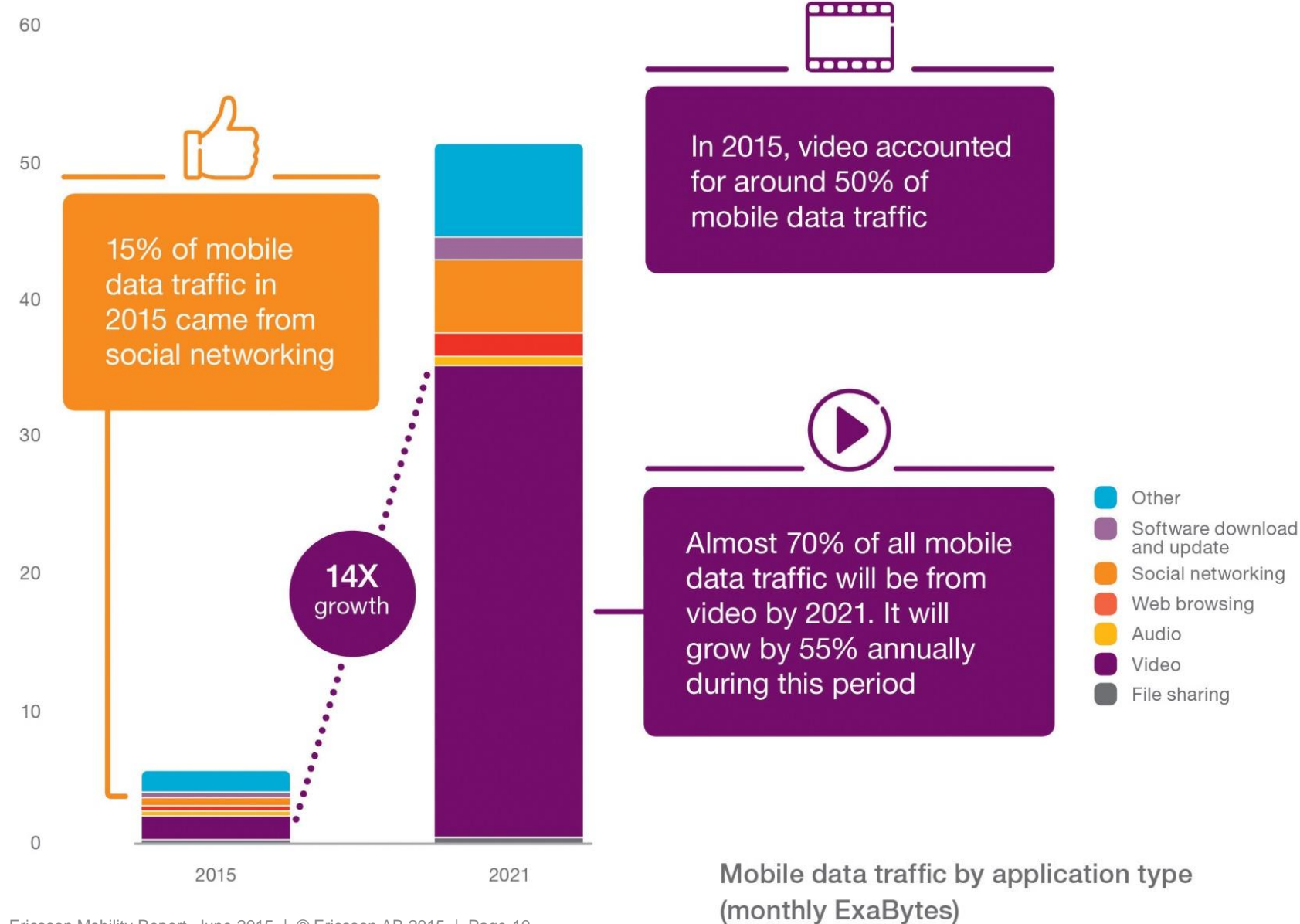 › Download 5 apps/week
› Send/receive 30 emails/day

6GB

› Stream video* 20 min/day
  › Browse 15 websites/day
  › Download 15 apps/week
    › Post 15 photos/day

Average data traffic per active smartphone (GB/month)

■ 2015
■ 2021

Chart: vertical axis from 0 to 25. Categories: North America, Western Europe, Asia Pacific, Latin America, Middle East and Africa, Central and Eastern Europe.

*Any type of video streams (YouTube, embedded clips, …)

14X MORE VIDEO TRAFFIC IN 2021

15% of mobile data traffic in 2015 came from social networking

In 2015, video accounted for around 50% of mobile data traffic

14X growth

Almost 70% of all mobile data traffic will be from video by 2021. It will grow by 55% annually during this period

- Other
- Software download and update
- Social networking
- Web browsing
- Audio
- Video
- File sharing

2015   2021
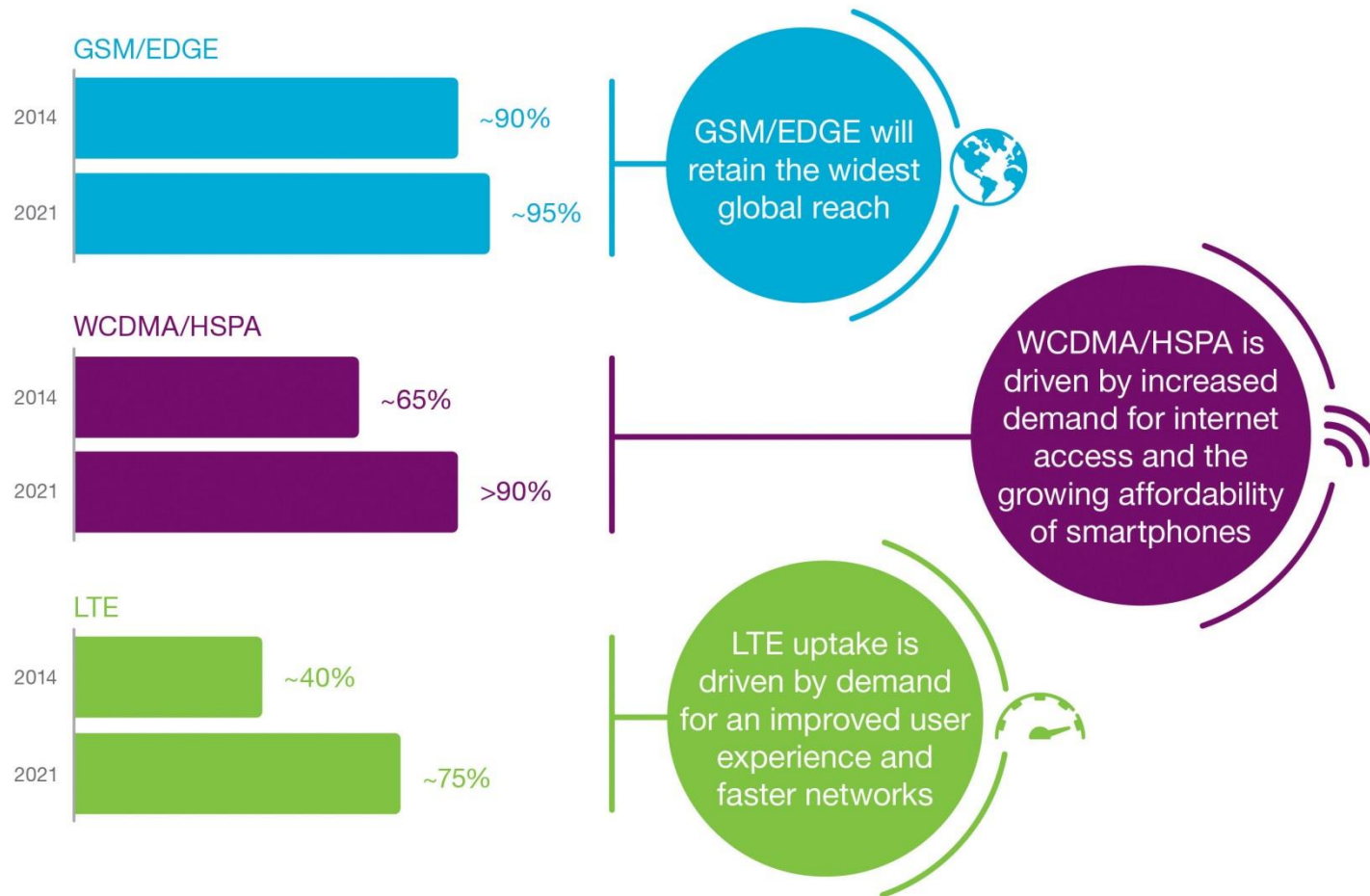
Mobile data traffic by application type (monthly ExaBytes)

DRIVERS

› Evolving devices with larger screens and better resolution
› Video part of online content, incl news, ads & social media
› User behavior changes, with video being consumed everywhere
› Faster networks & better App Coverage

POPULATION COVERAGE

World population coverage by technology[1]

GSM/EDGE

2014 — ~90%

2021 — ~95%

GSM/EDGE will retain the widest global reach

WCDMA/HSPA

2014 — ~65%

2021 — >90%

WCDMA/HSPA is driven by increased demand for internet access and the growing affordability of smartphones

LTE

2014 — ~40%

2021 — ~75%

LTE uptake is driven by demand for an improved user experience and faster networks

[1] The figures refer to population coverage of each technology. The ability to utilize the technology is subject to factors such as access to devices and subscriptions

By 2021, over 90% of the world's population will be covered by mobile broadband networks

Over 20 new mobile broadband subscriptions are activated every second, somewhere in the world, allowing high speed access to internet services

28B CONNECTED DEVICES BY 2021

› More than 15 billion will be connected M2M and consumer electronics devices.

› 1.5 billion of these with cellular subscriptions by 2021

Connected devices
In our forecast a connected device is a physical object that has an IP stack, enabling two-way communication over a network interface.


Connected devices (billions)
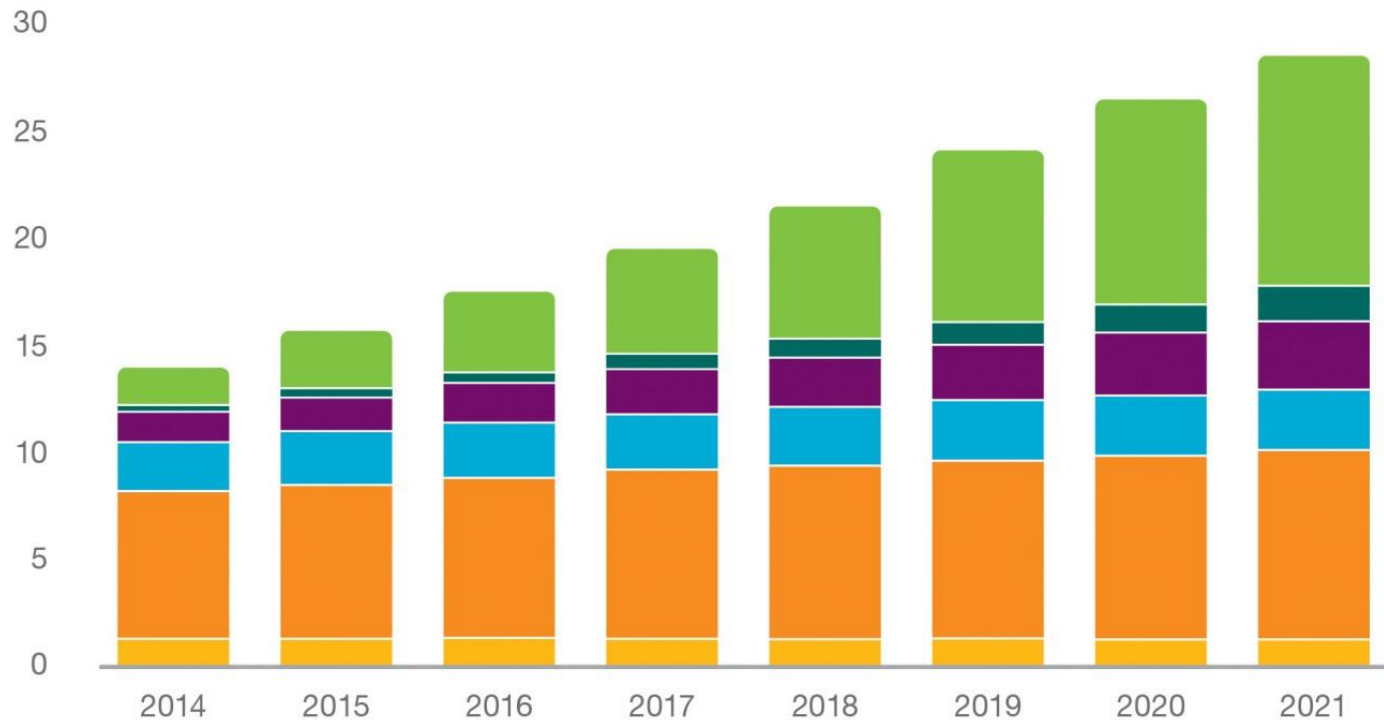
	15 billion	28 billion
M2M: non-cellular	2.6	10.7
M2M and consumer electronics; cellular	0.4	1.5
Consumer electronics; non-cellular	1.6	3.1
PC/laptop/tablet	2.4	2.8
Mobile phones	7.1	8.7
Fixed phones	1.3	1.4

DECOUPLING ENERGY FROM TRAFFIC GROWTH

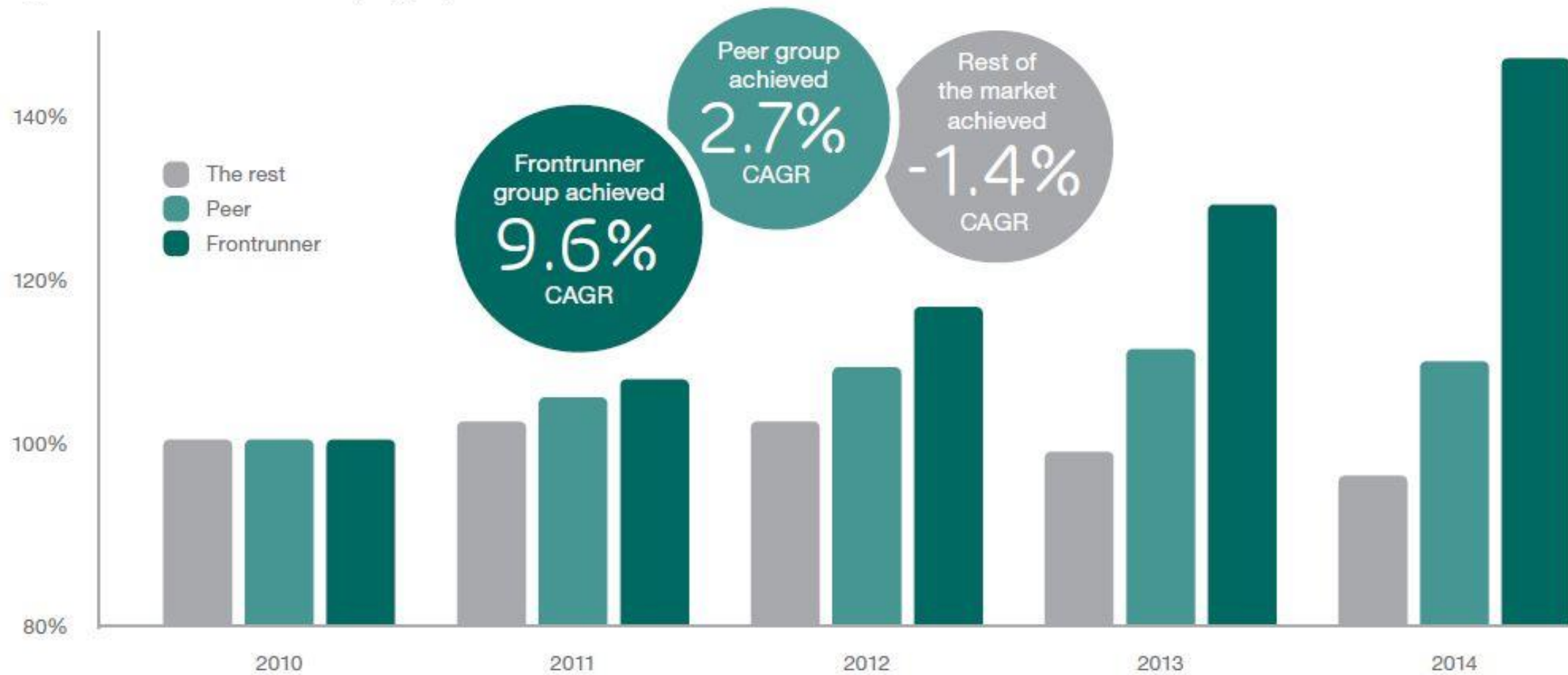Energy consumption and data traffic in mobile networks in Sweden,[1] 2003–2014

Legend:
- 4G (LTE)
- 3G (WCDMA/HSPA)
- 2G (GSM)
- 1G (NMT)
- Data traffic [yearly Petabytes]
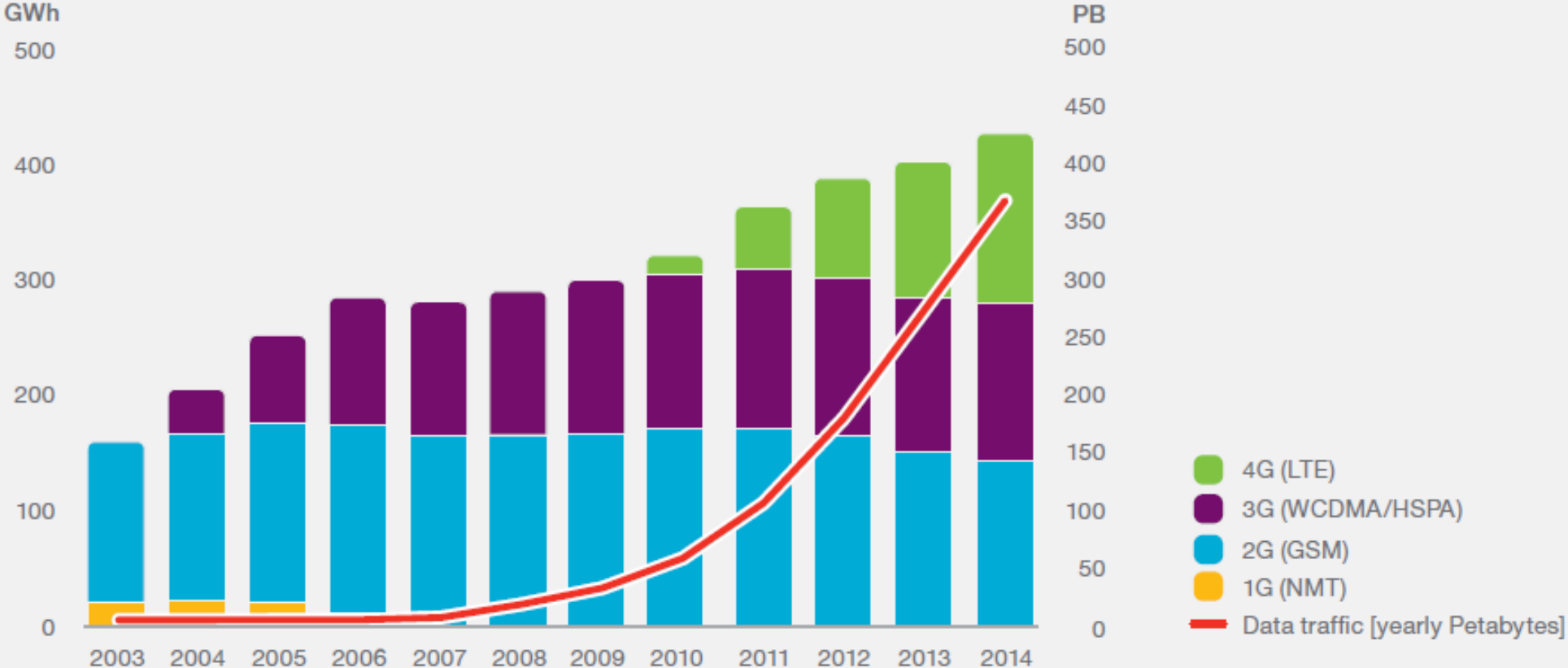
IS ANYONE MAKING MONEY FROM THIS?

AN EXTENDED GROUP OF FRONTRUNNERS KEEPS GROWING

CAGR of total revenue per group

The rest
Peer
Frontrunner

Frontrunner group achieved 9.6% CAGR

Peer group achieved 2.7% CAGR

Rest of the market achieved -1.4% CAGR

2010 2011 2012 2013 2014

Source: Ericsson analysis based on data from Strategy Analytics

FRONTRUNNERS IDENTIFIED

Leading Revenue Growth

Profitable

Positive EBITDA
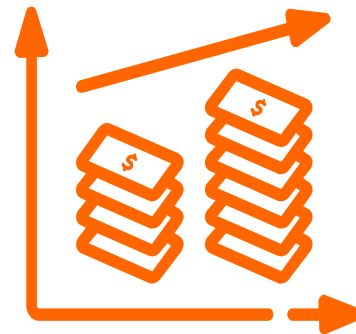
~5% or higher
full year growth

Data centric

>25% non-voice revenues in last quarter

Evaluated and identified based on 3 key parameters

DIFFERENT STRATEGIES IN DIFFERENT MARKETS

AMERICAS

EMEA

APAC

Quality led   Market led   Offering led

Source: Ericsson

WHAT HAVE THEY DONE TO BE THAT SUCCESSFUL?

FRONTRUNNERS THINK DIFFERENTLY

Problem Focused

Maximizing
old revenues

Connectivity and
Services as
commodities

Market &
Tech Silos

Opportunity Focused

Innovating
new revenues

Connectivity and
Services as
differentiators

Market &
Tech Synergies

Shift of
mindset

THE GROWTH CODES...

Measure and Manage User Experience
Streetwise Metrics

Create Performance Gap to Competitors
Gap Minding

Market your Performance Leadership
Showcasing

Drive Usage

Monetize Usage

The Enabler
Create sustainable growth

Co-Partnering
Create Strategic Partnerships for Innovation

Unboxing
Create Innovative Offerings

Eco-systematic
Embrace and leverage Innovation

IS THERE A COMMON STRATEGY BEHIND THEIR SUCCESS?

FRONTRUNNERS APPLY A DUAL APPROACH TO GROWTH

Existing Markets & Existing Capabilities

Strategies for current growth

> › Traditional telecom products & services
>
> › Present markets & segments

New Markets and/or New Capabilities

Strategies for future growth

> › IoT & Vertical solutions
>
> › Cloud & ICT services
>
> › Expand operations and footprint (e.g. through M&A, geographical expansion or alliance)
>
> › Explore new business models , partnerships and services

THREE STRATEGIES TO PROFITABLE GROWTH

Quality-led Progression

Differentiate on
high-performing networks and brand preference

› Selective customer experience efforts & **simplification focus**
› Extensive campaigns & promotions
› **Vast distribution network**
› Rely on **extensive high-quality service portfolio** & converged offerings
› Few strategic partnerships - extensive own VAS offering

Market-led Adaptation

Differentiate on
quick adaptation
to market conditions

› **End-to-end customer experience** focus
› Selective distribution & campaigns
› **Segmented approach** – often utilize sub brands
› **Fast followers** on new products & services
› Selected strategic partnerships

Offering-led Transfomation

Differentiate on
uniquely designed offerings
redefining customer value

› High focus on **market innovation**
› One-for-all offerings and targeted distribution
› **First to market** with new offerings
› Several **strategic partnerships**
› High focus on **operational efficiency**

APPLYING STRATEGY TO CODES...

QUALITY-LED PROGRESSION LEVERAGE THE GROWTH CODES

› **Gap Minding** to always have the best network

› **Showcasing** to demonstrate customer value and create brand preference

› **Unboxing** to package converged solutions and vast VAS offerings in attractive bundles

› **Co-Partnering** through long-term collaboration with suppliers to reach common goals

Streetwise Metrics

Gap Minding

Showcasing

Co-Partnering

Unboxing

Eco-Systematic

MARKET-LED ADAPTATION LEVERAGE THE GROWTH CODES

› Streetwise Metrics to support the development of an enhanced end-to-end customer experience

› Unboxing to mirror and create enhanced segmented offerings

› Showcasing to effectively market the segmented offerings, highlighting the customer value

Streetwise Metrics

Gap Minding

Showcasing

Co-Partnering

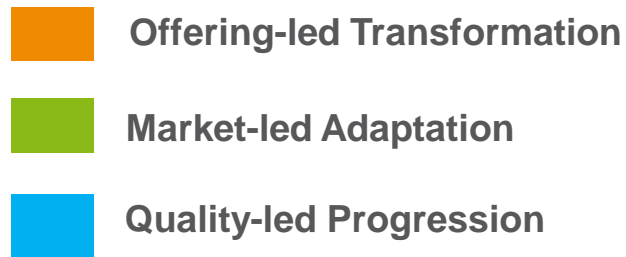Eco-Systematic

Unboxing

OFFERING-LED TRANSFORMATION LEVERAGE THE GROWTH CODES

› **Gap Minding** to meet customer expectations

› **Unboxing** to create innovative and unique service offerings

› **Eco-systematic** to bundle offers with partners to increase customer value and improve brand image

Streetwise Metrics

Gap Minding

Showcasing

Co-Partnering

Unboxing

Eco-Systematic

SOME INTERESTING TRENDS...

FRONTRUNNERS EMERGING

Offering-led Transformation

Market-led Adaptation

Quality-led Progression

Market share position: #1

Market share position: #2

Market share position: #3

Strategy Type
No. of frontrunners

30 est.

20

12

2013   2014   2015

Market Share
No. of frontrunners

30 est.

20

12

2013   2014   2015
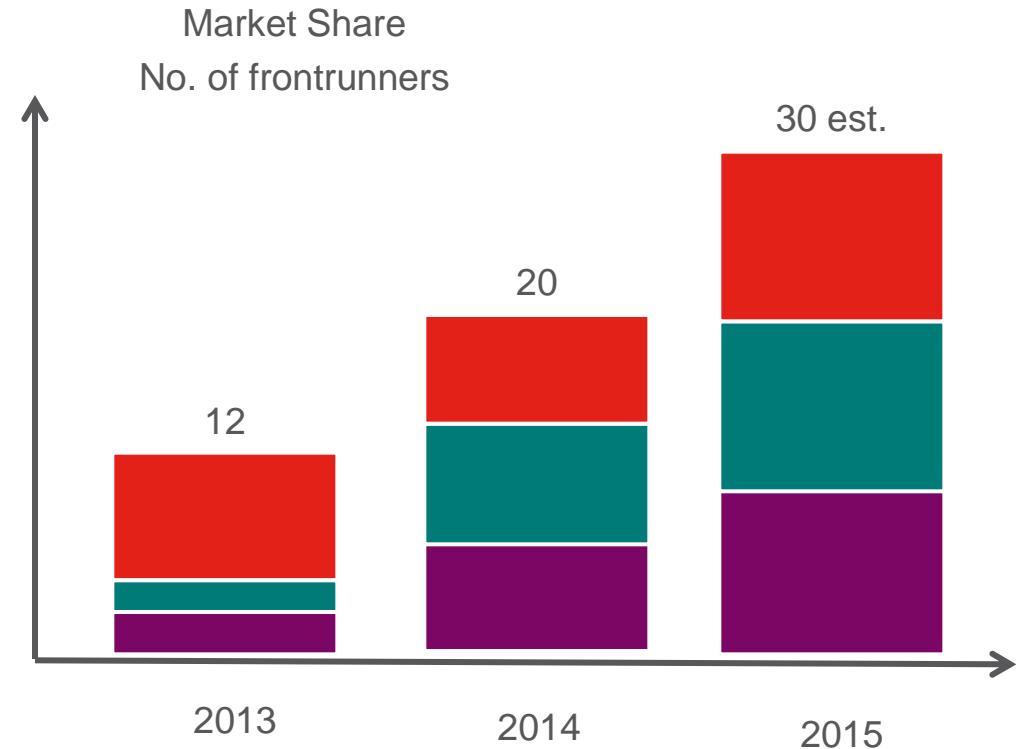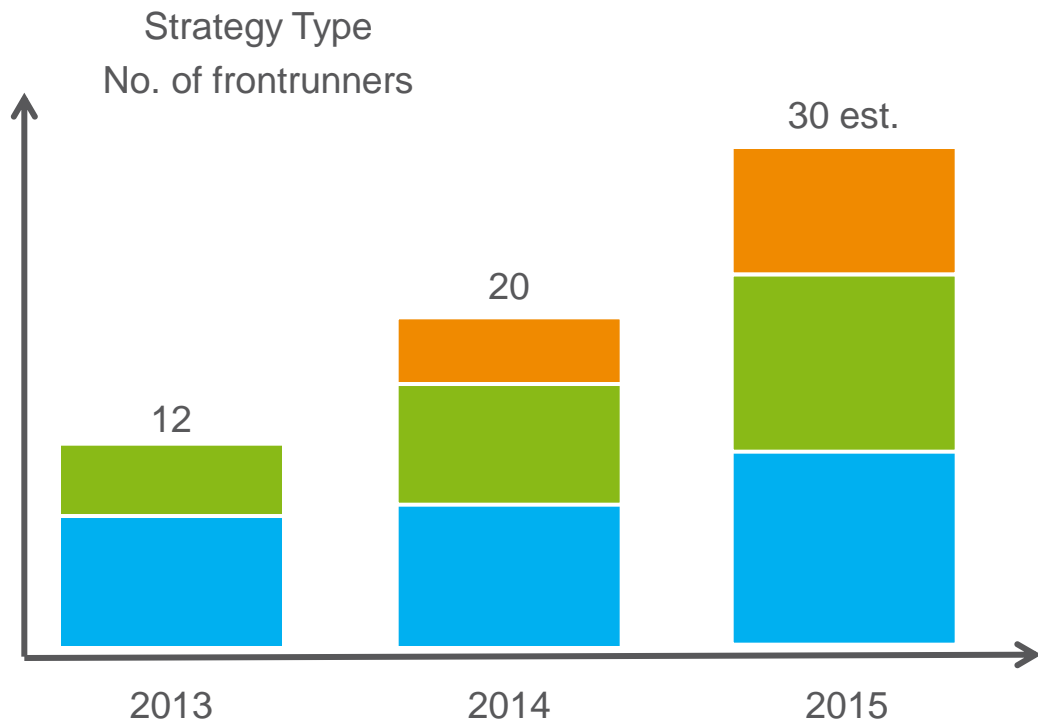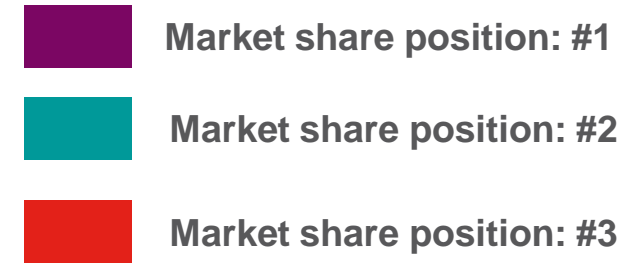
QUALITY OF SERVICE IS THE FOUNDATION OF GROWTH

Frontrunners leverage network performance in one of two different ways

Superior network performance as a differentiator

Improve network performance to meet customer expectations

Big investments, you have to be committed in outspending your rivals.
- COO, Frontrunner Asia-Pacific

You need to have a credible network, it's a must have.
- CSO, Frontrunner North America

Redefine Subscription

"UNBOXING"

THE STAIRCASE OF GROWTH
STEPWISE APPROACH TO INCREASED REVENUES

Enable

Extend

Expand

Explore

Smart-phones

Data plans

Need for speed

More devices

Content

Adjacent markets

2-sided business models

Expose network capabilities

Time and effort
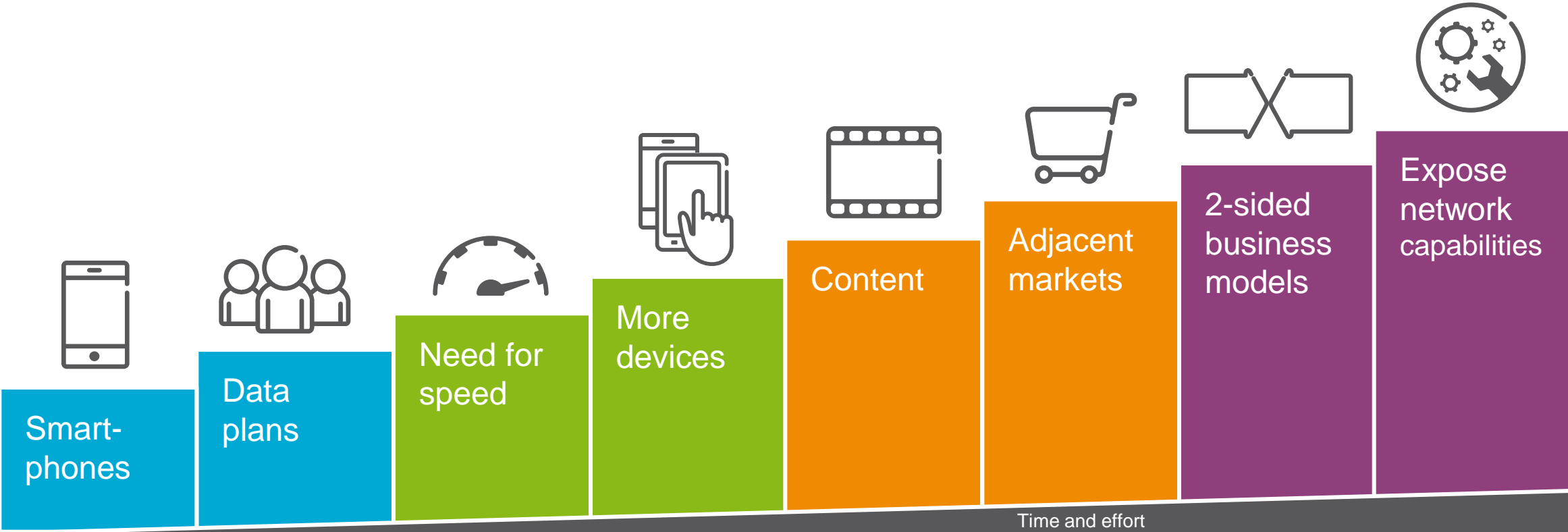
MONETIZATION IS ABOUT STIMULATING CONSUMPTION

Colgate increased sales with 40% by making the hole of the tube 1 mm larger

IKEA are using inexpensive teaser products as 'ice-breakers' for further consumption

McDonalds introduced super size meals and sodas, changing the perception on what is normal

Candy is now sold in large boxes rather than small paper bags, directly impacting the size of a "full bag"
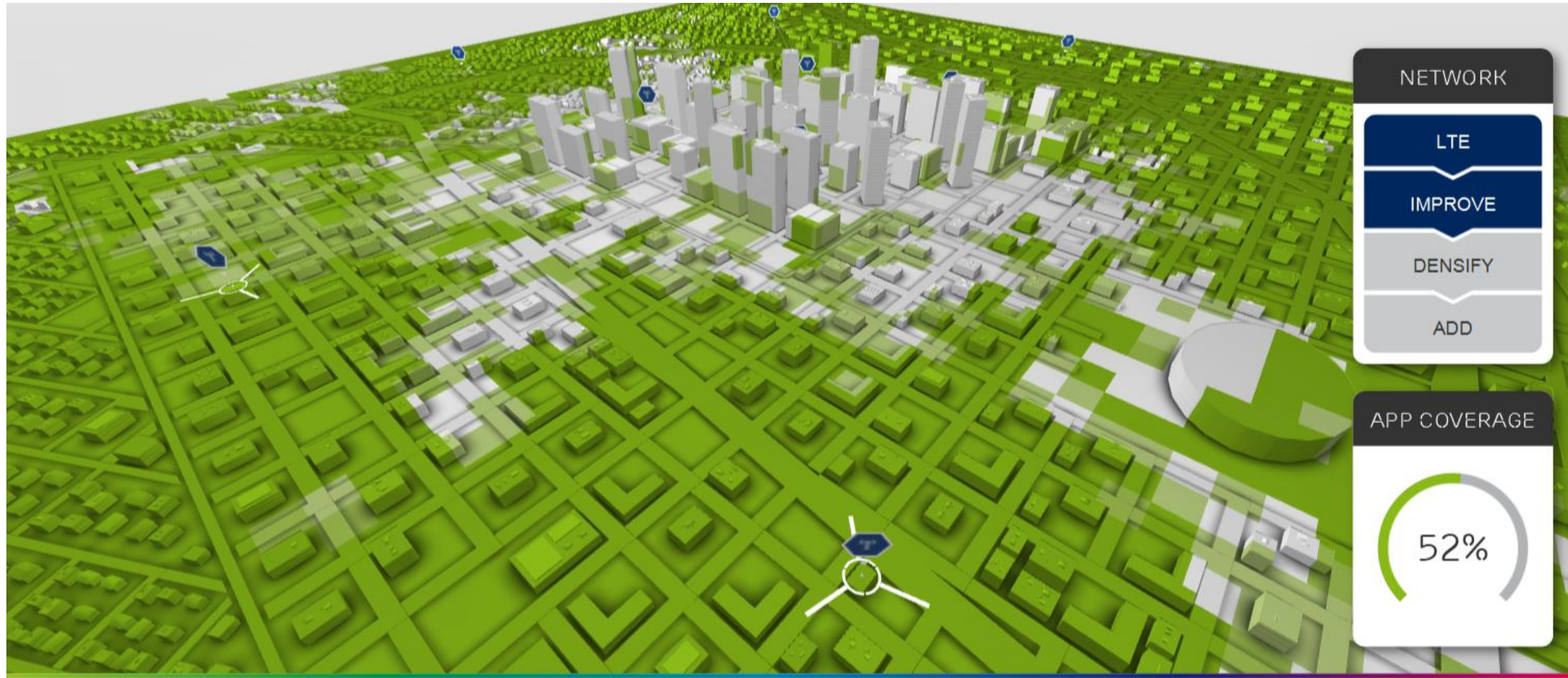
APP COVERAGE – VOICE & SMS

NETWORK

LTE

IMPROVE

DENSIFY

ADD

APP COVERAGE

99%

3.00
GB/Month/Sub

HD VIDEO – APP COVERAGE

NETWORK

LTE

IMPROVE

DENSIFY

ADD

APP COVERAGE

12%

3.00
GB/Month/Sub

HD VIDEO – APP COVERAGE

NETWORK

LTE

IMPROVE

DENSIFY

ADD

APP COVERAGE

72%
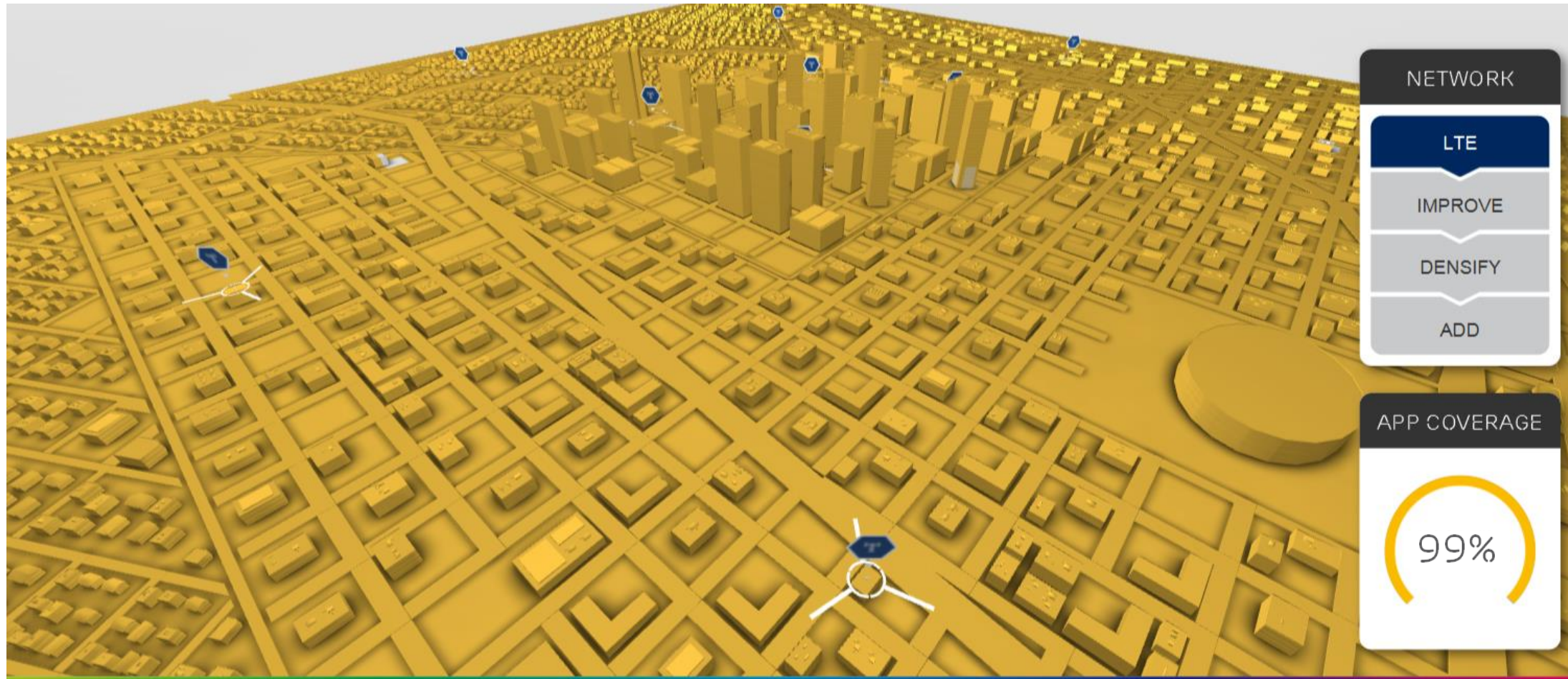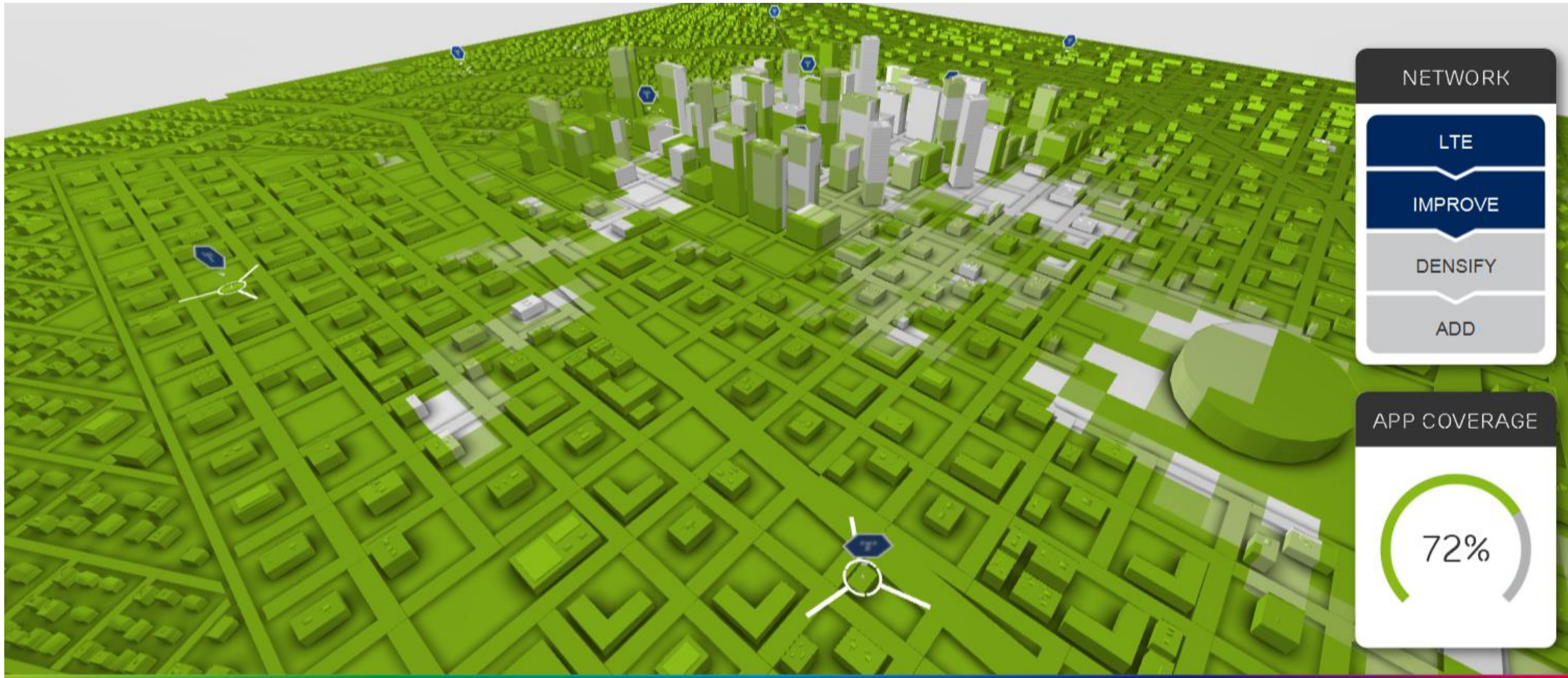
3.00
GB/Month/Sub

30% INCREASED USAGE…

TAKING DEVICE UPGRADES TO THE NEXT LEVEL

› "Don't get stuck with a phone you don't want!"

› Upgrade 3 times per year

› $20/month over 18 months
  - No upfront cost
  - No upgrade cost

NEW CAPABILITIES INCREASE REQUIREMENTS ON SPEED

Xperia Z5 (Sony)

World first smartphone with 4K (2160x3840) display.
Will be launched in this autumn.

iPhone6s (Apple)

Capable to take 4K video.
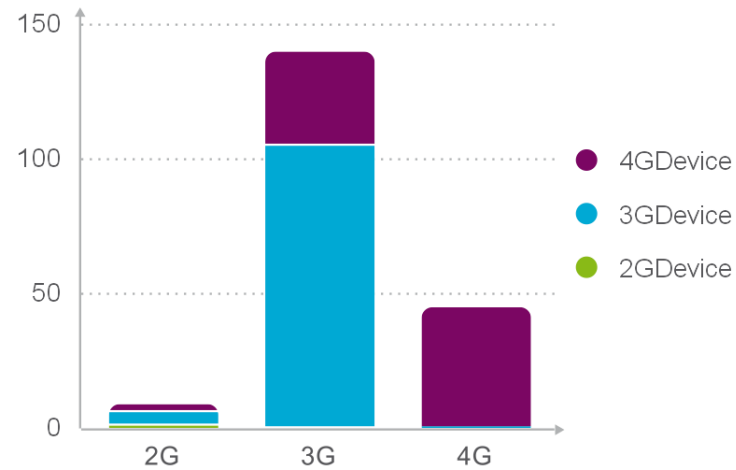*(Display resolution is still 1080p)*
Launched on 25th Sept.
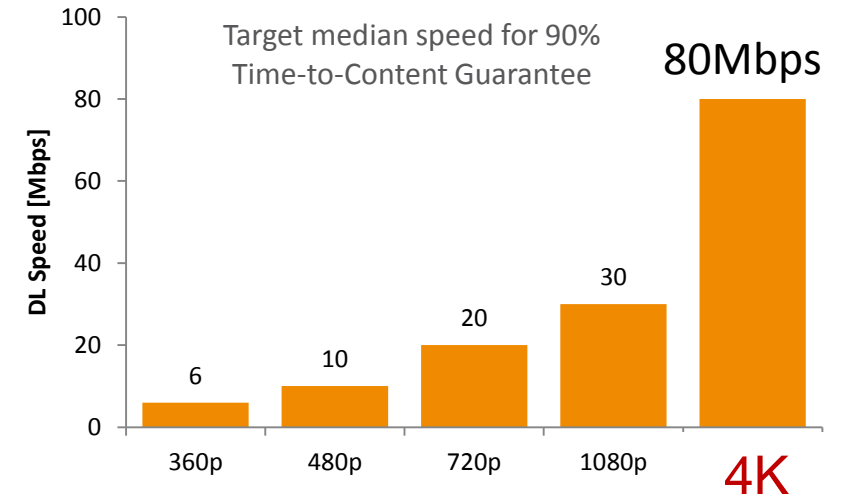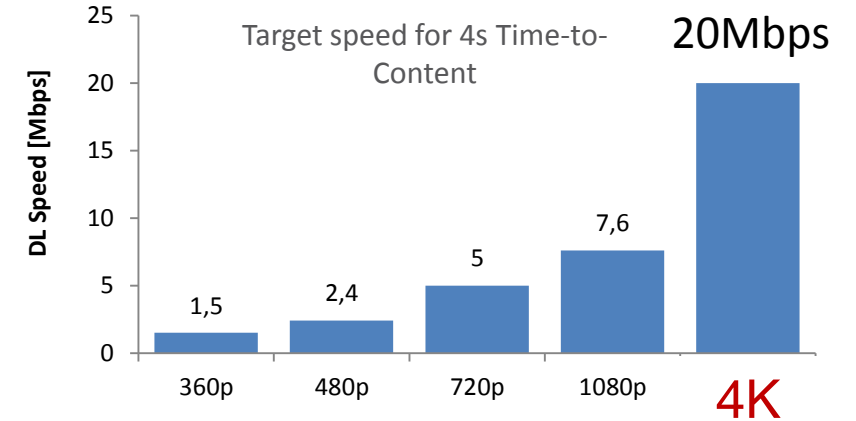
"4K experience" rely on a fast network

Target speed for 4s Time-to-Content

DL Speed [Mbps]

Resolution	Speed
360p	1,5
480p	2,4
720p	5
1080p	7,6
4K	20Mbps

Target median speed for 90% Time-to-Content Guarantee

DL Speed [Mbps]

Resolution	Speed
360p	6
480p	10
720p	20
1080p	30
4K	80Mbps

UNLEASH DEVICES AND MONETIZE THE TRAFFIC

Case study

Site Traffic (GB per day) — Actual

Legend:
- ● 4GDevice
- ● 3GDevice
- ● 2GDevice

Site Traffic (GB per day) — Potential
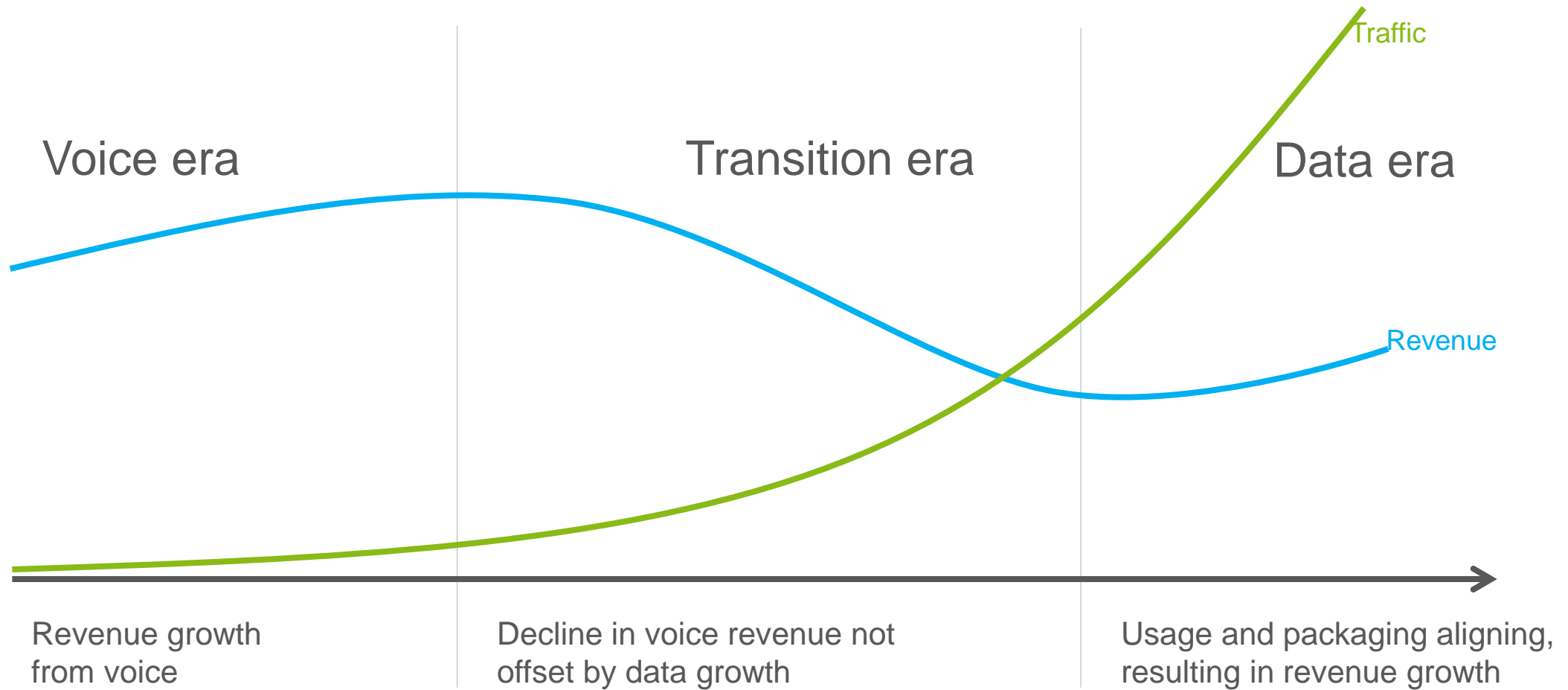

Legend:
- ● 4GDevice
- ● 3GDevice
- ● 2GDevice
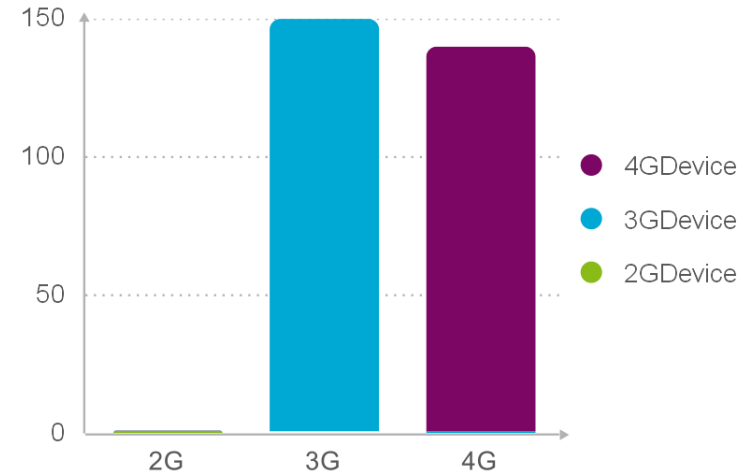
Site potential: +100 GB per day with investment in 3G & 4G

2. CAPTURE THE GROWTH IN DATA

TRANSITIONING FROM VOICE TO DATA

Voice era

Transition era

Data era

Traffic

Revenue

Revenue growth
from voice

Decline in voice revenue not
offset by data growth

Usage and packaging aligning,
resulting in revenue growth

CHECKLIST FOR SUCCESS

› Smallest monthly packages no less than ~1GB*
  – Day/week packages (20 / 200MB)

› Hard Stops
  – Force top ups and reduce customer care issues

› Transparancy
  – Comfort drives usage

› Simplicity
  – Ease of use when topping up

› Move towards family and multi device plans
  – Increase usage and improve NPS and churn
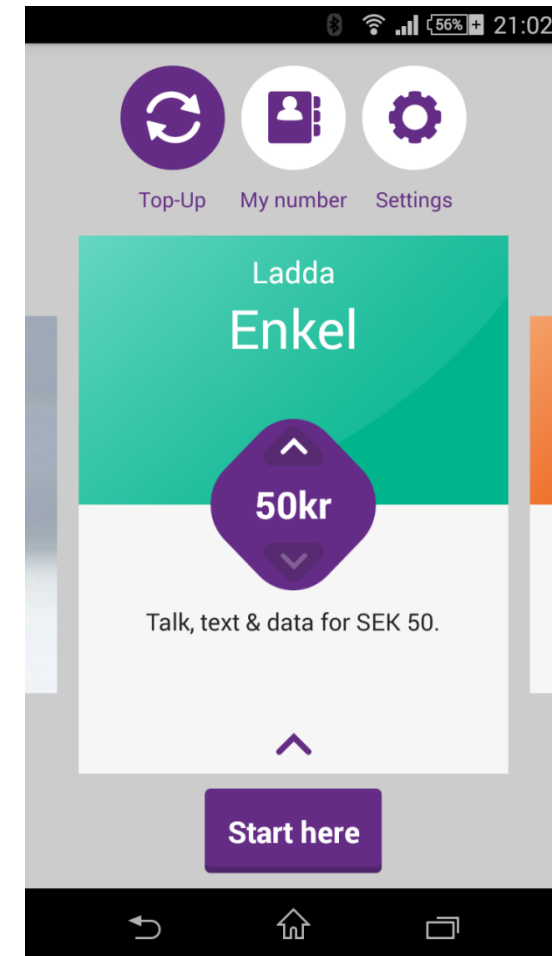
*) Some markets require even bigger buckets

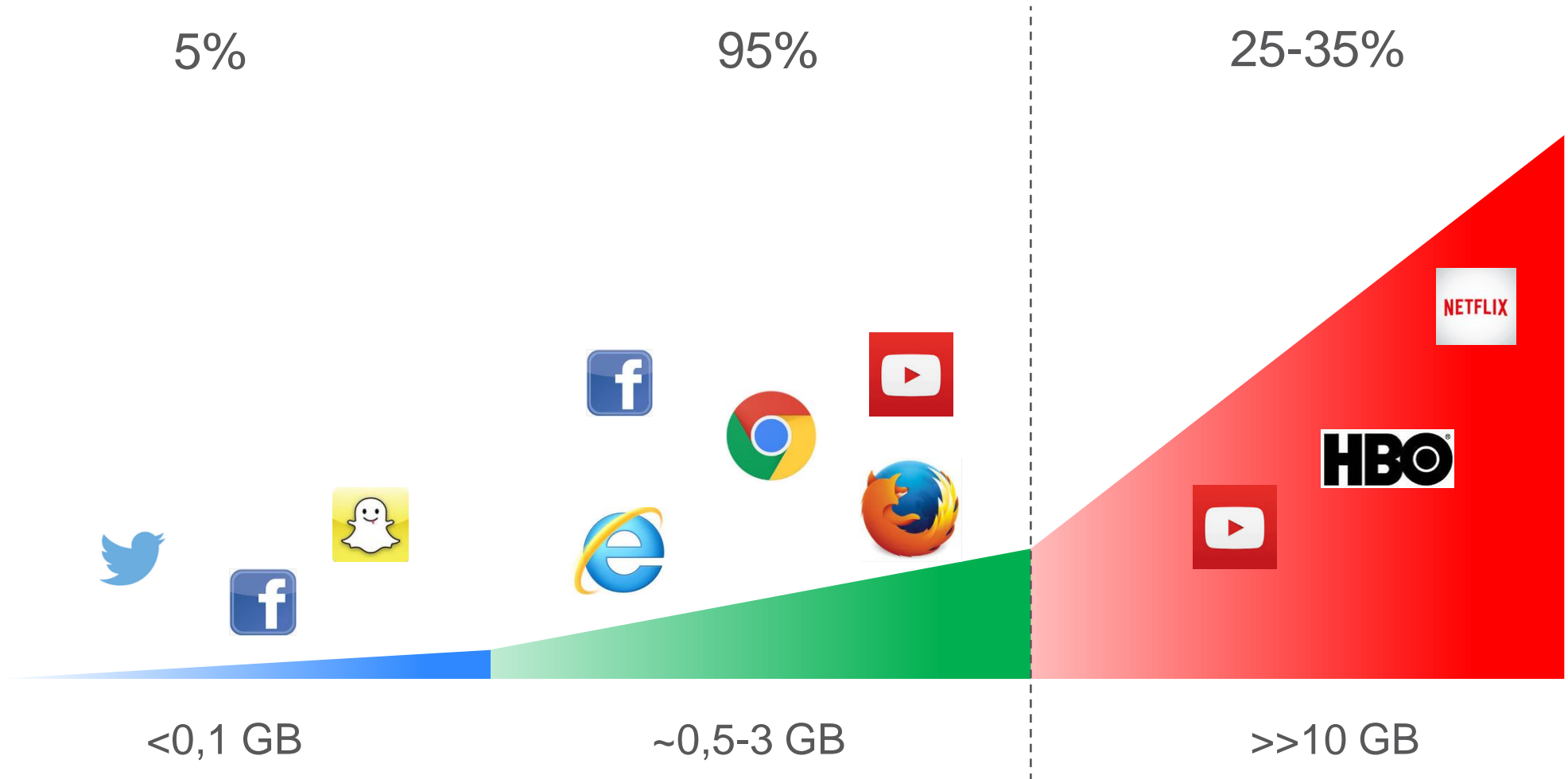# DATA CONSUMPTION… EXTREME VARIATION

Segment size	5%	95%	25-35%

Consumption	<0,1 GB	~0,5-3 GB	>>10 GB

3. DRIVE THE USAGE OF DATA AND THE NEED FOR SPEED

AUTOMATIC TOP-UPS REPLACE THROTTLING

Before:

Start of bucket utilization

1. Bucket is utilized
2. Notification is sent by SMS

Speed is unlimited

Speed is limited to e.g. 256 kb/s

Billing cycle

Now*:

Start of bucket utilization

1. Bucket is utilized
2. Automatic prolongation is activated with a fee
3. Notification is sent by SMS

Speed is unlimited

Speed is unlimited

Billing cycle

**MTS and Vimpelcom shift approach from throttling to automatic bucket prolongation**

*) Policy adopted for all new smartphone tariff plans

KEEP DATA RUNNING

› Orange lets customers navigate at full speed after your data quota has been consumed

› Activation: US$0.7 – 1h speed boost

› Speed boost capped when cost reaching +80% of the monthly fee

› *1h, 24h, 1W or simply Top Up?*

Power Botón

Get speed at need

Orange Dominicana, as of Jan 2014
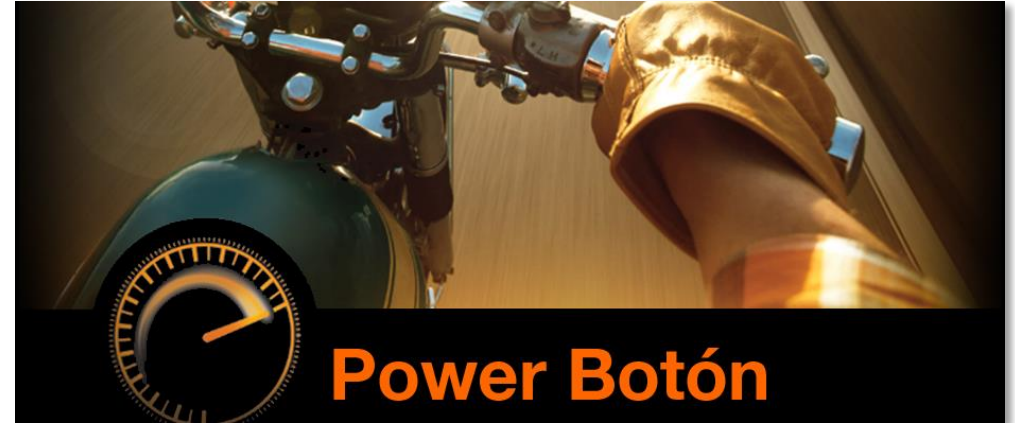
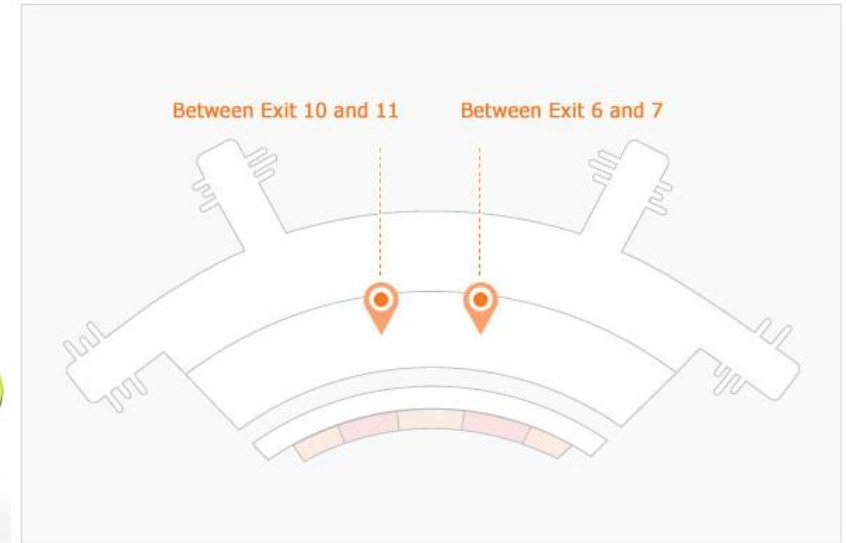# ROAMING SOLUTION FOR VISITORS

› Rent a "mi-fi" device during visit to Korea – unlimited data

› ~ 4.4 USD per day
    (90-180 USD deposit)

› All airports, harbor's and prime city locations

● Incheon International Airport

Between Exit 10 and 11   Between Exit 6 and 7

Step 1
Online reservation
Book T mifi ›

Step 2
Visit our roaming
Details on roaming center ›
SK

Step 3
Receive T mifi

Step 4
Use wireless Internet in Korea

Step 5
Return T mifi & make payment upon departure

"ROAMING" SOLUTION FOR VISITORS

› Rent a SIM during visit to Korea

› ~ 5.3 USD per day   (90-180 USD deposit)

› – 1GB data/day

› All airports, harbor's and prime city locations

› 0,53 USD per min

› 9 cents per SMS

· Rent a Korean SIM Card and insert it in your own smart phone
· Confirm with your Telco for country lock release
· SIM card rental can be processed only after usability test is done at our roaming center.

● Incheon International Airport

Between Exit 10 and 11   Between Exit 6 and 7
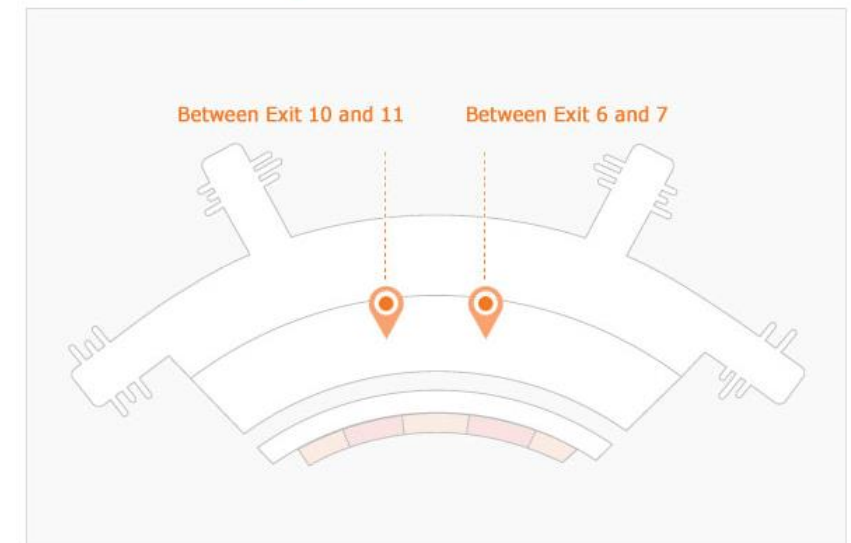
4. DRIVE THE CONNECTION OF MORE DEVICES

CAMPAIGNS TO STIMULATE MORE CONNECTED TABLETS

› **Device subsidies**

– Lower the entry barrier by offering discounts on additional tablets added to the plan, leveling the price with a Wi-Fi only device

› **More data**

– Attract customers with more or even free data when connecting an additional device, to make users appreciate the value of the plan
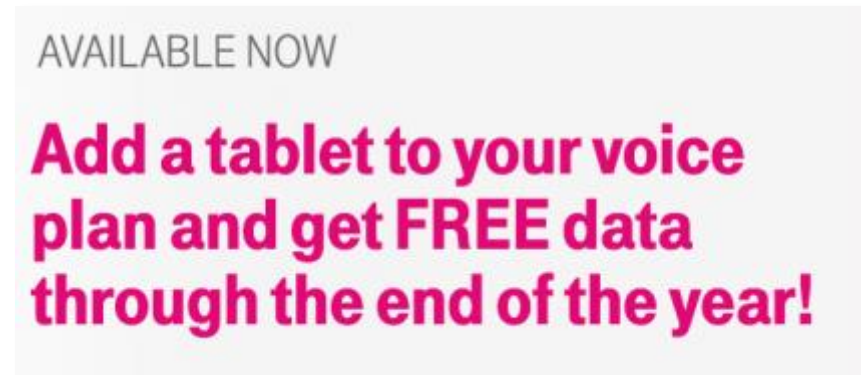
› **Subscription discounts**

– Lower the entry barrier by reducing the initial and monthly fee for additional devices added to the plan

Verizon campaign focused on discounting LTE tablets and offering more data

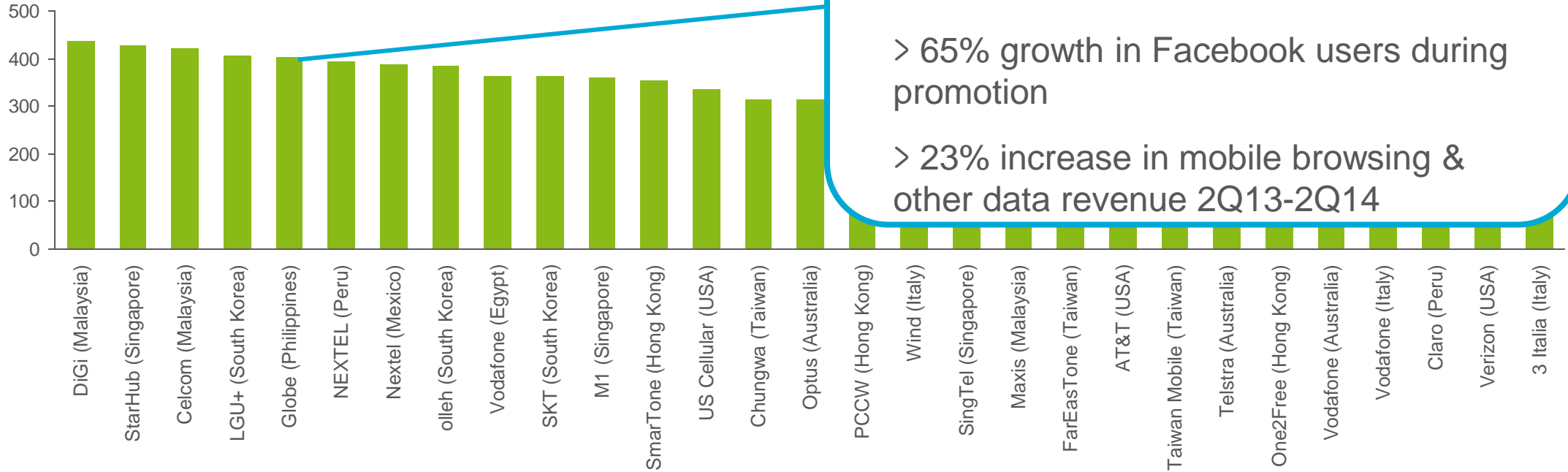T-Mobile campaign focused on discounting subscription and offering more data

INTRODUCING
MORE
The **MORE** Everything Plan

AVAILABLE NOW

Add a tablet to your voice plan and get FREE data through the end of the year!

5. DRIVE THE DEMAND AND MONETIZATION OF APPS AND CONTENT

FACEBOOK PROMOTIONS WITH DIRECT IMPACT ON USAGE

Cellular Facebook usage
(MB / User / Month)

Globe - Philippines:

>Free Facebook – no Wi-Fi needed

> 65% growth in Facebook users during promotion

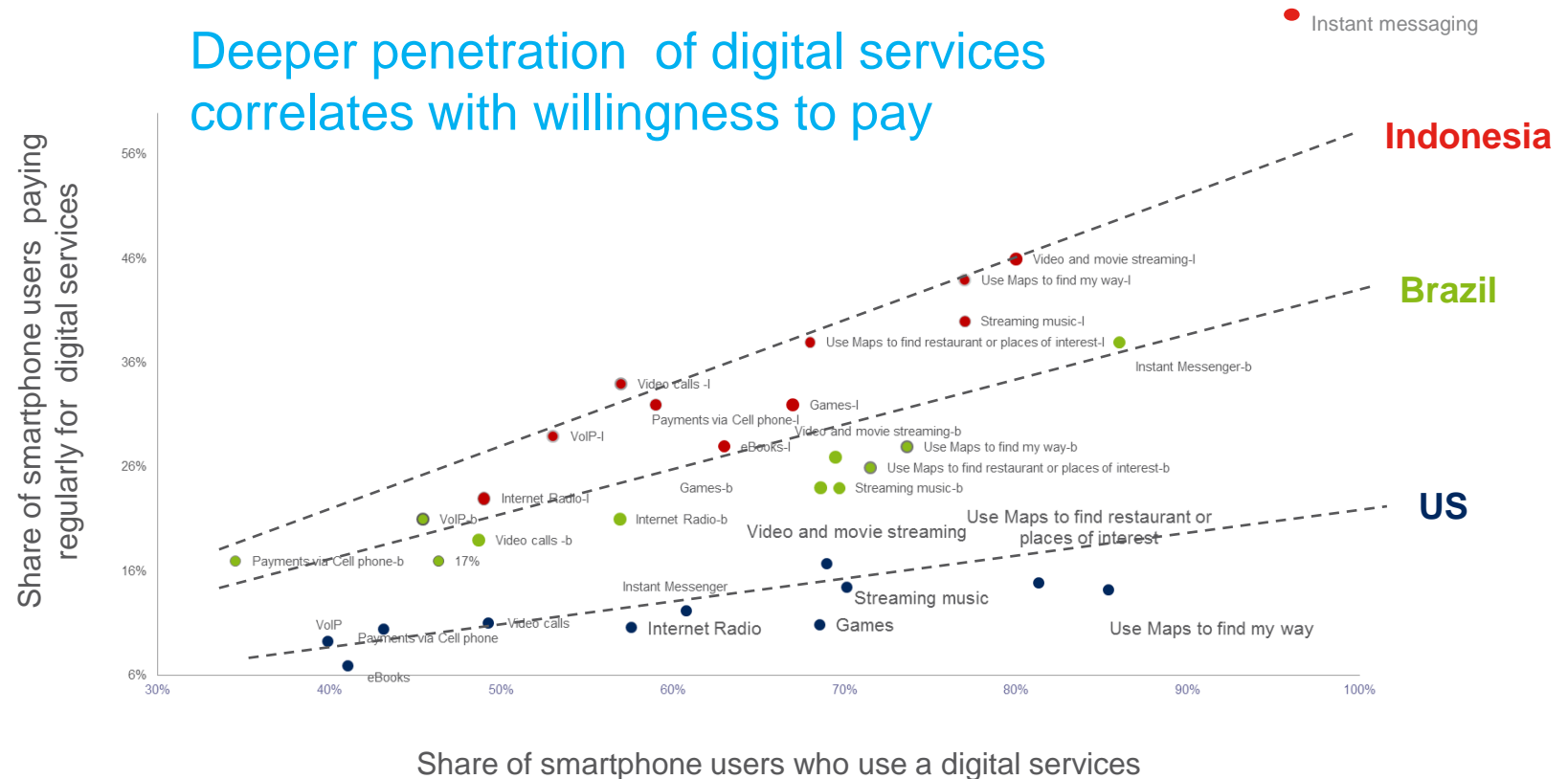> 23% increase in mobile browsing & other data revenue 2Q13-2Q14

Take Facebook to the streets – Just like users want

Source: Mobidia, 2015

USERS ARE READY TO PAY FOR DIGITAL SERVICES

> **37%** of smartphone users in the US are subscribing and paying for at least one digital service

> On average, these customers spend **$5 more** per month on their subscription

Deeper penetration of digital services correlates with willingness to pay

Share of smartphone users paying regularly for digital services (y-axis)

Share of smartphone users who use a digital services (x-axis)

Indonesia

Brazil

US

Instant messaging

Source: Ericsson ConsumerLab 2013

ETISALAT DOBOX – MOBILE VIDEO-ON-DEMAND, NIGERIA

> Download Movies, Trailers, Music videos, Documentaries and TV series

> Select preference for video quality; rich MP4 file or lighter GP3 file

> No direct data charges, content paid per download
  − Music videos and movie trailers – N20 ($0.1)
  − Short films and documentaries – N100 ($0.5)
  − TV series – N150 ($0.75)
 − Charges deducted from the user's airtime (minutes)

[Operators tapping into the ever growing demand for video]

BROADCASTING ADDS NEW OPPORTUNITIES

› Verizon uses LTE Broadcast technology in new mobile video service 'Go90'

› The ad-supported app was launched Oct. 1 on iOS and Android
   - Available to customers of all carriers
   - Offering 8,000 titles and over 35 exclusive original series
   - Major sports events (>900 per year)

› The technology enables new use cases, like broadcast of video ads to a fleet of taxis
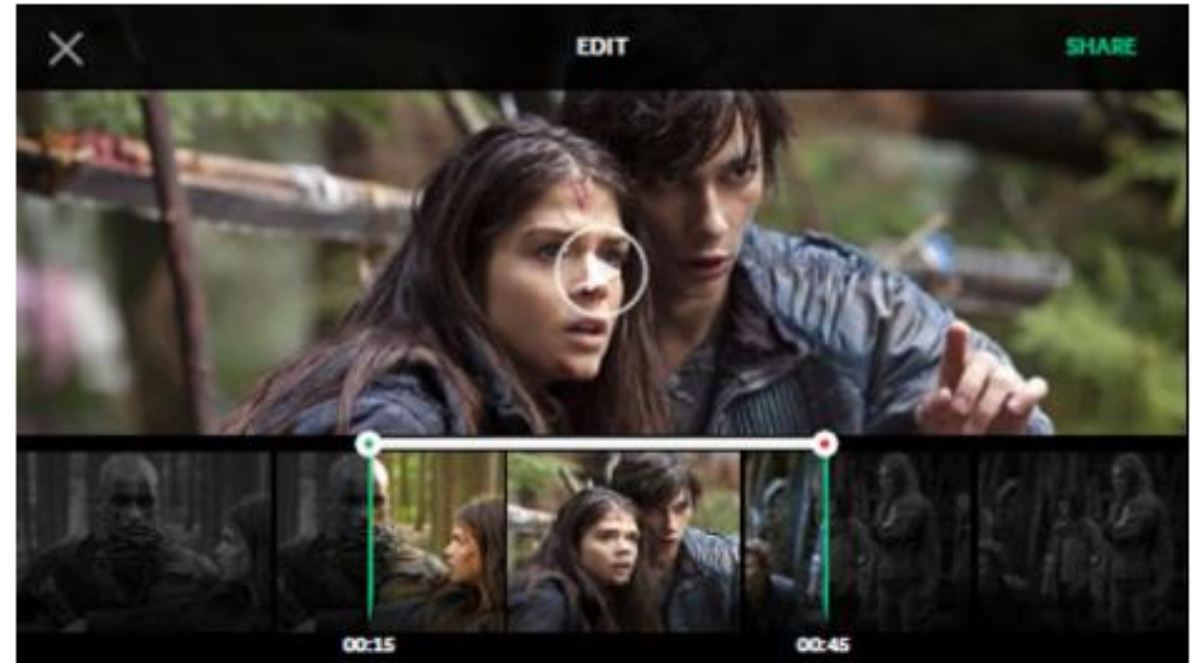
A screenshot of the Go90 app shows the ability to customize and share small clips, something that's being called "Moments."

DATA CONSUMPTION... EXTREME VARIATION
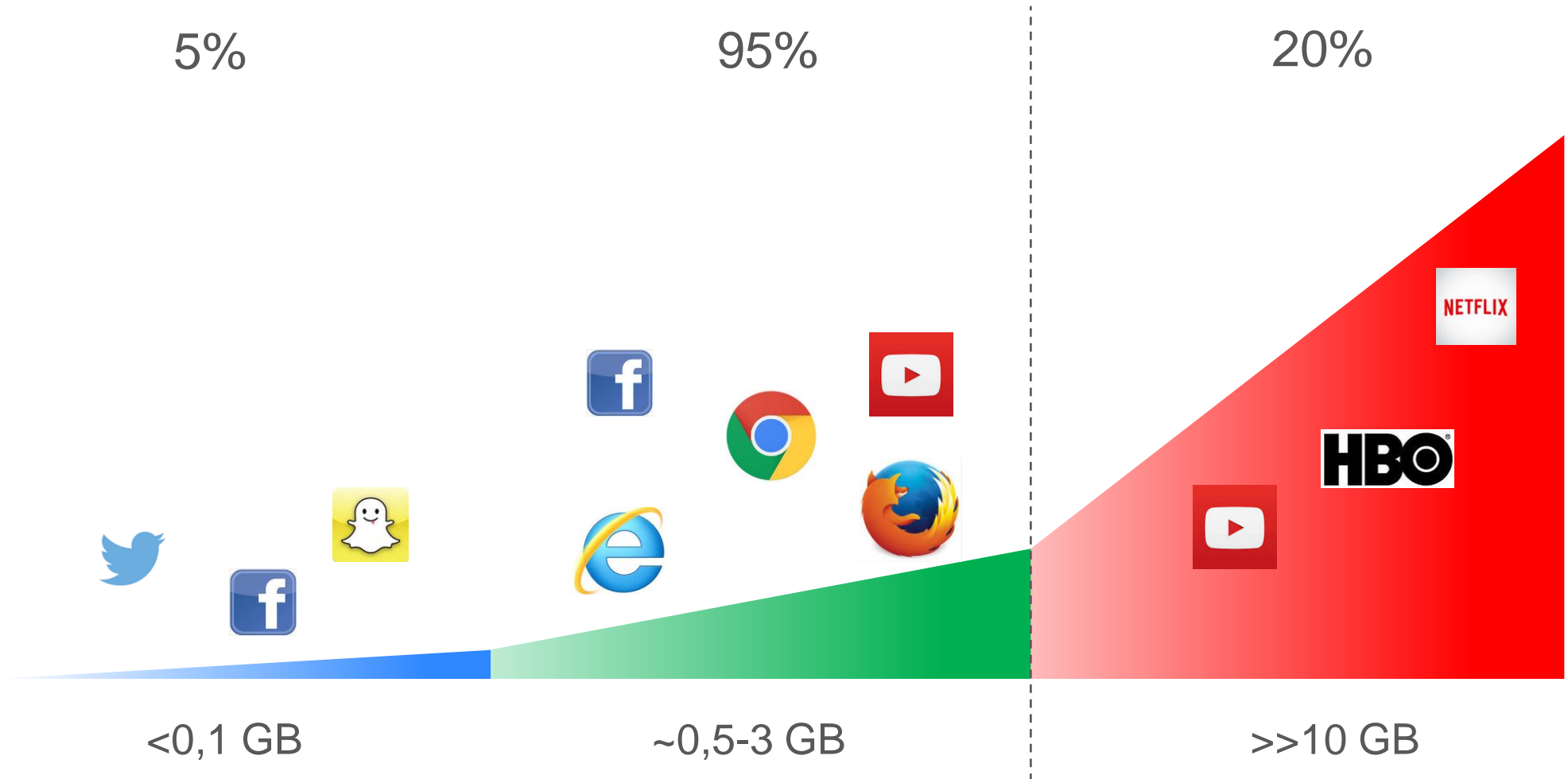
Segment size	5%	95%		20%

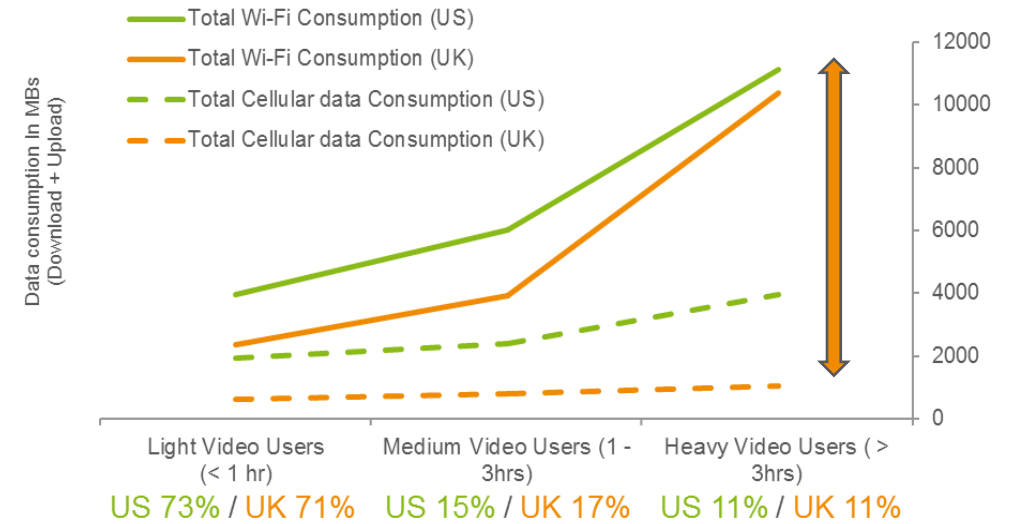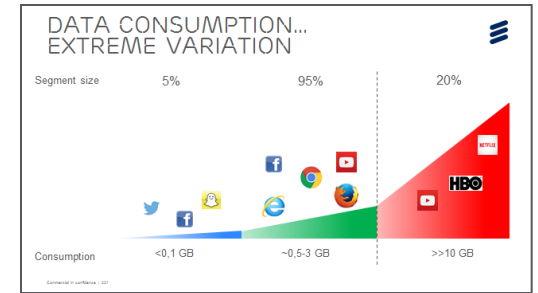| Consumption	<0,1 GB	~0,5-3 GB	>>10 GB

VIDEO ONLY ADD ON?

› Video – 20 GB or 20h
  – 3$ only YouTube
  – 5$ select 3
  – 10$ any video

› Add on to existing Premium Plans

› Additional revenue targeting high Video Consumers

› Marginal cost per GB is a few cents...
› What is the Price Elasticity for high Video Consumption??

DATA CONSUMPTION... EXTREME VARIATION

Segment size	5%	95%	20%
Consumption	<0,1 GB	~0,5-3 GB	>>10 GB

Total Wi-Fi Consumption (US)
Total Wi-Fi Consumption (UK)
Total Cellular data Consumption (US)
Total Cellular data Consumption (UK)

Data consumption In MBs (Download + Upload)

Light Video Users (< 1 hr)	Medium Video Users (1 - 3hrs)	Heavy Video Users (> 3hrs)
US 73% / UK 71%	US 15% / UK 17%	US 11% / UK 11%

Source : On-device metering data from Nielsen (5000 Smartphone users in each market)
Base: Smartphone users who use video apps on mobile phone

6. EXPLORE ADJACENT BUSINESS AREAS

T-MOBILE TO REVOLUTIONIZE THE ENTERPRISE SEGMENT?

Introducing Un-carrier for Business™.

Only T-Mobile offers guaranteed rates, 24/7 business account service, employee family line discounts, and tools to mobilize your business - all on the Data Strong™ network.

> Fixed rates for simplicity & predictability
  − Unlimited voice, text, 1GB data at $16
  − Volume discounts kicking in at 20 users
  − 4G speeds, Wi-Fi Calling
  − No contract period, no commitment

> Family line discounts, creating incentives for employees to hook up with private number

> Business tools to mobilize your business
  − Mobile-optimized websites
  − Free email
  − Business account service, 24/7

John Legere,
CEO, T-Mobile USA

"40 percent of carriers' wireless revenue comes from business users."
"We're going to do to the business sector what we did two years ago to the consumer segment"

SPRINT TARGETS ENTERPRISES WITH 'WORKPLACE-AS-A-SERVICE'

Sprint Business

WPaaS.

There's a better way to open a new office

Workplace-as-a-Service is the faster, easier, more cost-effective way to get all the tech you need.

> \$200 per user per month
> - "Half the cost of comparable solution" according to Sprint

> Service includes
> - Dedicated customer care
> - WAN connectivity
> - Enterprise grade managed Wi-Fi
> - Local and long-distance voice
> - Audio and video conferencing
> - Online collaboration
> - Instant messaging and presence tools
> - Mobile device management support across multiple carriers
> - Bring-your-own-device support
> - Optional Sprint wireless plans for smartphones and tablets that Sprint will offer at discounted prices

DIFFERENTIATED SERVICE QUALITY FOR ENTERPRISES
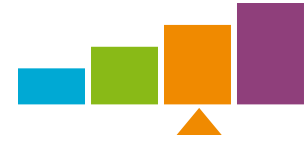
› Verizon launches 'Wireless Private Network' – targeting enterprises and governments

› Allows customers to manage their networks, including service differentiation and traffic prioritization
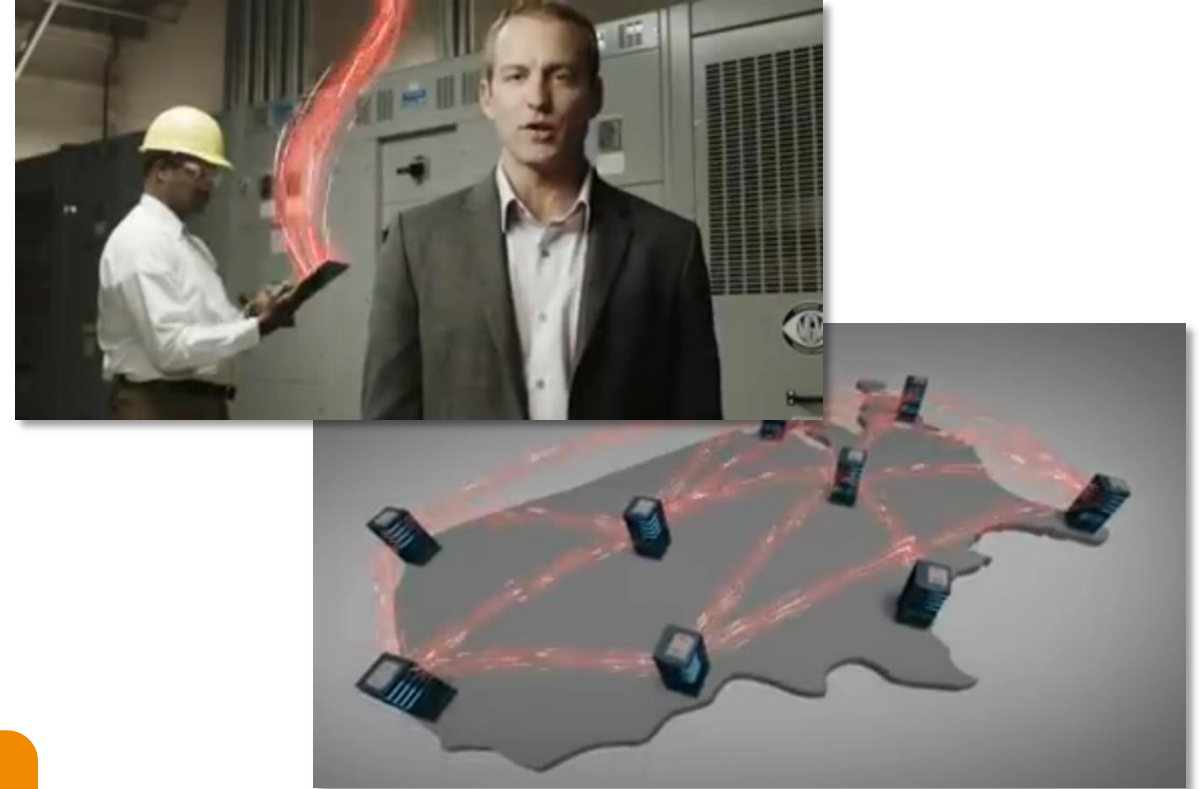
A networked society implies service differentiation

Verizon launch, Sept 2015

7. ADDRESS NEW MARKETS THROUGH TWO-SIDED BUSINESS MODELS

CHINA UNICOM ZERO-RATES SALES PORTAL – SHARES REVENUE

> Partnership between China Unicom, China Mobile and Alibaba

 – Zero-rated access on 'Taobao Mobile' e-commerce platform on 'singles day' (a key shopping day in China)

 – Within 70 minutes, transaction value reached 163 mUSD, more than the whole 24 hours of the singles day 2012

> Benefits for the operators:

 – Revenue share agreement with Alibaba

 – Increased customer loyalty and satisfaction

 – Increased mobile data usage

 – Brand perceived as modern and trendy

Encourage online shopping through zero-rated services – get revenue share

8. HOW OPERATORS EXPOSE NETWORK CAPABILITIES TO CREATE ECOSYSTEMS FOR APPLICATION DEVELOPERS

SMARTPHONES TURNED MEDICAL TOOLS

SMARTPHONES TURNED MEDICAL TOOLS

› $10 device turning smartphones into mini-microscopes

› Enables identification of parasites

› Potential in the healthcare industry yet to be discovered

Extend the application and value of smartphones

ERICSSON