

A child wearing a red dress and yellow rubber boots is crouching on a dark asphalt surface, drawing blue chalk lines. The child's hands are visible, holding a piece of blue chalk. The background is dark and out of focus. The title text is overlaid on the left side of the image.

# The power of end-to-end

Alexander Tikhonov

Adam Bryant

# 4th Industrial Revolution (4IR)

## Key Telecommunications Industry Trends



Explosive growth of data and connected things

Zettabyte magnitude 10th of Billions of devices



Disruption of traditional carrier services

10% decline YoY in revenue of voice/text until 2020



CSPs accelerating transition to the Cloud

89% of CSPs deploying SDN in 2017



New spectrum enabling innovative services

4K Video without fiber  
Industry 4.0, AR/VR, Massive IOT Connectivity

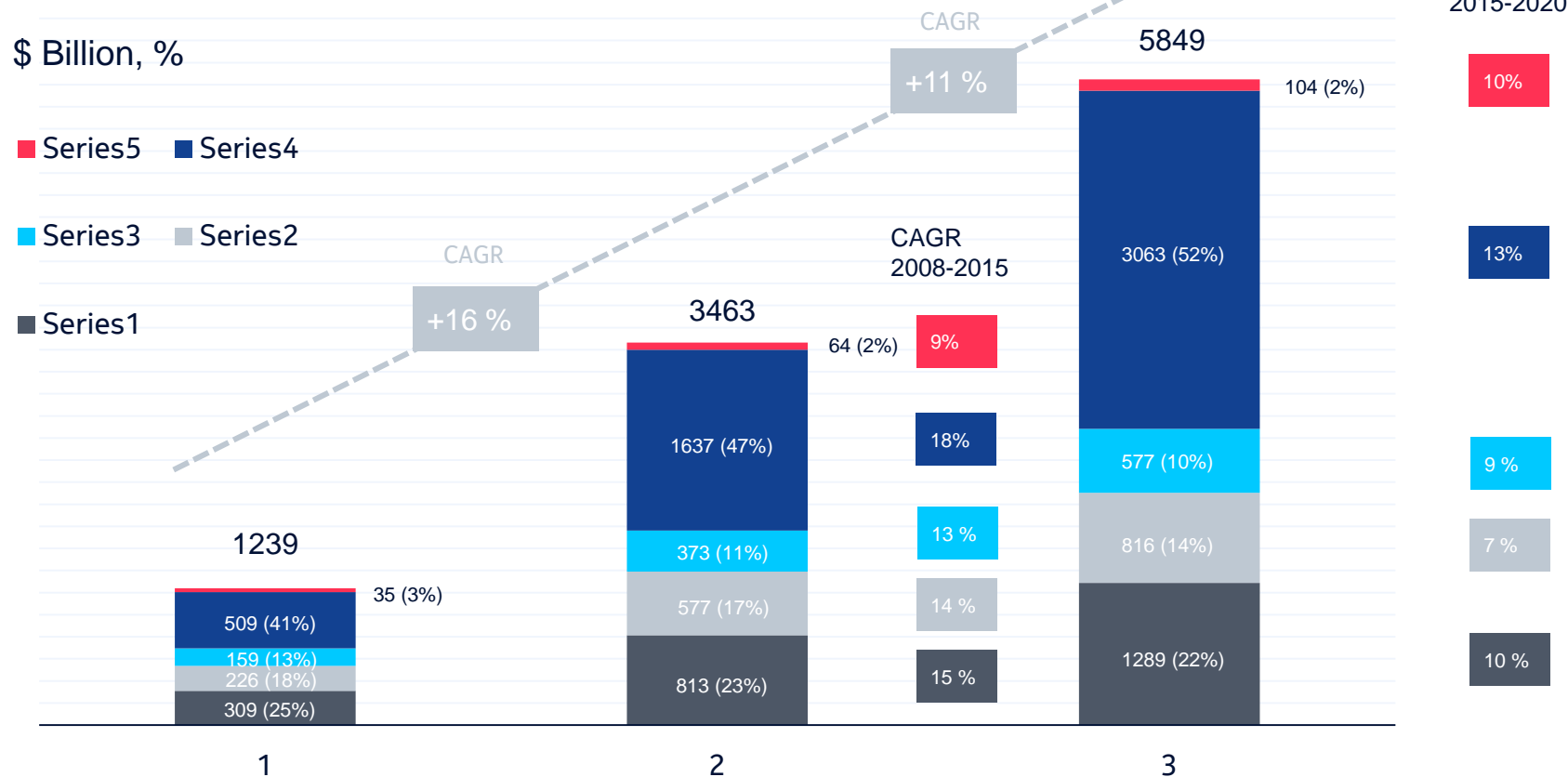


Rapid, disruptive technology changes

AI – IBM Watson question answering machine

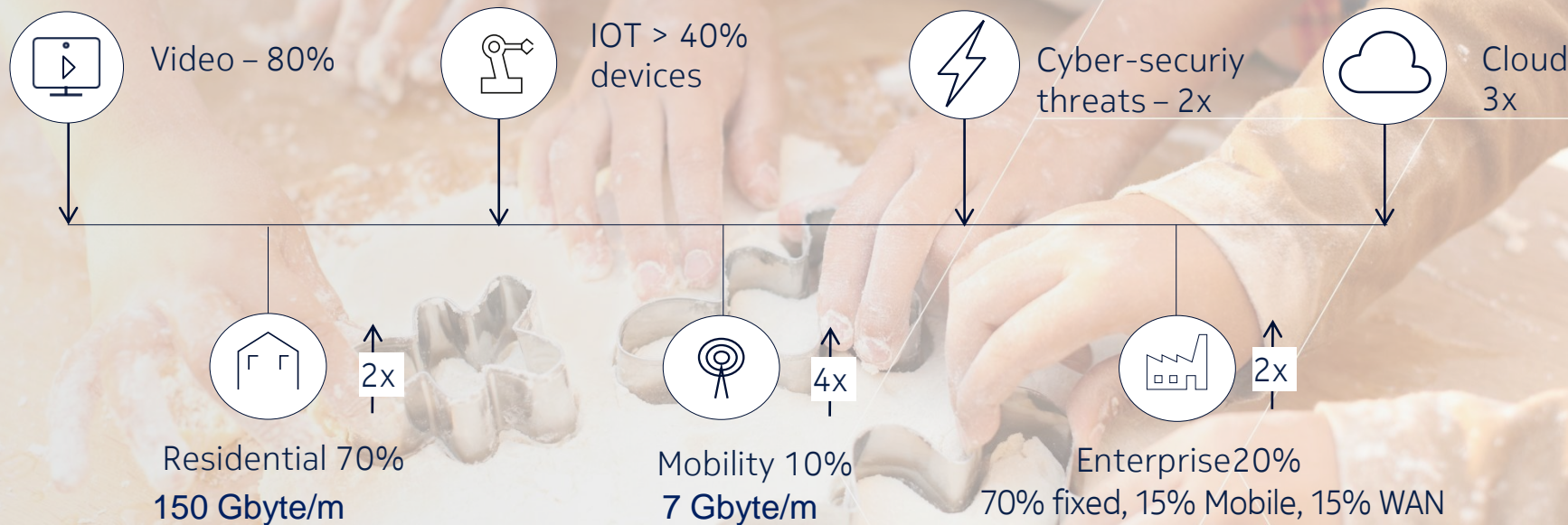
# 2020 Horizon

## Internet value chain size and growth by segment





# Network Challenges



Exponential Usage Growth and Growing Pressure on Value



# Strategies

What our Customers say ?

**MUST  
TRY**

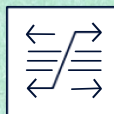
**13%  
Expand**



IoT, Video, PS, Enterprise, Real time Services (5G)

**MUST  
DO**

**7 %  
Connect**



1Gb/s, 1ms,  
Massive IoT

Cloud, Security,  
Automation



**9 %  
Digitalize**

At the lowest TCO



# End to End Solutions

## Residential



150 Gbyte

**MUST  
TRY**

- E2E Video
- IOT Smart Home
- Virtualized Residential Services

## Mobility



7 Gbyte

- E2E Video
- IOT Smart Home
- Virtualized Residential Services

**MUST  
DO**

- Connectivity (GPON, FFTx, G.FAST, 4G, POL)
- Hybrid Access
- Cable Access
- 5GTTH
- 60GHz Wireless PON

- E2E Mobile Network System
- IoT Connectivity & Service Enablement
- Mobile Transport Evolution
- E2E Small Cells
- 5G E2E Evolution

## Enterprise



70% fixed, 15% Mobile,  
15% WAN

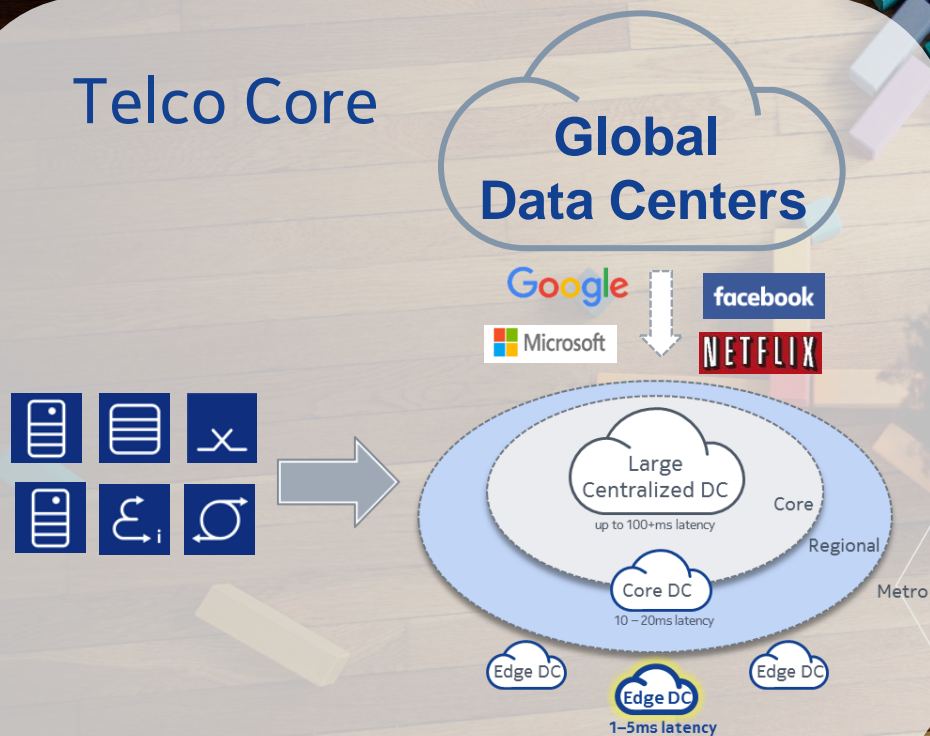
- Video
- IoT for Utilities
- IoT for Automotive

- Connectivity (GPON, FFTx, G.FAST, 4G, POL)
- Private LTE
- 5G E2E Evolution
- E2E Network Security



# Cloud

## Telco Core



- Online Services

MUST  
TRY

- HyperNetworked DC
- Dynamic Edge
- Telco Cloud Core
- E2E Network Security
- Virtualized Networks

MUST  
DO

# Practices

- Mobile Transport
- Cable Solutions
- Fixed Wireless Networks
- E2E Video

- Mobile Network Solutions
- 5G E2E Transformation
- Public Safety

Network  
Evolution

End-to-  
End  
Mobile

Digital  
Economy

Cloud  
Solutions

- IoT Use Cases
- IoT Connectivity
- E2E Security

- Hyper Networked Data Centres
- Virtualised Networks
- Core Solutions



**NOKIA**