

# The Promise of 5G

Exploring the benefits and use cases of 5G

# AGENDA



What is 5G?

5G Use Cases

Envisioning  
Robust 5G in  
South Africa

ENABLING  
MOBILE NETWORKS  
EVERYWHERE



# What is 5G?

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MOBILE NETWORKS  
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# Mobile Technology Generations

- Original analog cellular networks (1G) broad commercial adoption in 1980s
- 2G (second generation) digital cellular networks (1990s)
- 3G deployment begins during 2000s to incorporate voice *and data* communications

# Mobile Technology Generations

- 4G increases in bandwidth speeds and network capacity (commercial deployment in 2010s)
- 5G furthers major increases in network speed and capacity and ultra-low latency (as low as one millisecond, fiber-like reliability)
- 6G (under early development, likely 100x faster than 5G)

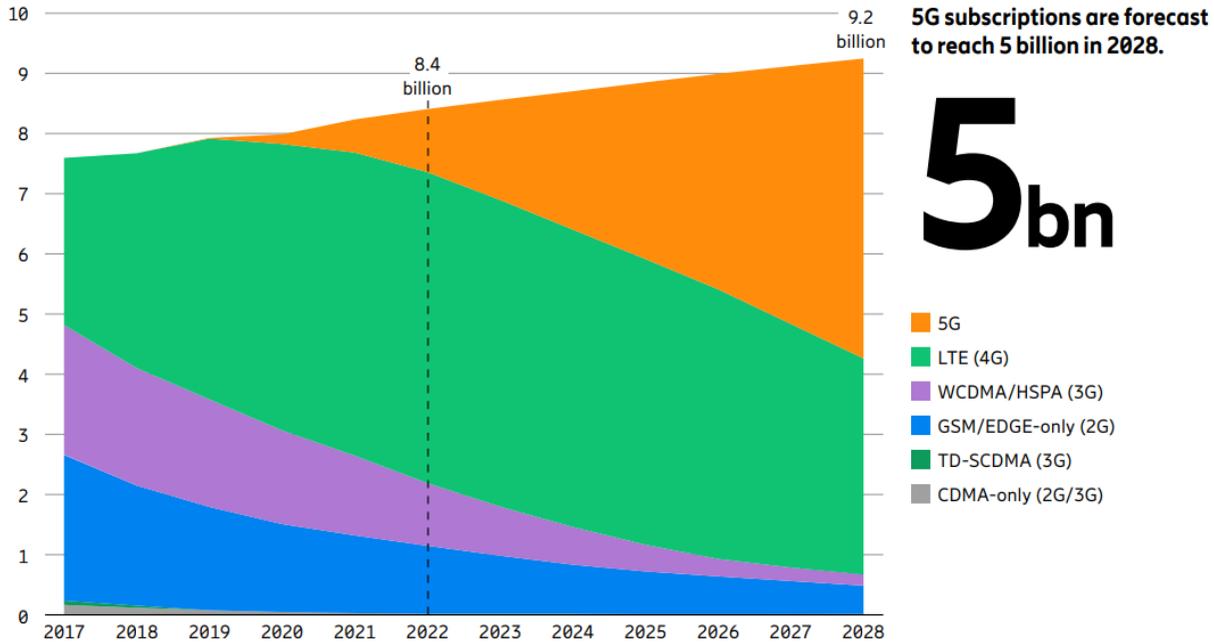


# Projected Impact of 5G

- Predicted to power the digital economy, enabling up to US\$13 trillion+ (i.e., approximately R243 trillion) in global economic value by 2035
- Will expand mobile ecosystem to new industries and for new uses

# Future of Mobile Generations

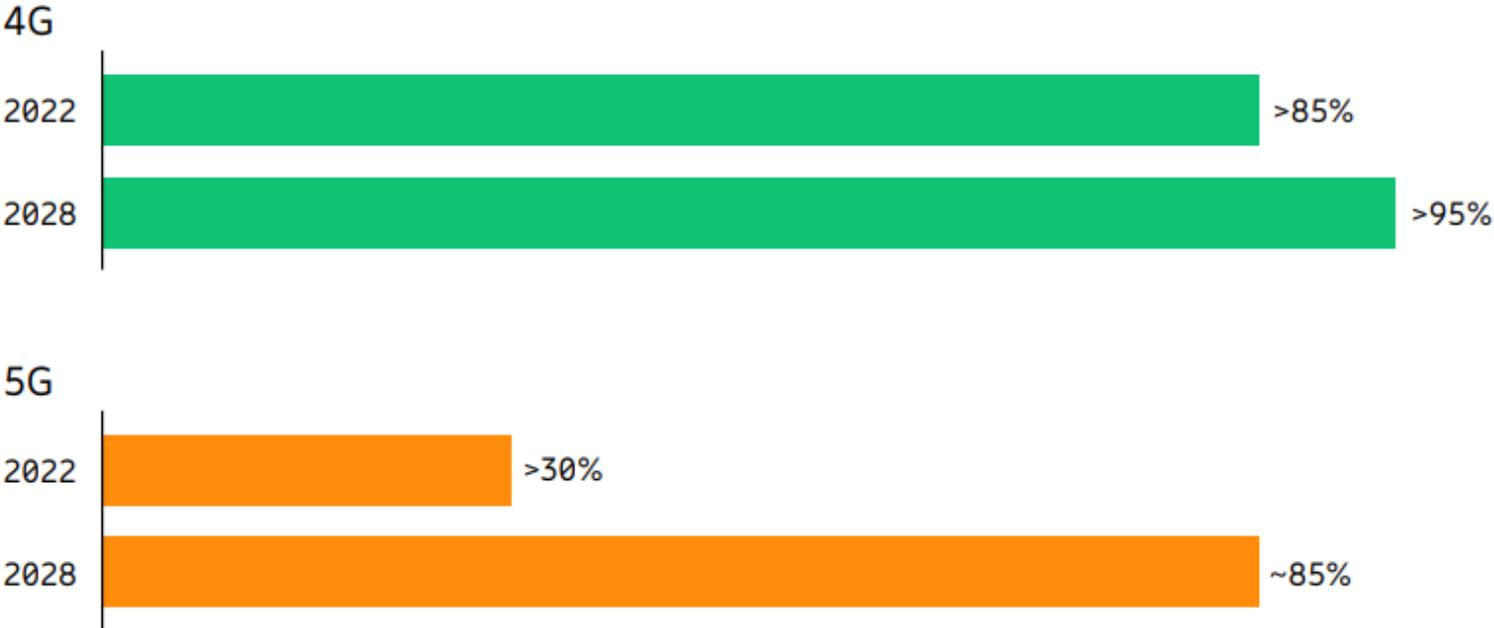
What are the driving forces behind the need for next generation of technology?



Source: Ericsson Mobility Report (2022)

- 1 billion 5G subscriptions by the end 2022.
- LTE subscriptions peaked in 2022 at 5.2 billion.
- LTE will decline to around 3.6 billion by the end of 2028 as subscribers migrate to 5G.

# World Population Coverage by Technology



Source: Ericsson Mobility Report (2022)



# 5G Technology Change

- The push to bring next-generation wireless network technology was causing a lot of excitement and created some commotion across the telecom space in the last few years.
- By the end of 2028, 5 billion 5G subscriptions globally
- **Questions remain:**
  - What exactly constitutes a generational technology change beyond the marketing hype?
  - What is the business case for such a move?

*Source: Ericsson Mobility 2022 Report*

# Current state of 5G

## Is 5G standardized?

- Yes. But improvements will continue. 5G capabilities and features will continue to enhance → 5G Advanced

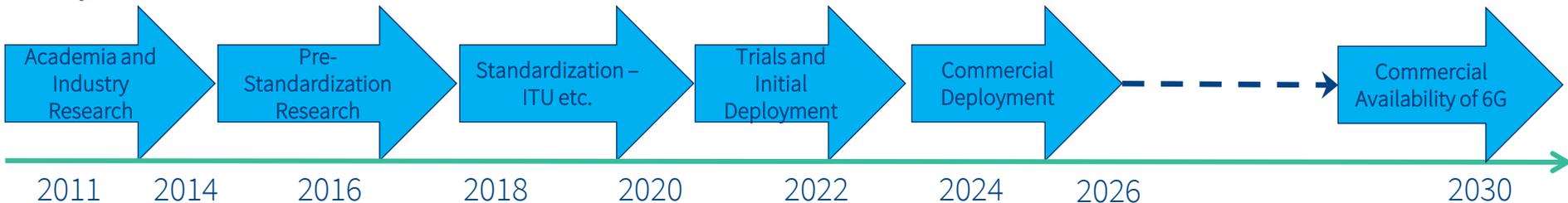
“5G is an end-to-end ecosystem to enable a fully mobile and connected society.”

*Next Generation Mobile Networks (NGMN)*

## This is NOT how 4G was created

- 4G was the natural evolution of air-interface technology (driven by technology upgrades).
- 5G is driven by use cases, business models, and value creation. Technology improvement is a side-product.

*Birth of 5G:*



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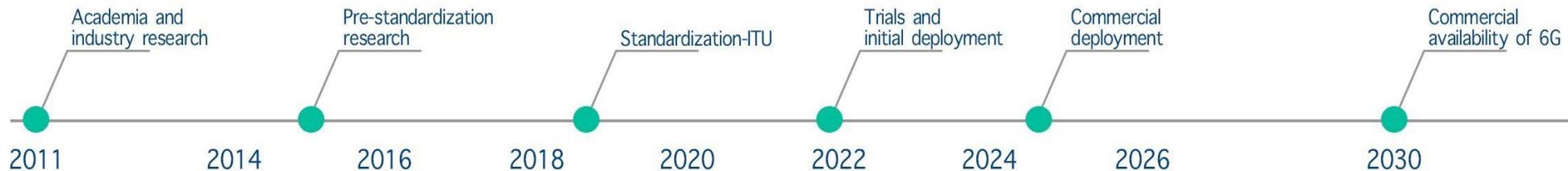
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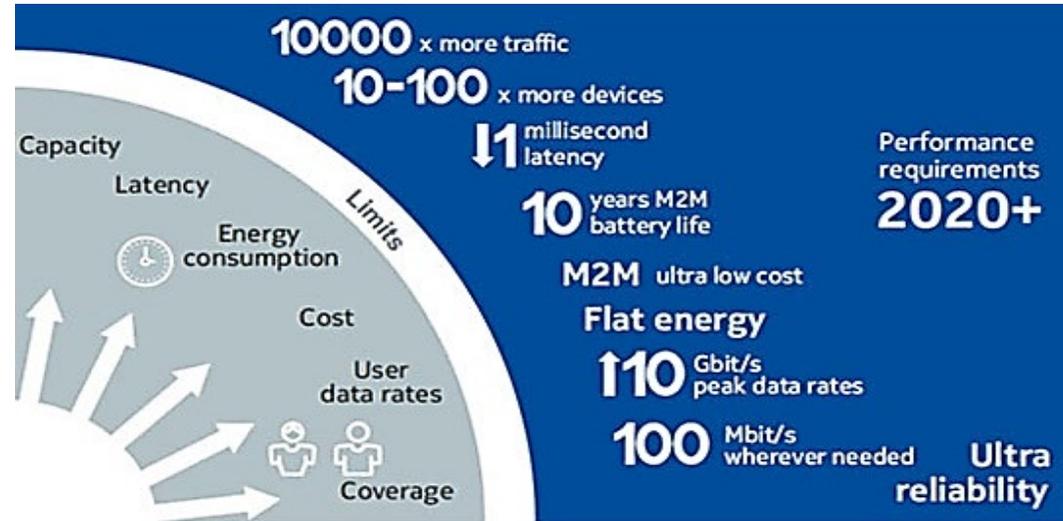
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# Drivers for 5G Adoption

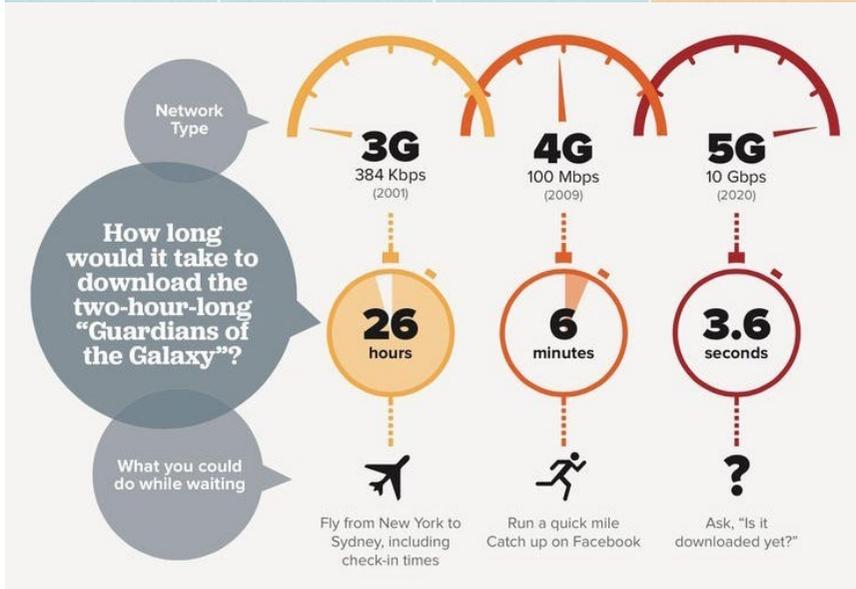
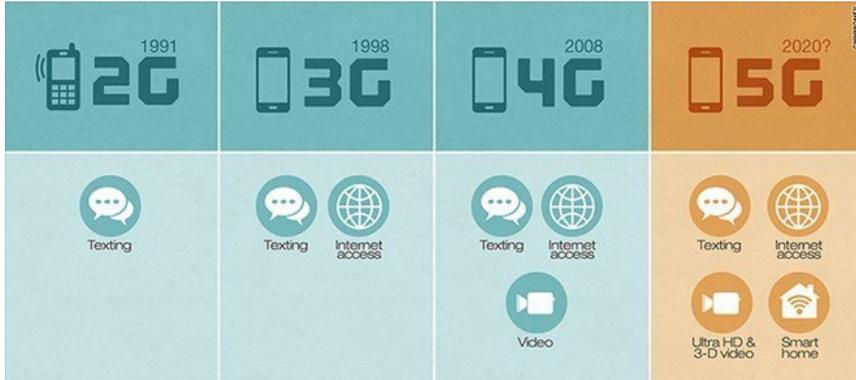


## In 2017, Cost Per Bit Exceeds Revenues:

- Operators face cost-revenue convergence
- The cost of delivering data becomes greater than the revenues derived from doing so.

- Subscribers are **demanding more bandwidth** such as streaming video, augmented reality, peer-to-peer gaming, and other bandwidth-intensive services.
- Mobile network operators (MNOs) seeking new ways to profit from their networks. 5G opens up the capability to **offer new applications and services**.
  - A new generation of applications that are (or soon will be) in use, from the **Internet of Things (IoT)** to **self-driving cars** to **virtual reality**.

# 5G Speeds and Features



Evolution of supported features

The real-world translation of "wireless fiber optics"



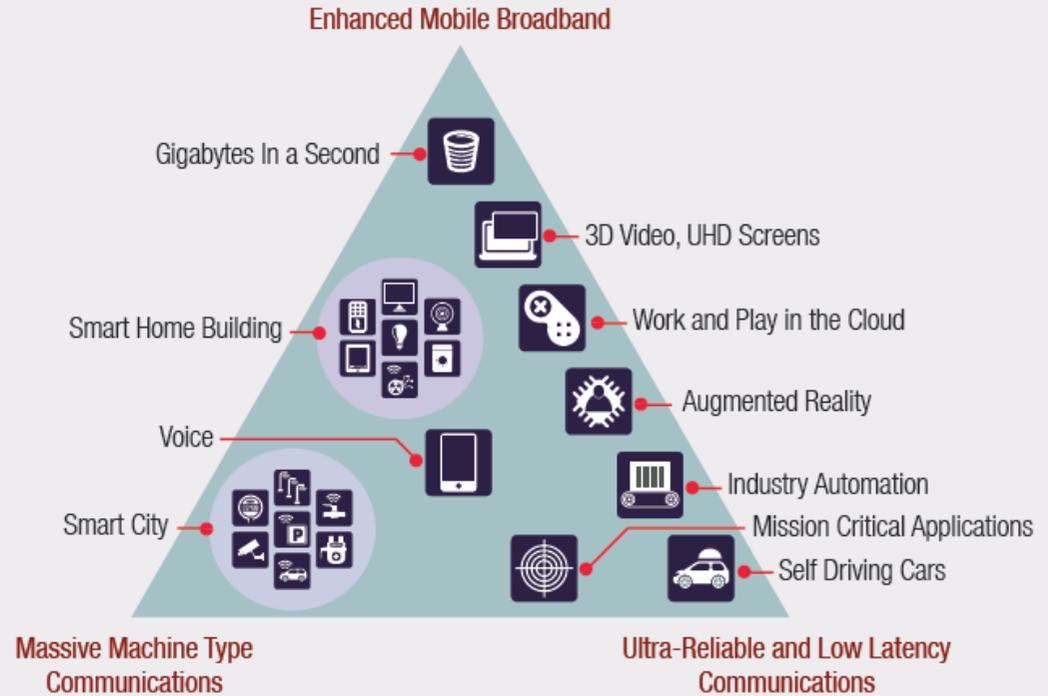
# 5G Use Cases

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# 5G Use Cases

Three broad use cases that 5G wireless technology seeks to transform:

- Broadband Speed/Access
- Low Latency/High Reliability
- Machine-to-Machine Communication



# 5G Use Cases



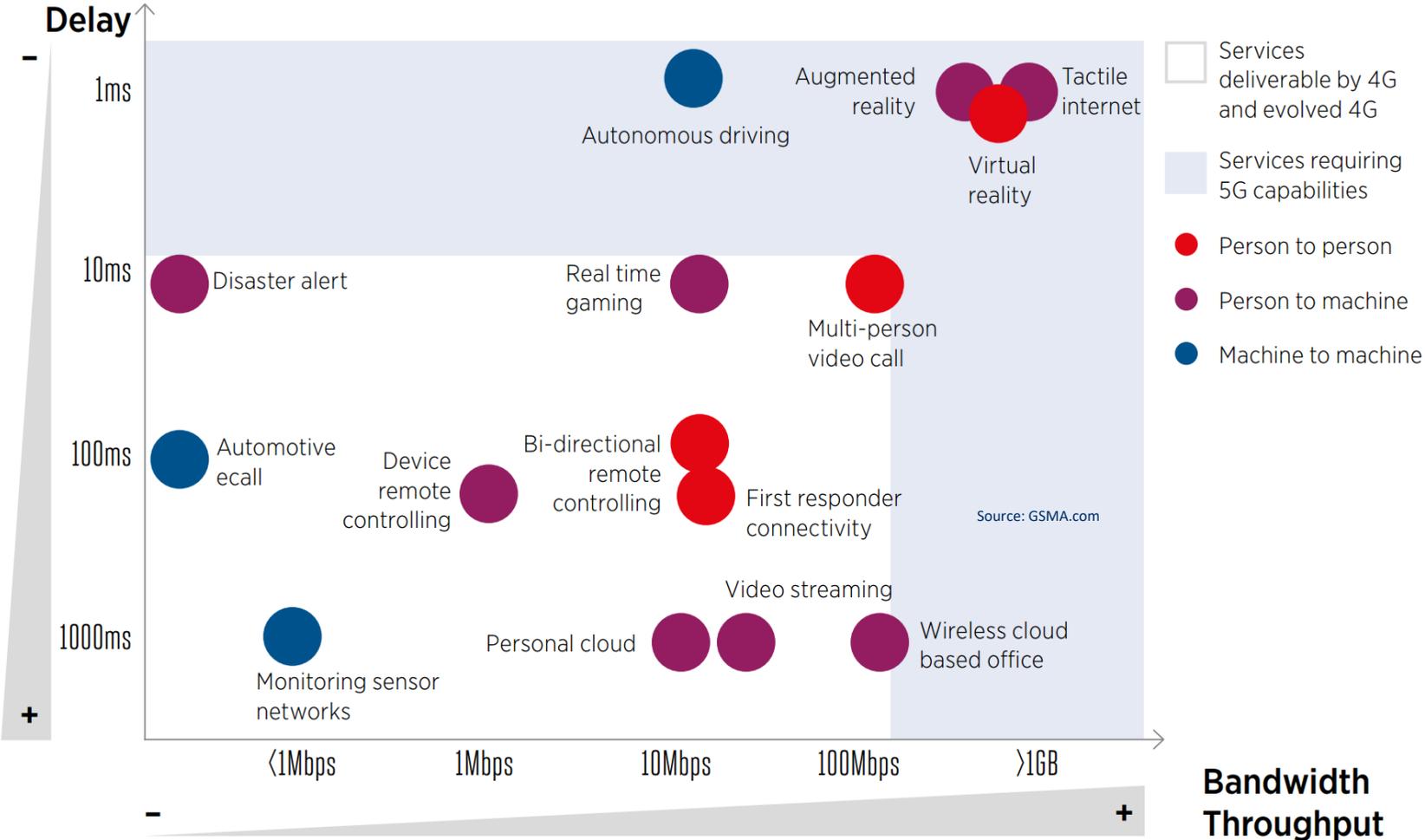
## Early Use Cases

- Fixed Wireless: Home Internet through 5G mmWave spectrum and beamforming
- Enhanced Mobile Broadband: Always-on, high-speed links with real-time responsiveness with the goals of 20 Gbps peak throughput and 1 Gbps with high mobility. AR/VR applications

## Later Use Cases

- Massive Machine-Type Communication: Embedded sensors in virtually everything. 27B of IoT by 2025. Industrial IoT with smart cities, smart utilities, agriculture.
- Ultra-Reliance Low-Latency Communications: self-driving vehicles, smart-grid control, industrial automation, robotics, drone control.

# 5G Supported Services



Source: <https://ipcarrier.blogspot.com/2015/07/ultra-low-latency-not-needed-by-all-or.html>

# The “Killer App”

- In 2010, as 4G rolled out, there were many conferences about the great things 4G would bring:
  - They talked about bigger bandwidth and about streaming and mobile broadband
  - NO ONE said anything about
    - Uber
    - Waze
    - WhatsApp
- No one predicted the impact of combining geolocation and broadband
- And now we watch as 5G is launched...
- The Point: The “killer app” for 5G has not been written yet. What will it bring?



# Envisioning Robust 5G in South Africa

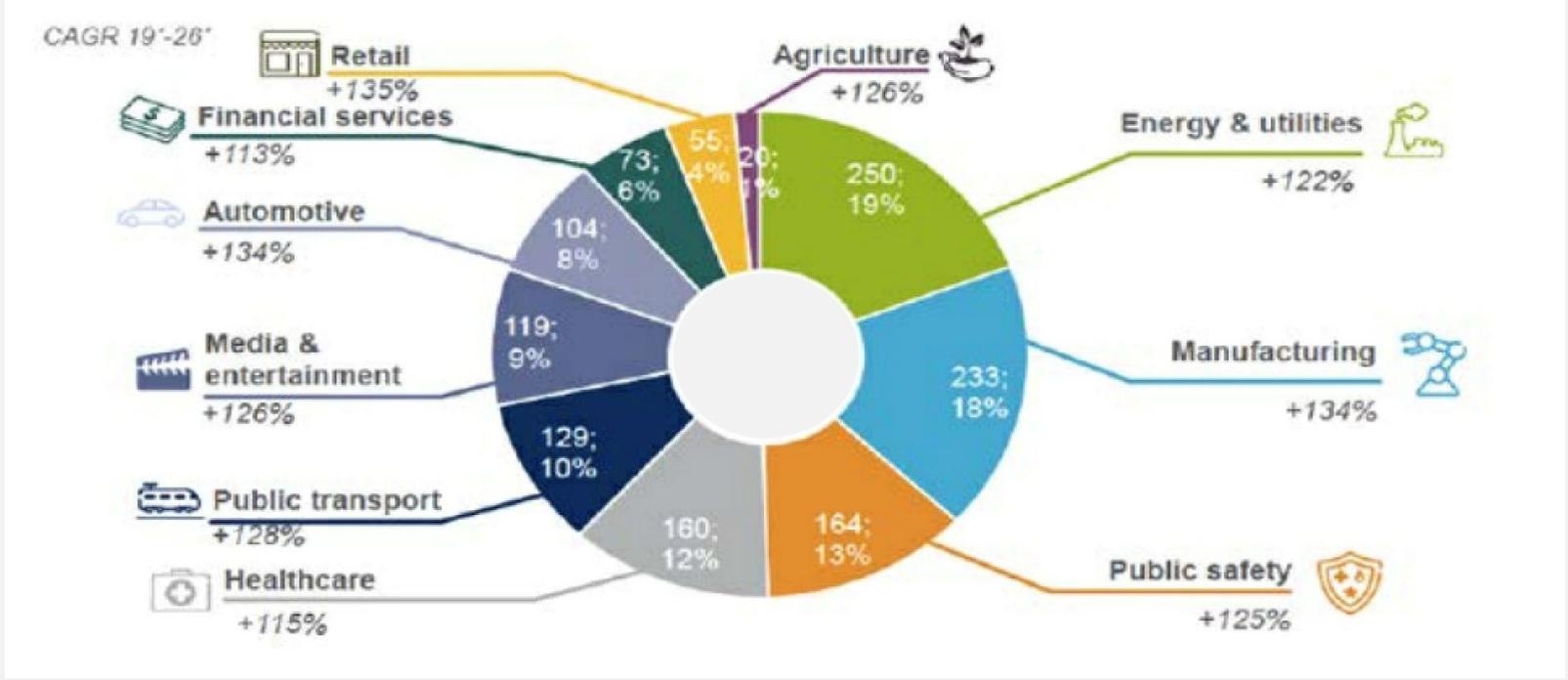
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# Recommended Use Cases

- Remote working
- Enhanced distance learning
- Telemedicine
- Security, public safety, and disaster response
- Agriculture
- Mining
- Manufacturing
- Financial Services

Source: 2021 ICASA 5G Annual Report

# 5G Use Cases and Benefits



Source: Ericsson, 2021 ICASA 5G Annual Report

# 5G Supported Uses



High Speed Home  
& Office  
Broadband



Education



# 5G Supported Uses



Healthcare



Security,  
Public Safety &  
Disaster Response



# 5G Supported Uses



Agriculture &  
Water



Mining



# 5G Supported Uses



Manufacturing



Financial Services



# 5G Supported Uses



Smart Cities  
& Transportation

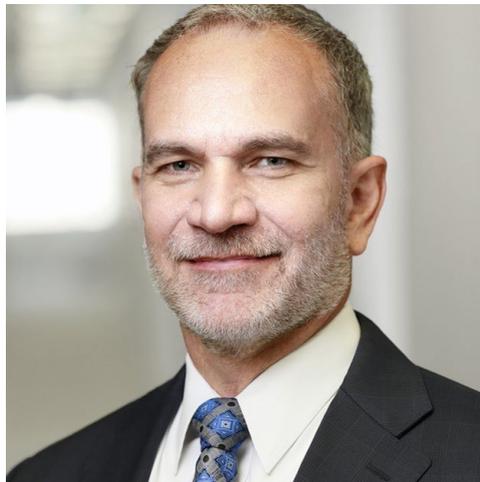


Travel &  
Tourism



# Questions?

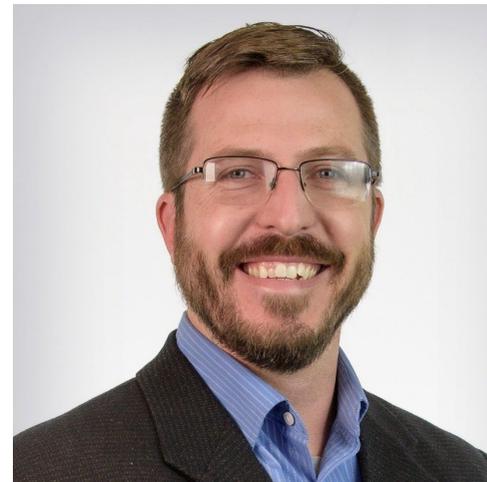
Please contact Doug, Sam or Jonathan with any questions you may have on this presentation.



Douglas W. Dimitroff  
[ddimitroff@phillipslytle.com](mailto:ddimitroff@phillipslytle.com)  
+1.716.847.5408



Samuel Borbor-Sawyer  
[sborborsawyer@phillipslytle.com](mailto:sborborsawyer@phillipslytle.com)  
+1.716.847.7037



Jonathan Sarles  
[Jon@ElevatedLearningLLC.com](mailto:Jon@ElevatedLearningLLC.com)  
+1.724.255.9686



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# Thank You!



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