

# Tearing Down Walls with Mobile IoT

David Allen

Director Advance  
Technical Solutions

AT&T Internet of  
Things Solutions

# Barriers To The Growth Of IoT

✓ Security Was Most Frequently Identified As A Obstacle To Growth



A Shortage Of People With The Required Skills Was Identified By 49%



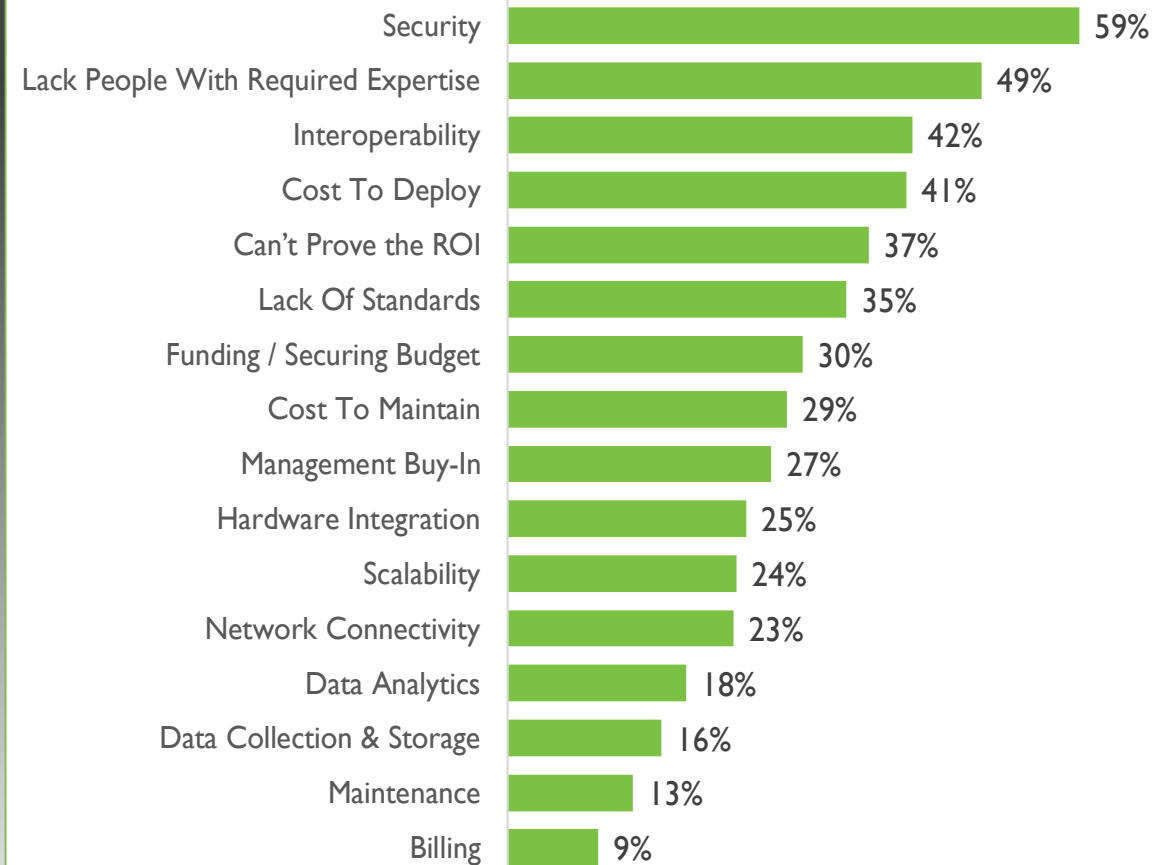
✓ 42% Believe Interoperability Issues Limit IoT Adoption



✓ 41% Are Challenged With The Cost Of Rolling Out IoT Solutions



## Barriers To Growth In IoT



\*provided courtesy of James Brehm of James Brehm & Associates LLC



# Better Together



OR



- Regional
- Targeted Use Cases
- Multi-Purpose Gateways or Simple Sensors



- ✓ Global
- ✓ Broad Use Cases
- ✓ FOTA / SOTA
- ✓ Complimentary

# Device Certification Improvements

## LPWA Goals

- ✓ Simplify the Device Certification Process
- ✓ Accelerate Time to Market
- ✓ Establish Global Industry Best Practices

## LTE-M and NB-IoT Compared to LTE Cat-1

Test Cases

↓ ~650-800

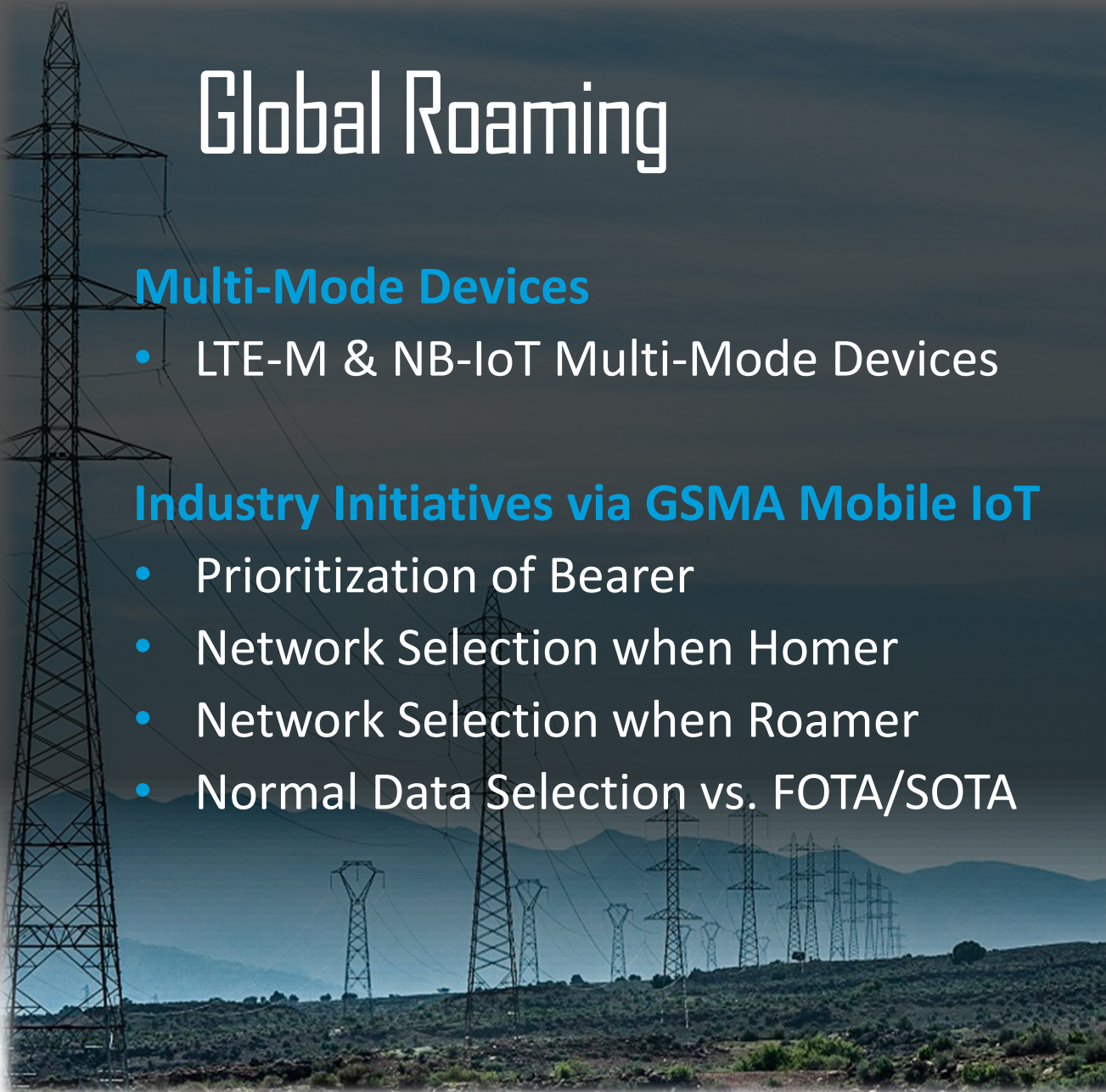
Costs

↓ ~1/3 - 1/2

Time

↓ ~7 weeks





# Global Roaming

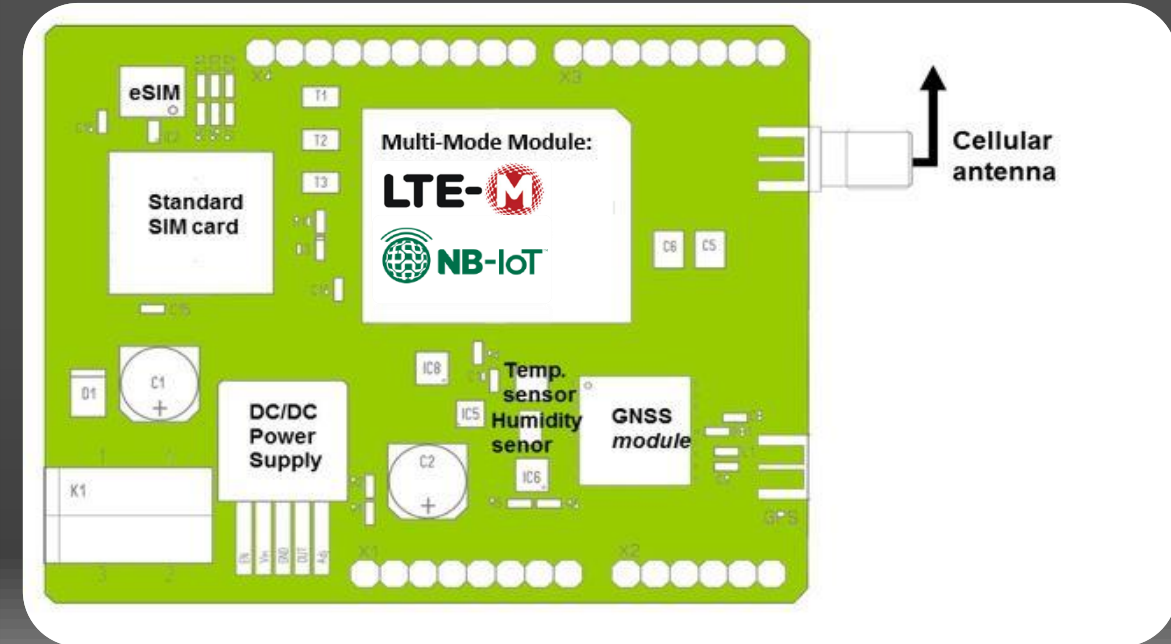
## Multi-Mode Devices

- LTE-M & NB-IoT Multi-Mode Devices

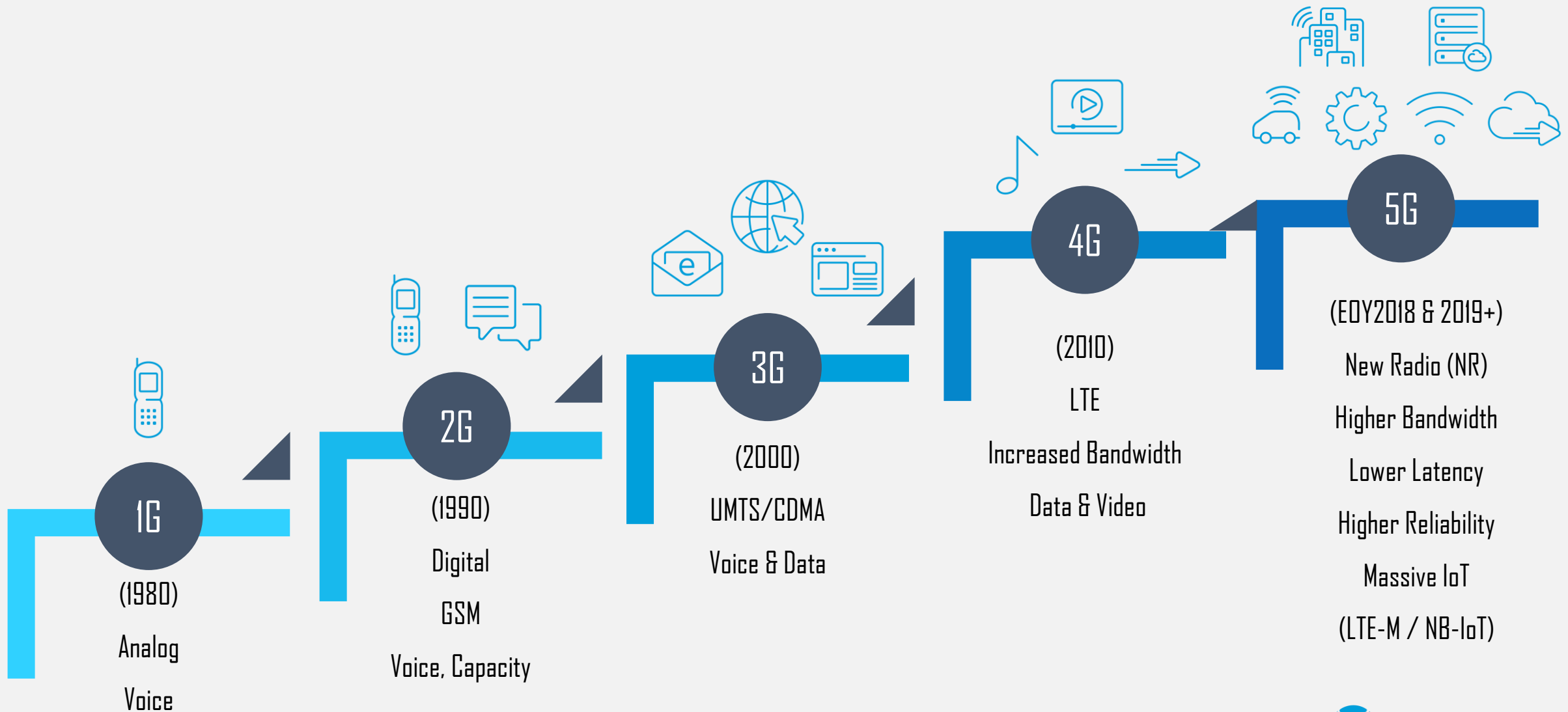
## Industry Initiatives via GSMA Mobile IoT

- Prioritization of Bearer
- Network Selection when Homer
- Network Selection when Roamer
- Normal Data Selection vs. FOTA/SOTA

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# Evolving to 5G

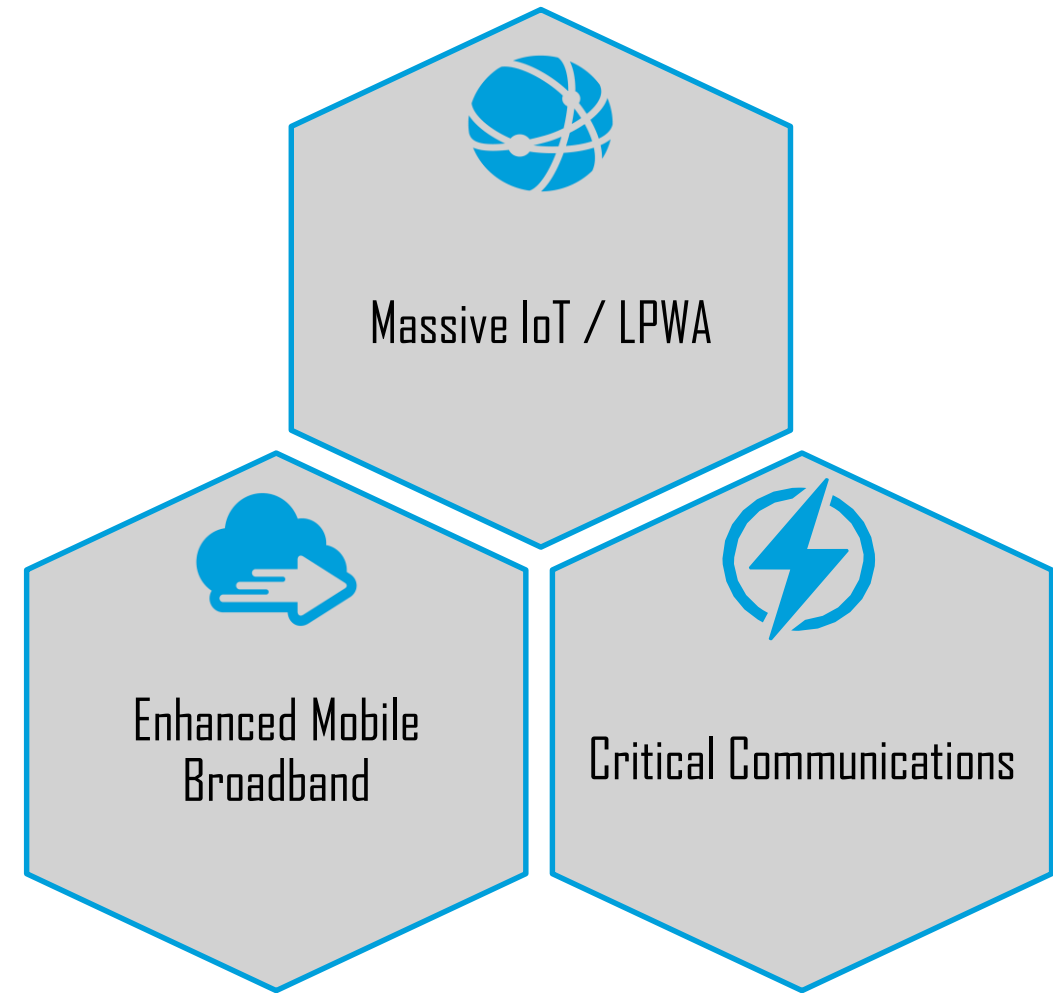


# 5G Investment: LTE-M & NB-IoT are Part of Developing 5G Standards

**Massive IoT / LPWA:** Expected to include LTE-M and NB-IoT. Long Battery Life, Improved Coverage, Low Cost

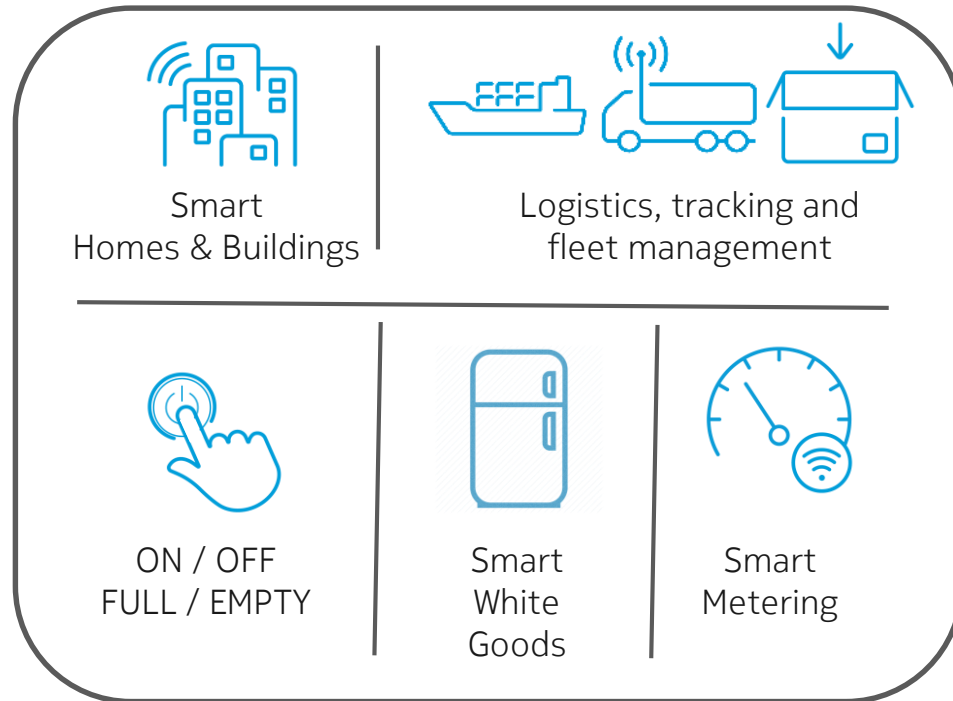
**Critical Communications:** Expected high performance, low latency for mission critical applications.

**Enhanced Mobile Broadband:** For Autonomous Vehicles and Vehicle to Infrastructure / People / Vehicle Communications.

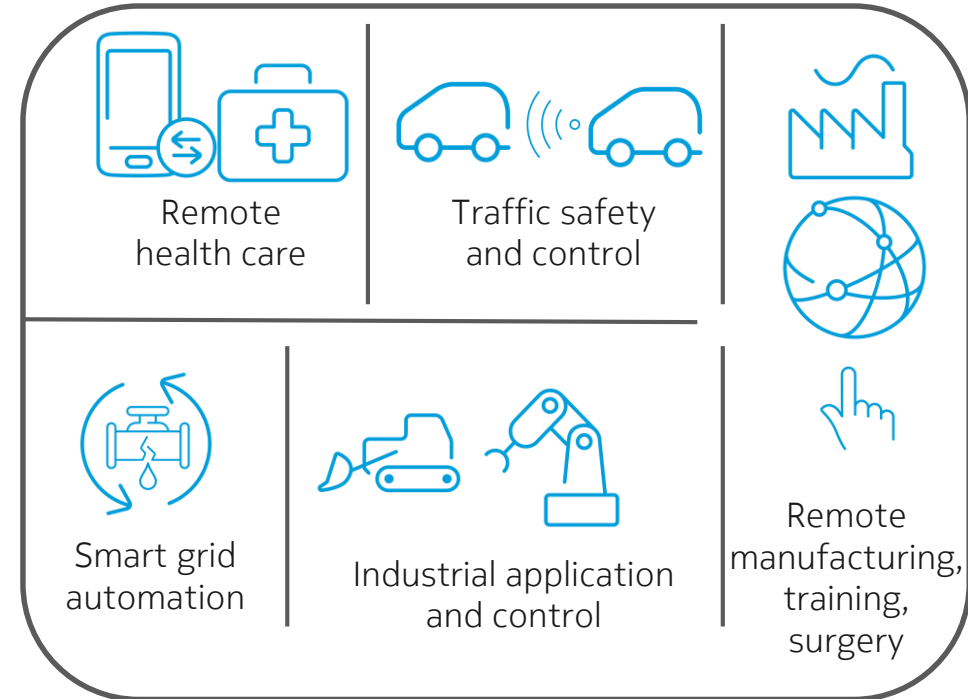


# LTE-M & NB-IoT are Part of Developing 5G Massive IoT Use Cases

## Massive IoT (NB-IoT & LTE-M)



## Critical IoT



Low cost, low energy,  
small data volumes,  
massive numbers

Ultra reliable,  
very low latency,  
very high availability

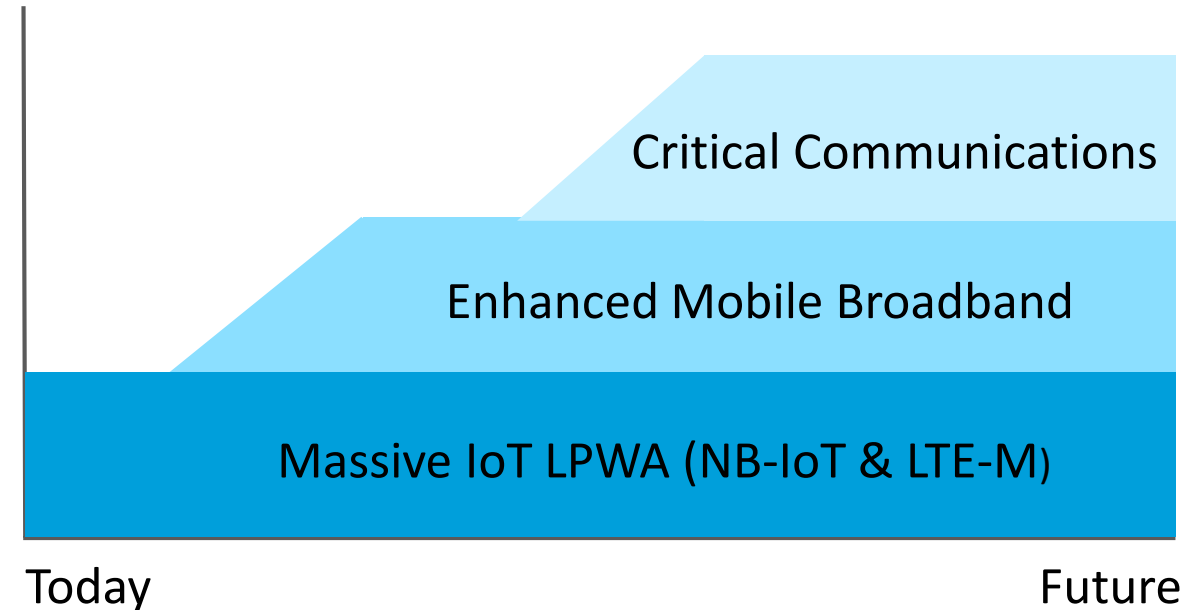


# LTE-M & NB-IoT are here Today

## 123 Massive IoT Commercial Launches\*

Operator	Market	Operator	Market	Operator	Market	Operator	Market
AT&T		Vodafone		Vodafone		Mobitel	
Verizon		Korea Telecom		Vodafone		Telia	
Telstra		China Telecom		Dialog		China Mobile	
Turkcell		LGU+		Vodafone		T-Mobile	
Etisalat		T-Mobile		T-Mobile		T-Mobile	
AT&T		T-Mobile		Telia		T-Mobile	
Orange		China Mobile		China Mobile		Vodafone	
KPN		M1		Vodafone		Singtel	
KDDI		Turkcell		TIM		TDC	
Dialog		Vodafone		Velcom		FarEasTone	
Vodafone		3		Telstra		true	
China Unicom		Etisalat		Orange		Singtel	

## Timeline of Introduction of 5G Components



\* Source: GSMA

# The Scene Revealed for AT&T





AT&T Business