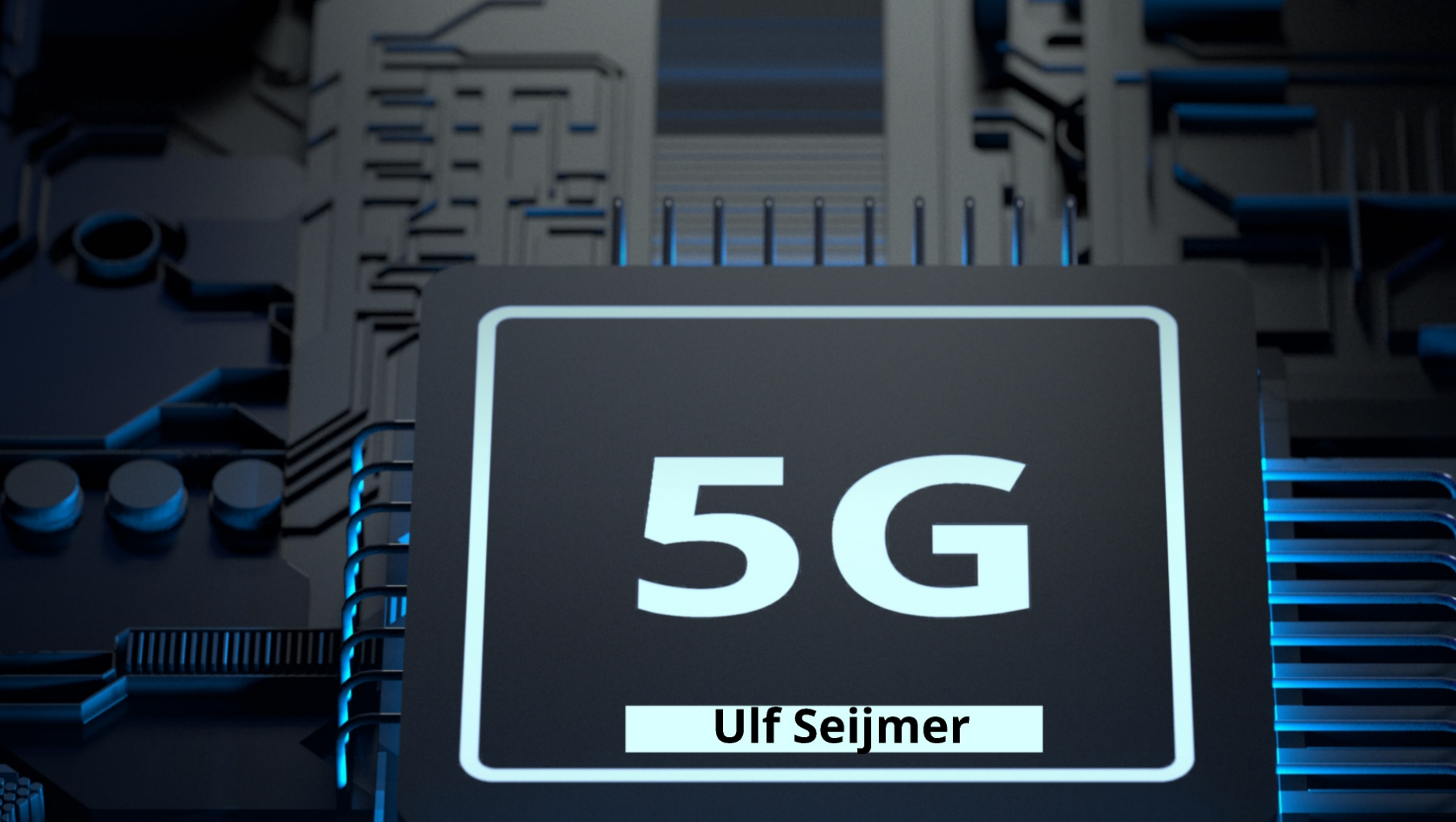
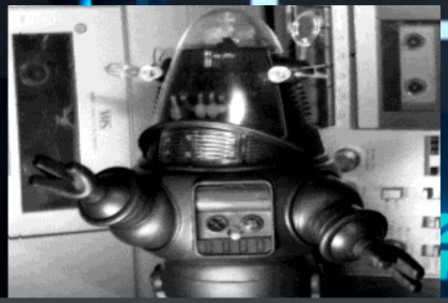

5G
Ulf Seijmer

What is 5G?

Intelligent technology that can connect the world without boundaries.

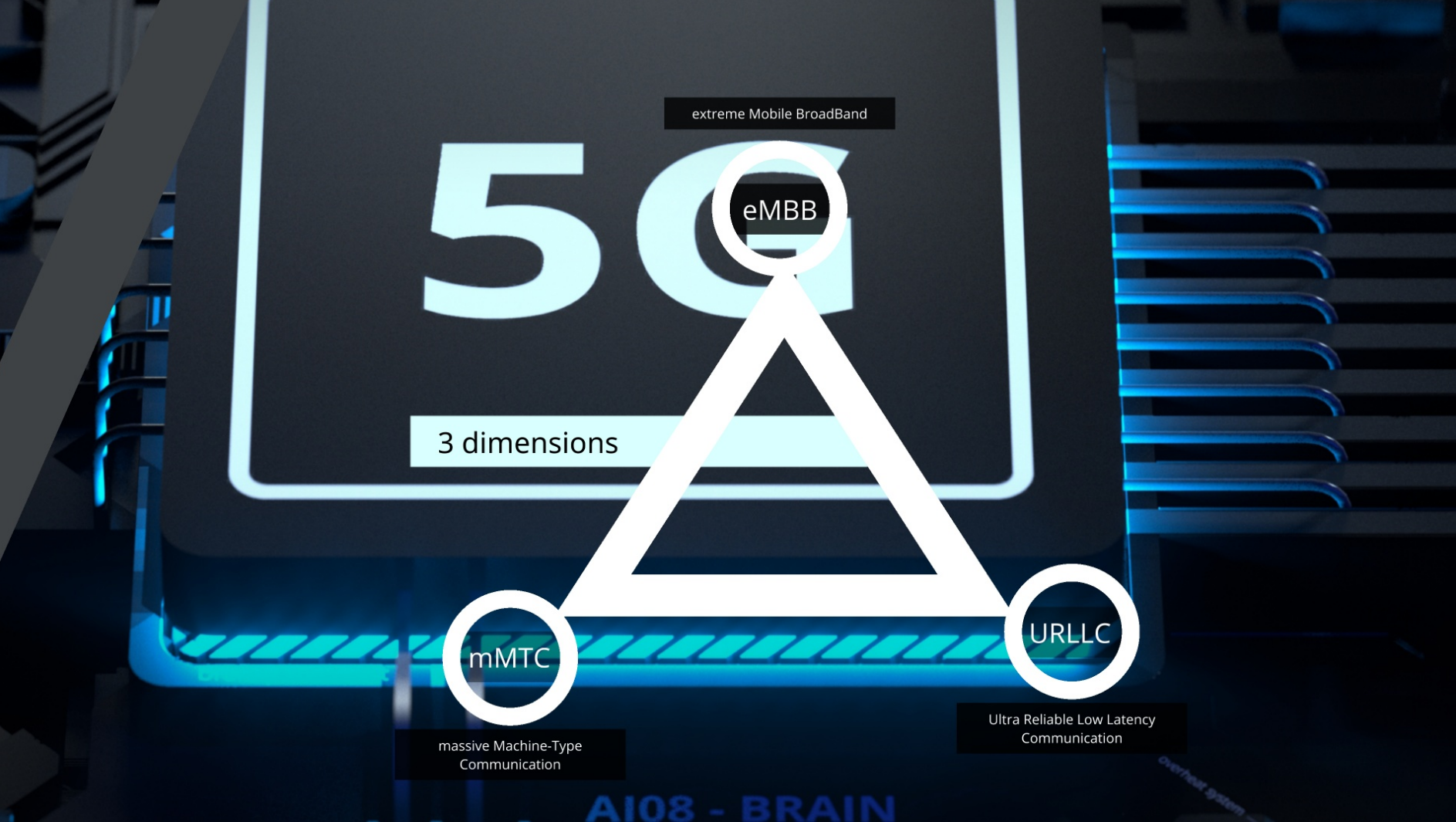


5G expectations

Faster internet access


5G
99,999% availability


1 million units/km2
5G
Massive IoT


5G
extreme Mobile BroadBand
eMBB
3 dimensions
mMTC
URLLC
massive Machine-Type Communication
Ultra Reliable Low Latency Communication


5G
MASSIVE
IoT
AI08 - BRAIN
4th/GEN
host device ID: 2569ch

LoRaWAN vs 5G LPWAN

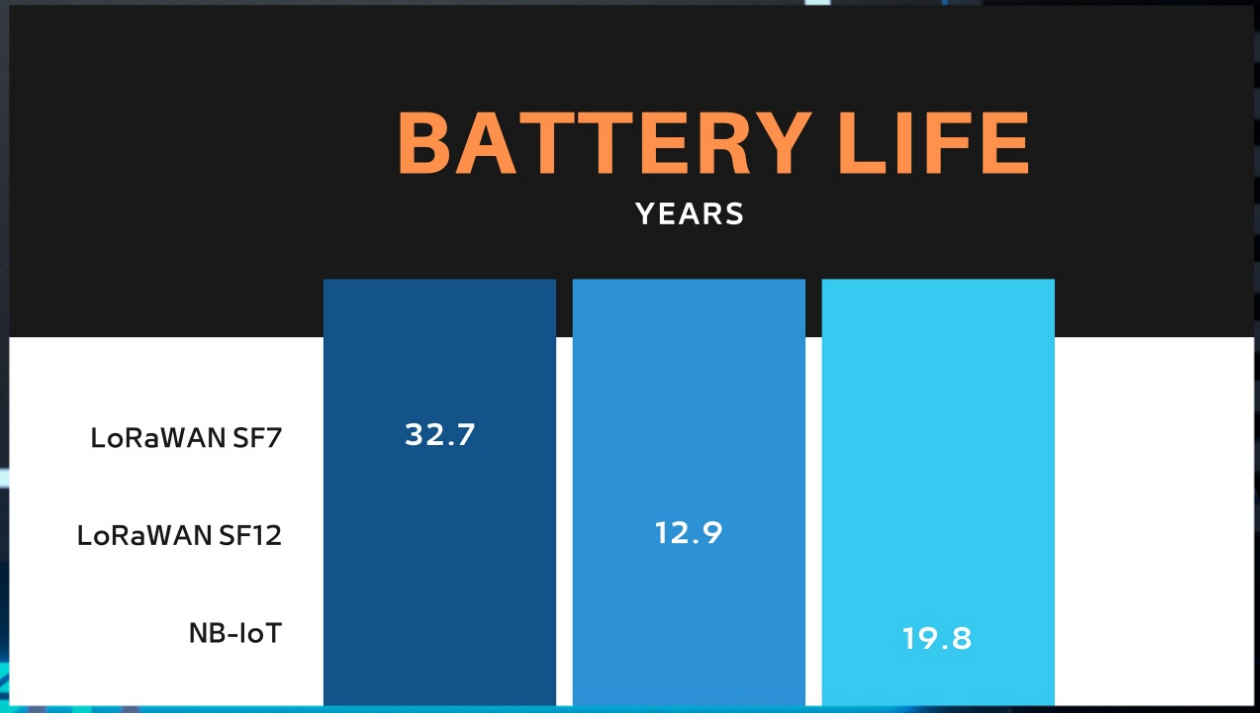
LoRaWAN vs NB-IoT/LTE-M

BATTERY LIFE

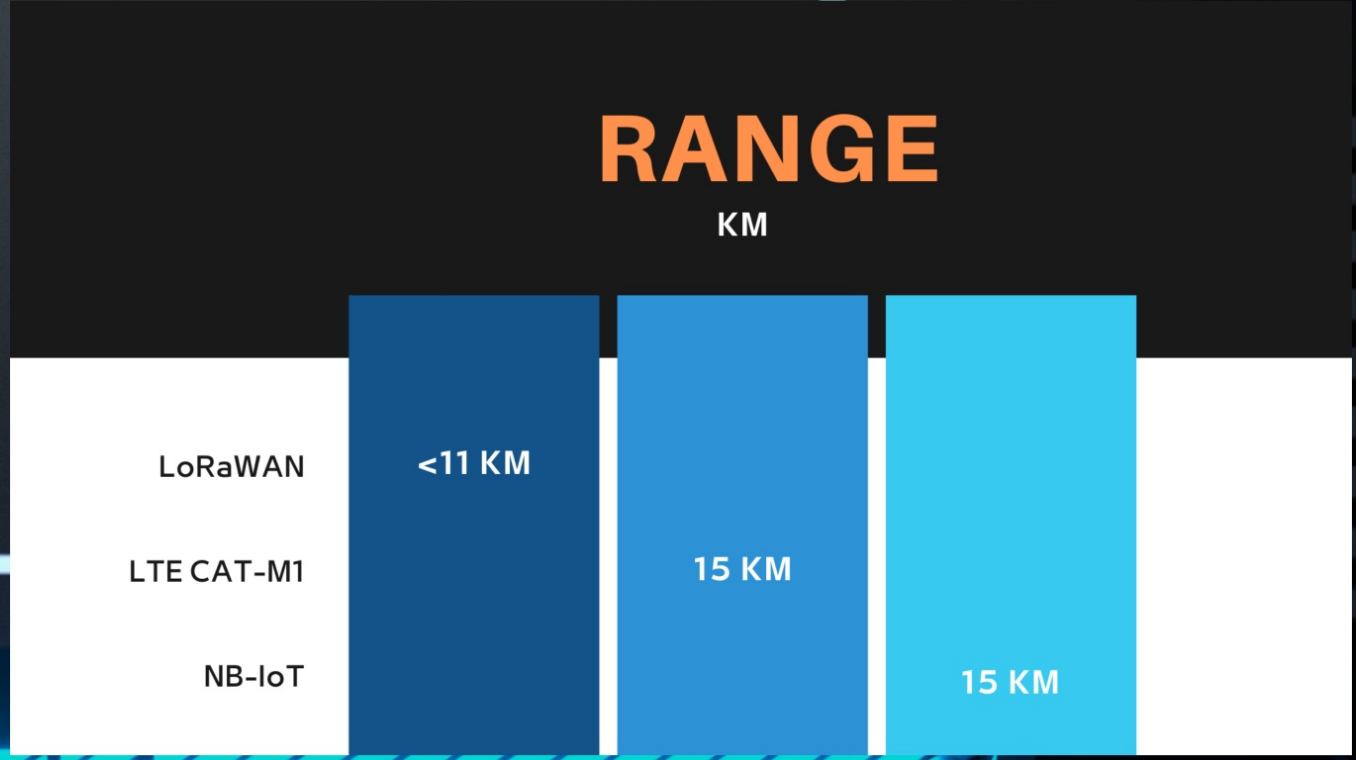
LoRaWAN: Superior low power standard designed for LPWAN with field proven 10-15+ year battery life

NB-IoT/LTE-M: Complex 3GPP protocol tuned down for LPWAN does not meet target performance required for battery constrained use cases

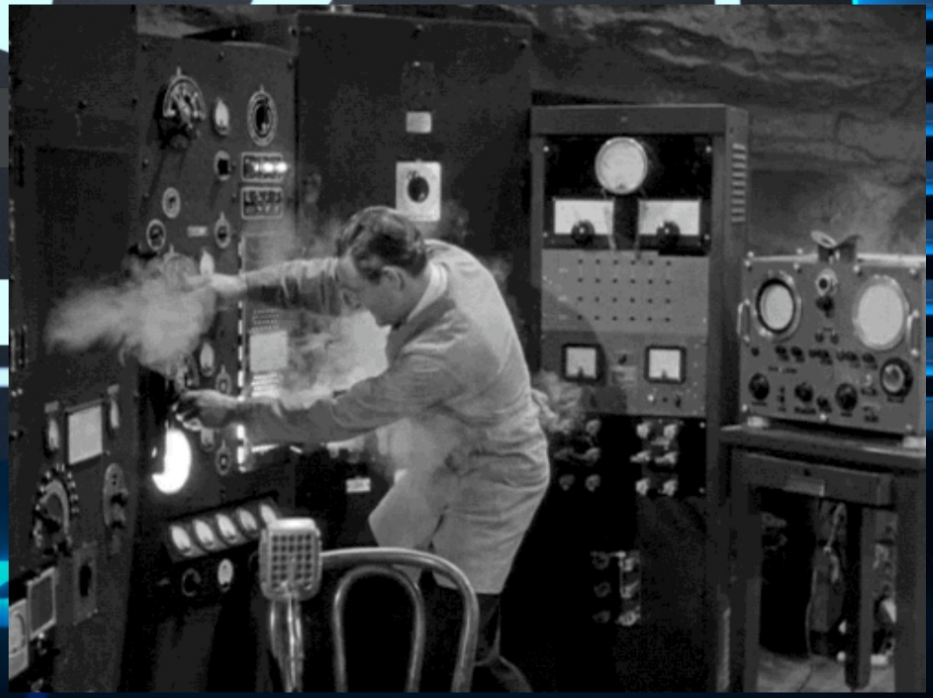

Comparison of LoRa an
IoT in Terms of Power
Consumption
LUNTE TAN
Connectivities, protocols, security and IoT needs: a compass to find a path
Performance of a LPWAN based on LoRa Technology:
Doppler Robustness, Scalability and Coverage
Daizy
Demystifying the Security of LoRaWAN v1.1
Measurement-Based Investigations of the NB-IoT
Uplink Performance at Boundary
Propagation Conditions
Comparison and Analysis
of Security Aspects of
LoRaWAN and NB-IoT
Low Power Wide Area Network
(LPWAN) Technologies
for Industrial IoT Applications
APPENDIX A
LoRaWAN Channel
Plans
LPWAN COMPARISON
Low Energy Consumption with NB-Io
LoRaWAN and Sigfox
WILHELM OELERS & HARALD NAUM
Avtal Robust & säker IoT version 1.0
Security Issues in Internet of Things: Vulnerability
Analysis of LoRaWAN, Sigfox and NB-IoT
A comparative study on various LPWAN and cellular
communication Technologies for IoT based Smart
Applications
Coverage Analysis of LTE-M
Category-M1
LoRaWAN® Roaming
Alper Yegin, Actility
Connecting Wireless Dat
Deploying IoT Everywhere
OT/M2M
COOKBOOK
How to develop a device based on
Wireless Wide Area Network modules
HARALD NAUMANN
LoRa®
The leading provider for cameragrade LPWA Network



KTH, Royal Institute of Technology Stockholm, “Degree Project In Electrical Engineering, Comparison of LoRa and NBIoT in Terms of Power Consumption”



University in Lund, Faculty of Engineering Low Power Wide Area Network (LPWAN) Technologies for Industrial IoT Applications



It is no magic; it is just LPWAN

There must be a difference?

LoRaWAN

VS

5G

LoRaWAN	5G

LoRaWAN

5G

More devices

Devices

Democraticed

Easily available

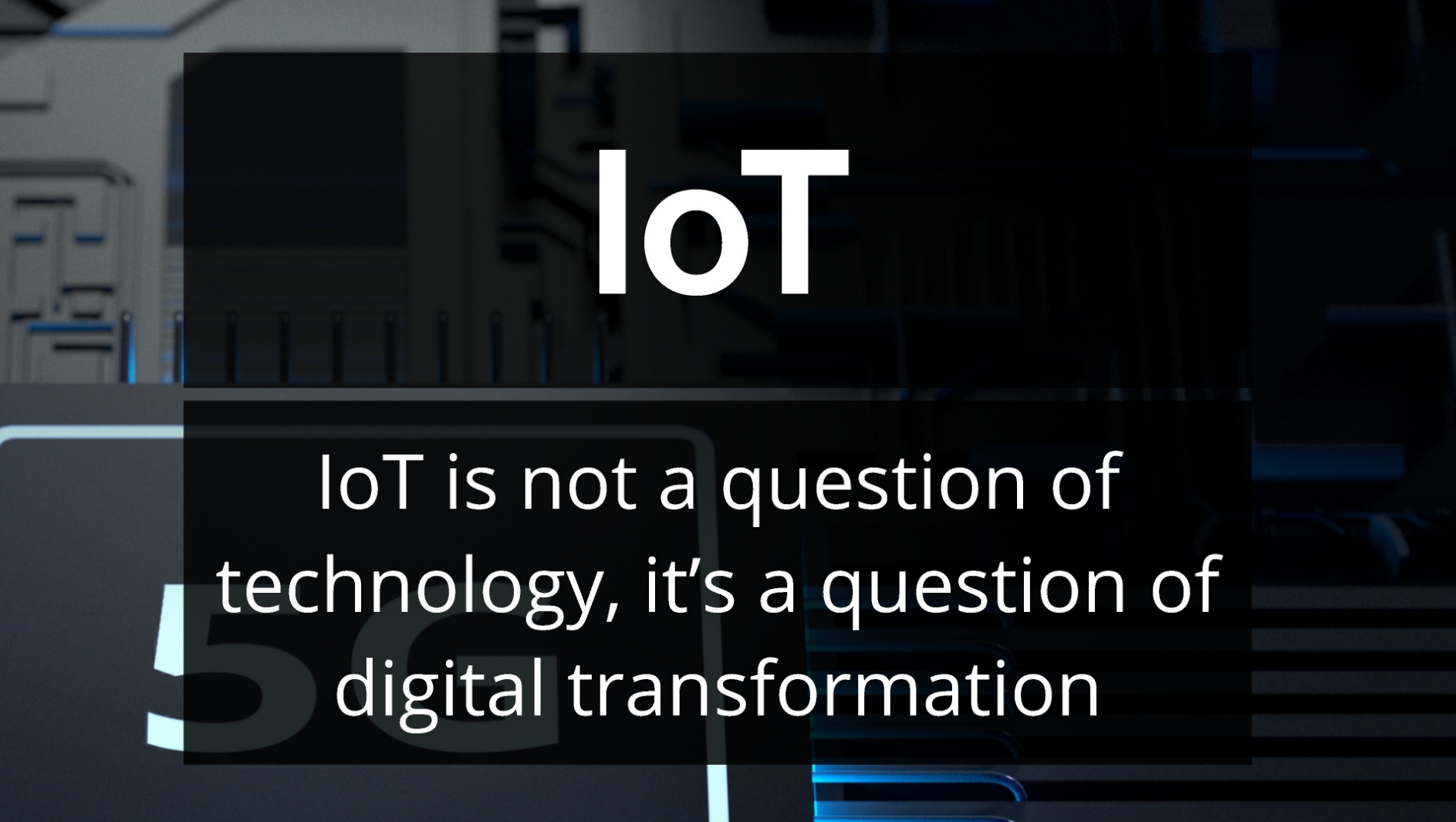
Secure		More secure
Payload limitations		Unlimited payload
FOTA problematic		FOTA

Free band

Licensed band

Affordable private networks

More private private networks

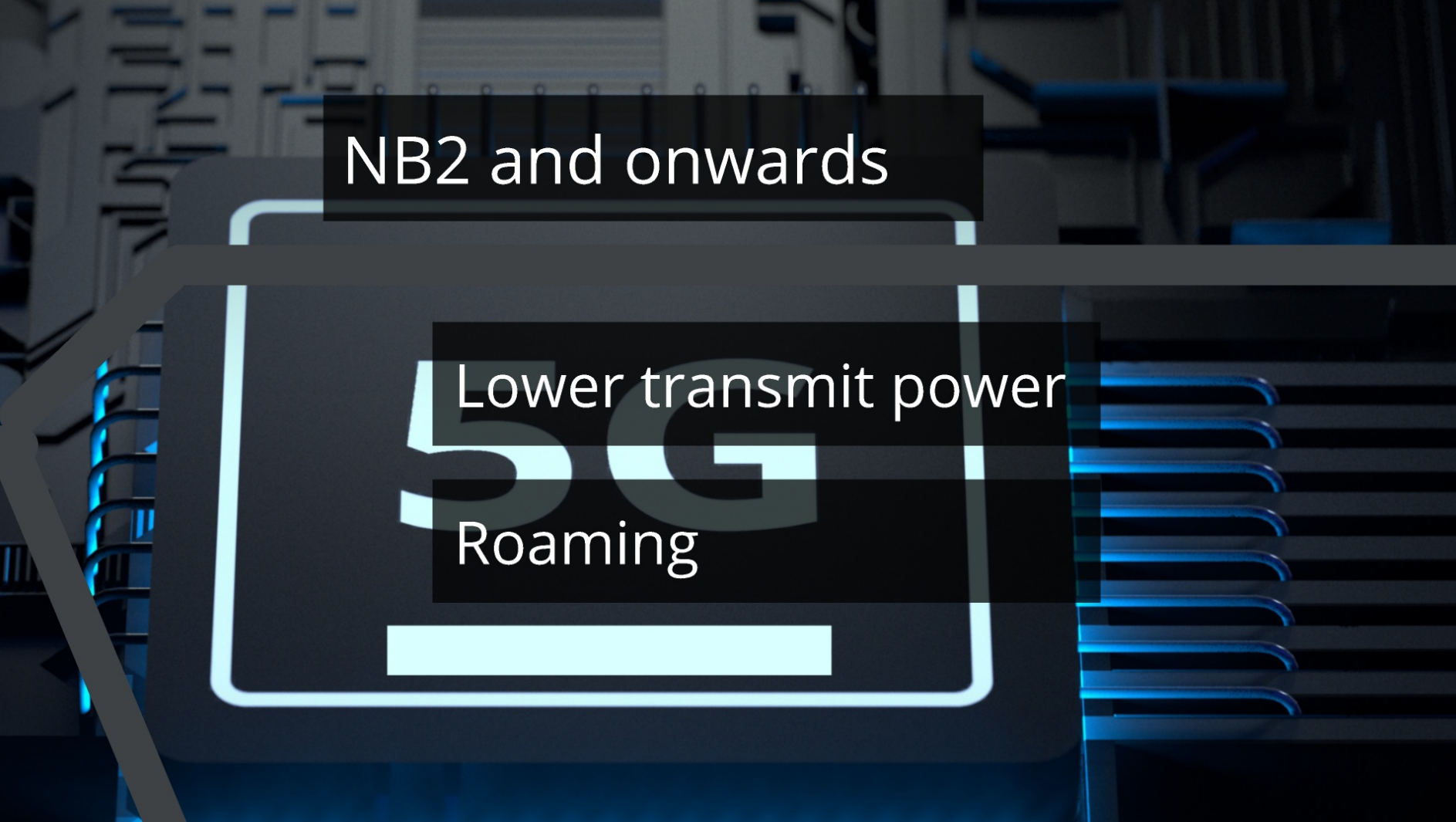

IoT
IoT is not a question of technology, it’s a question of digital transformation

Massive IoT what is next?

5G NR+ -w/o base stations

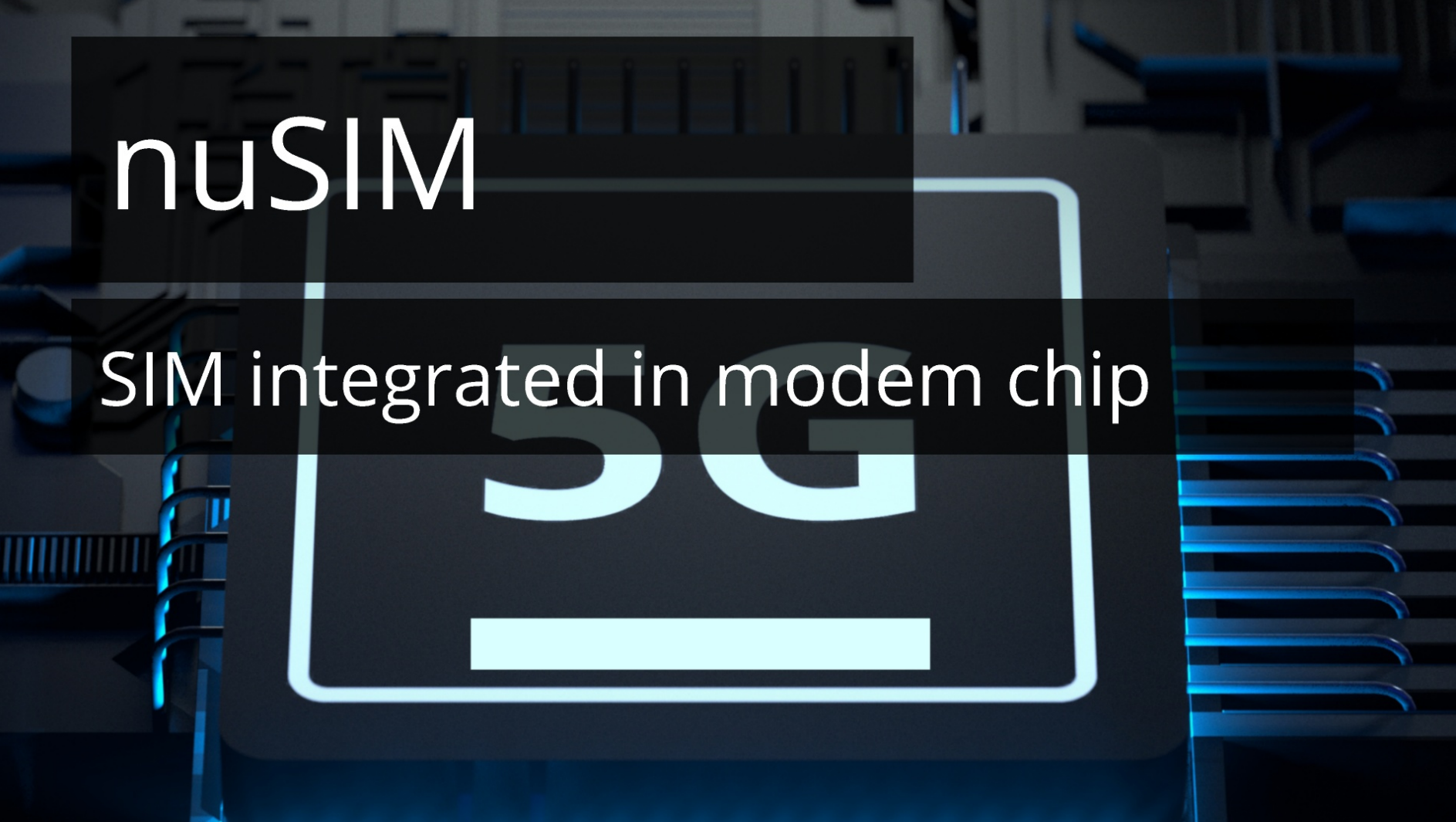
DECT-bands

Non-cellular 5G


NB2 and onwards
Lower transmit power
Roaming

nuSIM

SIM integrated in modem chip




5G
30 trillion devices
AI08 - BRAIN


LET'S BREAK THE WORLD RECORD.