5G: Managing component-level risks to commercial success

A Webinar by Omdia

#5GBigBang

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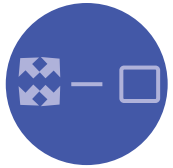

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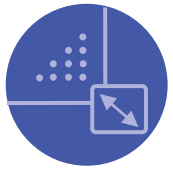

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Today's speakers

Julian Watson
Principal Analyst, IoT
Omdia (formerly IHS Markit | Technology)

Scott Klettke
Director, Connectivity Business Development & Product Management
Murata

Allen Tatara
Senior Manager, Webinar Events (Moderator)
Omdia (formerly IHS Markit | Technology)

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01 Market trends

02 Problems and challenges

03 New options and solutions

04 Murata approach

05 Conclusions

06 Audience Q&A

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5G’s momentum is building quickly

Networks ramping up

61 commercial 3GPP-compliant launches across 34 countries in 2019

- 49 mobile launches
- 34 FWA or home broadband services

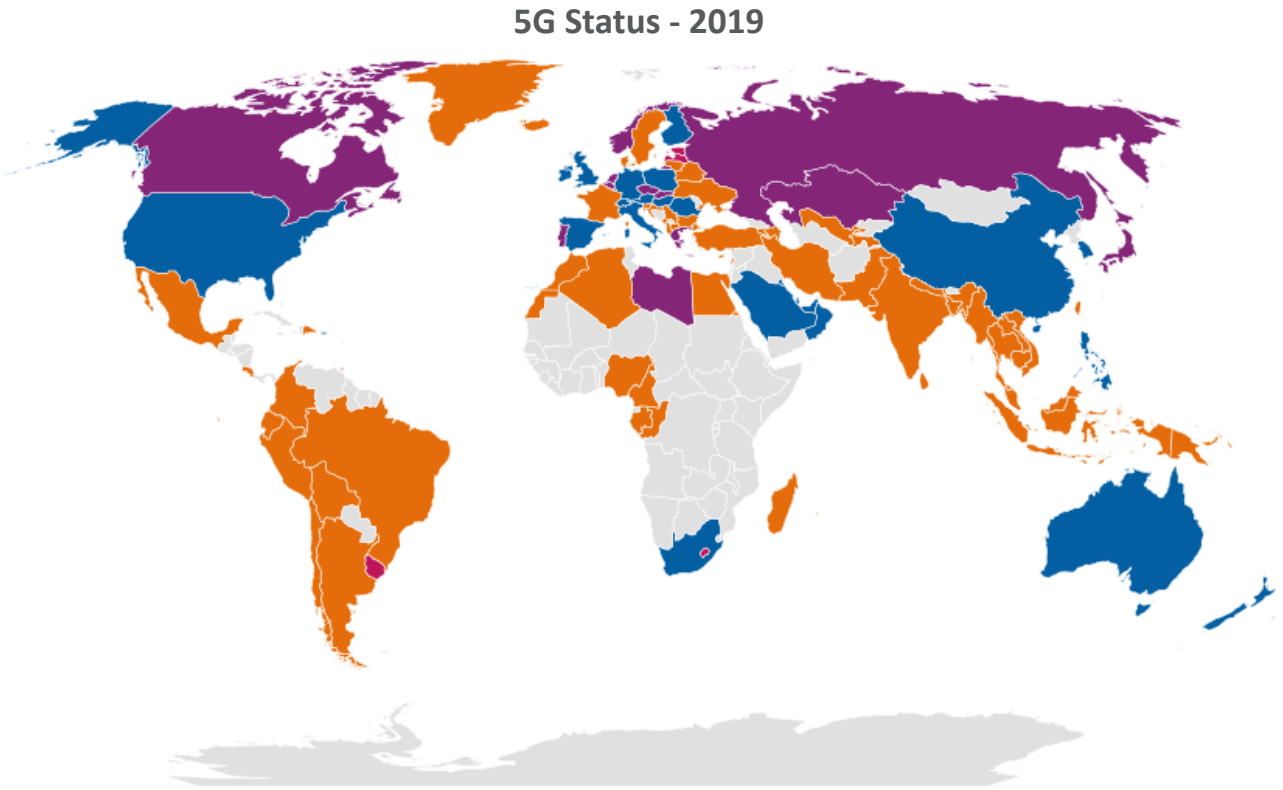
348 operators across 119 countries investing in 5G (2019)

Device range expanding

January 2020: over 200 announced devices across 16 form factors by 78 vendors

60 devices commercially available, including 35 smartphones

Around two-thirds of the 200 announced devices support sub-6GHz; around 29% mmWave



Source: GSA

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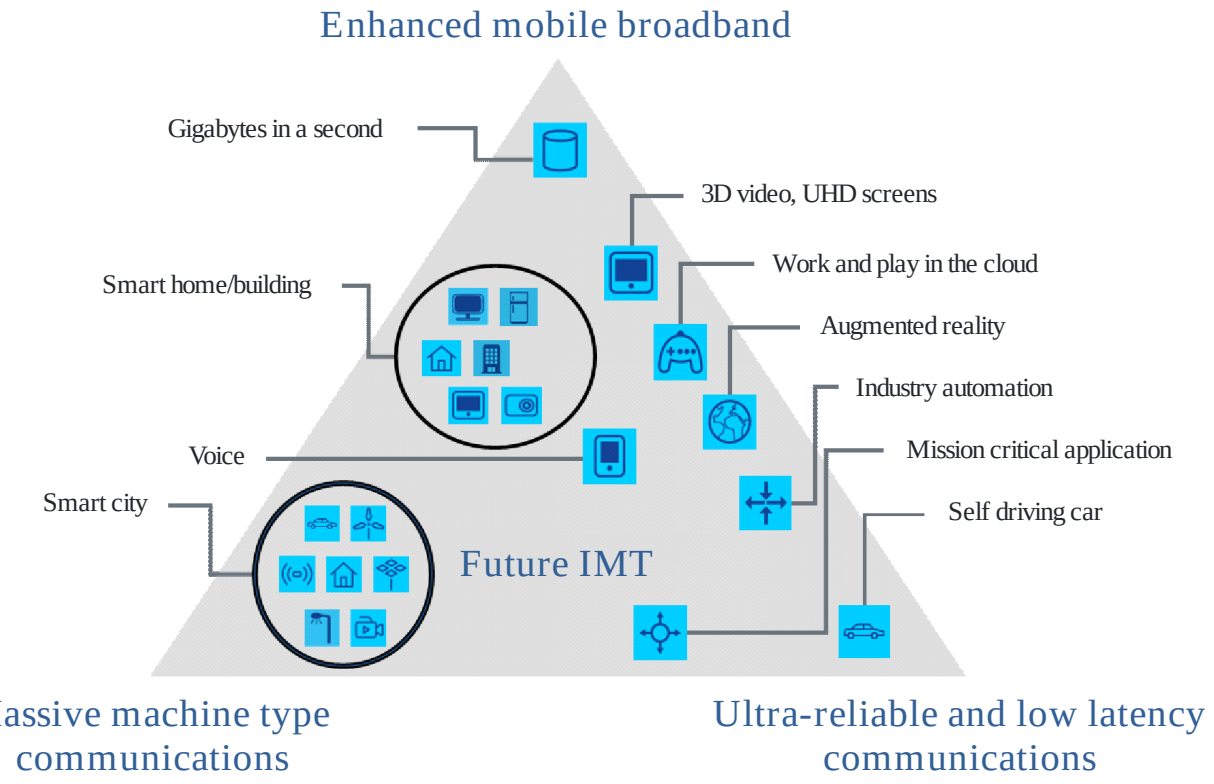
Today it’s an enhanced mobile broadband (eMBB) world, moving gradually to Massive IoT and uRLLC

Today’s commercial 5G networks, based on 5G NR (New Radio) Non-Standalone (NSA) are primarily targeted at consumer eMBB use cases like smartphone-based 4K video streaming, cloud gaming and FWA

5G Massive IoT will build on low power capabilities of LTE-based NB-IoT and LTE-M (from 3GPP Release 13); there are now over 90 NB-IoT commercial networks across 60+ networks and over 100 million subscribers (mostly in China)

uRLLC 5G will serve mission critical services (MCS) and applications that have largely not been served by previous generations of cellular due to stringent performance requirements (latency, availability, throughput)



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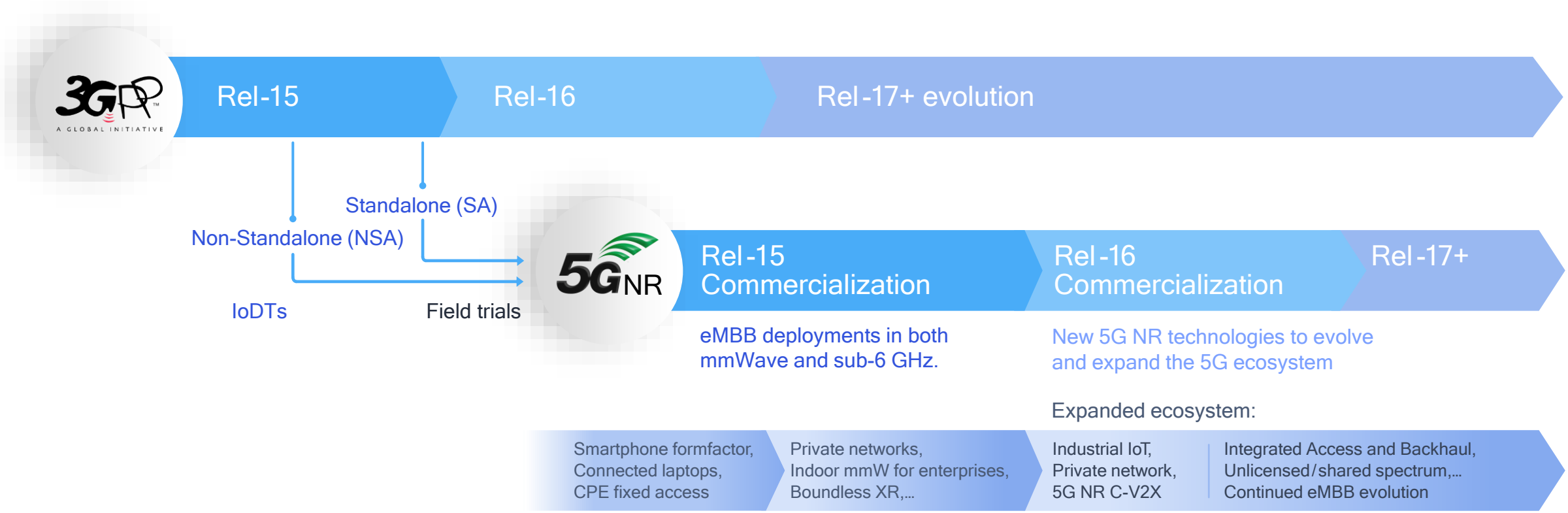
We are at Rel. 16, quickly moving to Rel.17



At the core of the 5G foundation, LTE will continue to evolve in parallel; it's Long Term Evolution after all!

2017 2018 2019 2020 2021 2022 2023+

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5G can address many verticals and applications

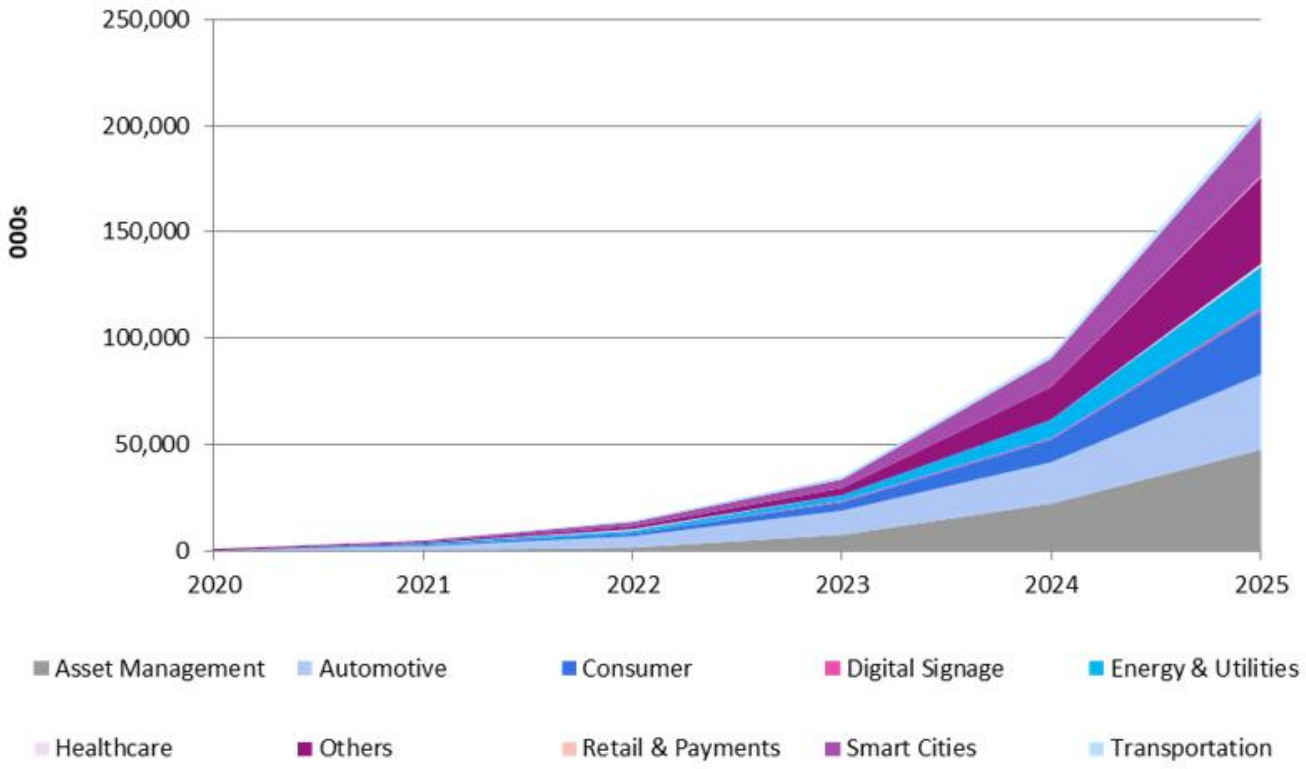
As with previous generations of cellular, 5G will start with the smartphone: in 2020 5G smartphone shipments will exceed 200 million – over 10% of handsets shipped
(source: Omdia Smartphone Intelligence Design Database – Q4 2019)

5G - Massive IoT will come into play in 2020 and will particularly address asset management, smart cities, energy and utilities and consumer use cases

5G C-V2X will reach beyond automotive (light vehicles) into transportation and smart cities

5G uRLLC will see module and device shipments from 2023 with modest volumes: extensive industrial proof-of-concepts and trials will be needed

Global 5G connections by application



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To realize 5G's benefits, the ecosystem must address both technical and commercial challenges

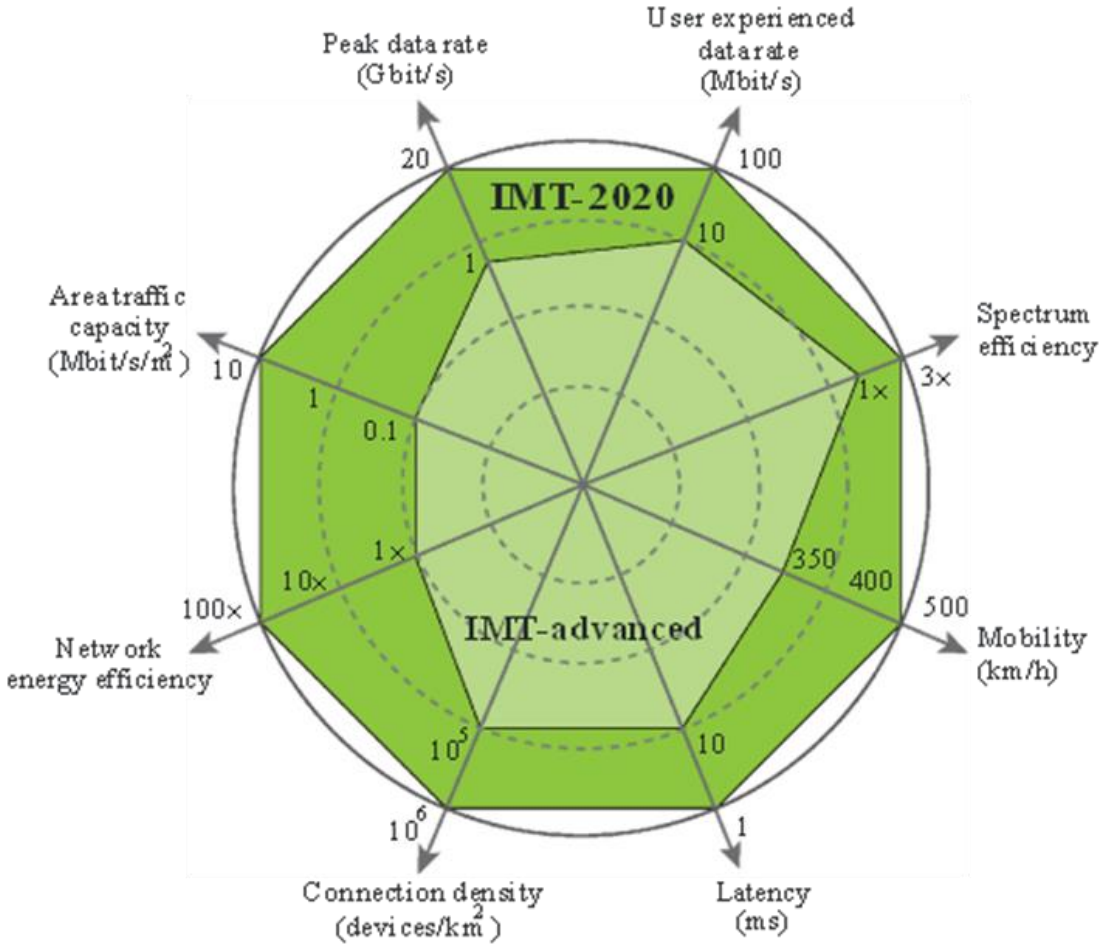
Realizing the potential benefits of 5G means addressing both technical and commercial challenges.

Among the main technical challenges:

- Scalability
- Thermal management
- Miniaturization
- Long battery life for Massive IoT
- Low latency for MCS applications

Technical and commercial challenges are intrinsically related:

- Monetization of 5G Massive IoT will be about battery/device lifespan, not data volumes
- Monetization of 5G MCS will be based on meeting specific performance KPIs (availability, latency)



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01 Market trends

02 **Problems and challenges**

03 New options and solutions

04 Murata approach

05 Conclusions

06 Audience Q&A

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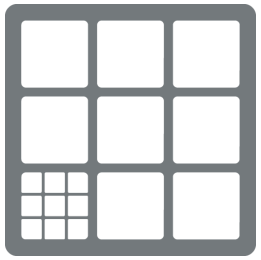
5G challenges



Scalability

Thermal management

Miniaturization

Extended battery life

Low latency

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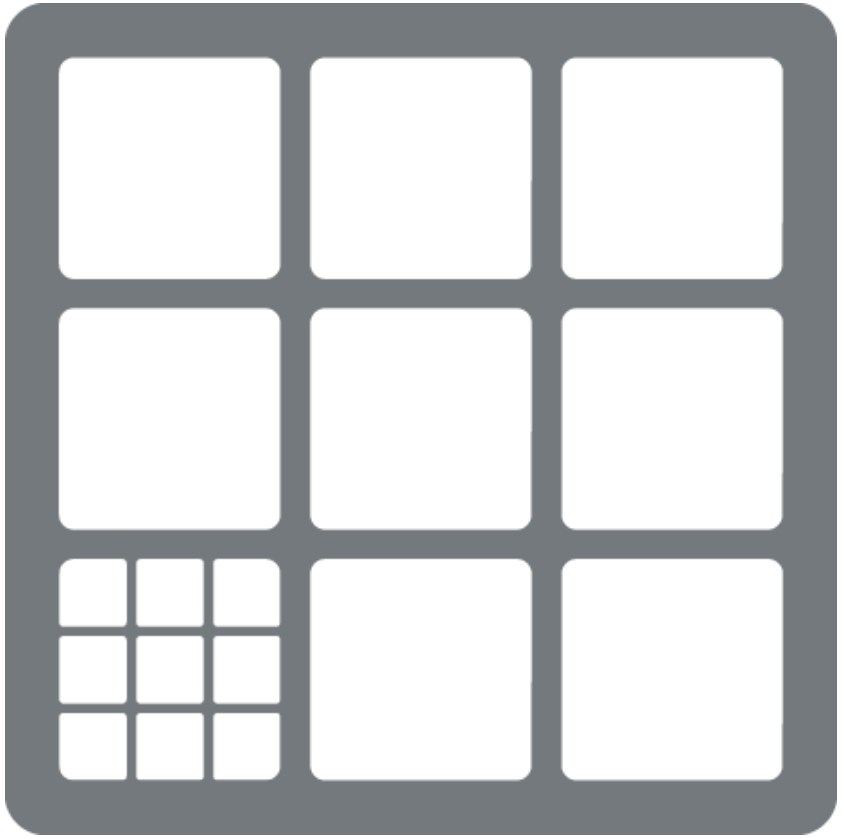
Scalability



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Scalability

For small installations

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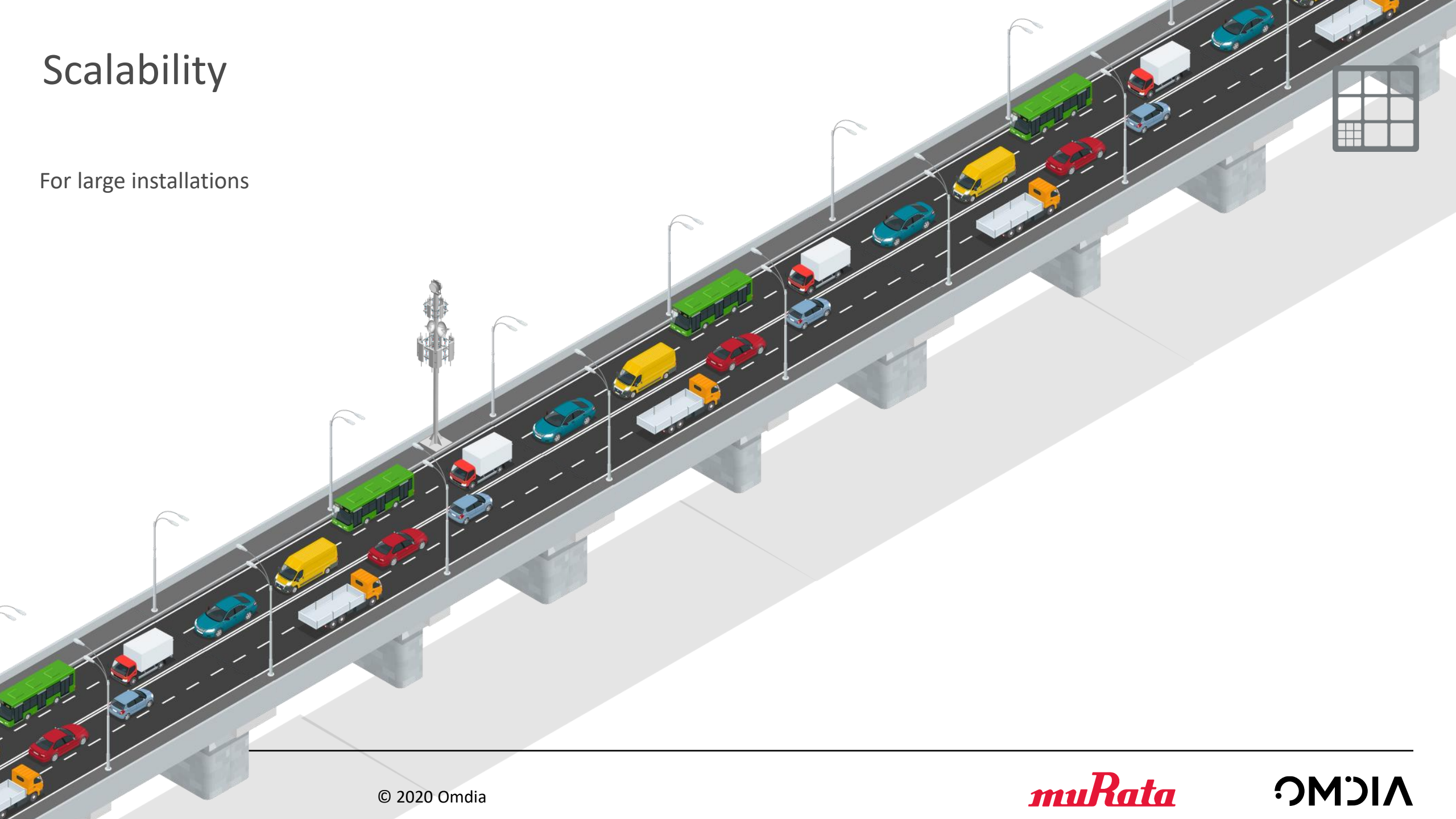
Scalability

For large installations



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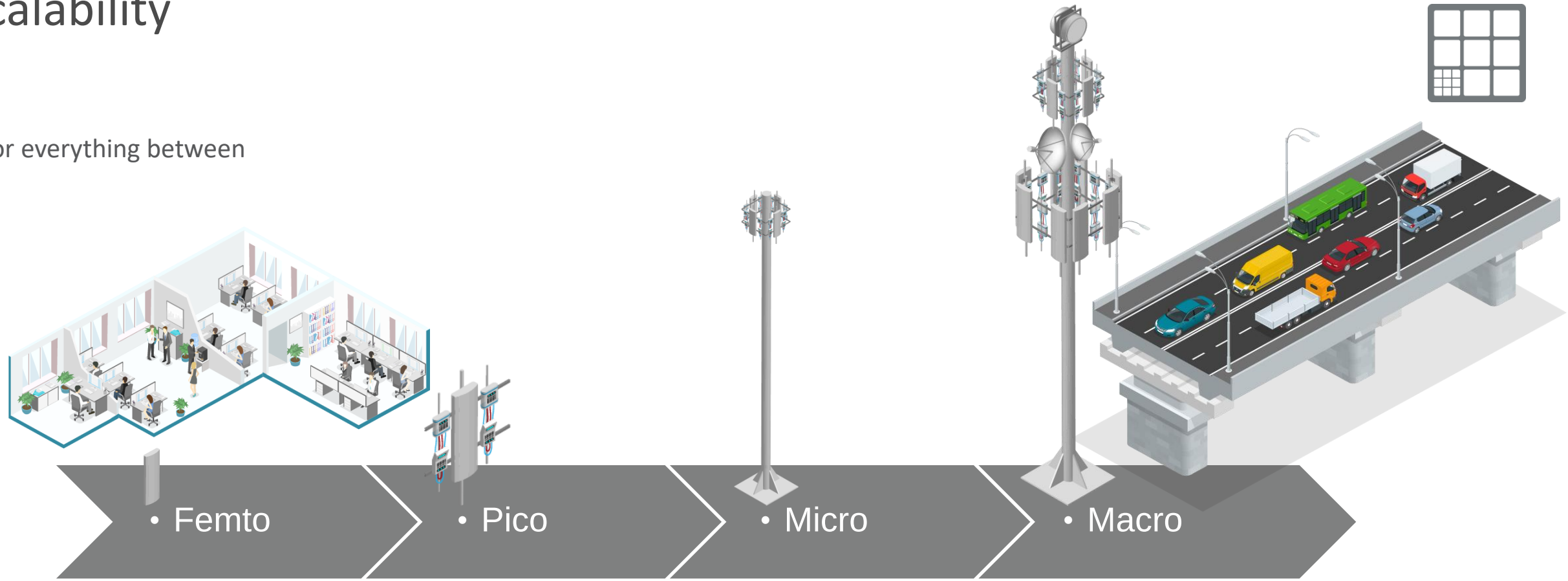
Scalability

For everything between



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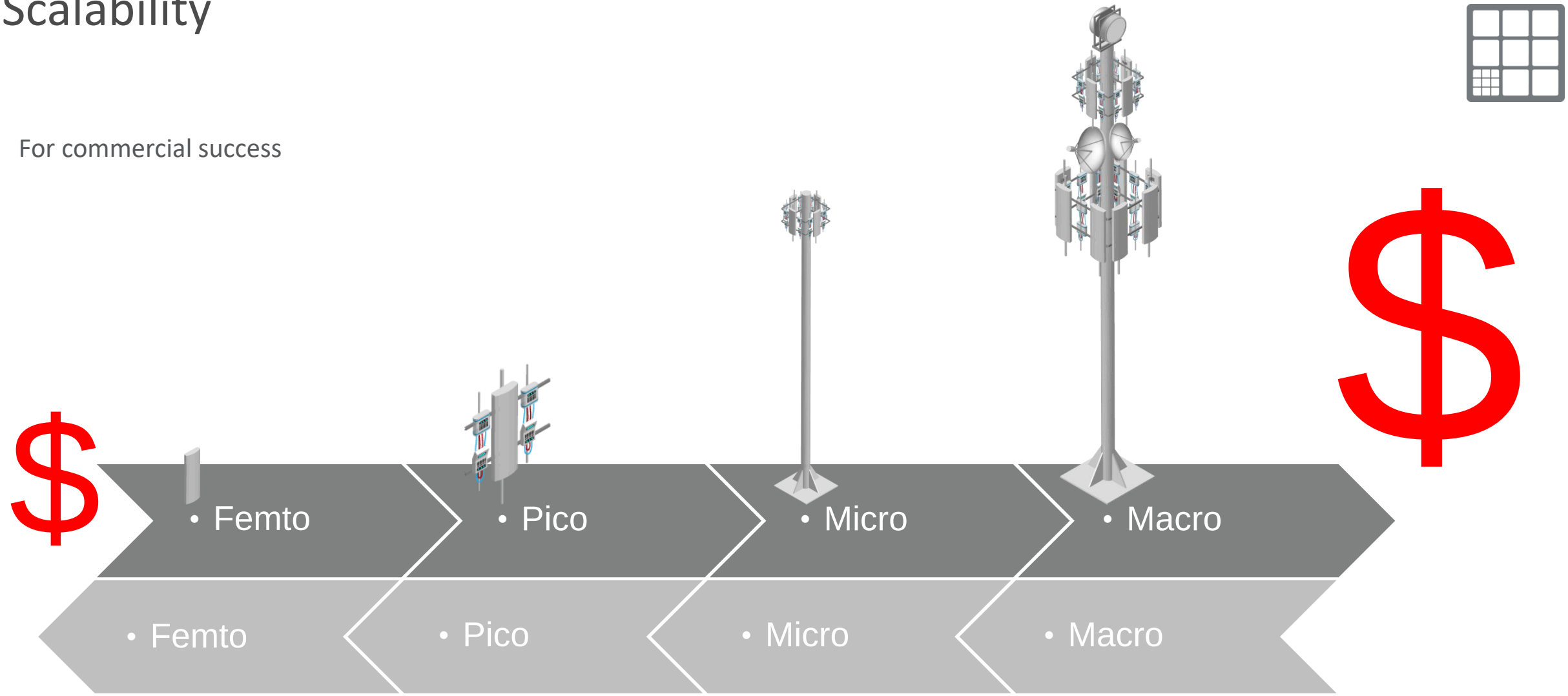
Scalability

For commercial success



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Thermal management

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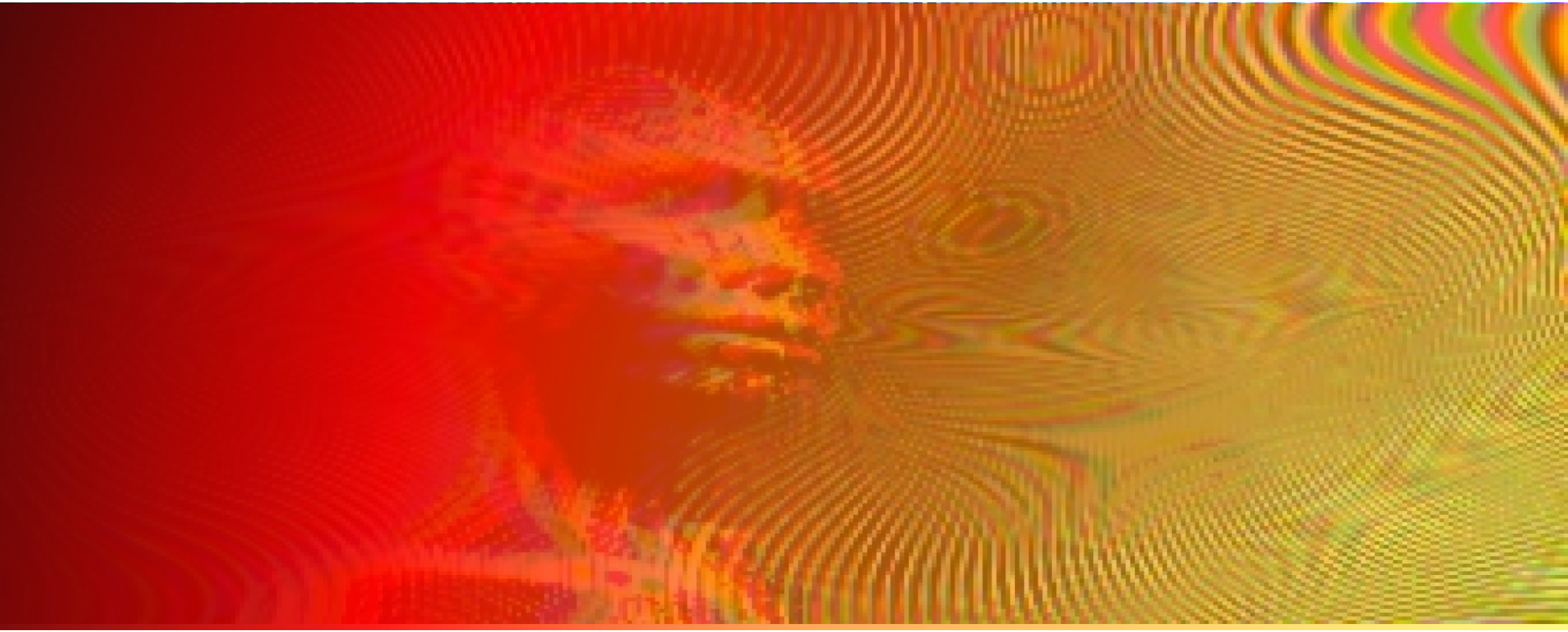

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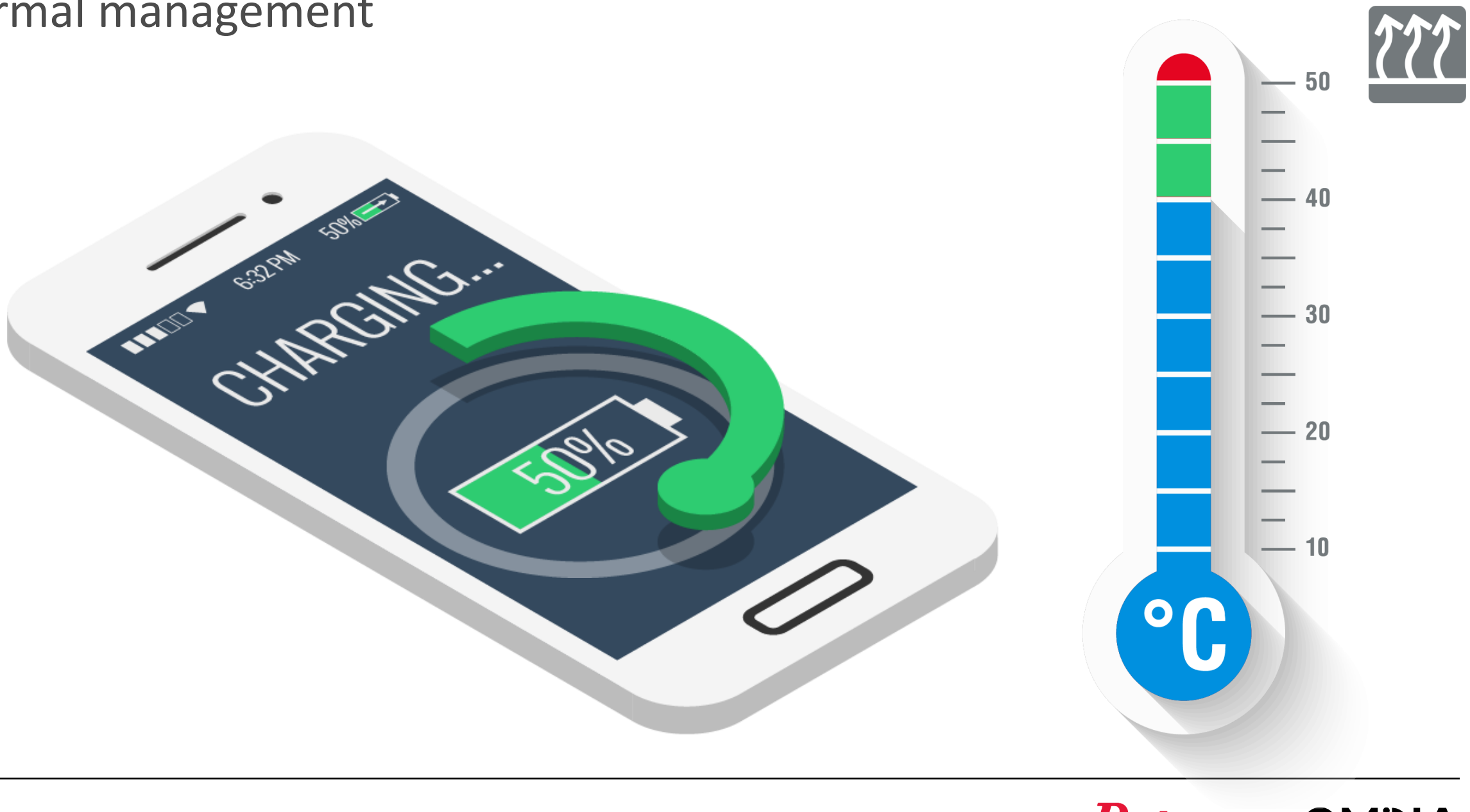

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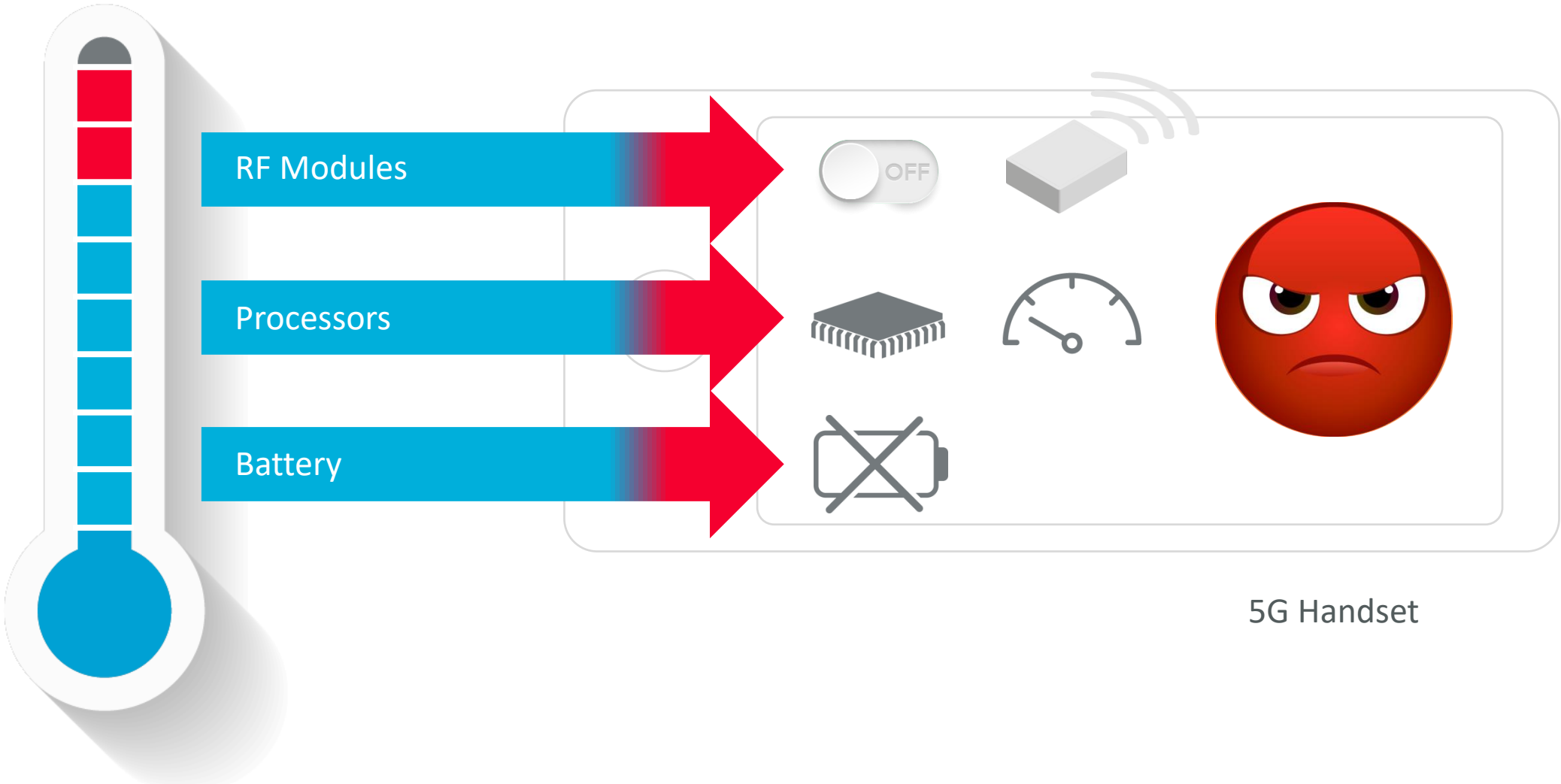

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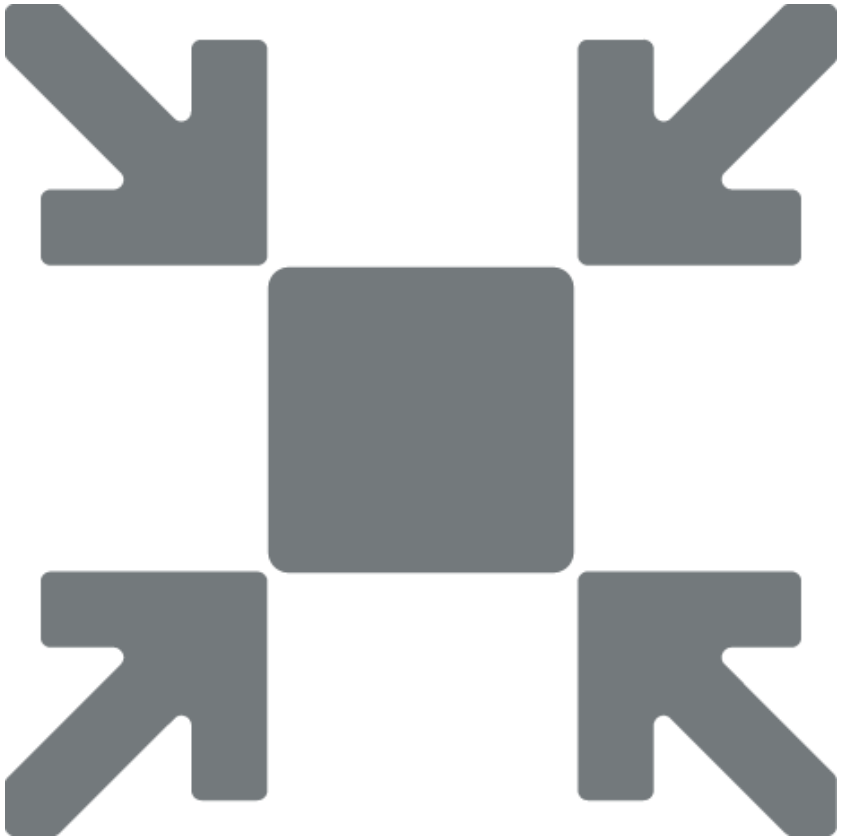

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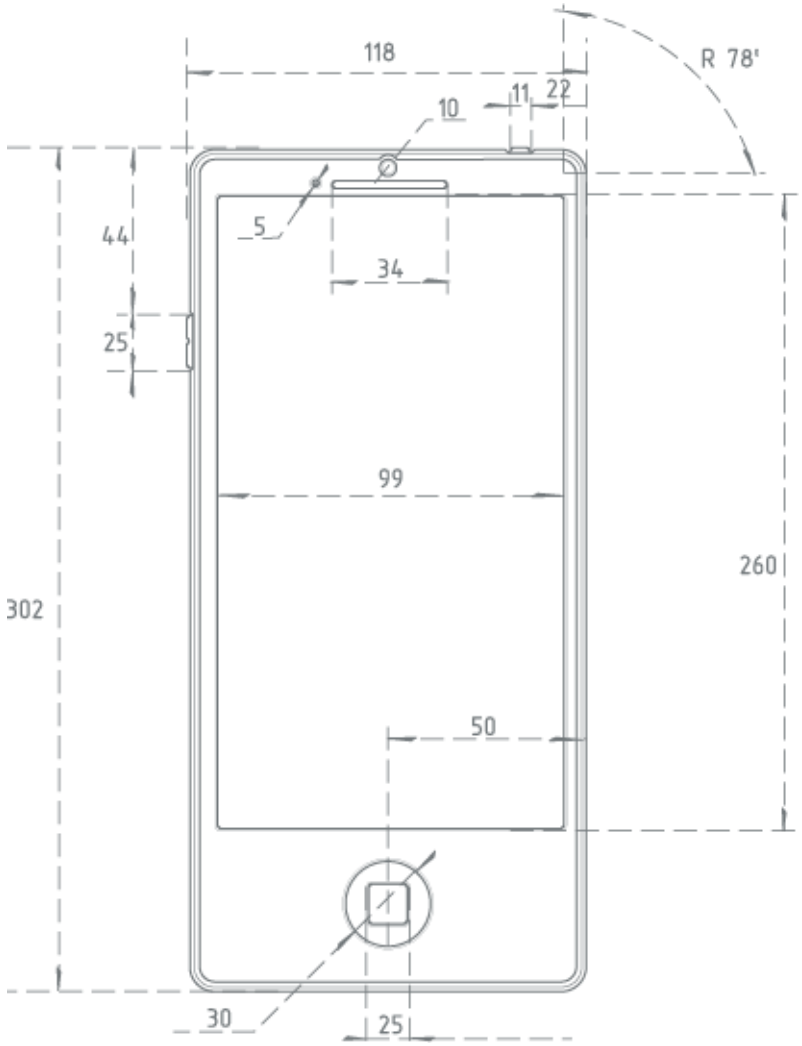

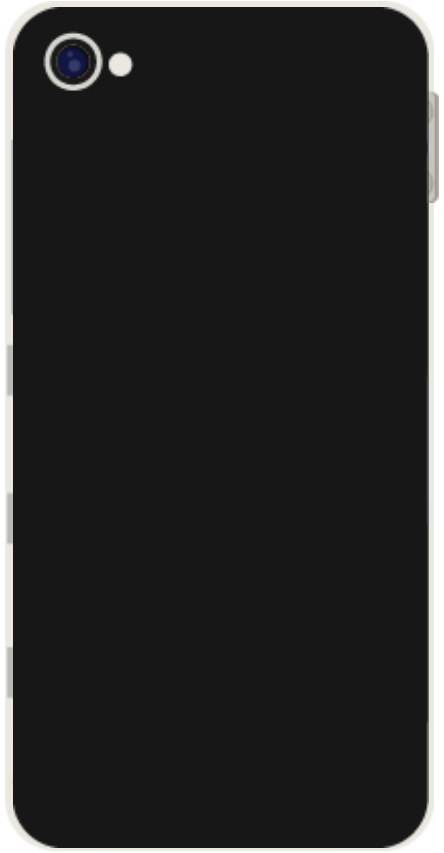

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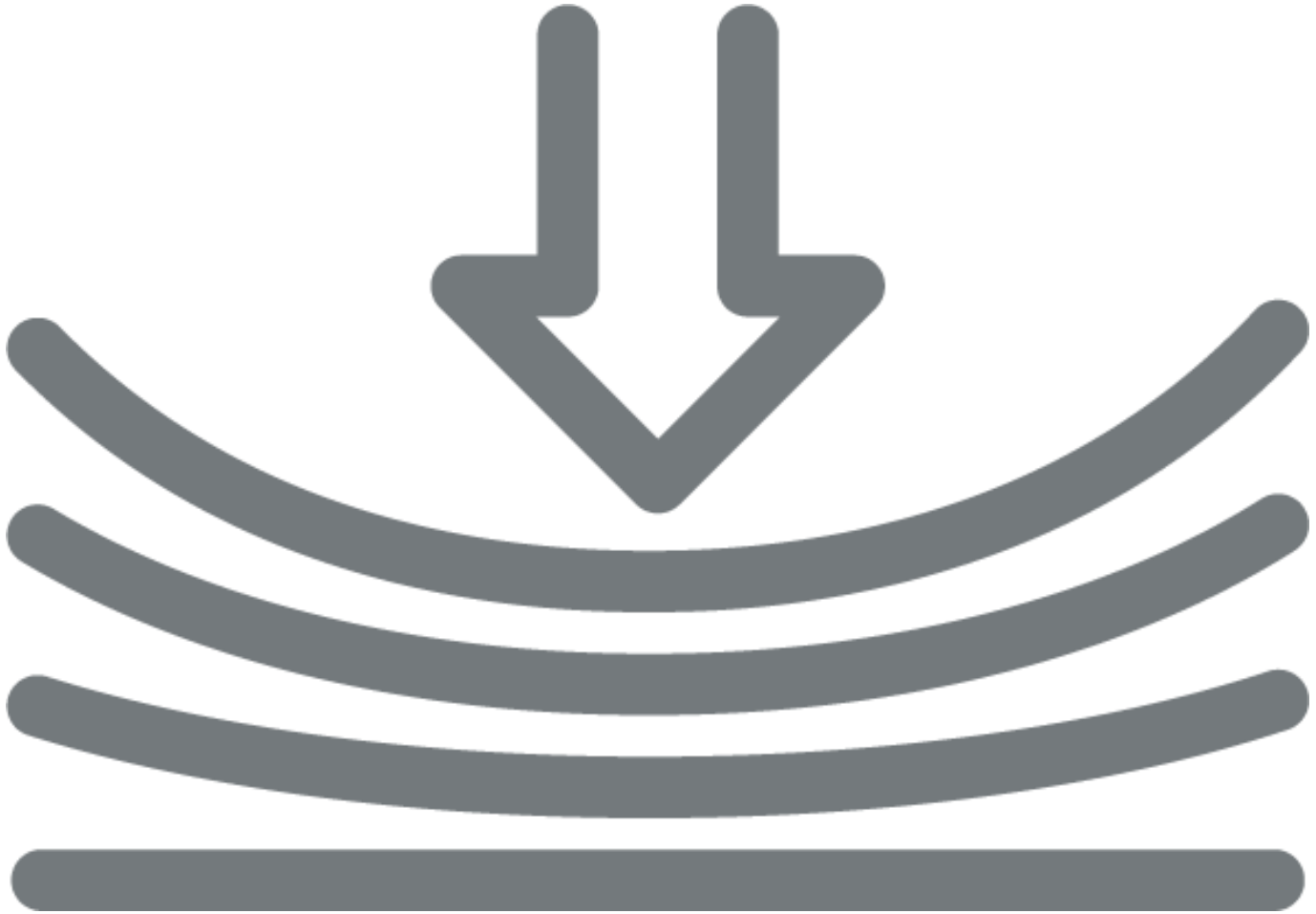

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Extended battery life

NB-IoT

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Extended battery life

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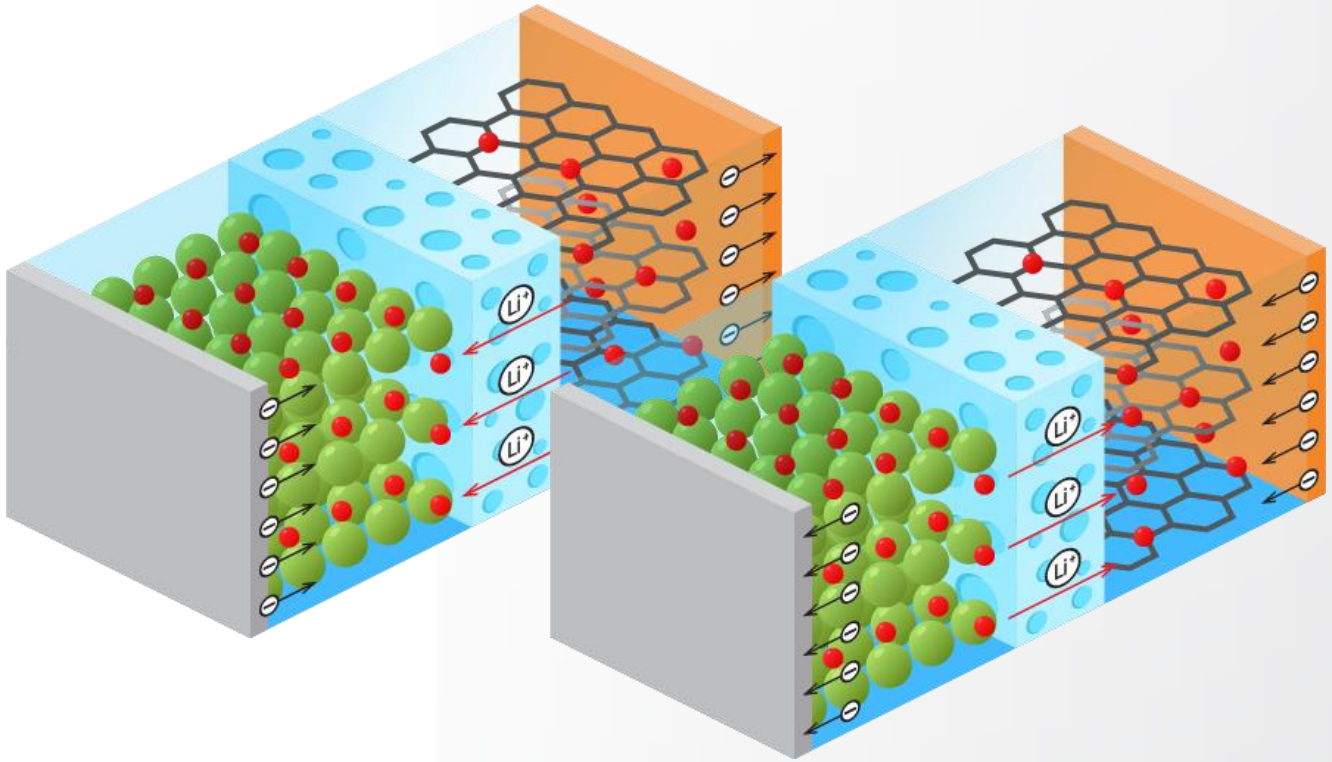
Extended battery life



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Low latency

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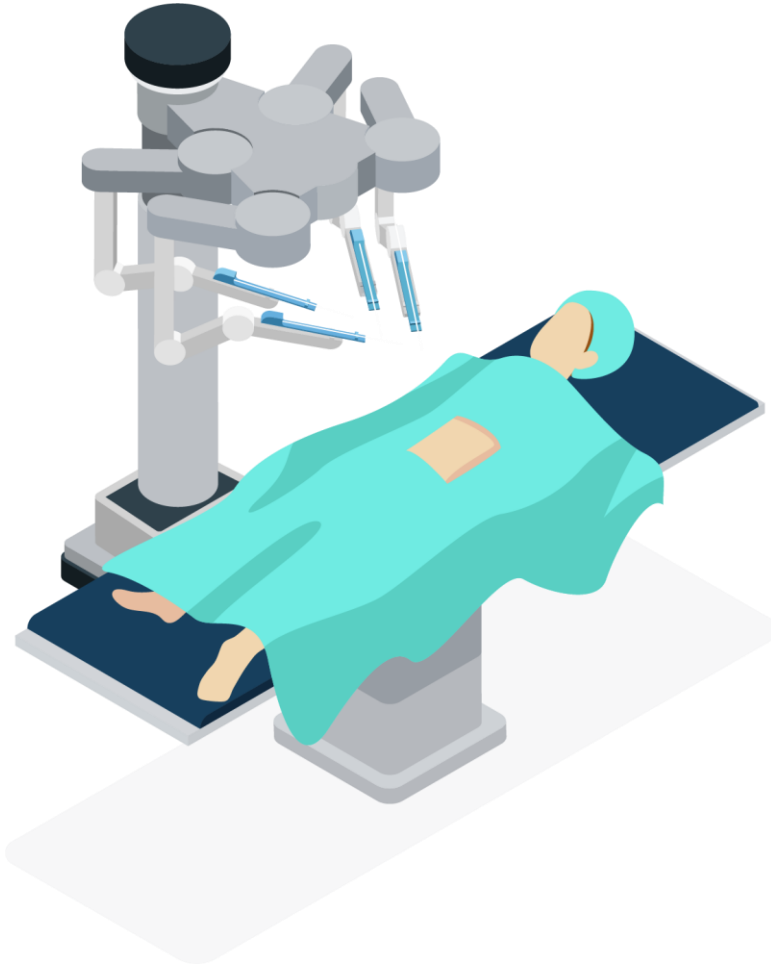
Low latency



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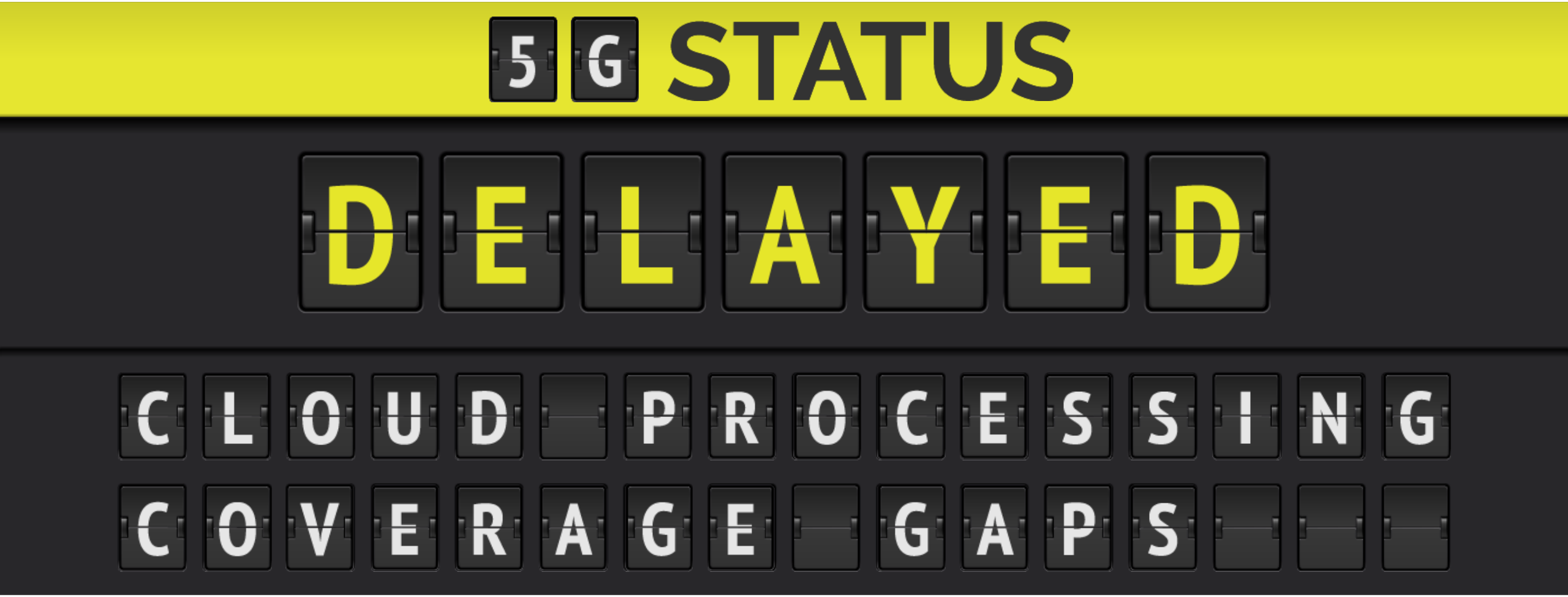
Low latency



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02 Problems and challenges

03 New options and solutions

04 Murata approach

05 Conclusions

06 Audience Q&A

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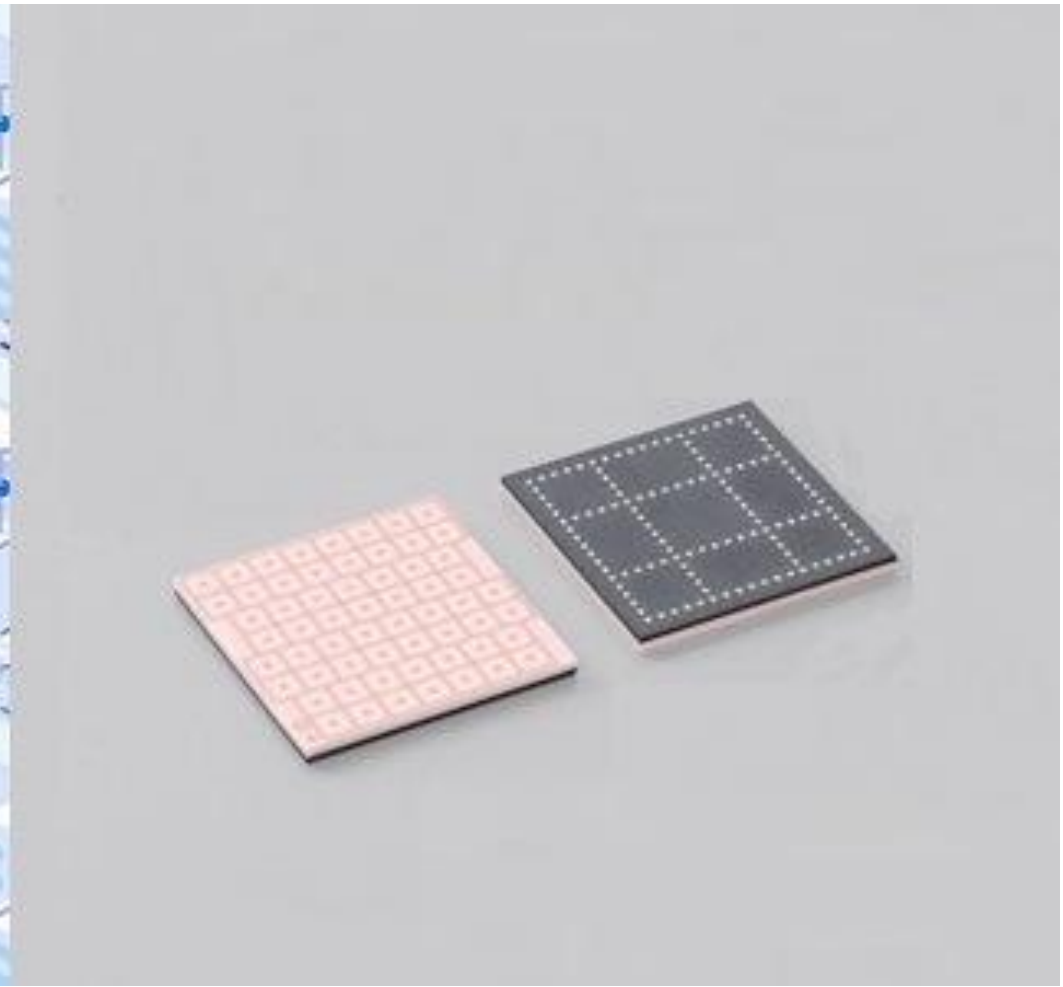
Scalability



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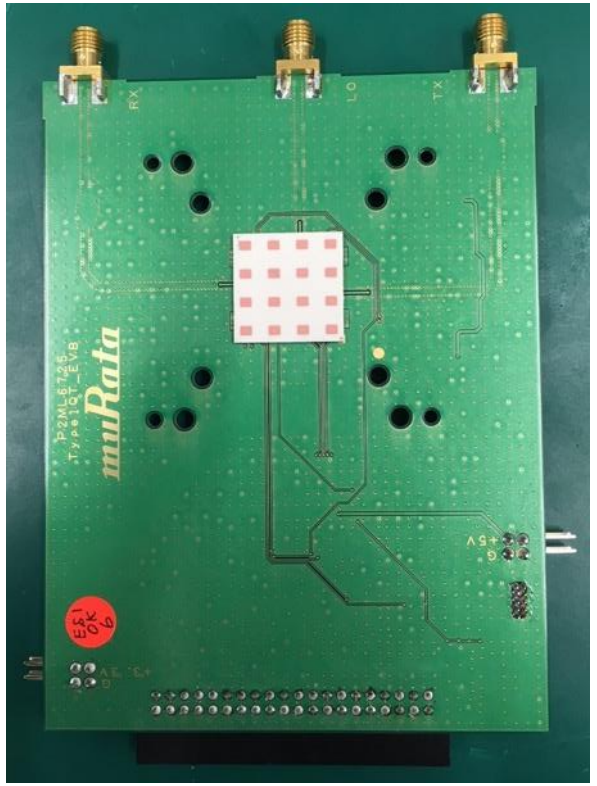
Scalability



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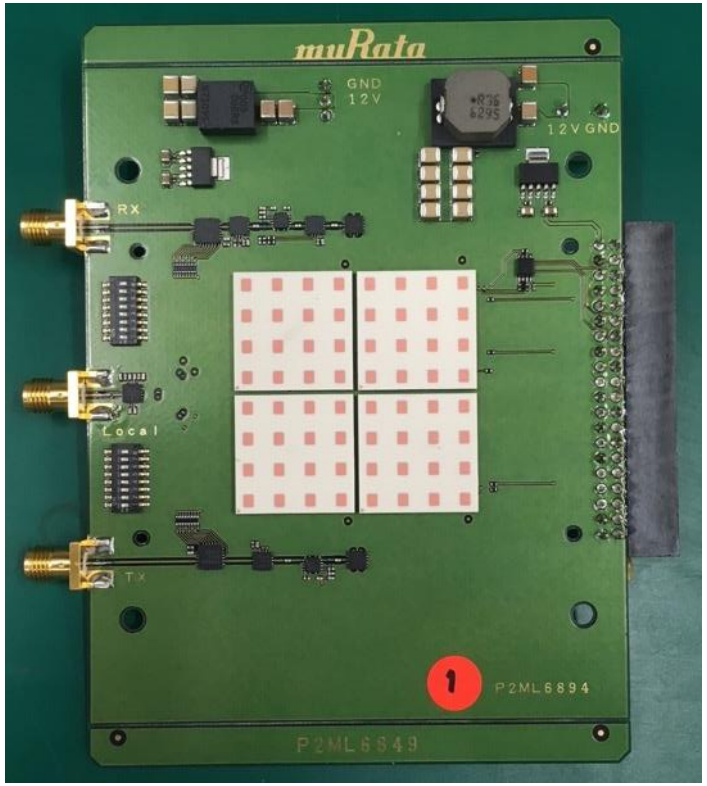

8 X 8 Array

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Thermal management

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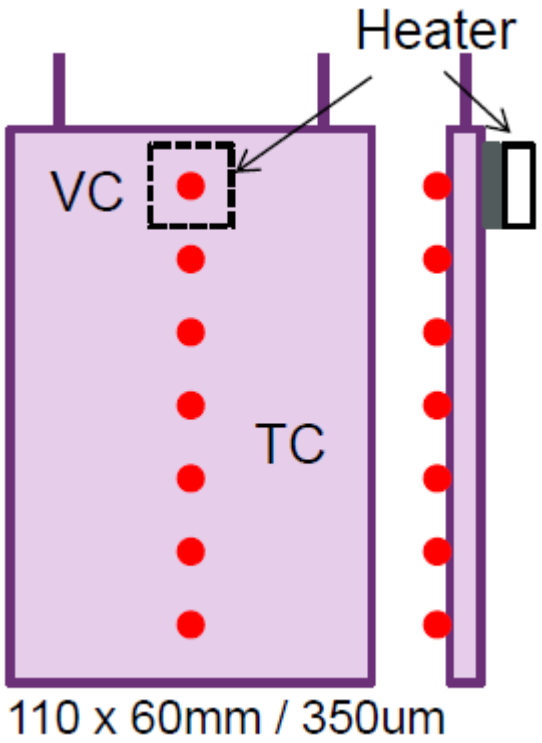
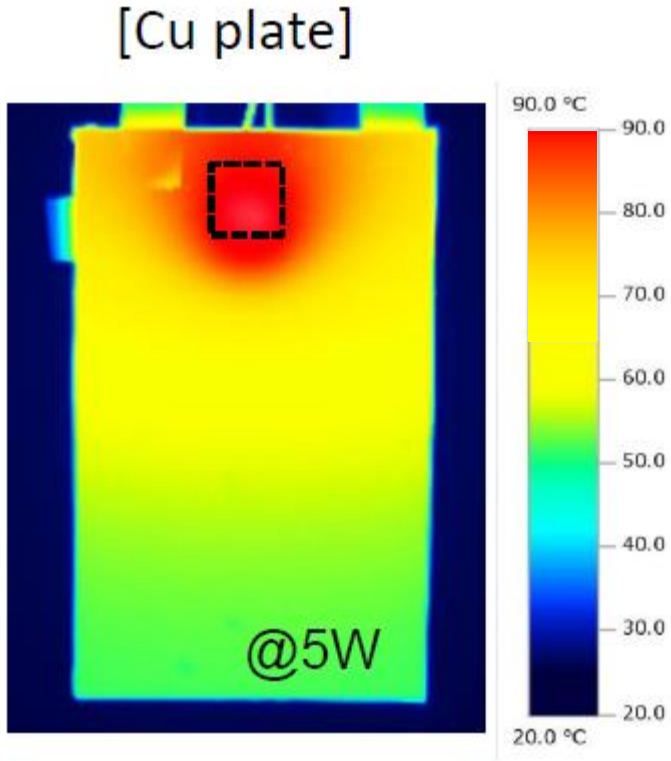
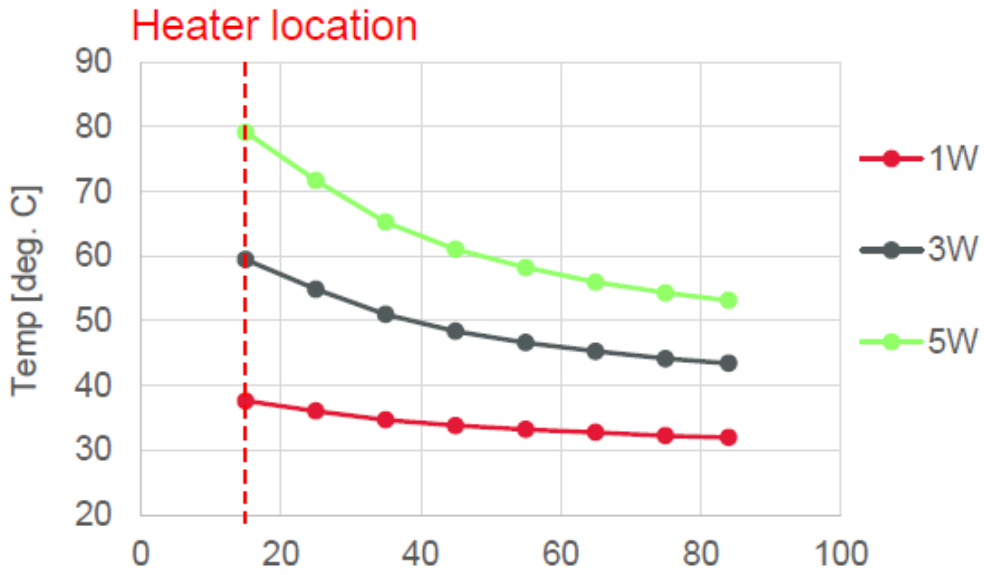
Thermal management







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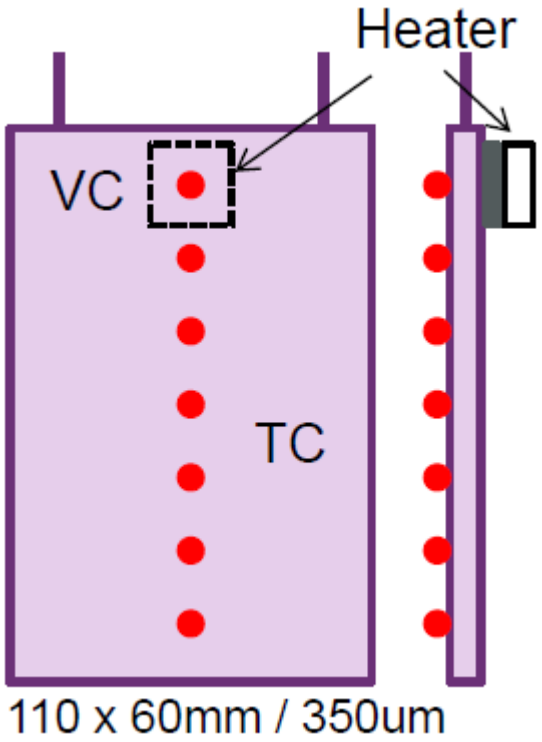

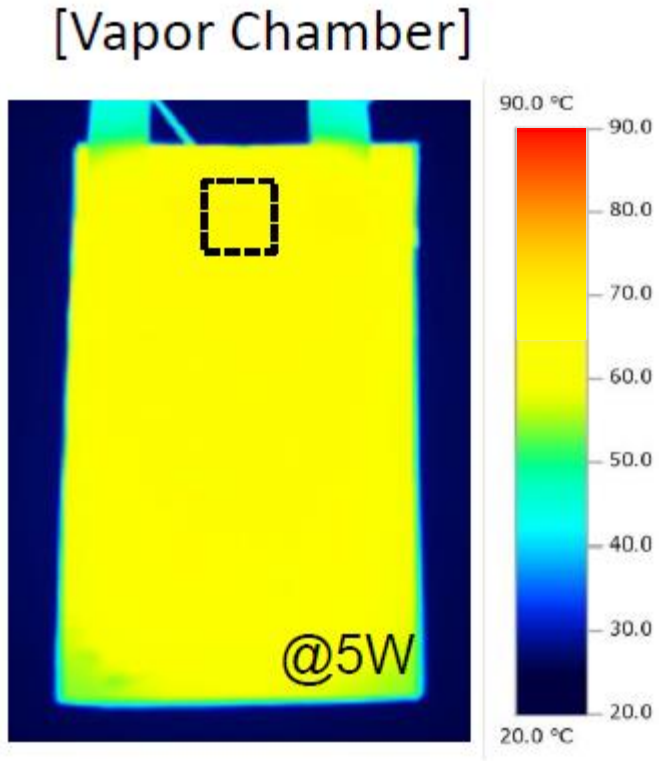

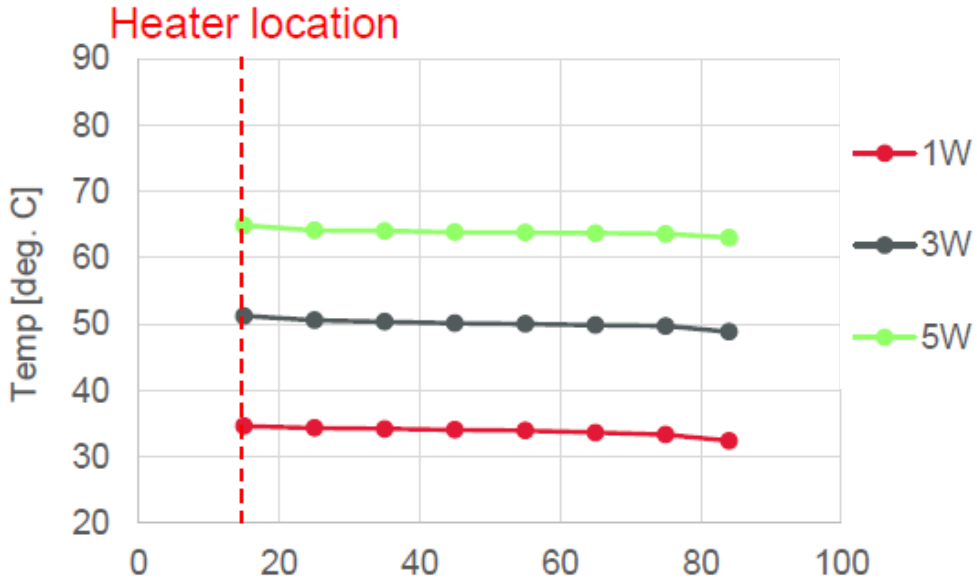

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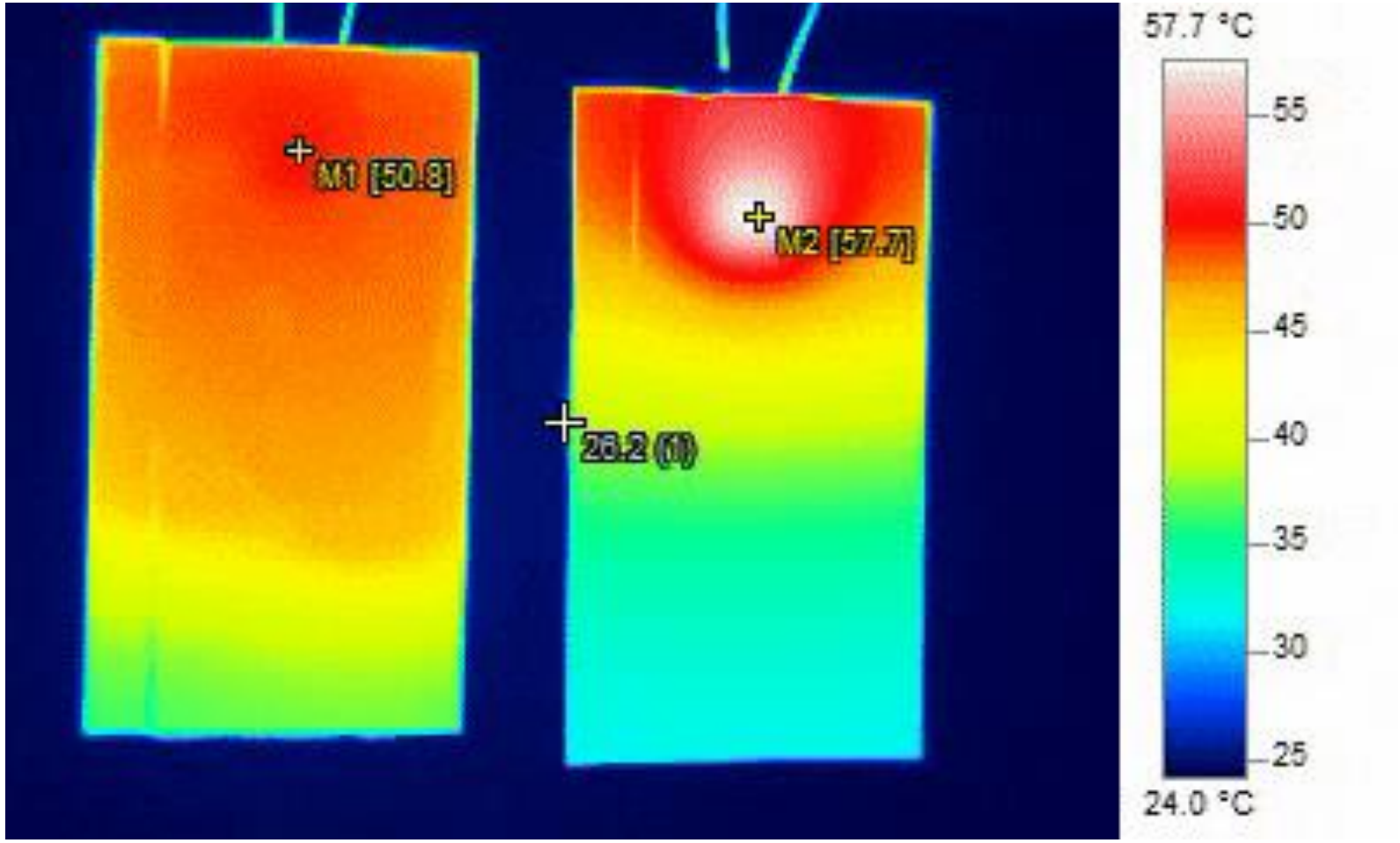
Thermal management

[Vapor Chamber] [Cu plate]



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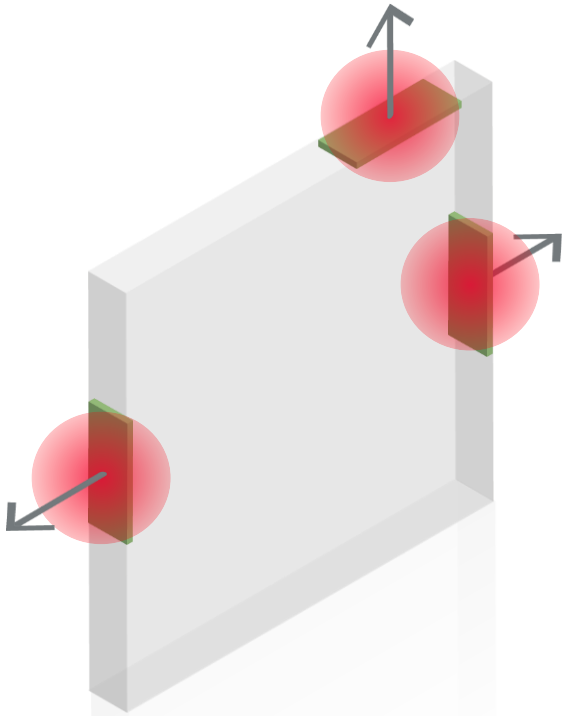

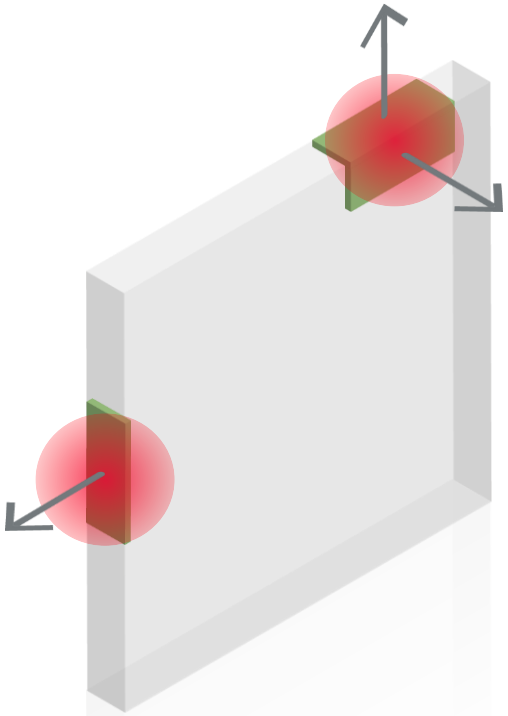

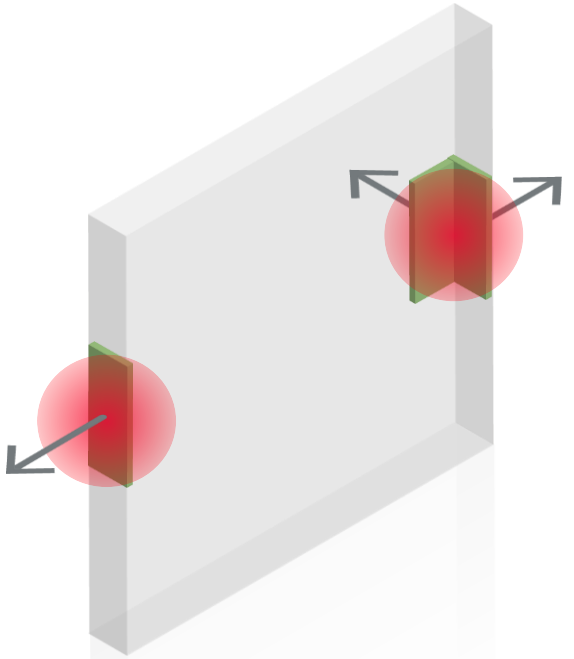

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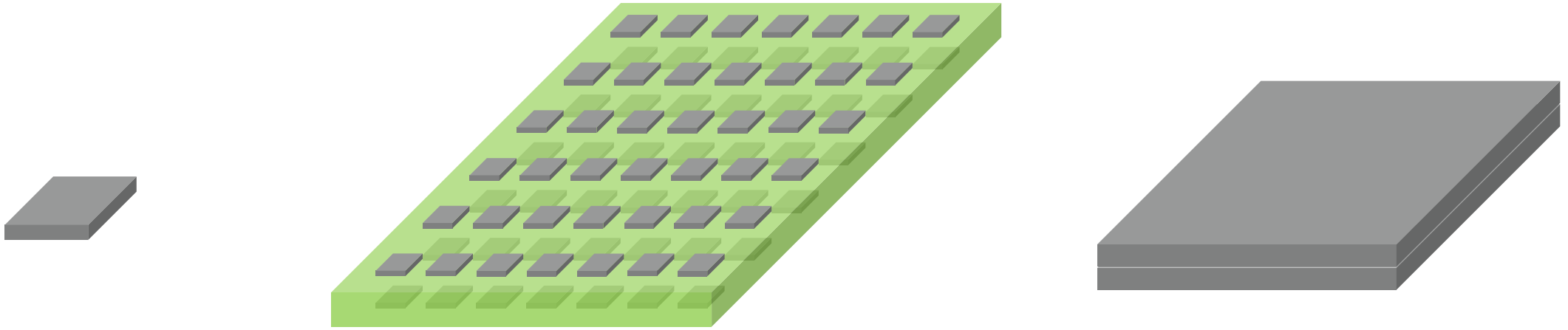
Miniaturization



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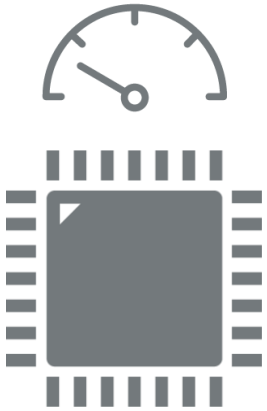
Extended battery life



Low loss components

Low power radios

AI enabled devices

Battery chemistry &
Energy harvesting

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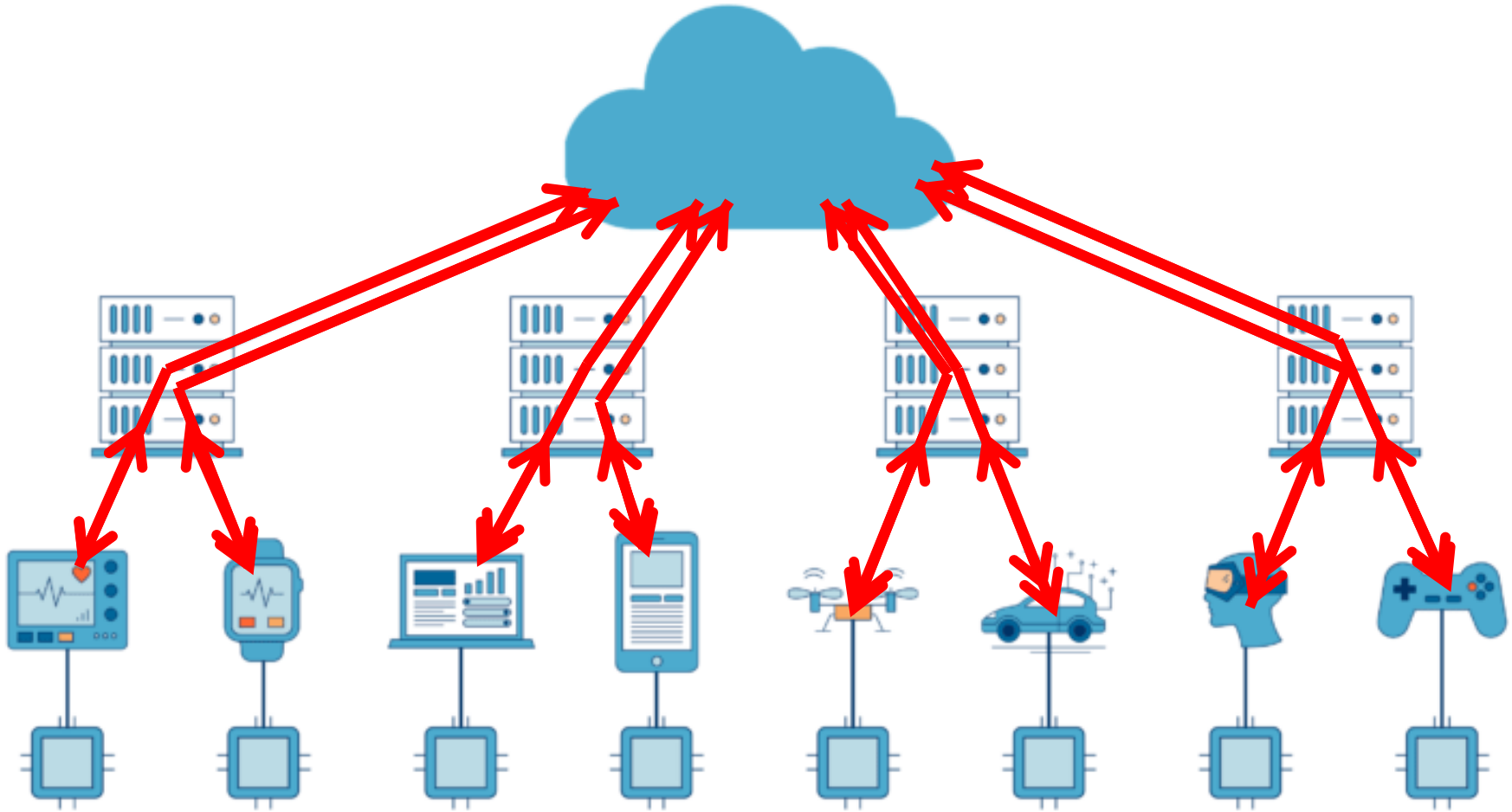
Low latency



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Low latency

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Murata strategy

- Continued commitment to innovation that benefits society
- A focus on open innovation
- Investment in manufacturing capacity

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Conclusions

5G is gaining rapid momentum and could have a positive impact on multiple industries. But we are just in the early days of consumer-centric eMBB.

5G will be more complex and demanding than previous cellular generations: need for denser networks, guaranteed performance levels as oppose to “best effort” connectivity, diverse end-user requirements among many others.

Reaching the required levels of performance requires navigating complexity at multiple levels: network design (scalability), device design and performance (thermal management, miniaturization), and application requirements (long battery life and low latency).

Efforts around simplification and flexibility will provide clearer total cost of ownership (TCO) for both the 5G supply-side and demand-side and ultimately help 5G to scale. This will open up the potential for new business and monetization models.

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05 Conclusions

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Audience Q&A

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