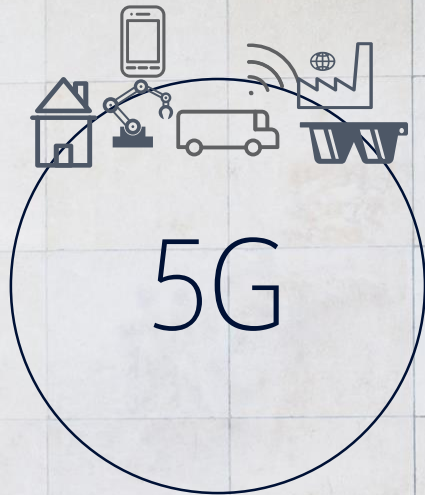
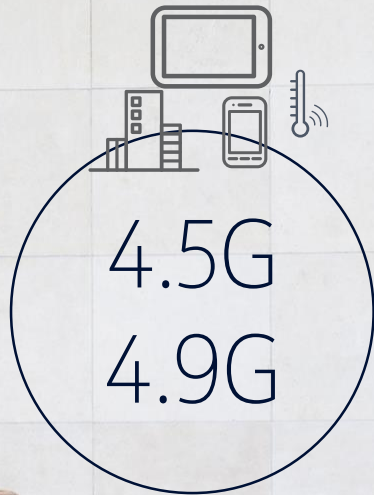
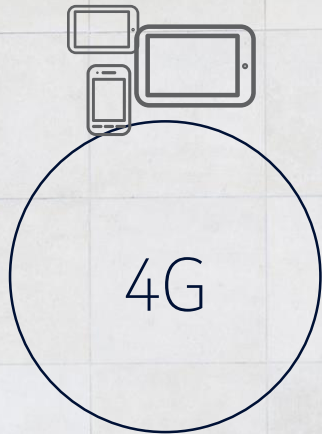
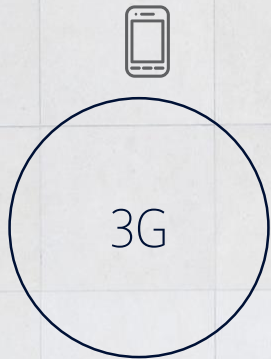


5G – enabling the 4th industrial revolution

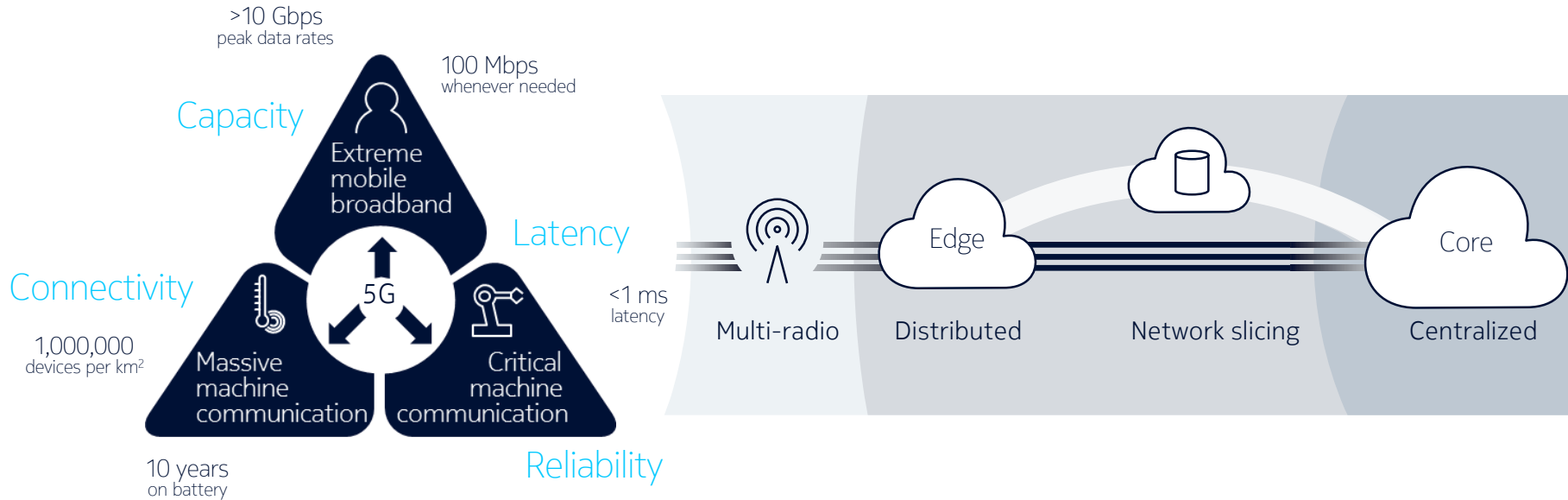
NOKIA

What's there for Smart Buildings ?



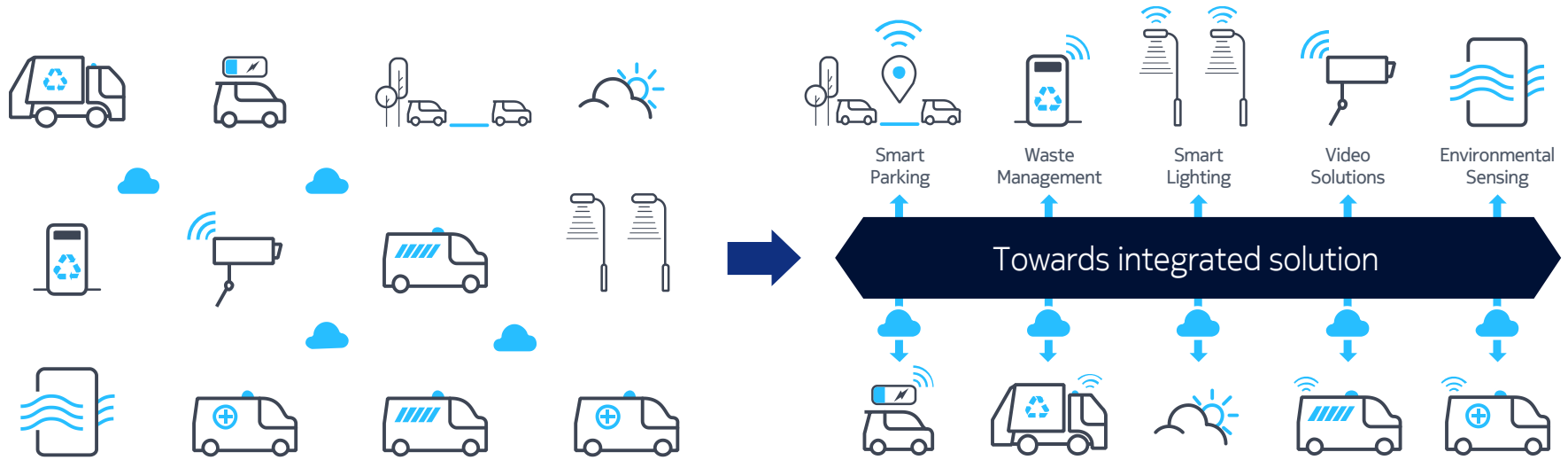
5G introduces huge technological advantages

10 Gbps data rate, 1ms latency and ultra-reliability – when and where needed



The need for a fully integrated approach to Smart Cities

Point solutions are easy to deploy but have limited benefits



Nokia IoT for Smart Cities : End to end solution overview

Modular - with blueprint applications and devices



Nokia as part of the ICT ecosystem

Oulu 5G Test Network Up and Running since 2015

Nationally funded (Tekes 5th Gear) research trial project

Network operation by VTT and University of Oulu, Nokia radio and core network products

Campus area, includes private network (VTT) and public network (University)

Steering group lead from Nokia

State-of-art LTE 5G Proof of Concepts Step-by-step towards commercial 5G

2015

2016

2017

2018

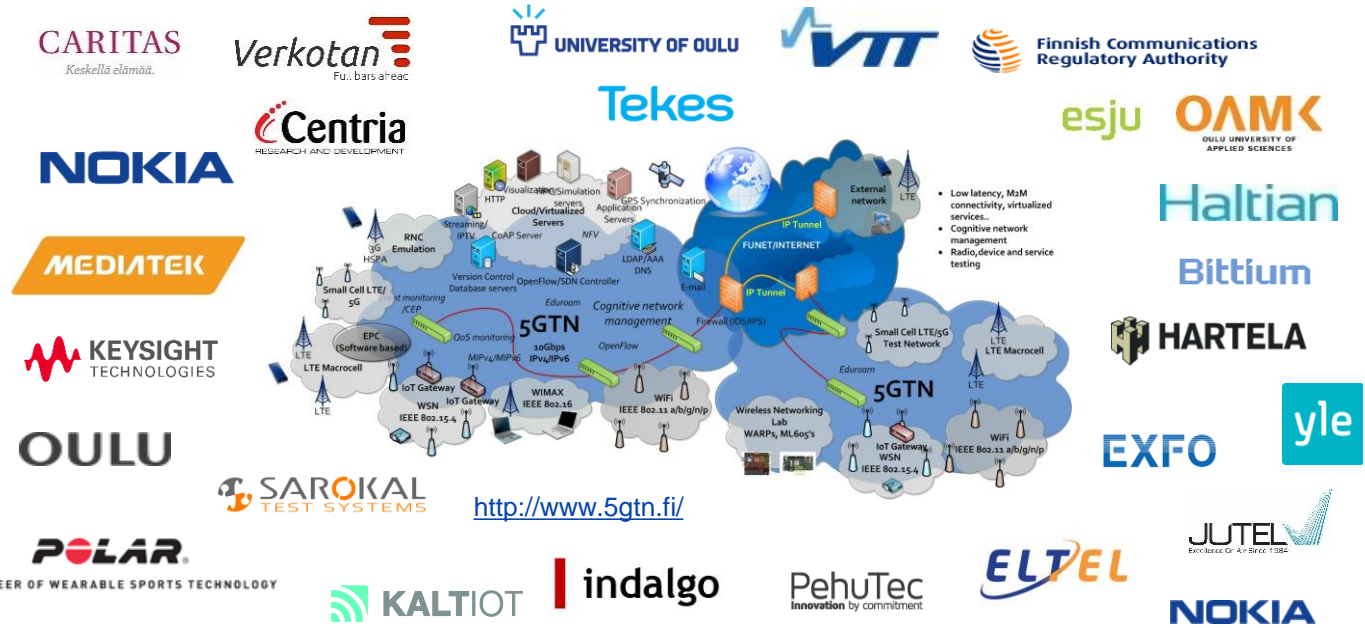
2019

2020

LTE-M live network performance tests

5G vs. LTE air interface and e2e performance

New 5G technologies, use cases, applications and business models



The image features a large, white, semi-transparent Nokia logo centered in the upper half. The background is a cityscape with several skyscrapers, overlaid with a white network grid of lines and nodes. The sky is blue with some light clouds.

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www.networks.nokia.com/innovation/5G