33rd APDC Congress

Harness the exponential potential of networks
The opportunity for Portugal

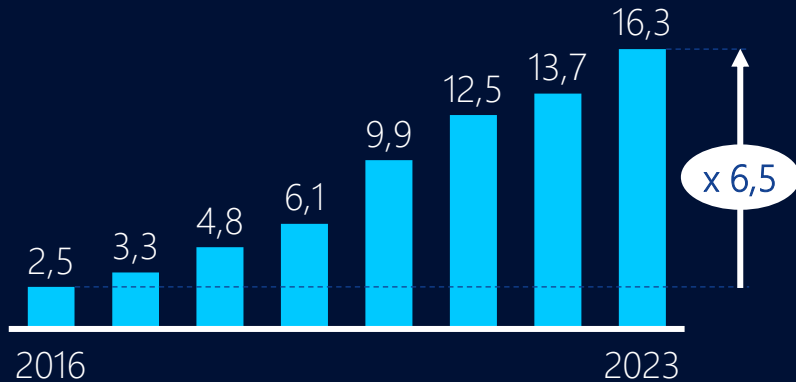May 15th , 2024

The industry paradox also in Portugal

Traffic
in TB

2,5	3,3	4,8	6,1	9,9	12,5	13,7	16,3

2016   2023

x 6,5

Revenues
in €bn

+1%

9,1	8,9	8,6	8,7	8,7	8,9	9,2	9,7

2016   2023

Commoditization created by a single network capability: Connectivity

Source: ANACOM, Q4 2023 report

NOKIA

5G impact creation

Giant leap enabling beyond connectivity

NOKIA Bell Labs

$8tn

(7%) contribution
to 2030 GDP

Source: Nokia Bell Labs report

NOKIA

The Growth opportunity for Portugal

Agriculture

Industry

Other

123K — Companies in the sector of Agro Production

68K — Companies in the Industry sector (inc. Textiles and Clothes)

4th Industrial Revolution

€0,9bn — 10% with TWO annual productions

€1,0bn — 10% with adapted production lines
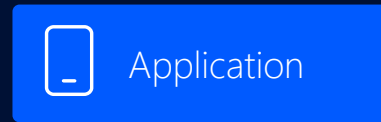
NOKIA

What´s different now ?

Network programmability underpinning value creation

4x to 9x Networks traffic is project to grow through 2030

0% to 6% connectivity market grow/year

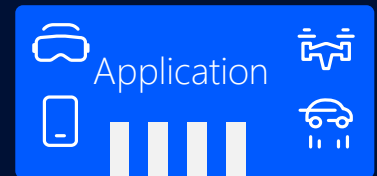**30% to 40%** digital applications ecosystem market grow/year

Before 5G

Application

Over-the-top

Network

Single Capability

With 5G

Application

Programmable Network

Multiple Capabilities

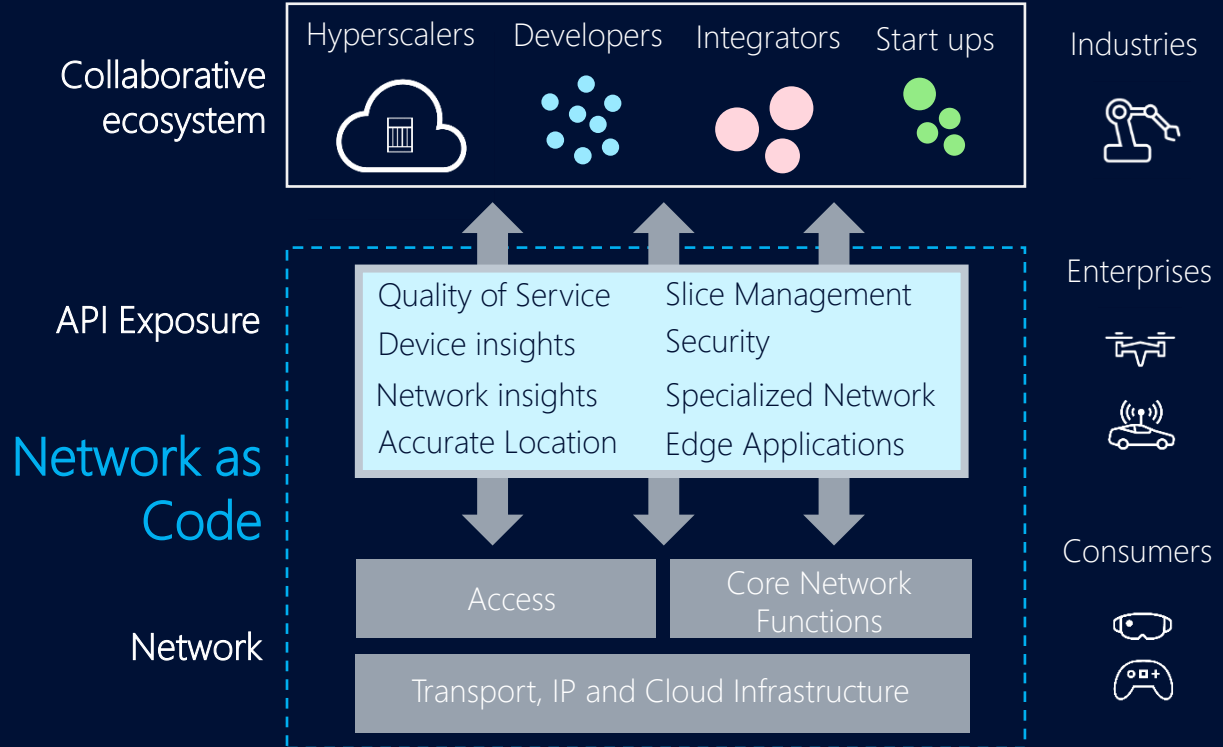Source: Gartner, Bloomberg, IDC, Global Data, Bell Labs

NOKIA

Network as Code driving industry value creation

Changing the relation between applications & telecom operator networks

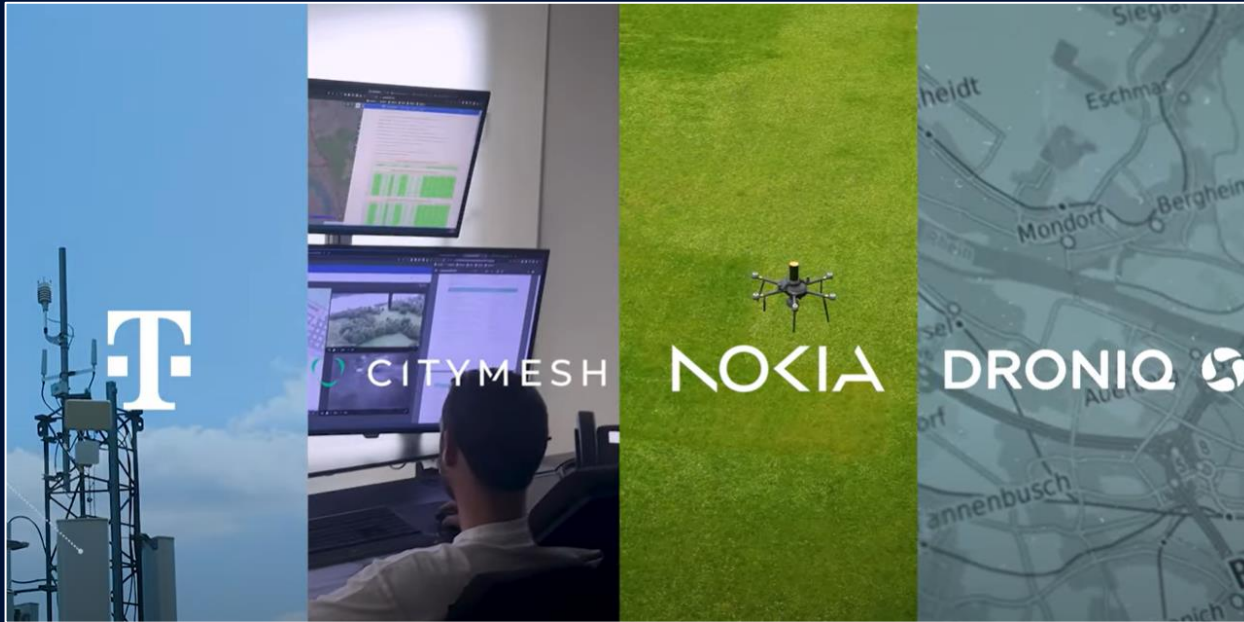**Network as Code – a Programable Product**

Rich, open ecosystem, driven by collaborative partnership and developer-led innovation

5G Network capabilities & APIs - leveraged for new value creation

Collaborative ecosystem

| Hyperscalers | Developers | Integrators | Start ups |

Industries

API Exposure

Quality of Service Slice Management
Device insights Security
Network insights Specialized Network
Accurate Location Edge Applications

Enterprises

Network as Code

Network

Access

Core Network Functions

Transport, IP and Cloud Infrastructure

Consumers

NOKIA

Collaborative value ecosystem market example

Remote-controlled drones over 5G,
leveraging Quality of Service and Location Verification APIs

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Nokia is delivering Network as Code elements for value creation

319 5G Radio Networks The biggest 5G SA in the world	**113** 5G Stand Alone Core	**710** Extreme-performance specialized networks (for several industry verticals)	**11** Network as Code APIs framework Projects

NOKIA

At Nokia, we create technology that helps the world act together

5G creates a strategic opportunity for economical growth in Portugal

Telecom Industry Value creation journey is just starting

Nokia is delivering projects enabling Network as Code journey

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