

Driving Economic Growth

Connecting People & Things for the Digital Era

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THE IMPERATIVE

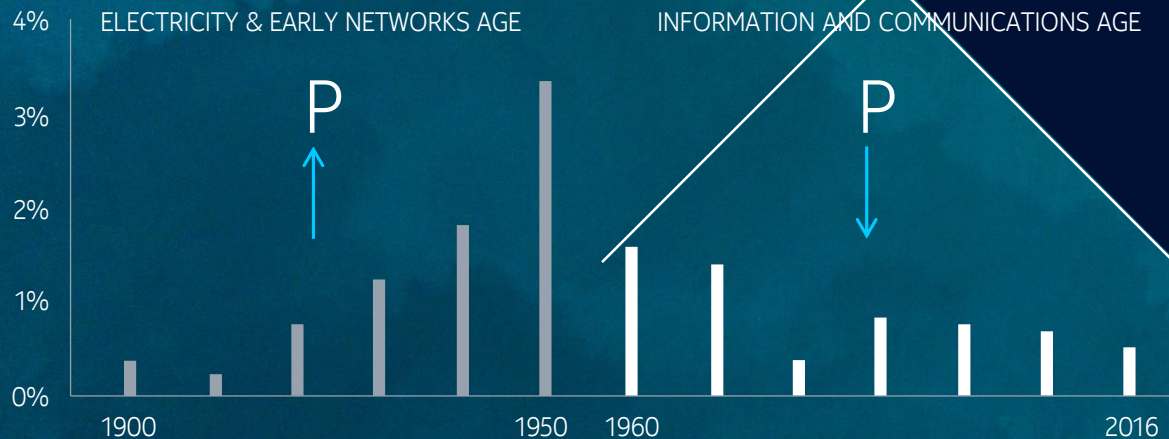
“Productivity isn’t everything, but in the long run it is almost everything”

Paul Krugman

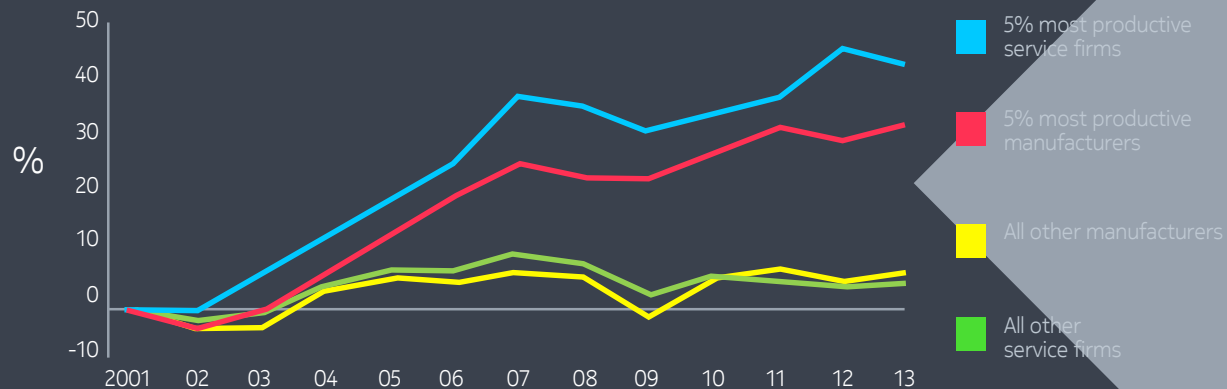


STAGNATION
IN PRODUCTIVITY
GROWTH

US Productivity Growth



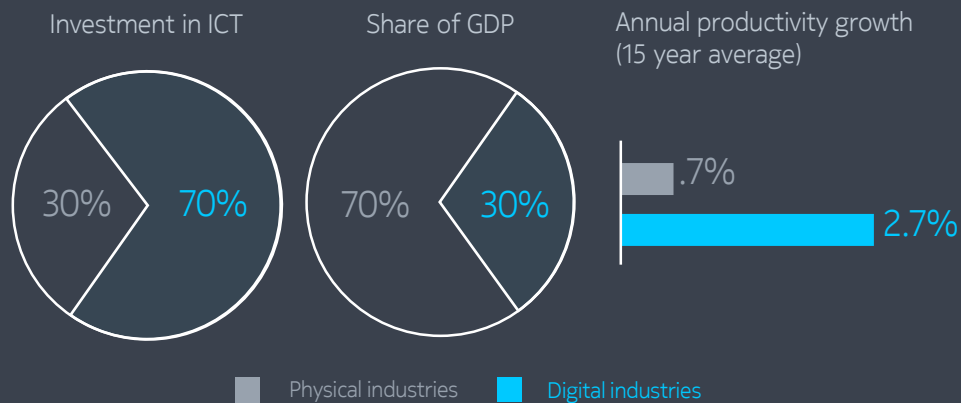
Productivity growth since 2001



Source: OECD, Wall Street Journal

THE BEST
VERSUS
THE REST

TALE OF TWO INDUSTRIES



Source: The Technology CEO Council

THE JOURNEY TO INDUSTRY 4.0



Consumer:

Smartphones

Centralized clouds

Best effort internet
connectivity



Industrial:

IoT

Edge cloud, AI

High performance
networking

OT

ICT

Mission-critical

Reliability

Carrier-grade

Specialized

Technologies

General-purpose,
standardized

Business process
control

Service(s)

Media delivery,
information
services

Slow (decades)

**Rate of tech
change**

Rapid
(months to years)

IT & OT
COME
TOGETHER

NOKIA

Industry	Sites
Transport venues & ports	50,000
Military bases	10,000
Warehouses	3,300,000
Industrial & manufacturing	10,710,000
Oil & gas	8,000
Power generation	47,6000
Water utility plants	140,000
Mining	54,000
Hospitals & labs	263,000
Total:	14,582,600

Comparison: Global base stations sites: ~7M

Source: Harbor Research

\$3.8T
to \$11T

Economic value
of IoT (by 2025)

Source: McKinsey

up to
11%

of global economy
(in 2025)

Source: McKinsey

MODERNIZATION
OF INDUSTRY
DRIVES MASSIVE
ECONOMIC
IMPACT

NOKIA

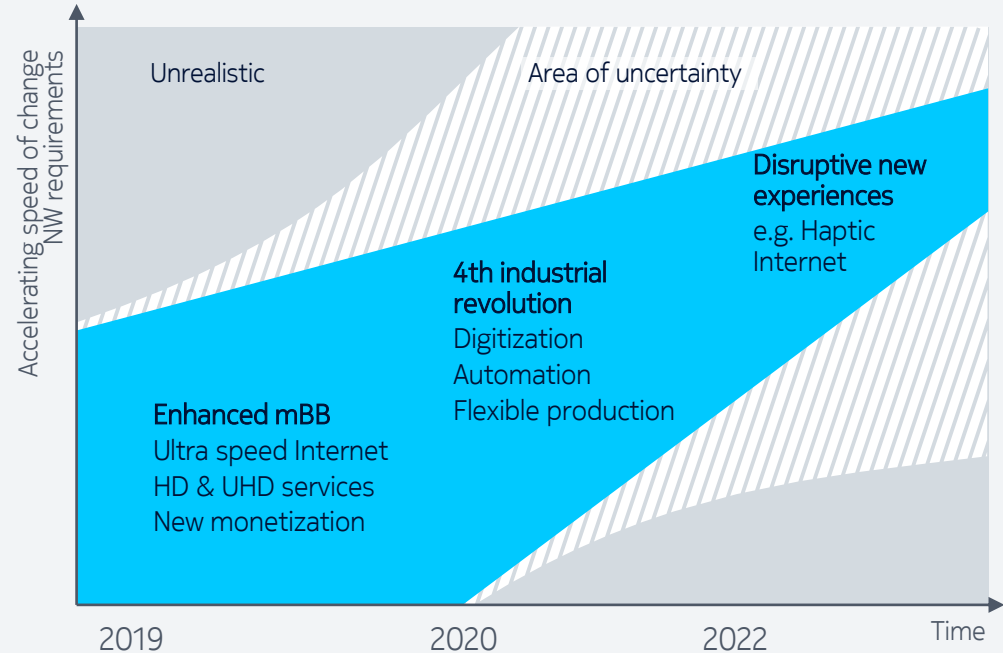
The quest for new economic value

New DSP markets offer significant revenue expansion



Estimated 2025 value creation potential of the IoT
- McKinsey Global Institute

...be prepared for the obvious and the uncertain



Enterprises will massively transform, becoming virtual in the broadest sense

Unbounded global-local enterprise

digital
virtual
light & agile



Ubiquitous wireless enterprise

always
connected
everywhere



Systematically secure enterprise

multi-layered
auto adaptive
sharing



Augmented intelligent enterprise

fully instrumented
contextualized intelligence
continuously adaptive



5G is key enabler in Industry 4.0 transformation

	Today	2020-25
Users	10M people	+100M 'things'
Speed	100 Mbps	100x faster
Latency	>>10 ms	10x less
NW service level	Best effort	Committed SLAs
Logical networks	1	Many (slices)



Smart home



Mobile gaming



Industry 4.0



Connected cars



Drones



IoT wearables

MINING



AIRPORTS



WIND FARMS





CONTAINER PORTS



RAILWAYS



ENERGY DISTRIBUTION

FACTORIES





LOGISTICS



DISASTER SUPPORT

An aerial night view of a dense city skyline, likely New York City, with numerous skyscrapers illuminated by city lights. The word "CITIES" is overlaid in large white capital letters on the right side of the image. In the background, a body of water and a bridge are visible under a dark sky.

CITIES

SPACE



The background of the slide is a stylized, light blue city skyline. In the foreground, there are various icons representing infrastructure: a tall building with a globe on top, a wind turbine, a power line tower, a radio tower with two large antennas, and several industrial silos. Dashed white lines with circular nodes at the ends are drawn across the sky, suggesting a network or data flow. The Nokia logo is prominently displayed in the center in a dark blue, bold, sans-serif font. Below the logo, the tagline "Connecting People & Things for the Digital Era" is written in a smaller, dark blue, sans-serif font.

NOKIA

Connecting People & Things for the Digital Era