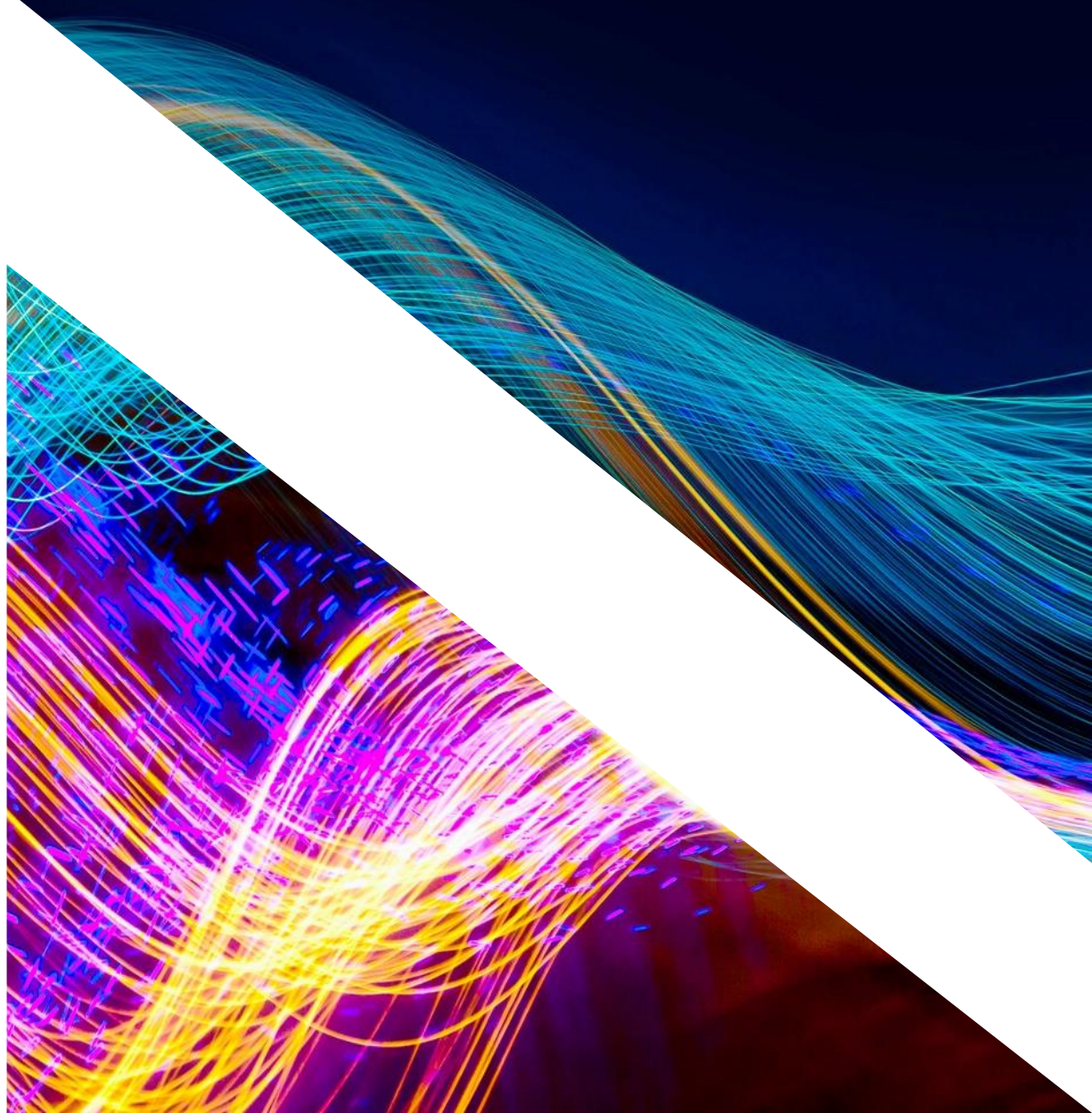


NOKIA



# India Mobile Broadband Index 2024

11<sup>th</sup> Edition





# About

## Nokia MBit Index

Nokia MBit Index is an annual report on mobile broadband performance in India. It aims to provide valuable insights, data and analysis of mobile broadband and traffic growth by co-relating these trends with various demand and supply-side drivers of the connectivity ecosystem including including devices and traffic usage patterns.

01

The 11<sup>th</sup> edition of the report assesses 5G and 4G data traffic growth and trends across India. It also tracks data consumption per user and sheds light on the device ecosystem in India.

02

The launch of 5G in India has transformed the digital landscape of the country with a significant shift in data consumption while ushering in a new era of connectivity.

03

The report also highlights the emerging trends for 2030 (including cybersecurity, advances in AI, ML, metaverse, cloud tech, etc) addressing new and heightened demands, and unlocking the potential of a vibrant, collaborative solution ecosystem.

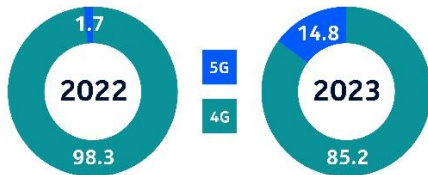


5G users on average consume up to 3.6x more data compared to 4G users

17.4 Exabyte  
Pan-India mobile data usage per month

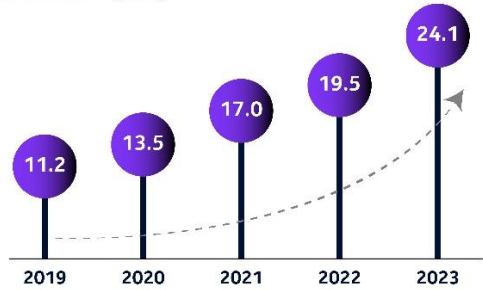
20.8% ↑ y-o-y growth

5G & 4G Traffic contribution (%)



Average monthly mobile data traffic per user (GB)

21.1%  
CAGR (last 5 years)



Solid growth in mobile data traffic across all circles with 5G traffic share in metros reaching

20%

5G FWA users consume more data compared to normal 5G users

2.5x

5G subscribers (million)



Technology themes shaping the world of 2030

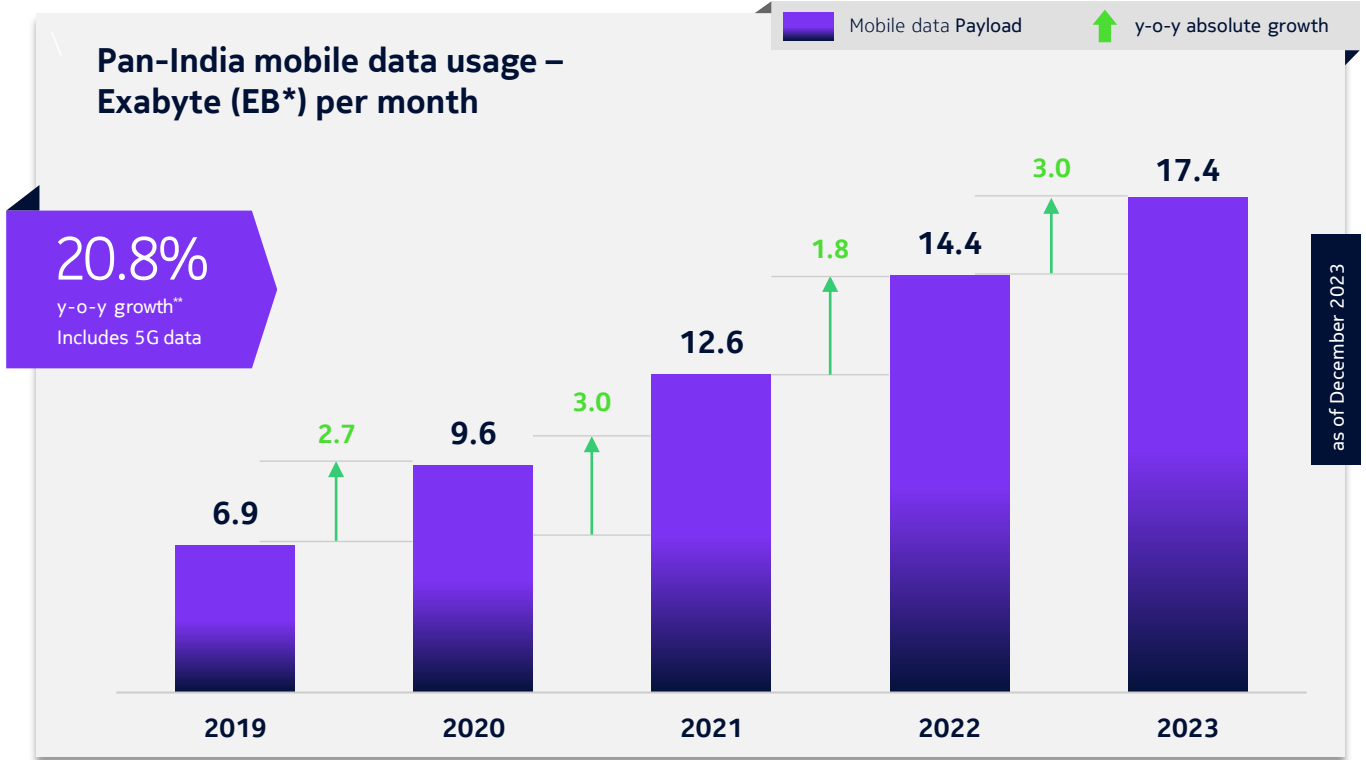


5G

~17%

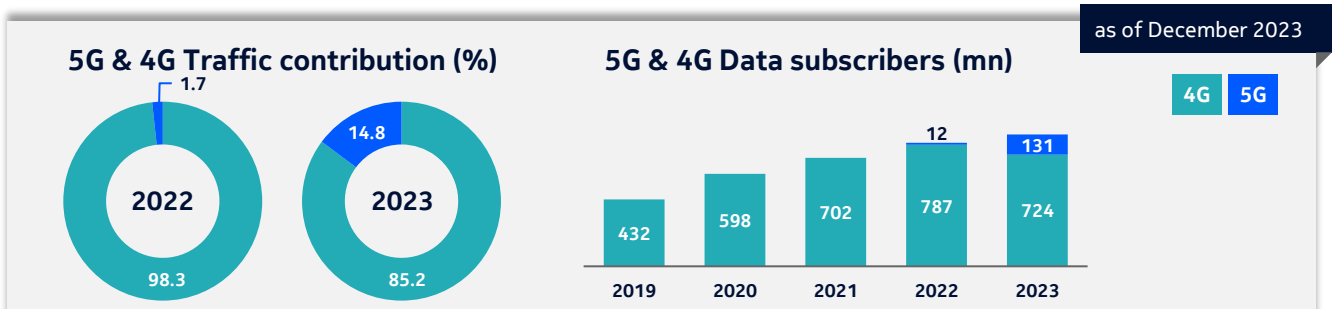
Active 4G devices are 5G capable

With a CAGR of 26% in the last five years, mobile data traffic reached 17.4 EB per month in 2023



Source: Nokia Analysis, Operator Quarterly Reports, TRAI

- 5G launch has emerged as one of the key accelerators of data growth
- 5G adoption to be driven mainly by retail use cases (e.g., mobile broadband, fixed wireless access, etc.)



Source: Nokia Analysis, Operator Quarterly Reports, TRAI

Source: Nokia Analysis, Operator Quarterly Reports, TRAI

- 5G contribution reached near 15% in 2023 (vs. 1.7% in 2022).

- Expected 5G data usage by 2026<sup>1</sup>: (per annum): 310 EB.

Expected subscribers by 2026<sup>1</sup> -

- 5G: ~575 million
- Combined (4G + 5G): ~1,155 million



Source: 1. OMDIA

\*1EB=1000 PB \*\*Represents y-o-y growth for Dec-22 to Dec-23

Note: 2G and 3G contribution in overall data traffic is marginal and reducing.

# Solid growth in mobile data traffic across all circles with 5G traffic share in metros reaching 20%

## 5G + 4G payload by category (in Exabyte), per month

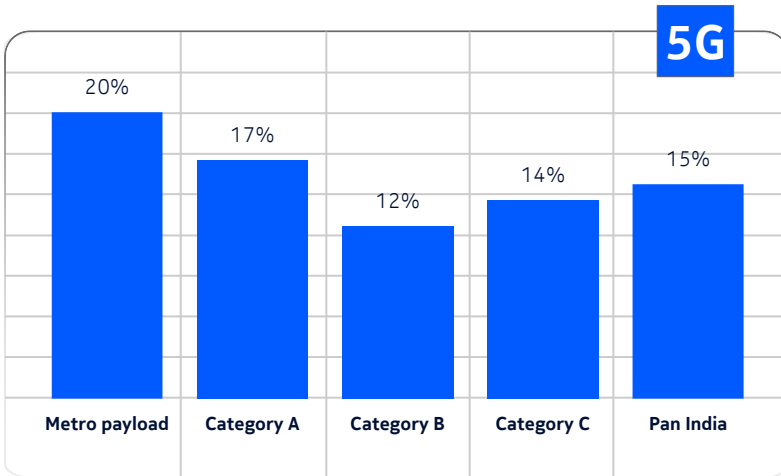
as of December 2023

	Metro payload	Category A	Category B	Category C	Pan India
2023	1.5	6.1	6.8	2.9	17.4
Y-o-Y Growth	▲ 18.5%	▲ 18.1%	▲ 23.8%	▲ 19.2%	▲ 20.8%
2022	1.3	5.2	5.5	2.4	14.4

Source: Nokia analysis

## 5G contribution in overall data traffic across circles

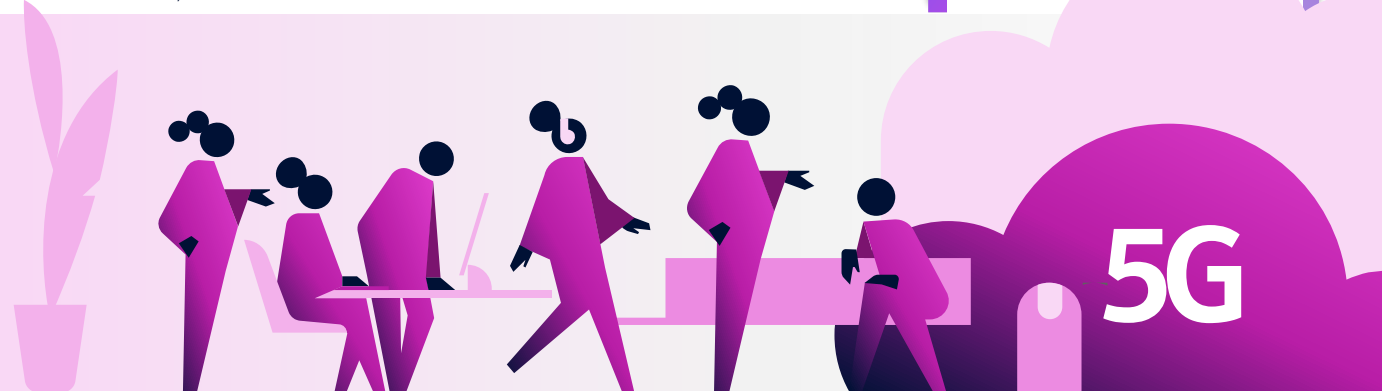
\*Contribution as of December 2023



Source: Nokia analysis

### Major accelerators of 5G data growth:

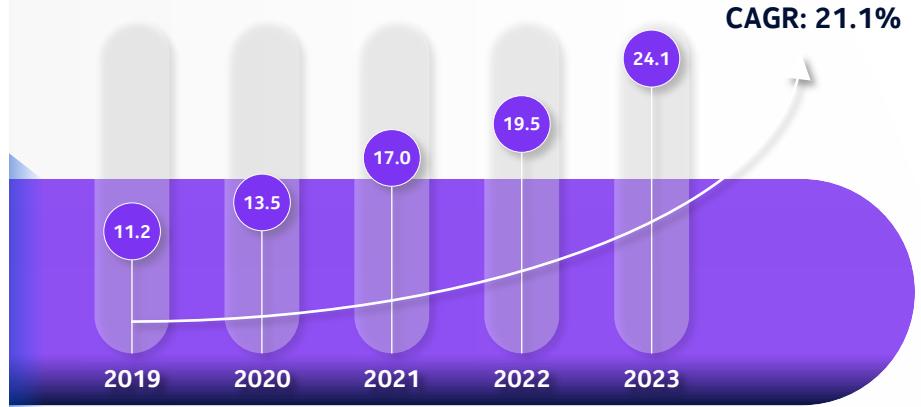
- Enhanced 5G availability and performance
- Availability of affordable 5G devices
- Data intensive apps and services



# Average monthly mobile data per user grew with a CAGR of 21.1% in last five years

- With a CAGR of **21.1%** in the last five years, mobile data consumption per user per month reached **24.1 GB**
- Average monthly data per user grew **24% (y-o-y)** in 2023
- Average monthly data per user is expected to reach **28-30 GB** by the end of **2024<sup>1</sup>**

## Average mobile data per user per month (GB)



Source: Nokia analysis

5G data consumption continues to grow since its launch in Oct'2022

5G FWA to emerge as a key enabler of new services for homes & businesses

5G users on average consume more data compared to 4G users

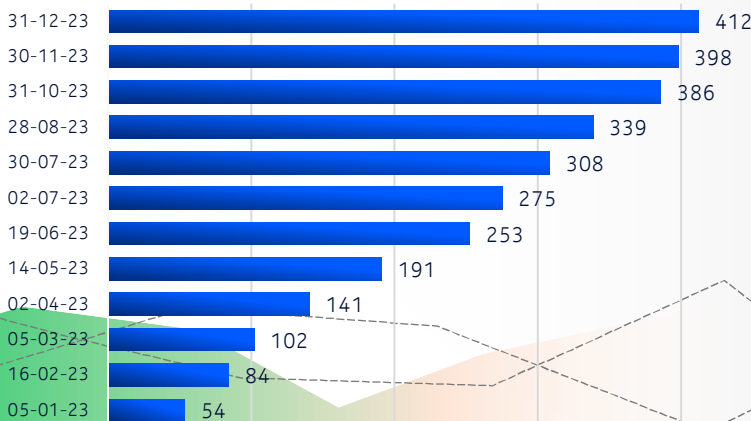


5G FWA users consume more data compared to normal 5G users

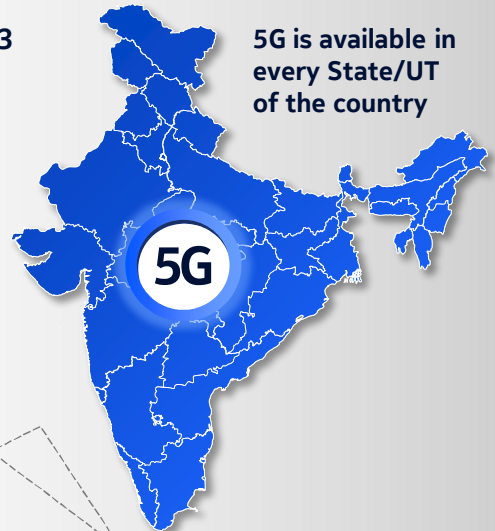


World's fastest rollout: ~4 lakh sites\*

## 5G BTS Deployed - State/UT-wise 5G BTS (in 000s) as of Dec'23



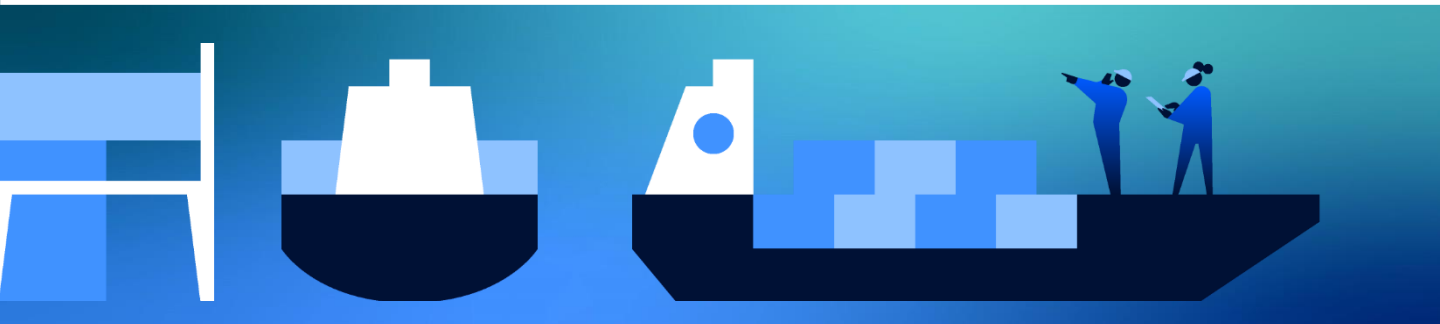
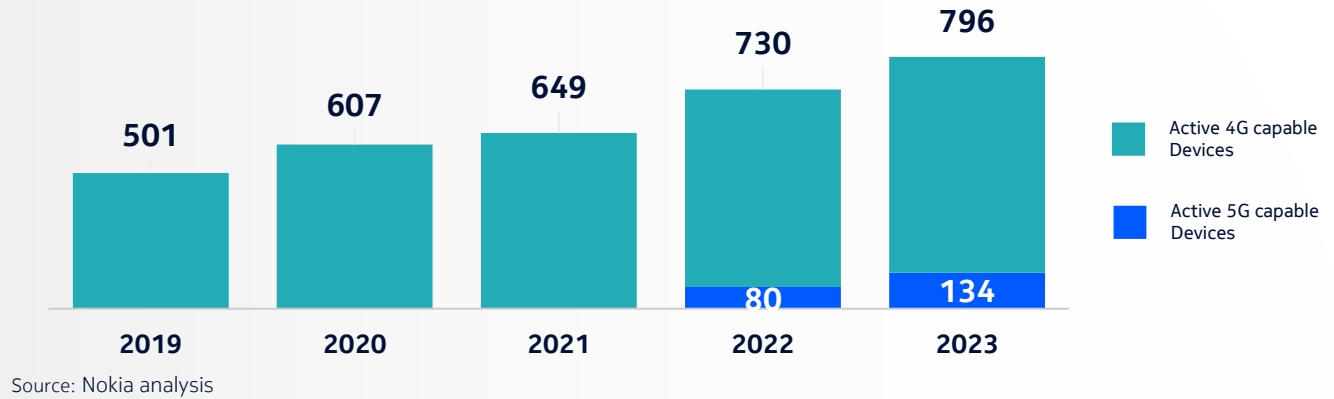
5G is available in every State/UT of the country



\*Above sites count includes single and dual layer sites basis operator deployment strategy  
1. Media, Nokia analysis

5G device ecosystem in India is evolving at a fast pace - around 17% of the active 4G devices are 5G capable

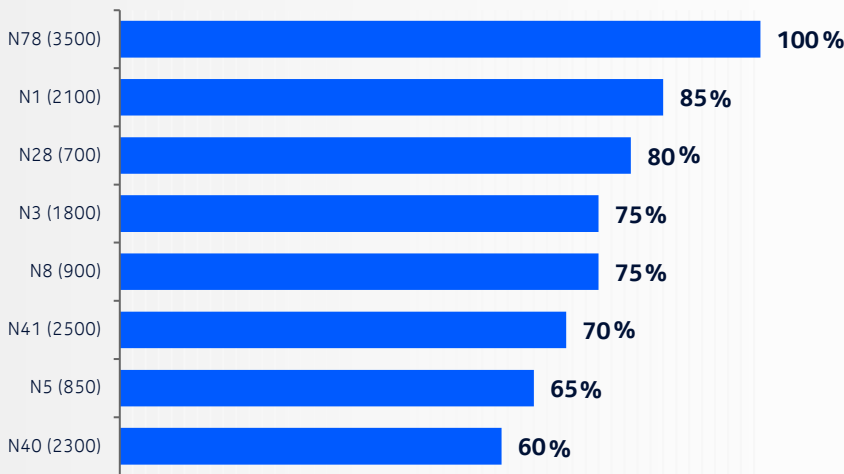
### India's 5G and 4G device ecosystem



- 796 mn active 4G devices; out of which 134 mn are 5G capable
- Active 5G capable devices expected to reach 158 mn by end of March 2024

### 5G device ecosystem and Band support (as of December 2023)

#### Band support in 5G devices (Frequency in MHz)



Strong 5G device ecosystem in existing CSP frequency bands to be a key driver for refarming



Source: Nokia analysis



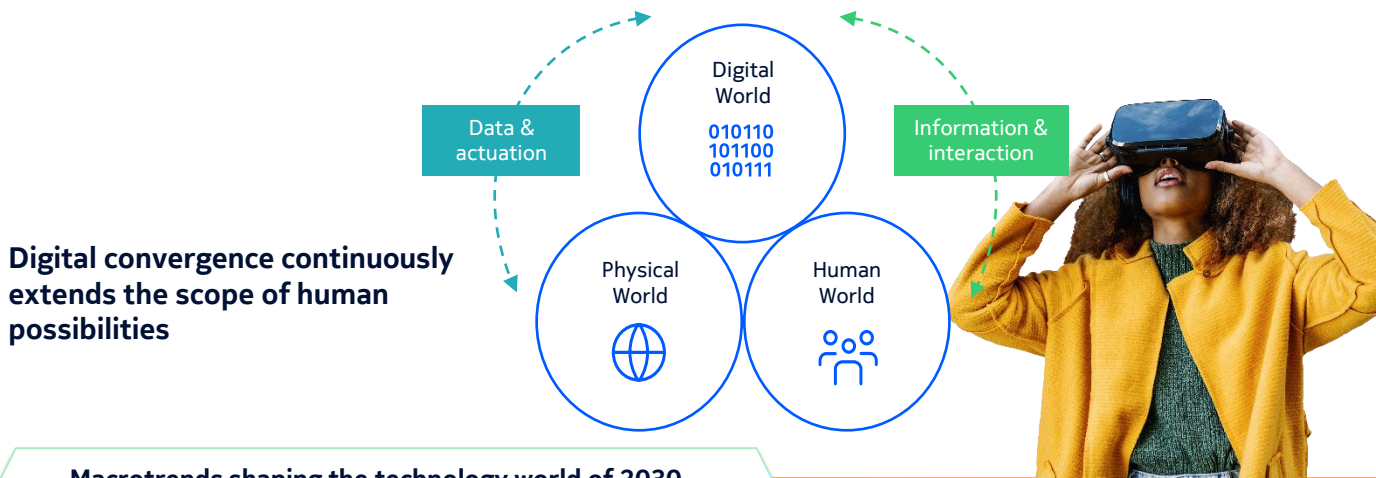
# Technology in 2030: Connecting the physical, digital and human worlds to meet the needs of 2030

Nokia Global Traffic 2030 report predicts a 22%-25% CAGR in end-user data traffic demand on global telecom networks from 2022 to 2030, reaching 2,443 to 3,109 EB per month.

Additionally, higher adoption of cloud gaming and XR may increase the CAGR to 32% by 2030.

## Realizing the synergies of the human, physical and digital worlds

**Technology in 2030** will significantly extend the scope of human possibilities by connecting the human, physical and digital worlds.



### Macrotrends shaping the technology world of 2030

#### Macroeconomics, Geopolitics & Regulation

- Regional trading blocks and protectionism
- Restricted trade in critical technologies
- Global standardisation threat
- AI regulation & policy
- Network security & resiliency regulation
- Population migration & demographic shifts

#### Work

- AI-driven productivity
- Labour needs in many fields



#### Sustainability

- Climate change mitigation
- Biodiversity & geodiversity loss
- Circularity & sustainability policy
- Digital inclusion



#### Security & Privacy

- Cybersecurity arms race
- Privacy and trustworthiness
- Life cycle management & supply chain security



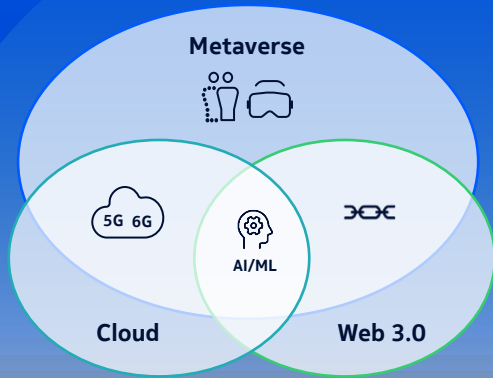
#### Innovation

- Regional differences in priorities
- AI integration driving innovation
- Semiconductor innovation in pace with increasing demands
- Quantum continues to attract investment
- Increased spending on climate, medical and defense technologies



# Technologies associated with Metaverse, AI/ML, Cloud and Web 3.0 will have some of the greatest impact towards 2030

## Technology themes shaping the world of 2030



Metaverse potential value creation

**\$5 trillion** by 2030.<sup>1</sup>

Edge cloud computing opportunity

**\$445 billion** addressable revenue by 2030.<sup>2</sup>

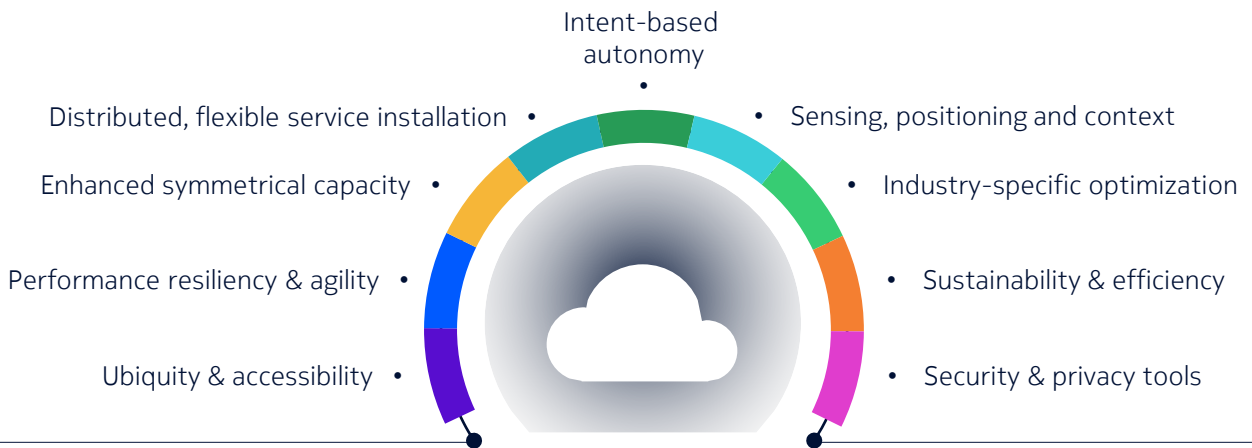
Blockchain market worth **\$508.1 billion** by 2030, with a 62.4% CAGR 2022-30.<sup>3</sup>

AI total market worth **\$908.7 billion** by 2030, with a 35% CAGR 2022-30.<sup>4</sup>

## The role of AI in Network 2030

Networks in 2030 are pivotal for harnessing emerging technologies. Tomorrow's networks will sense, think and act, leveraging ubiquitous AI, providing vast capacity and scale to meet digital demands efficiently.

### AI is integral to Network Evolution: Ubiquitous, Responsible AI unlocks the transformational potential of networks



#### Sensing, positioning and context

- Network sensing
- Device detection and localization

#### Intent-based autonomy

- Zero-touch automation & self-healing
- Dynamic network slice management

#### Sustainability & efficiency

- Dynamic, automated energy efficiency optimizations

#### Performance resiliency & agility

- Network-wide, real-time performance optimization
- Analytics & fault prediction

#### Security & privacy tools

- Threat detection
- Secure data sharing

Source: 1 McKinsey 2 STL Partners 3 GlobalData 4 GlobalData

# The metaverse will significantly extend business transformation potential

**Human Augmentation and Digital-Physical Fusion are the key concepts underpinning the metaverse**

## Human Augmentation



Extensions that enable people to interact with and within the digital world

Evolves the digital world from being a source of two-dimensional experiences and information, to a focal point of immersive and productive interaction

## Digital-Physical Fusion



Dynamic, connected representations of real-world things in the digital world

Allows the physical world to be replicated, simulated and automated within the digital world - opening doors to a wealth of new possibilities for human benefit.

## Metaverse for everyone – industrial, enterprise & consumers

### Industrial Metaverse

(OT\*-centric/ mission-critical technologies)



- XR-enabled workforces
- Digital twin enhanced production & condition monitoring

### Enterprise Metaverse

(IT\*-centric)



- Immersive team collaboration
- Digital co-design
- XR-based training & learning

### Consumer Metaverse



- Immersive gaming
- XR-enhanced social & retail interaction
- Virtual tourism

\* IT: Information Technology | OT: Operational Technology

We envision a world of 2030 driven by rapid and wide-ranging change, with innovation addressing new and heightened demands, and unlocking the potential of a vibrant, collaborative solution ecosystem.

AI-enhanced networks that sense, think and act will be vital to this evolution - connecting the human, physical and digital worlds, to meet the needs and opportunities of 2030.



# Future Outlook

- Mobile Data consumption will continue to grow; average monthly data per user expected to increase over 24% by end of 2024, driven by 5G
- 5G FWA to emerge as a perfect complement to CSP mobile offerings, bringing new revenues and enabling new services for homes and businesses
- 5G-Advanced to bring a new level of enhanced capabilities beyond connectivity and enable a wider set of advanced use cases for verticals; commercial deployment expected in 2025
- The years leading up to 2030 will produce major shifts in technology, creating up to \$5 trillion business opportunity with metaverse



Nokia India  
7th Floor, Building No 9A, DLF Cyber City, DLF Phase III  
Gurugram -122002, Haryana, India

Tel. +91 124 4504000

CID: 213849

# NOKIA

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

As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry.

Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

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