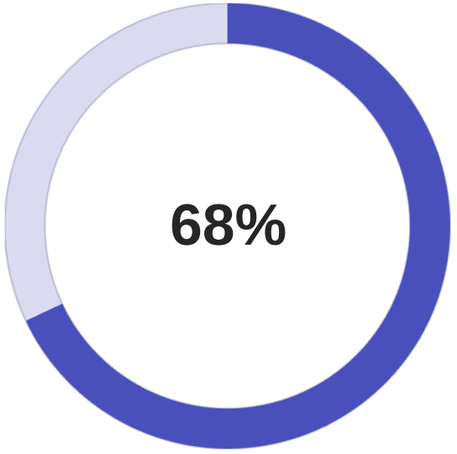
Digital Infrastructure for Viksit Bharat @ 2047

A Roadmap for Inclusive Growth

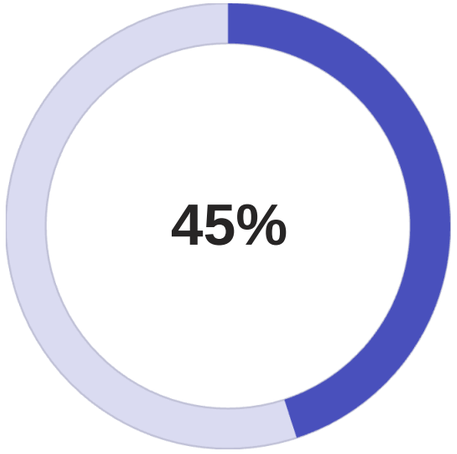
Digital Infrastructure: Foundation & Challenges

Achievement Unlocked

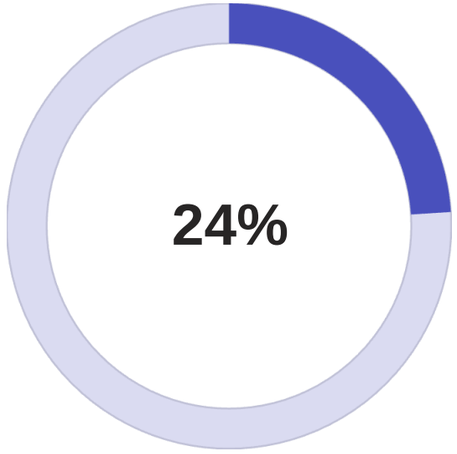
1.2B mobile subscribers, world-leading data affordability, near-universal 4G coverage, rapid 5G rollout, 17bn UPI transactions monthly



Overall Internet penetration plateau



Rural Access - significantly lower participation



Gender Gap - 49% men vs 25% women internet usage in rural areas

Nearly 70% of India's 21 million PwDs reside in rural areas, facing compounded digital exclusion.

1.5% GDP boost from 10% broadband penetration increase.

Accessibility and affordability are production inputs for GDP, not social add-ons.
Infrastructure must include everyone by design

Strategic Provocations

Affordability Paradox

₹/GB is low; monthly burdens be removed for bottom 50%

Indoors = New Last-Mile

Max. data consumption; need to improve QoE

Ducts & Fibre = Highways

Bottlenecks affecting Latency, Speed, Capacity, Affordability

Lack of Regional Data Centres

District level infra for education, health, employment and agriculture

The Next Wave: Equaliser or Divider?

AI-Native Networks

Equaliser: Affordable, low-latency for all.

Divider: Advanced in urban areas.

Quantum Communications

Equaliser: Unbreakable security globally.

Divider: High-cost, limited access.

Satellite-Terrestrial Integration

Equaliser: Seamless, remote connectivity.

Divider: Disparate coverage.

Immersive Services

Equaliser: AR/VR, telemedicine for all.

Divider: Exclusive, high-bandwidth only.

Edge Computing

Equaliser: Decentralized, real-time innovation.

Divider: Clustered in vibrant zones.

Determinants: Quality, Affordability, Devices, Skills

Transformational Use Cases

Precision Agriculture

AI-powered crop guidance using satellite imagery and IoT sensors

Tele-ICU Networks

Emergency care through satellite connectivity and AI triage

XR Classrooms

Immersive learning with AI tutors and satellite streaming

Smart Factories

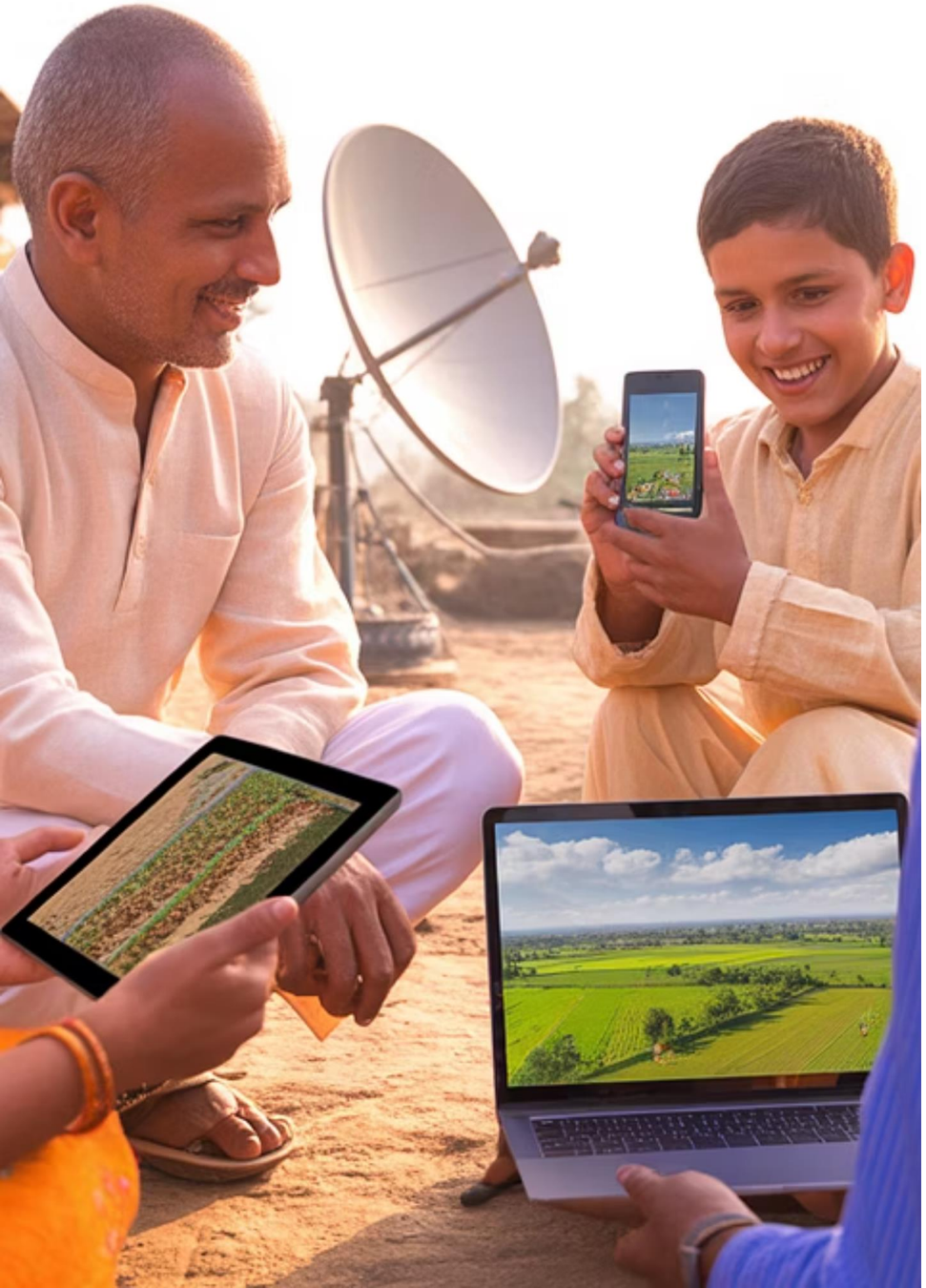
Edge-enabled manufacturing with AI quality control

Supply Chains

Real-time tracking with AI predictions and AR interfaces

UPI-Next Infrastructure

Quantum-safe payment rails with AI fraud detection



Key Enablers for Success

Universal Access

Fiber to every village, affordable devices, public WiFi density, RTC

Inclusive Design

Measure Inclusivity, PwD accessibility - assistive technology support, DBN - for non-market last mile and assistive technology

Self-Reliance

Indigenous semiconductors, domestic landing stations, homegrown solutions

Human Capital

Digital literacy beyond device use, continuous re-skilling

The Two Deltas That Matter

ΔParity ↑

Rural-urban gap closing on:

- Speed benchmarks
- Latency performance
- Network uptime
- Affordability burden

ΔSovereignty ↑

Domestic share increasing in:

- Semiconductor manufacturing
- Cloud computing
- Satellite systems
- Subsea cables

Inclusion and Resilience - Compounding Together

Proposal : National Digital Infrastructure Council (alignment of targets, resources and execution)

Four-Layer Digital Ecosystem

Digital infrastructure must be understood as a layered ecosystem where policy, governance and inclusion are as critical as towers, cables and data centres.

Logical Layer

AI network optimization, spectrum, security frameworks

Enabling Environment

Policies, regulation, governance, human capital, inclusion

Physical Assets

Fiber, towers, satellites, data centers, semiconductors

Service Layer

Payments, identity, cloud platforms, citizen services

Three-Phase Journey to 2047

2025-2030: Foundation

Complete rural fiber backhaul, achieve majority household broadband, scale PM-WANI to 50M hotspots, satellite connectivity in remote areas, establish accessibility standards

1

2

2030-2040: Capability

Rural-urban parity, AI-native networks, 6G rollout, quantum key distribution, redundant critical communications; satellite - terrestrial convergence; rural availing next gen technology ; 10 million PwDs with assistive technologies

3

2040-2047: Leadership

Eliminate rural-urban gap, digital opportunity for every citizen, sovereign capabilities, export DPI models globally

From Digital Economy to Digital Civilization

By 2047, success will mean a student in rural Odisha accesses immersive STEM labs with the same quality as one in Bengaluru, and a farmer in Rajasthan uses AI-driven forecasting as easily as a Mumbai trader.

Connect everyone. Empower everyone. Prepare everyone.

The path to Viksit Bharat @ 2047