

Counter Comments

TRAI Consultation Paper No. 07/2026

Proliferation of Public Wi-Fi Networks in India

Submitted by: Wiom (Omnia Information Private Limited)

Wiom submits these counter comments in response to the stakeholder comments received on TRAI Consultation Paper No. 07/2026 on the Proliferation of Public Wi-Fi Networks in India. Having reviewed the range of submissions made by industry bodies, operators, technology companies, and civil society organisations, we offer the following observations. These counter comments address key themes where, in our experience and considered opinion, certain positions put forward in the record would, if accepted, impede rather than advance the goal of making affordable, accessible public Wi-Fi a reality across India.

We have organised our response around the themes that matter most for the future direction of the PM-WANI framework. We do not repeat our original submission in full; we focus specifically on areas where we believe a counter-perspective is warranted.

Theme 1: The Case for PM-WANI — Why Mobile Internet Is Not Enough

Before engaging with the specific arguments raised in this consultation, it is worth restating a foundational point: mobile internet and broadband Wi-Fi are not competing technologies, they are complementary ones. Across every market where meaningful digital inclusion has been achieved, the two coexist and reinforce each other. Mobile networks excel at providing personal, on-the-go connectivity across wide geographic areas. Fixed and public Wi-Fi networks excel at delivering high-throughput, low-cost, shared connectivity at stationary locations in homes, schools, community centres, and small businesses. Neither can fully substitute for the other. The evidence from markets with high digital inclusion rates is consistent: mobile broadband penetration and fixed Wi-Fi penetration rise together, not in opposition. India's challenge is not to choose between them but to build both layers simultaneously. PM-WANI is India's primary instrument for building the shared Wi-Fi layer and its success is a complement to, not a competitor of, India's mobile broadband ecosystem.

A number of submissions to this consultation have argued, with varying degrees of directness, that India's mobile broadband ecosystem has already solved the connectivity problem that public Wi-Fi was designed to address. The argument, as we understand it, runs as follows: India has over a billion mobile broadband subscribers, data tariffs are among the lowest in the world, and rural internet usage has grown rapidly, therefore public Wi-Fi is redundant, and further regulatory intervention on its behalf is unnecessary.

In our experience, this argument misreads the nature of the access problem that PM-WANI is designed to solve. We address it across five dimensions below.

Despite India's rapid rollout of nearly 4.7 lakh 5G base stations, relying solely on cellular towers is fundamentally unviable because of the nation's extreme device density and

skyrocketing data usage, leading to severe network congestion during peak hours as too many users compete for the same limited bandwidth. This problem is compounded because high-frequency 5G signals struggle to penetrate physical barriers, suffering significant signal degradation when passing through concrete walls and pillars. While a single tower must stretch its finite bandwidth across thousands of crowded, indoor devices simultaneously, local Wi-Fi networks bypass these external bottlenecks. By operating on short-range, unlicensed 5 GHz and 6 GHz spectrum bands, PM-WANI hotspots act as a dedicated data pipeline that brings high-speed connectivity directly to users inside homes and community spaces, entirely unburdened by outdoor public congestion.

The data gap is structural, not just a pricing problem

India's entry-level mobile plans provide approximately 1–2 GB per day per SIM, for a limited validity period, at an average ARPU of around ₹195 per month. For a family of five sharing a single broadband connection, this translates to roughly 300 MB per person per day, a fraction of what meaningful digital participation requires. A child attending online school needs 8–10 GB for a single day of classes. Streaming a T20 match consumes 5–6 GB. These are not edge cases; they are the normal data requirements of a digitally included household. The gap between what India's mobile internet delivers and what India's families actually need is approximately 33x (300 MB/day reality vs. 10 GB need). This is not a gap that lower tariffs alone will close; it is a structural constraint on per-SIM, per-day data allocation that only shared, fixed-access Wi-Fi can address at scale.

Mobile data is affordable in aggregate but not at the household level

Citing India's low per-GB cost as evidence that connectivity is solved conflates aggregate pricing with household-level affordability. Not every member of a family has a personal SIM with a paid data plan. The person without disposable income, a student, a homemaker, an elderly dependent has no affordable path to independent connectivity under the mobile-only model. PM-WANI's sachet pricing is not a marginal improvement on mobile; it is a categorically different access model that allows any individual to get online independently, from a shared fixed-access point, at a very nominal cost. The relevant comparison is not the national per-GB average; it is whether the person with no SIM or no data balance can get online today. PM-WANI answers that question; mobile internet does not.

India's home Wi-Fi penetration reflects a structural broadband deficit

India has approximately 45 million wired broadband connections, representing a household penetration rate of around 13–15%, meaning the vast majority of Indian households remain dependent on mobile networks as their sole means of internet access. By contrast, fixed broadband household penetration in comparator economies is significantly higher, and globally, over 80% of all data is consumed over Wi-Fi rather than cellular networks. This gap is not simply a function of income or pricing, it reflects a structural deficit in fixed access infrastructure that mobile internet, by its nature, cannot substitute for. PM-WANI exists precisely to bridge this gap by creating shared, public Wi-Fi access points that deliver the throughput and cost economics of fixed broadband to people who do not have it at home.

Coverage is not the same as meaningful access

Some submissions have cited rural internet usage statistics to argue that the connectivity problem is largely solved. In our opinion, coverage and meaningful access are different things.

A person in a rural Gram Panchayat who uses their mobile for WhatsApp or occasionally checks news may be counted as an internet user. That same person accessing DIKSHA for three hours of educational content every evening, or consulting a doctor via telemedicine, or running a small business online, requires a qualitatively different level of connectivity sustained throughput, low latency, and no data cap anxiety that PM-WANI is specifically designed to make economically feasible. The question is not whether rural India is online; it is whether it is meaningfully online for high-value use cases at sustainable cost. On that test, mobile internet alone falls short.

The PCO analogy does not hold

Some submissions have drawn a parallel between the decline of Public Call Offices (PCOs) after mobile voice proliferated, and what they predict will be the fate of PDOs as mobile data deepens. In our view, this analogy does not fully hold. PCOs were rendered obsolete because mobile voice was a direct, personal, always-on substitute for a fixed-location voice call; a mobile phone does what a PCO did, better, at the same location. Mobile data is not a substitute for PM-WANI in the same way. A personal 4G connection does not deliver the throughput, the cost economics, or the shared-family-access model that a fixed Wi-Fi hotspot provides. The PCO served one person at a time on a usage-priced model; a PM-WANI hotspot serves an entire household, a classroom, a community, simultaneously, at costs that mobile data plans cannot match for high-volume use. The analogy conflates two fundamentally different connectivity architectures.

For all of these reasons, in our considered opinion, the argument that PM-WANI has lost its relevance should not be accepted. The framework addresses genuine structural gaps in data volume, household affordability, home Wi-Fi penetration, and access market concentration that mobile internet has not and cannot resolve on its own. PM-WANI deserves active policy support, and this consultation is the right mechanism to provide it.

Theme 2: Technology Recommendations

Several submissions to this consultation put forward technology-level recommendations for PM-WANI across three broad areas.

On authentication, a significant number recommend that TRAI adopt Passpoint/Hotspot 2.0 and related standards including EAP-SIM, EAP-AKA, and OpenRoaming on the basis that zero-touch, automatic device-level authentication eliminates user friction and is the technically superior solution.

On network architecture, some submissions flag that PM-WANI's current fixed BSSID registration framework may be incompatible with the MBSSID capabilities of next-generation Wi-Fi standards specifically Wi-Fi 6E and Wi-Fi 7 and recommend moving toward dynamic hostname-based and cryptographic certificate-based network identification.

On commercial and ecosystem structure, other proposals cover a positive list of indirect monetisation models for PDOAs and a standard commercial framework for TSP Wi-Fi offload arrangements as a PDOA revenue stream.

We engage with each of these in turn. Before doing so, it is important to establish the evaluative lens through which any proposed change to the PM-WANI framework should be assessed.

Who PM-WANI is built for

PM-WANI was designed for a specific user: the first-time internet user, the rural household, the student without a personal data plan, the small shopkeeper. This is a population characterised by basic handsets, limited digital literacy, and acute price sensitivity. Any technology intervention proposed for PM-WANI must be assessed against this user profile not against the urban smartphone user for whom most of these standards were originally designed.

The minimum conditions any intervention must satisfy

In our view, all technology recommendations for PM-WANI, however well-intentioned and technically sound should satisfy three minimum conditions before being adopted:

- They should impose no additional commercial burden on PDOAs, recognising that most PDOs in the ecosystem are small, local operators with limited capital and no dedicated technical teams
- They should not require hardware changes whether at the PDO access point level or on the user's device that increase costs or necessitate upgrades, given that both PDOs and end users in PM-WANI's target segment operate with constrained budgets and limited ability to absorb additional capital expenditure
- They should be implementable in a way that serves, rather than screens out, the most marginalised users PM-WANI is designed to reach, meaning that if a technology cannot function on a basic Android handset or a feature phone, it should not be a mandatory requirement for the ecosystem at this stage

Theme 3: Roaming and Interoperability — Sequencing Before Architecture

Several submissions to this consultation have called for mandatory inter-PDOA roaming to be implemented as an immediate priority, with various proposals for the technical and commercial architecture through which it should operate. The argument is that seamless roaming is essential for adoption, that users should be able to authenticate once and connect everywhere, and that without this, PM-WANI will remain fragmented and underutilised.

We understand and appreciate the appeal of this vision. Seamless, universal connectivity is an admirable end goal. However, in our considered opinion, mandating roaming infrastructure at this stage of PM-WANI's development would impose costs that the ecosystem cannot currently absorb, for a benefit that current usage patterns do not yet justify.

Roaming delivers value only when density exists

Roaming delivers meaningful value when users move regularly between different operators' coverage areas. At PM-WANI's current stage of deployment, this condition is not yet met in most geographies where the ecosystem is active. The predominant PM-WANI use case today is a user at a fixed, familiar location, a home, an office, a shop, a community space consuming data over an extended session. The investment required to build cross-network interoperability infrastructure — RADIUS federation, credential exchange, and settlement mechanisms — is difficult to justify against usage patterns that are, by nature, largely stationary. In our view, the right sequencing is to first deepen the quality and reliability of access at individual hotspot locations, and to pursue interoperability as a natural next step

once the ecosystem has the density and mobility patterns that would make roaming genuinely valuable to users.

PM-WANI's competitive advantage is stationary, high-volume access

On-the-go connectivity is already served by mobile networks. PM-WANI's comparative advantage and the use case where it clearly outperforms mobile data in cost-per-GB terms is the stationary user consuming large volumes of data at a fixed location: a student on DIKSHA, a family watching OTT, a small business operator accessing government services. Investing in cross-network handover infrastructure optimises for a use case mobile networks already handle, while potentially distracting from the deepening of quality and reliability at individual hotspot locations that actually serves PM-WANI's users.

The bilateral peer-to-peer mechanism is sufficient for now

The existing PM-WANI framework already permits bilateral commercial arrangements between PDOAs for roaming. This peer-to-peer mechanism allows roaming to develop organically where it makes commercial sense between PDOAs with adjacent or overlapping geographies, or between PDOAs serving similar user bases without imposing a universal architecture cost on the entire ecosystem. In our opinion, this is the appropriate starting point. Universal interoperability is a worthwhile medium-term goal to work toward as ecosystem density increases; it is not a prerequisite that should be mandated now.

A further consideration worth noting is that intra-circle roaming — the ability of a subscriber to seamlessly connect across different network operators' infrastructure within the same licensed circle — does not exist even within India's licensed mobile operator ecosystem, except in specific DBN-funded tower arrangements. If seamless roaming across operators has not yet been achieved within the far more capitalised and tightly regulated mobile sector, mandating it as an immediate requirement for a nascent, unlicensed, decentralised PM-WANI ecosystem would be premature by any reasonable measure.

Theme 4: Super-Aggregator or Centralised Platform

Among the most consequential questions in this consultation is whether a super-aggregator or a centralised platform consolidating authentication, session management, and commercial settlement should be introduced into the PM-WANI ecosystem. Several submissions have advocated for this, in various forms: some propose a single national entity; others propose a small number of 'senior' or 'higher-tier' PDOAs performing aggregation functions; others recommend a centralised authentication and payment gateway managed by a government-backed body.

In our considered opinion, each of these proposals, while well-intentioned, raises concerns that we believe warrant careful examination before any such architecture is adopted.

PM-WANI's design strength is its openness — centralisation risks undermining it

PM-WANI was deliberately designed as a flat, open architecture: no licence fee, no single gatekeeper, minimal barriers to entry. This design is not incidental; it is the mechanism by which PM-WANI reaches the small shopkeeper, the household with unused broadband capacity, the community institution that may not have the means to participate in a more structured commercial framework. In our view, introducing a mandatory intermediary

between the PDO and the user regardless of the form it takes would replace this open architecture with a more controlled one, and in doing so, risk narrowing the very participation that gives PM-WANI its scale potential.

Resilience is a core design principle

PM-WANI supports education, telemedicine, UPI transactions, and welfare access services that citizens depend on for daily life. A centralised platform, however well designed, introduces a single point of failure: a technical disruption or security incident at the centre would affect every PDO and user simultaneously. PM-WANI's distributed architecture is, among other things, a resilience feature; it ensures that a failure in one part of the ecosystem remains contained rather than cascading across the network. In our view, for infrastructure of this nature and public importance, this resilience is worth preserving, and any move toward centralisation should be weighed carefully against the concentration of risk it would introduce.

The UPI analogy points in the opposite direction

Several submissions have invoked UPI as a model for what PM-WANI could become, and have drawn from this the conclusion that a centralised national platform is the right answer. In our opinion, the UPI analogy supports the opposite conclusion. UPI's transformative success came from NPCI creating shared technical rails, a neutral, non-commercial infrastructure layer on which PhonePe, Google Pay, Paytm, and dozens of other applications competed with each other on user experience, features, and pricing. NPCI does not compete with these applications; it enables them. A super-aggregator or centralised platform for PM-WANI is not the NPCI of this ecosystem; it is the government-mandated replacement of all competing applications with a single one. That is precisely what did not happen with UPI, and it is the reason UPI succeeded.

What the PM-WANI ecosystem does need is a neutral Nodal Agency, an entity modelled on NPCI's governance role, sitting above the ecosystem without competing in it, setting national targets, publishing transparency data, and coordinating stakeholders. This is fundamentally different from a centralised commercial platform, and it is the only governance model that is consistent with PM-WANI's design principles.

Theme 5: The BharatNet–PM-WANI Integration Imperative

There is broad convergence across submissions on the importance of BharatNet as a rural backhaul resource, and we welcome this consensus. We wish to emphasise, however, that endorsing BharatNet integration in principle is only the starting point, the implementation mechanism matters equally, and in our view, an open-access model is the one most likely to deliver the intended outcomes.

Open access, not single-provider allocation

BharatNet's value to PM-WANI depends on it being available to any licensed ISP or PDOA on transparent, published, non-discriminatory wholesale terms. Where access to BharatNet infrastructure is mediated through a single delivery entity at negotiated rates, the risk is that the same pricing and access constraints that have historically limited rural connectivity re-emerge at a different point in the chain. What is needed is BharatNet dark fibre available on published tariffs, accessible to any licensed operator, with clear service level commitments

and financial accountability for downtime. This is what transforms BharatNet from a passive infrastructure asset into an active enabler of rural PM-WANI deployment.

The block-level caching problem is under-discussed

A structural cost problem that has received insufficient attention in this consultation is the fact that every unit of content consumed at a rural PM-WANI hotspot must currently traverse 1,500–2,000 kilometres of long-haul fibre as paid transit to reach the nearest Internet Exchange Point or CDN cache node. Extending IXP and CDN cache infrastructure to the block-level BharatNet PoP is a structural intervention that would reduce rural bandwidth costs by a margin that pricing negotiations alone cannot achieve. In our opinion, this is among the most impactful and most under-advocated interventions available to TRAI, and we would encourage it to be recognised as a priority recommendation.

Concluding Observations

Wiom has engaged with this consultation in the belief that PM-WANI represents one of India's most significant untapped opportunities to democratise digital access through open architecture, decentralised participation, and targeted public infrastructure support. The counter comments above reflect our operational experience as a practising PDOA and our considered assessment of where certain positions in the stakeholder record, if accepted, could pull the policy framework in directions that work against this potential.

Our core positions, briefly restated:

- PM-WANI addresses genuine structural gaps in household data consumption, home Wi-Fi penetration, and the diversity of the access ecosystem that mobile internet, on its own and by its nature, is not designed to fully close. The gap between what India's families need for meaningful digital participation and what any single access technology can deliver is best addressed through complementary layers, of which shared fixed-access Wi-Fi is an essential one.
- Technology recommendations for PM-WANI whether on authentication standards, network architecture, or commercial and ecosystem structure are welcome and reflect the ecosystem's growing maturity. However, they must be evaluated against a clear test: do they serve PM-WANI's primary beneficiary? Any recommendation that imposes additional commercial burdens on PDOAs, requires device upgrades that exclude low-income users, or cannot function on a basic handset should not be mandated as an immediate requirement.
- Roaming and interoperability are medium-term objectives to be pursued once ecosystem density justifies the investment. Mandatory roaming architecture at the current scale is premature and costly.
- A super-aggregator, centralised platform, or tiered PDOA structure would replace PM-WANI's open, democratic architecture with a controlled one defeating the programme's design purpose. A neutral Nodal Agency for governance only is the right model.
- BharatNet integration must be implemented as open access on published wholesale terms, combined with block-level IXP and CDN caching infrastructure, to deliver structurally lower rural bandwidth costs.

We remain available to elaborate on any of these points and we look forward to TRAI's recommendations.

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