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Report 2026

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10 Sectors.
1 Uttar Pradesh.

ABHIVARDHAN, ADITYA JAKKI, AYUSHI AGARWAL & NISHA SINGH | EDITORS

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Introduction by

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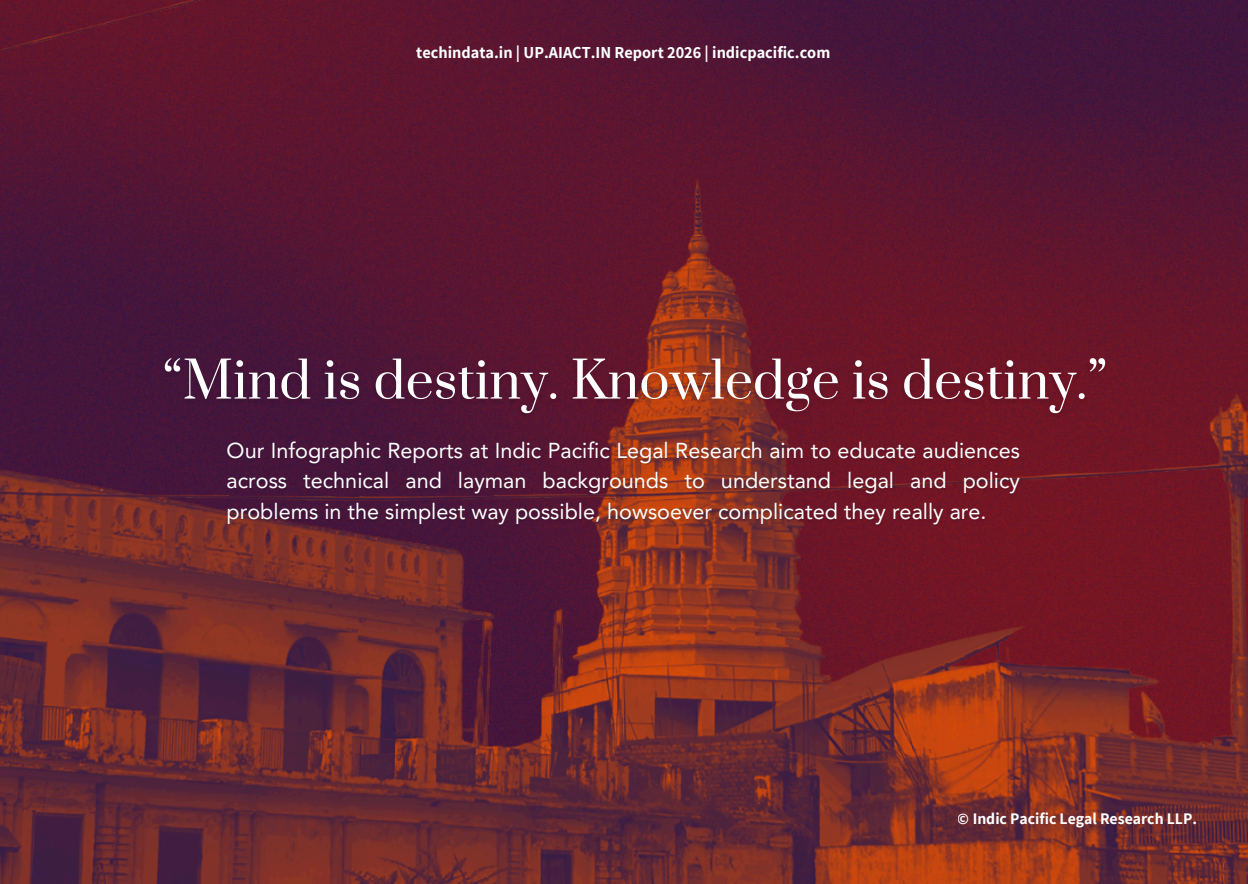

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UP.AIACT.IN Report 2026, First Edition, 2026

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UP.AIACT.IN

Report 2026

This report is the first serious playbook that puts Uttar Pradesh's own cities, talent and institutions at the centre of an AI strategy, with concrete 3–7 year actions for both government and industry stakeholders in Central India. The report also lays the basis of an AI Transformation Matrix, which is to be depicted on indicpacific.com/upaiact / up.aiact.in.

This report contains general suggestions and viewpoints shared by specialists, entrepreneurs and scholars, in professional and individual capacities respectively. These inputs are offered in a personal capacity only and do not represent or imply any affiliation, endorsement, or coordination with any government body.

Edited with Gratitude, by

ABHIVARDHAN, ADITYA JAKKI, AYUSHI AGARWAL & NISHA SINGH | EDITORS

Foreword by

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First Foreword

Professor Sachin Chaturvedi

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Global AI governance conversation has, for too long, been conducted at an altitude too high to be effective. **Global frameworks set principles; national governments are expected to operationalise them, yet the connective tissue between the two has remained conspicuously weaker. With growing polarization, tasks for national governments have become all the more complicated. The UP.AIACT.IN Report 2026 is a serious attempt to supply precisely that missing layer, and it does so for a geography that carries consequences well beyond its own borders.**

In addition to being India's most populous state, Uttar Pradesh is also the demographic and economic centre of gravity for the entire Central Indian belt. It is a region whose developmental trajectory will shape the character of India's AI transition decisively. Any credible account of inclusive AI deployment in India must reckon with this region first. This report is, one of the first structured, multi-sectoral effort to do so from within the industry and policy community.

What distinguishes the report is its insistence on operational specificity. It moves deliberately away from the familiar register of policy aspiration, like the declarations, the vision documents, the framework proposals, and consciously moves toward concrete, testable interventions across ten sectors. The Manufacturing + AI framing is particularly well-judged for a labour-abundant economy, and the emphasis on sovereign institutional capacity over vendor-dependent procurement reflects a hard-won understanding of how AI deployments actually fail in practice.

First Foreword

The initiative deserves attention not only from policymakers in Lucknow but from practitioners and researchers across the Central Indian states who face structurally comparable challenges. **I commend the Indian Society of Artificial Intelligence and Law and Indic Pacific Legal Research for undertaking this important work. I am sure it would stimulate the kind of sustained, state-level analytical engagement that India's AI governance ecosystem requires.**

Professor Sachin Chaturvedi

Vice-Chancellor
Nalanda University

Second Foreword

Dr Pitabas Mohanty

Professor
XLRI Jamshedpur

Most reports about AI and India say a lot without actually saying anything.

They talk about "transformative potential." They have slides with rocket ships and pie charts. They mention Bangalore fourteen times. And then they end with a vague call to "foster innovation ecosystems", and nothing happens.

This report is different.

The UP.AIACT.IN Report 2026 does something genuinely rare: it puts Uttar Pradesh at the center of the conversation, not as an afterthought, not as a market to be tapped, but as a place with its own logic, its own strengths, and its own urgent need for strategies that actually fit. The authors aren't asking UP to be a smaller Bangalore. They're asking something harder and more interesting: what does AI look like when it has to work for a polytechnic graduate in Kanpur, a weaver in Varanasi, a farmer in Bundelkhand?

That's the right question. And this report attempts to answer it.

What I appreciate most here is the insistence on operational honesty. It's easy to say "AI in healthcare" or "AI in governance." It's much harder to say *who builds it, where, with what data, under whose accountability, and by when*. **This report demands that harder answer. The AI Transformation Matrix it introduces isn't a framework for consultants. It's a diagnostic tool for implementers. That distinction matters enormously.**

Second Foreword

Dr Pitabas Mohanty

Professor
XLRI Jamshedpur

There's also something important in the report's willingness to name what isn't working. The talent pipeline is misaligned. **Government deployments are too often vendor-locked and opaque. National AI strategies treat states like UP as passive recipients rather than active builders. Saying these things plainly, and then proposing specific remedies, is more useful** than any amount of optimistic framing.

None of this means the path is simple. Uttar Pradesh faces real structural challenges, and AI is not a shortcut around them. But the authors are right that the window is open, and that waiting for someone else to write the playbook is not a strategy.

This report is the playbook.

Introduction by

RUPAK CHATTOPADHYAY

President and CEO
Forum of Federations

Introduction to the Report

Rupak Chattopadhyay

President and CEO
Forum of Federations

I am truly privileged to pen this introduction for the UP.AIACT.IN Report 2026, a timely contribution on the potential for AI to transform Uttar Pradesh.

Uttar Pradesh lies at the heart of India's developmental paradox: a population exceeding 240 million, larger than most countries coupled with vast human resources, islands of industrial and economic vitality, yet hobbled by gaps in infrastructure, education, and economic opportunity. As the world accelerates toward an AI-driven future that reshapes industries, governance, and daily life, UP stands at a crossroads. This report, produced by Indic Pacific Legal Research, is an implementation-first playbook, extending AIACT.IN, India's first privately proposed AI regulation framework into practical, state-level, city-specific, and department-ready execution.

The opportunity is profound. UP's economy cannot rely on services alone, it also needs to build a manufacturing-driven model deeply integrated with AI, robotics, machine learning, and physical AI. UP's greatest asset is its talent scale: hundreds of thousands of graduates from polytechnics and tier-2/3 engineering colleges: **under skilled but eager, cost-competitive, and ready for targeted retraining**. Real challenges such as healthcare access, environmental degradation, corruption, judicial delays create genuine & immediate demand for high-impact, domain-specific AI solutions capable of driving inclusive growth. Yet glaring gaps threaten to squander this potential. Central UP (Awadh and upper regions) remains systematically absent from national AI narratives. Industry reports, venture capital, and policy documents fixate on Bangalore, Hyderabad, Pune, and NCR, treating Noida as spillover rather than gateway to a far larger ecosystem.

Introduction to the Report

Rupak Chattopadhyay

President and CEO
Forum of Federations

Cities with over 15 million people and rich institutions are overlooked. No dedicated AI playbook exists for UP, and national strategies reduce states to passive implementers lacking operational depth. **There is no structured mapping of UP's industrial, educational, and tech evolution from 1990 to 2026, leaving decision-makers without historical context. This report addresses a crucial policy groupthink gap in that sense.**

The traditional IT services model, which is part of India's AI and IT story, is now under pressure from AI-assisted tools (GitHub Copilot, Claude Code, Cursor, Replit), which have the potential for smaller teams to replace large benches or optimise their expectations. UP must therefore build long-term value in manufacturing-AI integration, domain applications, localised software, and heritage-tech. Talent infrastructure is misaligned: policy chases elite institutions while mass graduates lack curriculum reform, retraining, or startup linkage. Many government AI deployments remain vendor-locked, opaque, and without local ownership, violating the sovereignty and explainability principles this report defends. **Most government AI strategies fail predictably: they remain ambitious and well-funded, yet they stay as documents and not deployments. State capacity (or lack thereof) is at the heart of this comprehension, and therefore implementation deficit within the public and policy sector. They speak in slogans ("AI in healthcare," "AI in governance") without answering what matters in execution: who builds what, where, with which data, under whose accountability, and by when? This report closes that gap, in my humble view. It prioritizes operational specificity over policy theatre.**

Introduction to the Report

Rupak Chattopadhyay

President and CEO
Forum of Federations

The report adheres to a simple standard while recommending sectoral playbooks of policy recommendations: Concrete + Testable + Sovereign + Operational = Shippable.

Recommendations feature 18–24 month targets, sector deep-dives (some with precedents), sovereign capacity analysis to prevent vendor lock-in in critical domains, and granular detail on cities, departments, timelines, partners, and maintenance. It serves doers across government and private actors: AI startups (government-as-first-customer), IT firms (co-development), industrial operators (operational AI), financiers (pilots), academia (skills and audits), and diaspora partners (joint labs).

UP will not succeed by imitating Bangalore. Network effects create winner-takes-all hubs that are structurally non-replicable at UP's scale. The path lies in digitizing its **52.38 lakh MSMEs and legacy clusters**, creating real ladders for rural-to-urban migrants from factory floors to data-informed roles and building diversified, resilient pathways amid service-sector disruption. Talent reform is central: upgrade institutions, launch large-scale retraining, embed industry expertise, bridge startup-academia gaps, and remove barriers.

If Uttar Pradesh succeeds, it will achieve something rarer and more valuable: becoming the first Indian state to operationalize AI at true population scale — without sacrificing sovereignty, accountability, or inclusive employment. That is the ambition of this report. **More than ambition, it is an attempt to make that ambition executable: one testable, sovereign, city-rooted pilot at a time**.

India's success in managing this transition to an AI-embedded economy hinges on Uttar Pradesh's success. If the state fails, India's transition will be incomplete. The editors and contributors of this report are to be congratulated for undertaking this comprehensive mapping exercise.

Rupak Chattopadhyay

President and CEO
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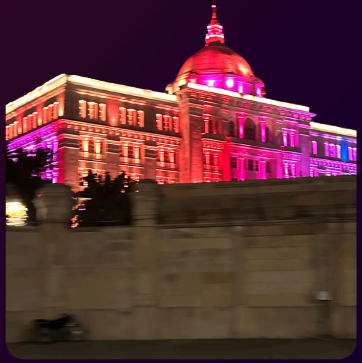
About the
Editor(s)



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Abhivardhan is the Founder, President and Managing Trustee of the Indian Society of Artificial Intelligence and Law, and the Managing Partner of Indic Pacific Legal Research.

He has also nurtured impactful brands such as AIACT.IN, LegalTechPolicy.com and AIARB.IN, and has been featured in numerous media outlets, and prestigious Indian and international law, policy and technology forums. Abhivardhan is also a recipient of EuropeIndia Under 40 Leaders in the year 2025 and has published 49 in-house and 14+ third party publications in AI policy & strategy.

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Ayushi Agarwal was the Associate Vice President of Data Science at United We Care, where she spearheads groundbreaking initiatives in AI and mental health, driven by a powerful vision: making mental health support accessible to everyone through responsible AI. With 12 patents and 10 research papers, including the co-authored work “LLMs Will Always Hallucinate and We Need to Live with This,” she is dedicated to the responsible and ethical use of AI to address challenges in healthcare and improve human well-being.

Currently, Ayushi is building an AI startup. However, in the past, she has focused on establishing causality in mental health through the use of Spatio-Temporal Graph Attention Networks to determine Compression-Complexity Causality. Her work aims to create a one-of-a-kind vertical Large Language Model (LLM) for the health sector. Ayushi is also one of the Distinguished Experts of the Advisory Council of the Indian Society of Artificial Intelligence and Law.

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About Indic Pacific and the Indian Society of Artificial Intelligence and Law

Indic Pacific is a research & market intelligence firm, specializing in customized AI strategy & governance issues, including market law, intellectual property, data protection & AI strategies.

The Indian Society of Artificial Intelligence and Law (ISAIL.IN) is an artificial intelligence industry forum, founded in 2018.

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Sectoral Playbooks on AI Industry Impact

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1 The State of UP AI

- What This Report Is (and Is Not)
- Why Operational Specificity Matters
- Why UP, Why Now: An Economic Perspective
- Who This Report Serves: Stakeholder Typology
- The Report Formula

The State of UP AI

1.1. What This Report Is (and Is Not)

This report is an extension to India's first privately proposed AI Regulation, AIACT.IN (currently at Version 5) - authored by Abhivardhan, one of the authors of this report. **As an extension of the AIACT.IN project, this report translates national-level AI governance principles into actionable, state-specific execution.**

- **If you only have 15 minutes, read this chapter plus the sectoral playbooks from Chapters 3 to 11 to understand the list of industry-policy recommendations made by our editors and contributing authors.**

- If you want to understand why these choices make sense as to why UP needs a different strategy than places like Bengaluru, read **Chapters 1 & 2**, which contains the economic analysis, talent gap assessment, and policy context.

The State of UP AI

1.2. Why Operational Specificity Matters

Most state AI strategies fail not because they lack ambition or funding, but because they treat implementation as a post-strategy problem. The pattern is predictable: a policy document announces "the state will promote AI in healthcare, agriculture, governance, and industry," allocates crores to a "State AI Mission," forms a steering committee of secretaries, publishes a PDF, holds a launch event — and then nothing ships.

What happens in the gap between announcement and execution? Four structural failures:

First, no one is actually accountable for concrete outcomes. The policy says "promote AI in healthcare," but it doesn't say which hospital, which use case, which vendor, which dataset, which department owns the procurement, who trains the staff, who maintains the system after the consultant leaves, and what specific patient outcome improves by what percentage by when. Without operational specificity, accountability dissipates across committees. Everyone is "responsible" in the abstract; no one is accountable for deliverables.

The State of UP AI

1.2. Why Operational Specificity Matters

Second, procurement defaults to the path of least resistance — vendor lock-in via black-box SaaS. For example, when a district magistrate or municipal commissioner is told "adopt AI," they could do what's easiest:

- **Sign an MoU** with a large vendor who promises an "AI-powered dashboard" or "smart city command center."
- **The vendor delivers a proprietary system with pretty visualizations, minimal documentation, no explainability, and zero local maintenance capacity.**
- Two years later, when the contract ends or the vendor pivots, the system becomes e-waste.

The state has paid for software rental, not capability building. This isn't hypothetical — it's the dominant failure mode of Indian smart city ICCCs, e-governance portals, and pilot projects from 2015–2025.

Third, context gets ignored, leading to mismatched solutions.

- **For example, a** "traffic management AI" that works in Bengaluru (dense urban roads, high car ownership, existing sensor infrastructure, English-speaking traffic police) may not work in a Tier-2/3 district (mixed-use roads with cattle, rickshaws, and trucks; minimal sensors; different enforcement culture).

The State of UP AI

1.2. Why Operational Specificity Matters

- But generic policies procure the same vendor solution for both cities because the RFP template was copied from a national portal, and no one involved in drafting the tender has ever stood at a Gorakhpur intersection during evening rush hour.

The AI fails not because the algorithm is necessarily problematic, but because the problem specification was wrong from the start.

Fourth, no one owns the talent pipeline.

- A policy (for instance) may announce "create AI skilling programs," but who exactly gets trained? The typical response is to fund a generic bootcamp (online courses, Coursera partnerships, maybe a ₹10 lakh grant to a private training institute) and then discovery three months in that the students who most need retraining (polytechnic diploma holders, tier 3 college graduates) cannot afford fees, don't have laptops, need hands-on lab access not video lectures, and require job placement guarantees to justify opportunity cost.

The policy assumed "if we fund training, talent will emerge."

The bottleneck remains that training programs serve the already-privileged (tier 1 college graduates who could have upskilled anyway) and miss the mass base.

The State of UP AI

1.2. Why Operational Specificity Matters

The antidote to these failures is operational specificity. Here are some of the simplest questions around implementing AI strategies by ensuring operational specificity:

- Which city leads which pilot, and why that city specifically?
- Which department is the lead implementer, and what happens when that department has no AI expertise?
- Which existing asset (hospital, court, expressway, factory) gets instrumented first, and how does that choice determine scalability?
- Which vendors or partners are realistic for UP's context?
- Which talent pool fills which role in deployment, maintenance, and iteration?
- What budget is realistic for an 18-month pilot, and where does that budget come from?

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Uttar Pradesh's recent industry policy frameworks reveals both ambition and a critical strategic choice. The **UP Global Capability Centres (GCC) Policy 2024** explicitly targets high-value digital services, including AI, machine learning, data analytics, cloud computing, and cybersecurity, aiming to position the state as an "innovation nerve centre" for multinational corporations.

The earlier **UP IT and Startup Policy 2017-22** attracted investment worth ₹6,300 crore and proposed employment of 53,000 individuals.

These policies signal a clear intent to participate in India's digital economy.

However, UP's economic structure and scale may need to pursue a unique AI strategy than Bengaluru or Hyderabad's service-sector-led model.

The data underscores this imperative. **UP accounts for 11% of India's MSME units (around 84.5 lakh enterprises) — the second-highest concentration in the country — yet manufacturing contributed only 10.5% to UP's GSDP in FY25 compared to the national share of 12.6%**.

- This state of performance considering an estimated population of 24 crore (nearly one-sixth of India's 140+ crore population) and established industrial clusters spanning Kanpur textiles/leather, Noida semiconductors/electronics, Lucknow MSME handicrafts, and Gorakhpur fertilisers **points to important digitisation gaps** in the **industrial base** beyond the interface & intersection of service-sector orientations of the domestic economy in UP.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

- The GCC policy's emphasis on attracting global R&D centres represents a strategic opportunity for UP's technology sector. However, the state faces **important timing considerations** regarding **which segments of the global services value chain to prioritise**. The **traditional IT services outsourcing model (for instance)** underpinned Bengaluru's technology growth from the 1990s onward. Today, AI-assisted software development platforms (for example, GitHub Copilot, Cursor, Replit) are **reshaping productivity economics in code generation and standard development tasks**. This technological transition suggests that **UP's GCC strategy would benefit from calibration toward R&D functions, product development, and specialised technical capabilities;** areas where human expertise and creative problem-solving remain essential.

The Gaps

- **Central Uttar Pradesh is systematically underrepresented in national AI narratives and industry mapping**. Reports by industry associations & chambers of commerce, national AI mission documents, and venture capital flows concentrate overwhelmingly on metros (Bengaluru, Hyderabad, Pune, NCR) with Noida receiving attention primarily as an NCR spillover, not as a gateway to UP's broader ecosystem. **Lucknow, Kanpur, Prayagraj, Varanasi, and Gorakhpur, cities with combined populations exceeding 1.5 crore and rich institutional assets remain absent from mainstream AI industry analysis and policy focus**.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

The Gaps - continued....

- **No dedicated, structured AI playbook exists for Uttar Pradesh, particularly for the Awadh and Upper Central regions** despite these geographies being critical to North & Central India's economic resilience, cultural continuity, and political centrality. Existing national AI strategy documents treat states as **implementation appendages rather than offering state-specific operational guidance**.

- In fact, we did not find any structured industrial history guidance on Uttar Pradesh's educational and technology ecosystems of talent and scale, which give us a realistic direction as to which way the state's industry & education landscape when it comes to tech ecosystems has evolved in the 1990-2026 period.

- **The "mass recruiter" model for IT services employment is unlikely to materialize in UP at the scale or speed that generic policy documents assume**. Traditional IT services hiring (TCS/Infosys bench model) is contracting due to AI-assisted software development tools and competitive decisions made. **Long-term economic options, such manufacturing-AI integration, domain-specific AI applications, localized software services, heritage-tech innovation must be deliberately constructed. Quantified goals may defer or transform with time, but these long-term options anchor a major purpose to usher this report.**

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

The Gaps - continued...

- **Talent development infrastructure is misaligned with market realities**: Policy attention focuses on attracting elite institutions (IITs, IIMs, foreign universities) or courting big tech campuses, while **UP's actual talent advantage, i.e., hundreds of thousands of polytechnic and tier 2/3 engineering graduates annually, lacks systematic retraining, curriculum reform, or startup ecosystem integration**.

- **Sovereignty and governance principles are absent from pilot designs**: Existing AI deployments in government services often replicate vendor-controlled, black-box SaaS models with unclear data ownership, no explainability requirements, and limited local maintenance capacity, precisely the pitfalls AIACT.IN warns against.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Institutional Risk and the Governance Premium

While a population of 24 crore and a massive MSME base of 84.5 lakh units provide a solid foundation for the state's growth, external investors and global firms often price in a **Governance Premium**, i.e., the hidden cost of navigating administrative friction, law and order concerns, and judicial backlogs.

Traditional technology hubs like Bengaluru or Hyderabad have operated within a "**high-trust**" environment where the administrative layer is largely invisible to the investor. In contrast, UP's industrial history is often characterized by four structural challenges:

- **Accountability Dissipation**: High-level policies often fail because no single entity is held accountable for concrete deliverables, leading to a gap between announcement and execution.
- **The Black-Box Procurement Trap**: A reliance on vendor-controlled, proprietary software creates "software rental" models rather than local capability building.
- **Operational Ambiguity**: Generic RFPs are often copied from national templates, ignoring the ground-level realities of Tier 2 and Tier 3 districts.
- **Talent Misalignment**: Skilling programs frequently target elite graduates while ignoring the mass base of polytechnic and Tier 3 engineering students who drive the actual industrial workforce.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

The Capex-Execution Challenge

A critical institutional risk is the state's persistent challenge to meet Capital Expenditure (Capex) targets despite maintaining a revenue surplus. This challenge suggests that the primary bottleneck could be a deployment capability.

Large-scale urban expansions (especially in manufacturing centres in Western and Central UP) often prioritise land acquisition and real estate while failing to build the essential social infrastructure for labour. A lack of dedicated hostels or housing for the industrial workforce directly impacts supply chain stability and project uptime. Without addressing the "human layer" of the factory floor, high-tech clusters will remain underutilised assets.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

The Opportunity

- **Manufacturing + AI potential**: UP's economy cannot be merely service-driven; it must be manufacturing-driven with AI, robotics (including physical AI), and ML integration.

For "Manufacturing + AI" ecosystems to function, factories require a high-uptime workforce that is not hampered by the logistics of long-distance commuting or inadequate living conditions.

- **Geographic diversity**: From Noida's semiconductor ecosystem to Lucknow's administrative depth, Kanpur's industrial legacy, Prayagraj's judicial institutions, Varanasi's heritage economy, and Gorakhpur's emerging logistics role, UP offers multiple testbeds for AI applications.

- **Talent pool at scale**: Massive graduating cohort from polytechnics and tier 2/3 engineering colleges; **underskilled but hungry, trainable, and cost-competitive**.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

It is proposed that a hybrid focus to manufacturing and AI innovation + implementation can be helpful for government stakeholders and private stakeholders to further industrialise the state in a quite far-reaching sense. We call it, a Manufacturing + AI approach with certain operational pillars.

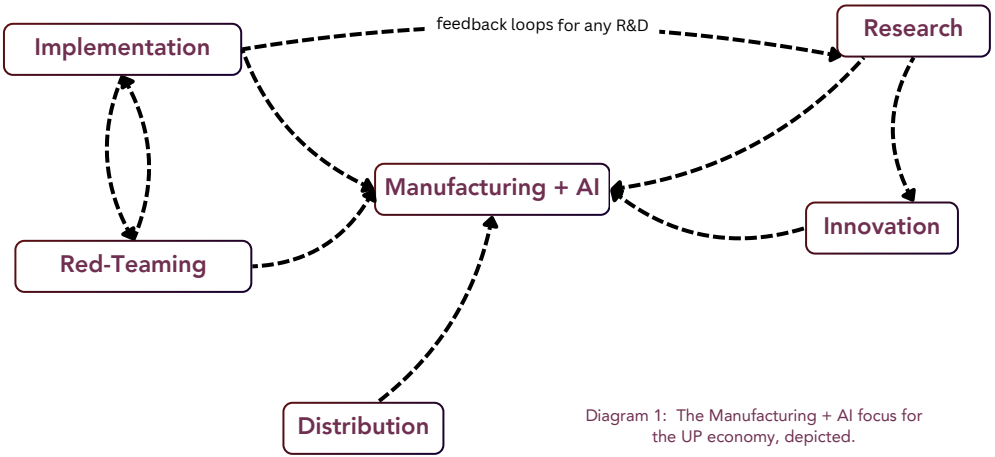


Diagram 1: The Manufacturing + AI focus for the UP economy, depicted.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Uttar Pradesh's demographic scale, with a population considerably larger than states like Karnataka (6.8 crore) or Telangana (3.9 crore) shapes distinct employment imperatives for the state's economic development strategy.

To compare, **Bengaluru's technology services sector has generated substantial employment for highly educated professionals serving global clients.** This model has proven effective for states with concentrated technical talent pools and specific demographic profiles. UP's development requirements, however, **extend across a broader skill spectrum**: from polytechnic diploma holders and engineering graduates to manufacturing workforce and artisan communities.

Given that significant portions of UP's population remain engaged in agriculture and traditional manufacturing sectors, the **state's employment strategy can benefit from a multi-sectoral approach** that **creates economic pathways across diverse skill levels and geographic locations**.

This demographic reality suggests that UP's technology and industrial policy framework should integrate digital capabilities with manufacturing modernisation and skill development initiatives—creating complementary employment ecosystems.

Such an approach **aligns** with the state's industrial clusters and population distribution while building on its emerging strengths in both technology services and manufacturing.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Manufacturing provides distinct employment pathway characteristics that complement service-sector opportunities.

- Workers can enter **production roles with foundational technical skills**, **acquire quality control expertise and process knowledge on the job**, and **progress into supervisory or specialized technical positions,** particularly as factories **adopt digital systems that require proficiency** in both operational processes and data interpretation.
- This incremental skill-building model **accommodates workers** across different educational backgrounds and geographic origins, **creating employment pathways for populations that may face barriers to entry** in technology services sectors, where requirements typically include English proficiency, computer science credentials, and exposure to coding environments. UP's employment strategy benefits from incorporating both pathways to address its diverse workforce profile.
- The state's established **industrial clusters, including** textiles and leather production, electronics manufacturing, **represent underutilised assets rather than declining sectors**. These clusters maintain **existing infrastructure, established supply chains, and experienced workforces**. The primary opportunity lies in **closing the digitisation gap: introducing data-driven decision-making, process automation, and AI-optimized operations to improve productivity within proven manufacturing ecosystems**.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

UP operates within a competitive service-sector landscape where established technology hubs have accumulated significant structural advantages over multiple decades. Cities like Bengaluru, Hyderabad, and Pune benefit from mature IT infrastructure, developed startup ecosystems, global market recognition, and talent density that has compounded over time through positive feedback loops.

Network Effects and Ecosystem Dynamics

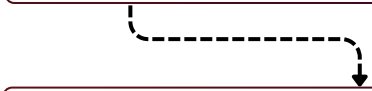
The self-reinforcing characteristics of mature technology ecosystems, where talent concentration attracts capital, which attracts companies and talent reflect fundamental economics of agglomeration rather than replicable policy blueprints. Diagram 2 gives a holistic perspective of how network effects and ecosystem dynamics work.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Network effects in technology sectors exhibit strong concentration dynamics. When venture capital firms, experienced entrepreneurs, specialised professional services (legal, financial, technical infrastructure), and skilled technical talent co-locate, each additional participant increases the ecosystem's value exponentially.

This density creates operational advantages: rapid talent acquisition, access to experienced advisors, efficient capital deployment, and knowledge-sharing networks that emerge organically through professional interactions.



Technology companies in mature ecosystems benefit from reduced friction across multiple dimensions:

- Talent pools that enable specialized hiring within compressed timeframes
- Access to professionals with relevant scaling experience
- Concentrated investor networks enabling efficient capital raising
- Informal knowledge transfer through professional communities and peer networks

Diagram 2: Network Effects and Ecosystem Dynamics, explained.

The State of UP AI

1.3. Why UP, Why Now: An Economic Perspective

Misalignment with Regional Economic Structure and Scale
More fundamentally, the Bengaluru model (for example) is structurally misaligned with the needs of most Indian states.

- Bengaluru's success depends on a geographically concentrated and well-skilled tech workforce serving global clients. Strong pre-existing educational infrastructure (IISc, NITs, private engineering colleges) certainly helped augment the status of the city.
- Nonetheless, even for a relatively moderately populated Karnataka, you need other areas like manufacturing, mining, and commercially viable agriculture, among others, to absorb the rest of the workforce outside the Bengaluru tech ecosystem and address regional disparities.

A state like Uttar Pradesh, therefore, cannot employ its population through software startups and IT services GCCs alone, considering that:

- The Bengaluru model also assumes a certain kind of talent pipeline: English-proficient, four-year engineering degree holders, comfortable with startup risk and equity compensation cultures — a profile that represents perhaps **a fraction of India's graduating youth**.
- For the remaining — polytechnic diploma holders, tier 2/3 engineering graduates, ITI-trained technicians, traditional artisans, agricultural workers seeking non-farm employment — the Bengaluru model offers no pathway.

Diagram 3: Misalignment with Regional Economic Structure and Scale, explained.

The State of UP AI

1.4. Who This Report Serves: Stakeholder Typology

This is an industry-policy report. Therefore, it is designed for decision-makers and implementers across government and private sectors.

Stakeholders from Government Bodies

Category	Who
Political–Executive	CM, Ministers, Mayors
Economic Agencies	UPSIDA, UPEIDA, Industry/IT/ESDM Depts, State Transformation Commission
Social Sector Agencies	Health, Education, Social Welfare, Skills, Higher Education
Judiciary & Law Enforcement	Police, Courts, Tribunals, Home Dept, Legal Services
Urban–Infrastructure	Smart City SPVs, Municipal Corps, Housing, Transport
Knowledge & Culture	Universities, Technical Colleges, Archaeology, Tourism

The State of UP AI

1.4. Who This Report Serves: Stakeholder Typology

This is an industry-policy report. Therefore, it is designed for decision-makers and implementers across government and private sectors.

Private Stakeholders

Category	Who	Why They Need This Report
AI/Tech Startups	Early-stage AI product/service companies, vertical AI, deep-tech	To identify government-as-first-customer opportunities, understand procurement paths
Established IT/ITS Firms	Service firms, system integrators, GCCs, captive centres	To scope implementation contracts, co-develop solutions, train teams
Industrial and Infra Firms	Manufacturing, logistics, energy, real estate, infra operators	To deploy AI in operations, access local vendor ecosystem, reduce costs

The State of UP AI

1.4. Who This Report Serves: Stakeholder Typology

This is an industry-policy report. Therefore, it is designed for decision-makers and implementers across government and private sectors.

Private Stakeholders

Category	Who	Why They Need This Report
Financial Actors	VCs, PE, Banks, NBFCs, CSR arms, institutional investors and ancilliary arrangements	To identify fundable pilots, understand government co-investment models
Knowledge Ecosystem	Universities, private colleges, research labs, think tanks, training companies	To partner on pilots, provide bias audits, offer skills programs
Diaspora and External Partners	NRIs, Japan–Singapore–ASEAN-based MSMEs and firms, GCC firms, multinationals	To return/invest, establish joint labs, mentor local entrepreneurs

The State of UP AI

1.4. Who This Report Serves: Stakeholder Typology

Secondary / Cross-Cutting Tags (examples)

In certain parts of this report, especially in Chapters 3 to 12, we have provided reference to certain cities / districts of the state of UP by connecting their relevance or essence with the recommendations developed by our contributing authors, and curated by our editors:

- **Geography**: Noida, Lucknow, Kanpur, Prayagraj, Varanasi, Gorakhpur, specific corridors (Lucknow–Prayagraj–Varanasi, Kanpur–Lucknow).

Roadmap and Definitions

Timeframes can be divided into 2 types:
- **Short-term**: 1–2 years (immediate action, testable outcomes by Q4 2027)
- **Long-term**: >2 years (institutionalization, scaling, state-wide rollout by 2028–2032)

The State of UP AI

1.5. The Report Formula

This report is built around a simple but rigorous formula that addresses four critical requirements for credible AI strategy:

Concrete + Testable + Sovereign + Operational = Shippable

Breaking this down:

1. **Concrete, testable outcomes**: Every recommendation includes specific 18–24 month targets.
2. **Sector example with guidance + legal / policy precedent**: At least one sector receives deep-dive treatment showing what governance practically requires on the ground, and how emerging legal or policy precedents change system design, procurement, and vendor accountability.
3. **Sovereign capacity examination**: Explicit analysis of what UP / India must own versus what can be procured for critical workloads (for example, **health, social welfare**), preventing vendor lock-in and data monopolies.
4. **Operational specificity**: City-level, department-level, corridor-level detail with named lead agencies, timelines, partner types, and skills/maintenance infrastructure requirements.

The State of UP AI

1.5. The Report Formula

This mind map demonstrates the sectors this report emphasises upon.

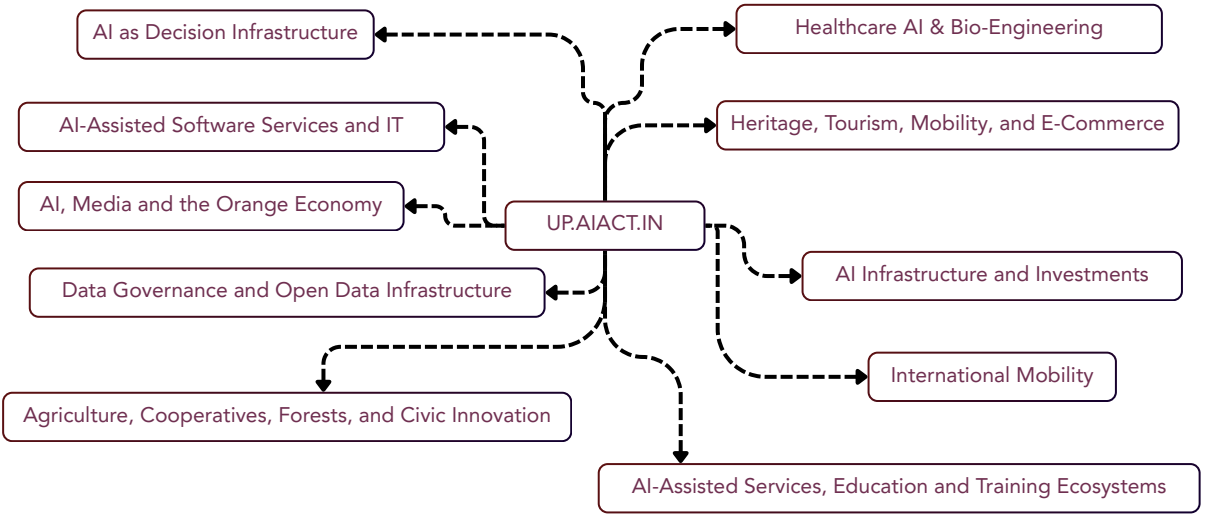


Diagram 4: Sectoral focus for the UP.AIACT.IN Report 2026.

The State of UP AI

1.5. The Report Formula

To anchor the state's deployment strategy, the sectoral playbooks from Chapter 3 onwards have been consolidated into an **AI Transformation Matrix.**

- The necessity of this matrix lies in its strict diagnostic approach. It forces implementing departments to definitively isolate the ***Current Structural Problem*** before any technological procurement is proposed. At the core of the framework is the AI Intervention Layer, which acts as the precise and executable mechanism engineered to resolve the identified administrative bottleneck. **This layer serves as the operational engine of the state strategy. It translates high-level governance ambitions into specific, localized execution and demands absolute operational specificity regarding the exact application of technology, the deployment corridor, and the required infrastructure.**
- To prevent the funding of technical vanity projects, the framework requires absolute clarity on outcomes. Every intervention must explicitly project a **Measurable Impact** that improves frontline decision-making or civic service delivery, alongside an **Economic Spillover** that quantifies the broader financial benefit or talent ecosystem growth for the local economy.
- Furthermore, a successful deployment must anticipate both structural and technical failure. The matrix compels decision-makers to evaluate **Key Risks** inherent to the technology or the bureaucratic environment. To deploy a solution safely, it establishes active feedback osmosis between ground-level administrative realities and algorithmic outputs through dual governance constraints.

The State of UP AI

1.5. The Report Formula

- The **Policy Mandate** defines the overarching administrative intent, while the Strict Compliance Metrics serve as non-negotiable operational rules and procurement kill switches.

- By anchoring every initiative to a defined **State of Focus**, this architecture ensures continuous alignment among technology, applied research, and civic utility.

The Indic Pacific website at indicpacific.com hosts the first and continued iterations of the AI Transformation Matrix, specifically within the AIACT.IN portal, serving as a live instrument for administrative reference and public accountability.

2 Hyperscaling the Talent Ecosystem

- Market Timing Risks
- Talent and Research Access Gaps

Hyperscaling the Talent Ecosystem

2.1. Market Timing Risks

The mass IT recruiter model, where firms like TCS, Infosys, and Wipro hired thousands of fresh engineering graduates for "bench strength," training them on-the-job and deploying them to client projects as needed is facing structural headwinds that UP's policymakers must understand soberly.

- **India's Economic Survey 2025-26, Chapter 14**, provides a specific analysis to date of this shift. Quoting a US study examining US professional, business, and information services employment from March 2016 to July 2025, the Survey identifies a meaningful structural change in employment dynamics post-December 2022, precisely when generative AI tools gained widespread salience.

- The findings are nuanced or traditional IT services: while the post-2022 period shows a positive association with employment levels (firms hiring to integrate AI systems, manage new workflows), the interaction between this period and output growth is negative and statistically significant. This translates into stating that the marginal responsiveness of employment to economic growth has weakened, and the labor intensity of output has declined.

- **As the Survey notes, "policymakers and firms might witness a non-linear labour market trajectory. Unless the labour market adapts and new skills are learned, which alter the profile and types of jobs people are engaged in, we may observe even more reductions in the labour-intensity of GDP in the future".**

Hyperscaling the Talent Ecosystem

2.1. Market Timing Risks

- This decoupling is driven by AI-assisted software development tools (GitHub Copilot, Claude Code, Cursor, Replit Agent) that enable small, highly capable teams to deliver projects previously requiring dozens of engineers. Despite these tools lacking reliability, they drive agile behaviour in smaller yet highly capable IT / AI engineering teams, which could drive some if not an overhauled form of decoupling for the Indian IT sector.
- Now, Industry data from January 2026 shows AI-linked hiring in India reached 290,256 roles in 2025 and is projected to grow 32% to nearly 3.8 lakh roles in 2026. Despite Uttar Pradesh's liberalised IT policy, mass-level recruitment in workspaces across Lucknow, Kanpur, Prayagraj, Deoria, and Varanasi (for example) cannot accelerate swiftly due to decoupling trends and real estate dynamics governing how IT firms allocate work accounts to regional sections and talent.

Now, Zerodha's June 2025 analysis "The AI-Shaped Hole in Personal Finance" provides a nuanced and structured underdtanding of this.

1. Employment escalators have stopped moving, not disappeared, which complicates planning

Junior positions are not vanishing but evolving into endpoints rather than pathways to senior roles. When AI-associated market hiring & business narratives reshape intermediate career stages, the work quality equation of it, and how compensation drives value for enterprises & start-ups, the traditional career progression model (accepting lower early compensation in exchange for experience-based advancement) requires recalibration.

Hyperscaling the Talent Ecosystem

2.1. Market Timing Risks

Effective workforce strategies must specify not only job creation numbers but also advancement trajectories and skill development pathways. **Without clear progression mechanisms, policies risk creating positions with limited upward mobility.**

2. The relationship between credentials, effort, and compensation has become non-linear requiring new strategic frameworks

GenAI proliferation & market hype is altering the historical correlation between inputs (education, tenure, effort) and outputs (income, advancement). Multi-year strategies built on stable employment elasticity assumptions may encounter challenges. The GCC Policy 2024, for example, could attract centers employing thousands or centers leveraging AI to achieve similar output with smaller teams. Traditional forecasting models struggle to differentiate between these divergent trajectories, necessitating more flexible planning approaches.

3. Expert predictions vary by orders of magnitude requiring scenario-based planning

Incentive structures shape AI forecasts: companies emphasise transformative potential to attract investment; researchers highlight breakthrough findings to secure funding. Policies designed around a single scenario, such as sustained IT services hiring may prove vulnerable if alternative trajectories emerge, including significant employment contraction. UP benefits from scenario-robust policies that create value across multiple AI impact levels, whether modest or transformative.

Hyperscaling the Talent Ecosystem

2.1. Market Timing Risks

4. Financial resilience outperforms optimisation under uncertainty and economic diversification becomes essential

Under conditions of high **Knightian uncertainty***, resilience-focused strategies provide greater stability than optimization-based approaches. For UP, this translates to economic diversification rather than sector concentration. Relying predominantly on IT services through GCC policy carries risk given sectoral uncertainty. Manufacturing-AI integration, heritage-tech applications, infrastructure optimization, and domain solutions for UP's 84.5 lakh MSMEs create multiple economic pillars. **The Indian Economic Survey (page 556) addresses this directly: "The trade-off, therefore, is between expending scarce resources to chase frontier-scale models or deploying those resources more effectively towards domain-specific AI systems aligned with domestic economic priorities."**

Additionally, the Economic Survey warns: "**For labour-abundant economies such as India, this creates a tension between aggregate productivity gains and employment absorption. Rapid, uncalibrated deployment of AI may boost output but risks displacing segments of the workforce faster than the economy can reabsorb them. Conversely, delaying adoption to protect jobs may risk locking firms into a low productivity equilibrium. The policy challenge, therefore, is not whether to adopt AI, but how to pace its diffusion so that labour augmentation can be facilitated.**" Planning for multiple futures means accepting that some pilots fail, some succeed beyond expectations, and the state's role is orchestrating adaptation, not executing a fixed blueprint.

***Knightian uncertainty describes a condition of 'unknown unknowns,' where the absence of measurable odds requires a shift from predictive optimization to systemic resilience.**

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Uttar Pradesh produces one of India's largest annual cohorts of engineering and technical graduates, yet this apparent strength masks a fundamental mismatch: the talent pipeline is calibrated for a labour market that no longer exists, while the institutions producing that talent operate under incentive structures that resist adaptation.

The Polytechnic and Tier 2/3 Engineering College Reality: Volume Without Industry Readiness

UP has hundreds of polytechnics producing diploma graduates annually, plus tier 2/3 engineering colleges (for example, IET Lucknow, HBTI Kanpur, KNIT Sultanpur, MMMUT Gorakhpur, and dozens of private engineering colleges) graduating tens of thousands of BTech holders each year. **This is UP's actual talent base, dwarfing the output of major institutions like NIT Allahabad or those under state's quota in IIT Kanpur.**

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Current state explains that:

These graduates face structural unemployability in AI-era labor markets, not due to individual deficiency but institutional bottlenecks:

- **Curriculum fossilisation:** Most tier 2/3 colleges teach CS curricula frozen in the 2010s — data structures, algorithms, Java/C++ basics, web development fundamentals — with minimal exposure to AI-assisted development tools (GitHub Copilot, Cursor, Replit), domain-specific AI applications, or modern cloud-native architectures. A 2025 graduate from a tier 3 college in Bareilly or Moradabad has learned to write code the same way a 2015 graduate did, but now competes in a labor market where employers expect AI-augmented productivity from day one.

- **Lab infrastructure gap:** Colleges lack physical AI and IoT lab infrastructure — robotic arms, sensor kits, edge computing devices, industrial automation setups — needed to train students for manufacturing-AI integration roles. You cannot teach someone to deploy computer vision for factory quality control using only laptops and PowerPoint slides. ***This hardware-software gap is invisible in pure software training (where cloud access suffices) but crippling for UP's manufacturing-AI opportunity***.

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

- **Faculty skill obsolescence:** Most faculty in tier 2/3 colleges completed their own education pre-2015, have limited industry exposure, and face no systematic retraining mechanisms. Asking them to teach generative AI, explainability frameworks, or AI ethics without themselves having industry experience in these domains creates a knowledge transmission bottleneck. The rare faculty member who is up-to-date either leaves for industry or gets overwhelmed trying to update an entire department single-handedly.

- **Placement-driven pedagogy**: Colleges optimise curricula for mass IT services placements, which means drilling students on aptitude tests, basic coding problems, and HR interview skills **rather than deep technical capability or domain specialisation**. Now that **mass IT hiring is contracting**, this optimisation target has vanished, but institutional inertia keeps the pedagogy unchanged.

Why this matters for UP's AI strategy:

If UP's AI economic transformation depends on talent that **does not yet exist in adequate volumes**, and the institutions producing talent at scale are **structurally incapable of rapid curriculum reform**, then any strategy assuming "**build it and they will come**" (IT parks, tax incentives, GCC attraction) **may not be helpful in the long-run**. The talent constraint is **not a supply problem (UP has massive graduate volumes) but a mismatch problem** and mismatches require **deliberate intervention**, not market-driven adjustment.

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

The UP GCC Policy 2024 emphasises attracting R&D centres and assumes these will train local talent.

- But GCCs hire from the top 5-10% of graduates, i.e., those from MNIT, IITs, or tier 1 private colleges with strong fundamentals.

- **They do not, and structurally cannot, absorb the 50,000+ polytechnic diploma holders and tier 2/3 BTech graduates UP produces annually.**

Policy attention and resource allocation in UP's higher education gravitate toward:

- Attracting new IITs, IIMs, or AIIMS-style institutions
- Courting foreign universities under NEP 2020 provisions
- Upgrading MNIT Allahabad or establishing new NITs/IIITs
- Inviting BITS Pilani, VIT, Manipal to set up UP campuses

These initiatives create quality jobs for hundreds or low thousands — valuable, but structurally insufficient for a state of 24 crore.

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Meanwhile, the institutions that actually produce mass talent, i.e., government polytechnics, district-level engineering colleges, private tier 3 colleges in Meerut, Moradabad, Bareilly, Gorakhpur, Azamgarh, receive minimal attention, are affected by outdated AICTE curriculum mandates, no retraining budgets for faculty and no systematic & sustained industry partnership infrastructure.

The missed opportunity

- If UP invests ₹100 crore (approx.) in comprehensively reforming 50 polytechnics and 20 tier 2/3 engineering colleges, i.e., new labs, faculty retraining, industry partnership coordinators, AI-first curriculum modules, 6-month bootcamp programs for final-year students, it would impact 50,000+ graduates annually.

- By contrast, a new IIT campus (if UP secured one, which is uncertain and slow) might graduate 1,000–1,500 students annually after a 5-year ramp-up. The return on investment per rupee spent on mass institution reform vastly exceeds elite institution attraction, but the latter has more political visibility and prestige.

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Policymakers often cite Bengaluru's ecosystem: IISc, IIMs, top-tier private colleges feeding a vibrant startup scene. But Bengaluru's model is non-replicable for UP because:

- **Bengaluru's elite institutions existed for decades before the IT boom (IISc founded 1909)**
- **Karnataka's population (6.8 crore) allows an elite-focused talent strategy; UP's (24 crore) cannot**
- **Bengaluru's success came from leveraging existing elite talent, not creating it through policy in 5-10 years**

UP attempting to "become Bengaluru" by attracting elite institutions is fighting on unfavorable terrain. **UP's unique advantage is volume, if it can upgrade the quality of its mass-producing institutions, it creates a talent base no other state can match.**

Curriculum-Industry Disconnect

Engineering college curricula in India are governed by AICTE (All India Council for Technical Education) guidelines, updated every few years through a bureaucratic process involving committee meetings, stakeholder consultations, and nationwide rollout timelines. By the time a curriculum update reaches implementation in a tier 3 college in Bareilly (for instance), it is already 3-4 years behind industry practice. **The table in the next page depicts AI-specific curriculum gaps in UP-based colleges.**

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

What students learn	What industry needs	Gap impact
Basic Python programming	AI-assisted development using Copilot/Cursor	Students write code slowly, manually; employers expect 2-3x productivity from AI tools
Generic machine learning theory	Domain-specific AI applications (manufacturing quality control, healthcare diagnostics, legal document analysis)	Students have theoretical knowledge but cannot deploy it in sector contexts
Solo coding projects	Collaborative development with AI pair programming, version control, code review culture	Students unprepared for professional workflows
Textbook problems with clean datasets	Real-world messy data, edge cases, bias detection, explainability requirements	Students cannot handle production AI challenges
No ethics/governance modules	Data governance, data privacy workflows, AI / tech explainability, technical bias auditing	Students unaware of regulatory/governance requirements employers face

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Why industry partnerships fail to fix this:

Many colleges **claim "industry partnerships" or "MoUs with tech companies,"** but these typically amount to:

- **Guest lectures (one-off events, no curriculum integration)**
- **Internship programs (benefit top 10-20% of students, rest excluded)**
- **Hackathons (extracurricular, not core pedagogy)**

What's missing: Embedded industry practitioners co-designing and co-teaching semester-long modules, with college faculty sitting in to upskill themselves.

This requires budget (₹5–10 lakh per module per semester to compensate industry experts), institutional willingness to cede curriculum control, and coordination mechanisms that don't currently exist.

Unlike Bengaluru or Pune, where colleges are physically proximate to large tech employers and can organically develop partnerships, **UP's tier 2/3 colleges are geographically dispersed (Gorakhpur, Bareilly, Moradabad, Jhansi) and distant from major tech hubs**. Remote industry partnership models (video lectures, online mentorship) **exist but lack the hands-on, lab-based, iterative learning needed for hardware-software AI integration** (robotics, IoT, edge AI).

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Startup-Academia Linkage Vacuum

For a matter of contrast, ***Bengaluru*****'s AI / IT ecosystem benefits from dense startup-academia interaction: IISc/IIIT-B professors consult for startups, PhD students intern at companies, research labs and startups co-locate in incubators, faculty take sabbaticals to join founding teams, and students flow fluidly between academic research and commercial ventures**. This creates a **knowledge transfer loop**: academic research informs startup products, startup problems inspire academic research.

UP's current state:

- MNIT Allahabad, IET Lucknow, HBTI Kanpur (for example) have incubators, **but startup activity is sparse** compared to cities like Bengaluru
- **Faculty incentives discourage commercial engagement**: Academic promotion **depends on papers published, not startups incubated**; consulting for startups is often **seen as distraction, not contribution**
- **PhD/MTech students are rarely exposed to startup internships**: Unlike IISc, for example (where this is normalised), UP technical universities **treat industry engagement as optional extracurricular**
- No systematic "AI talent mixer" infrastructure for researchers, engineers, and entrepreneurs **to meet, collaborate, pitch ideas**

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

The freelancer economy dimension:

- India's tech workforce is increasingly freelance/remote-first (especially post-COVID). Talented researchers who might not want full-time startup roles could contribute as part-time consultants, technical advisors, or contract developers but only if matchmaking infrastructure exists.

- Platforms like Upwork/Toptal are global; UP lacks a state-level talent marketplace connecting local AI researchers (from MNIT, IITs, universities) with local startups, MSMEs needing AI solutions, or government pilots requiring technical expertise.

The Retraining Infrastructure Gap: No Pathway for Skill Upgrades at Scale

UP produces 50,000+ engineering/polytechnic graduates annually with outdated skill sets. Rather than writing them off as "unemployable" and waiting for the next cohort (with presumably better training), a functioning ecosystem would offer 6–12 month intensive retraining programs to upgrade them for AI-first roles.

What exists currently:

- Private bootcamps (Scaler, Masai School, etc., for example) — expensive (₹3–4 lakh), concentrated in Delhi/NCR/Bengaluru, high attrition rates, focused on software development not domain-specific AI
- NSDC/State Skill Mission courses — short duration (1–3 months), generic IT skills, insufficient depth for AI roles

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

- Online courses (Coursera, Udemy) — self-paced, require high self-motivation, no hands-on labs, no job placement support, dropout rates 80%+

What's missing or could be possible:

Government-subsidized, outcome-based, 6-month intensive AI retraining programs with:

- Physical infrastructure (labs with hardware for IoT/robotics/edge AI, not just laptops)
- Domain focus (manufacturing-AI track, healthcare-AI track, civic-tech track — not generic "data science")
- Industry partnerships (employers commit to interview graduates, provide real project datasets for capstone projects)
- Income-share agreements or post-placement fees (students pay ₹0 upfront, ₹50,000–1 lakh after securing job above threshold salary — aligns incentives for quality training)

Scale target for UP:

A realistic 18-month goal: 500 graduates retrained across 3–5 pilot programs in Lucknow, Kanpur, Noida (₹10–15 crore budget — ₹2–3 lakh all-in cost per student including stipends, lab access, faculty, placement support). If successful, scale to 5,000 annually by Year 3.

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

Why government must lead this

Private market undersupplies retraining because:

- **Adverse selection**: Students most needing retraining (tier 3 college graduates with weak fundamentals) are least able to pay ₹3–4 lakh bootcamp fees
- **Externality**: Social benefit of reducing educated unemployment exceeds private return to training provider
- **Coordination failure**: Employers want trained candidates, colleges can't update fast enough, students lack resources — government is the only actor that can broker this triangle

AI Talent Mixers: Necessary But Insufficient

Talent mixers are periodic events (monthly/quarterly) where AI researchers, startup founders, corporate engineers, government officials, and students meet to network, present projects, discuss collaboration opportunities, and scout talent/co-founders. Bengaluru has several (Hasgeek events (for e.g.), Product Conclave, startup meetups); UP however lacks systematic equivalents. Mixers remain valuable for the following set of reasons:

- **Knowledge sharing**: Researchers learn what industry problems exist, startups learn what academic research might help

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

- **Hiring**: Companies scout talent, students find opportunities
- **Serendipity**: Co-founder matches, mentor relationships, deal partnerships often form from informal conversations

Why they're insufficient for UP's challenge

Talent mixers work for experienced professionals who already have base competency — a mid-career engineer from Noida attending a Lucknow AI mixer might find a startup to join or a collaboration opportunity (for instance). **But mixers do not upskill the underskilled. A polytechnic graduate (for instance) who doesn't know how to use GitHub or deploy a model to cloud infrastructure won't benefit from attending a panel discussion on transformer architectures.**

UP's talent problem is not primarily a networking gap (though that exists). There actually exists ample skill depth gap. Mixers complement training programs; they cannot substitute for them.

It could be considered a form of strategy error assuming to "let's create networking events and ecosystem will self-organize". It works when Bengaluru's baseline talent density (for instance) is high. **In UP, you need to create the talent first, then create networking opportunities for them.** UP's talent ecosystem faces five interlocking problems:

- **Mass-producing institutions (polytechnics, tier 2/3 colleges) teach outdated curricula and lack industry linkage infrastructure**

Hyperscaling the Talent Ecosystem

2.2. Talent and Research Access Gaps

- **Policy attention focuses on elite institution attraction (new IITs, foreign universities) rather than mass institution reform**
- **No systematic startup-academia collaboration mechanisms, unlike Bengaluru/Hyderabad**
- **No large-scale retraining infrastructure for the 50,000+ underskilled graduates produced annually**

These are not market failures that self-correct on their own. **They are coordination problems which would eventually require deliberate state intervention.**

Side note for Chapters 3 to 12

Chapter 1 of the Report had identified sectoral specificities based on which UP can deploy AI pilots in 18–24 months using existing assets and institutional capacity.

Chapter 2 had addressed how Hyperscaling the Talent Ecosystem for the AI Economy of UP remains challenging and what cohesive possibilities and realities can be tapped into.

Chapters 3 to 12 therefore offer recommendations in the form of "Sectoral Playbooks" from the Indic Pacific team, the Contributing Authors of this Report, and the individual and Alliance members of the Indian Society of Artificial Intelligence and Law as to what solutions are plausibly achievable in 18–24 months, and what measurable outcome indicates success.

These chapters also include some ancillary non-AI-specific recommendations where contextually necessary.

Based on the sectoral playbooks provided in Chapters 3 to 12, we have also developed a consolidated and tabulated version, called the AI Transformation Matrix, on the UP.AIACT.IN page hosted by Indic Pacific. We thank Sankarshan Mukhopadhyay for recommending a shrink-wrap version of the sectoral playbooks in the form of this Matrix.

The UP.AIACT.IN page also hosts some crucial data points obtained from the Ministry of Statistics and Programme Implementation (MoSPI), Government of India, thanks to Sohan Basak's contributory support.

Sectoral Playbooks on AI Industry Impact

3 AI as Decision Infrastructure — Design Principles

AI as Decision Infrastructure — Design Principles

3.1. Government Sector Initiatives – Recommendations

Before any pilot in **Chapters 3 to 12** are read as a procurement instruction, three principles must be internalised by every implementing department. They are not aspirational. They are the difference between a pilot that survives and one that becomes a line item in next year's audit objections.

First: Design for bureaucratic survival, not technical elegance.

Every AI system recommended here must be evaluated against three stress tests before resources are committed:

- Will it function after the officer who championed it is transferred?
- Will it retain core utility if its budget is cut by 40% in year two?
- Can it be maintained by a different vendor, or in-house, without the original implementer?

If the answer to any of these is no, the system is not ready for deployment. It is ready for a lab.

AI as Decision Infrastructure — Design Principles

3.1. Government Sector Initiatives – Recommendations

Second: Prioritise use cases where the evidence for success is strongest.

Two categories of AI deployment have demonstrated consistent success in comparable governance contexts:

- **Command-and-control functions** with daily senior review and clear escalation — traffic enforcement, grievance redressal, emergency response
- **Narrow, high-frequency, low-discretion decisions** — route optimisation, inspection scheduling, utility anomaly detection

These should constitute the first wave of UP's AI pilot programme. Everything else follows once these are working and owned by the relevant line department.

Third: AI is decision infrastructure and not a technology showcase.

The measure of success is not how sophisticated the system is. It is whether a district magistrate, a municipal commissioner, or a frontline health worker (for example) makes a better decision faster because the system exists. If the answer is not demonstrably yes within 18 months, the pilot should be redesigned or discontinued, not extended.

AI as Decision Infrastructure — Design Principles

3.1. Government Sector Initiatives – Recommendations

Design Focus Principles for Citizen-Facing AI Services

- **Disclosure at the point of service, not in documentation**: Every citizen-facing interface using AI must carry **a visible "AI-assisted" label at the point of interaction on the interface itself** where the citizen is receiving the service; **this should be regarded as a non-negotiable condition**
- **Human escalation path must be visible at the point of failure**: The human escalation path must be **visible at the point of failure**. When an AI-assisted service cannot resolve a citizen's needs, the option to connect with a human officer must be displayed immediately. This **escalation path** should be integrated directly into the service interface rather than treated as a supplemental feature.
- **Auto-denial prohibition in high-stakes contexts**: AI must be prohibited from issuing final adverse outcomes, which includes benefit denials, eligibility rejections, penalty assessments without a recorded human decision. For high-stakes AI use, the system's output is merely a recommendation. The final determination must be documented as a human act, clearly identifying the officer and their designation, while maintaining a comprehensive audit trail of the reasoning behind the decision.
- **Actionable reasons and next steps as a citizen right**: A citizen receiving an adverse or incomplete outcome from a government AI-assisted process must receive, in writing and in Hindi where applicable, the specific reason for the outcome and the specific next steps available. These include appeal mechanisms, review requests, or document resubmissions. Generic rejection language is not compliant with this standard.

AI as Decision Infrastructure — Design Principles

3.1. Government Sector Initiatives – Recommendations

Administrative Capacity and the Mentor-Architect Model

The recent state-level consultation held in Lucknow during March 2026 confirms that administrative bandwidth and incentive structures are the primary challenges to traditional capacity building. **To accommodate the high-pressure environment of the state administration, the report recommends a transition from classroom-style training to a mentor-led framework. This approach respects the professional standing of officials by positioning them as strategic architects who direct technical assets rather than being expected to handle procedural execution.**

The traditional training model often conflicts with the "mission mode" responsibilities of nodal officers. The following interventions provide a solution to these bandwidth limitations:

- **Mentor-Led Automation Sprints**: Departments should utilize high-potential technical interns and fresh graduates to handle implementations. The official serves as the mentor-architect, defining strategic problem statements while the junior team manages the coding and data preparation.
- **On-the-Job Digital Assistance**: Capacity building should be delivered through hyper-personalized, modular digital content that can be consumed during regular workflows. This replaces long-form seminars with relevant, role-specific insights.
- **Staffing Mix Protocols**: Project proposals must specify a staffing ratio that pairs a senior administrative lead with a dedicated technical execution team. This ensures that the official's time is reserved for high-level oversight and decision-making.

Sectoral Playbooks on AI Industry Impact

4 AI-assisted Software Services and IT

AI-assisted Software Services and IT

4.1. Government Sector Initiatives – Recommendations

Training Officials to Question AI, Not Just Use It

The following **five competencies** must be the explicit focus of any official training programme accompanying AI deployment in UP, and **must be delivered by domain practitioners with governance experience** not by the technology vendor whose system is being deployed:

- **Interpreting Confidence Levels:** Understanding statistical reliability and the specific implications of confidence intervals for decision-making.
- **Identifying Bias and Blind Spots:** Recognising gaps in training data and determining if a model has been validated for specific demographics.
- **Exercising Independent Judgment:** Developing the capability to override AI recommendations, document justifications, and avoid algorithmic dependency.
- **Distinguishing Advancement from Hype:** Differentiating between substantive technological progress and marketing-driven claims.
- **Facilitating Independent Audits:** Cooperating with and supporting external & standardised technical assessments of AI deployments.

AI-assisted Software Services and IT

4.1. Government Sector Initiatives – Recommendations

Open-Access Technical Programmes at Premier Institutions

A significant supply-side gap exists in accessible, high-quality technical education. To address this:

- NIT Allahabad, IIIT Lucknow and IIT Kanpur should be encouraged to launch programmes modelled on the IIT Madras BS in Data Science, **which are structured as non-JEE entry pathways open to a significantly wider applicant pool**
- This model has demonstrated national scalability and represents one of the more successful interventions in broadening access to rigorous technical education
- **Existing online postgraduate offerings across institutions do not constitute an adequate substitute; they are characterised by poor pedagogical quality, high pricing relative to cohort size, and limited reach; they should not be treated as a template for this initiative**

Sectoral Playbooks on AI Industry Impact

5 AI-assisted Services, Education and Training Ecosystems

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Restructuring Education for a Technology-Intensive Economy

India's global success in technology talent has been built on deep strength in computer science engineering. However, the structure of the AI-driven digital economy is evolving in ways that increasingly reward interdisciplinary capability alongside core engineering depth. **Continuing to treat technology careers as synonymous with software engineering risks leaving critical gaps in India's future workforce architecture.**

Modern digital and AI systems are not delivered by engineering talent alone. They depend on a wide spectrum of functions including product management, human-centered design, digital operations, platform governance, and technology strategy to ensure systems are usable, scalable, trusted, and effective in real-world institutional environments. Globally, these roles have grown in strategic importance as digital platforms have matured.

At the same time, advances in AI-assisted software development are beginning to reduce the effort required for routine programming tasks. **In this context, continued over-indexing on narrow coding skills poses a structural risk to the long-term sustainability of India's technology workforce strategy**.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Restructuring Education for a Technology-Intensive Economy

The window to rebalance India's technology talent pipeline is therefore time-bound. Accordingly, the following tiered recommendations are proposed across the education pipeline.

School Level (Foundation Layer)

- Introduce foundational knowledge on AI systems by secondary school.
- Mandate technology career exposure modules in Classes 11, 12 highlighting roles beyond software engineering, including product management, UX research, data strategy, and AI governance.
- Expand design-led problem solving and user empathy exercises.

Undergraduate Level (Interdisciplinary Layer)

- **Mandate a foundational revision of CS curricula at all institutions to center mathematical education around structural and broadly applicable skills including proof writing, combinatorics, linear algebra, and number theory rather than narrow procedural skills optimized for competitive testing.**
- **Broad mathematical fluency underpins AI systems design, algorithmic reasoning, and data governance far more sustainably than technique-specific shortcuts.**

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Restructuring Education for a Technology-Intensive Economy

Explanatory Note: **Procedural-heavy curricula tend to produce graduates who can execute known solution patterns efficiently but struggle with the novel problem formulation, mathematical abstraction, and first-principles reasoning that real-world AI development, model evaluation, and algorithmic accountability work increasingly demand.**

- Require all technology degrees to include a core data governance and privacy foundation module.
- Introduce mandatory human-centered research training, including both qualitative user research and quantitative behavioural analysis.
- Make applied digital research methods and statistics compulsory beyond engineering streams, particularly in management, design, education, and public policy programs.

Postgraduate Level (Socio-technical Strategy Layer)

- Establish advanced programs on AI, society, and governance in leading Indian universities.
- Create specialized tracks in algorithmic accountability, platform regulation, and digital public infrastructure within these programs.
- Create programmes that are a blend of business domains and digital applications especially for people wanting to move to digital transformation companies.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Restructuring Education for a Technology-Intensive Economy - UP-specific Recommendations

- The structural composition of enrolment across state universities requires deliberate rebalancing. Specifically:
  - STEM intake, particularly in Computer Science, AI, and data engineering must be scaled up significantly at premier state institutions including MNIT Allahabad, IET Lucknow, and HBTI Kanpur (for instance)
  - Corresponding rationalisation of humanities intake is warranted where it yields savings in infrastructure and faculty deployment that can be redeployed toward technical capacity
  - The underlying objective is not merely enrolment optimisation but the cultivation of a technology-oriented institutional culture permeating all domains of state functioning

- To bridge the gap between academia and real-world application, the following "expert-led" strategies should be implemented:
  - Inviting policy analysts, economists, legal experts, and industry veterans to co-teach modules on the societal & economic impacts of emerging technologies.
  - Formalizing pathways for state universities to act as research hubs for government departments, where law and policy experts validate the legal feasibility of new tech deployments.
  - Involving humanities and ethics scholars in the "independent technology audits" mentioned previously to ensure systems are socially inclusive.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

State-Funded AI Incubation Centres with Institutional Accountability

Public investment in incubation infrastructure is justified **provided disbursement follows a disciplined architecture**:

- AI Incubation centres to be established within state technical institutions, **supported by partial state funding**
- Allocation framework to be structured around three components: **physical space provisioned by the institution, shared infrastructure, and conditional operational grants released only upon demonstrating capabilities of a MVP (minimum viable product) and not as an upfront**
- An independent evaluation and mentorship board should be constituted for each state-funded incubation centre, with membership drawn from institutions meeting one or more of the following criteria: NAAC A++ accreditation, NIRF ranking within the top 50 in the relevant category (Engineering, Management, or Multidisciplinary), or recognition under UGC's University-Industry Interlinkage (UIL) guidelines
- This criteria-based eligibility framework rather than nomination of specific institutions ensures the board remains credible, scalable across multiple AI incubation centres statewide
- The board's evaluation methodology should align with the Atal Innovation Mission's Screening-cum-Selection Committee framework, which provides a tested, NITI Aayog-anchored precedent for assessing venture robustness, team capability, market potential, and IP creation, avoiding the need to design governance instruments from scratch.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

State-Funded AI Incubation Centres with Institutional Accountability

- This governance structure is essential to prevent the well-documented pattern of institutional resource misallocation in publicly funded incubation programmes

Localisation and Language Model Incentive Policy

- UP should develop an operational incentive policy for enterprises building domain-specific or regionally contextualised language models, analogous to the Central Government's support for Sarvam AI (for instance) with particular relevance to Hindi-medium, Hindustani, and Awadhi language corpora that UP is uniquely positioned to develop and own (for example)

Chair Professorship Programme for Entrepreneurial Mentorship

A time-bound, government-funded chair professorship programme should be constituted as follows:

- Duration: 2-year cycles
- Scale: 20 chair positions
- Structure: Each chair position to support 5 visiting experts with a defined mandate to mentor local entrepreneurs
- Chairs to be situated at institutions with active and verifiable startup activity

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Chair Professorship Programme for Entrepreneurial Mentorship

- The proposed AI Incubation Centres should host short-term "Automation Sprints" where interns and fresh graduates from state technical institutions work on low-complexity government process automations. These sprints must be overseen by the Chair Professorship mentors or the independent evaluation boards to ensure technical and domain alignment.

Retraining Technical Graduates and Government Professionals

The talent pool extends well beyond graduates of premier institutions:

- A targeted retraining programme for IT and software graduates from diploma colleges and second- and third-tier engineering colleges should be launched, called as **AI IT Skill Retraining Diplomas**
- **The programme must be focused specifically on AI-first software development beyond digital literacy or broad upskilling to be of productive value to the industry**

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Enhancing Administrative Leadership for Technical Mentorship

To accelerate the state's digital objectives, the capacity-building framework for administrative officers should be broadened to include **Executive Supervision of Emerging Talent**. This approach recognises that high-potential fresh graduates and interns can serve as a significant force multiplier for department-level automation, provided they are guided by the strategic vision of experienced officers.

- **Administrative leadership** will focus on translating complex policy challenges into narrow, executable technical scopes. This ensures that junior developers can deliver localized, high-impact software services without the need for constant, high-level technical intervention. While junior teams handle implementation, the final decision-making authority remains a human act, anchored in administrative accountability.
- By establishing "**Junior-Led Automation Sprints**" within department-aligned incubation centers, officers can direct 2nd and 3rd-tier technical graduates toward routine process optimizations. This model leverages the "underskilled but hungry" talent pool to solve immediate diagnostic or logistics challenges while preserving the officer's bandwidth for high-level strategy.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Enhancing Administrative Leadership for Technical Mentorship

To ensure technical sustainability, the framework will incorporate **Industry-Led Technical Stewardship**. By inviting software architects and digital transformation leads to serve as visiting mentors, the state achieves three goals:

- **Professional Rigour:** Experts provide the "**code-review**" layer that ensures junior output is secure, scalable, and standardised.
- **Knowledge Transfer:** Mentors bridge the gap between academic theory and industry-grade deployment, upskilling the talent pool at no additional training cost to the state.
- **Ecosystem Building:** This creates a prestigious "**Public Service Fellowship**" for industry leaders, allowing them to shape the state's digital architecture through high-impact, low-time-commitment advisory roles.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

AI Talent Discovery: Olympiads, Hackathons, and Compute Prizes

- The state should sponsor recurring AI Olympiads and hackathons, specifically scoped to problems facing in UP (agriculture, urban governance, healthcare, logistics), to surface early talent and create a culture of applied problem-solving around AI
- Prizes should be structured as access to GPU compute or cloud credits as an alternative to cash prizes, directly enabling winners to continue building, converting competition participation into a pipeline for early-stage ventures
- **The prizes for AI Olympiads and hackathons, structured as GPU or cloud credits, should be specifically earmarked for junior-led teams. This allows high-potential freshers to execute smaller-scale automation projects without the burden of infrastructure costs, provided they have a verified domain-expert advisor**
- To move beyond prototypes, the state should offer merit-based research grants focused on localized AI applications. Unlike traditional academic funding, these grants will be awarded based on **outcome-oriented research proposals** that address specific departmental bottlenecks, ensuring that theoretical breakthroughs have a direct path to public utility.
- The state may actively seek tripartite partnerships with global technology leaders. These collaborations will provide "**State-as-a-Sandbox**" opportunities, where the industry provides proprietary toolkits and high-tier mentorship, while the state provides the data environments and regulatory support for large-scale pilot projects.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Industry-Led Skilling and Curriculum Co-Development

- **Industry-funded fellowships and apprenticeships distinct from government retraining programmes should be established at scale, particularly targeting second and third-tier engineering graduates, with the private sector absorbing trained talent directly into deployment roles**
- Large technology enterprises should be invited to establish **sector-specific Centres of Excellence in UP cities** by combining applied research with structured graduate training, subject to the following non-negotiable structural conditions:
  - **Mandatory domain-specific staffing standards**: Each CoE must designate a minimum proportion of technical and advisory staff to be defined in the state's CoE policy, who hold verifiable domain expertise (minimum 5 years of applied work, not programme management, in the CoE's stated focus area). A CoE focused on healthcare AI must be led and substantially staffed by people with clinical informatics, medical data, or health systems backgrounds and not repurposed startup ecosystem managers. The state's approval and renewal process should include personnel qualification audits.
  - **Single-sector mandate per CoE, and not multi-sector umbrella**: Each CoE must declare a focused sectoral mandate at inception, be it sectoral form of automation or AI solution, and be evaluated exclusively against outcomes within that domain. Cross-sector drift should be treated as a covenant violation, not flexibility

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Industry-Led Skilling and Curriculum Co-Development

- **Outcome-linked renewal, not event-linked continuation**: CoE operating licences and state support should be renewed on a 2-year cycle tied to defined, measurable outcomes: number of AI solutions deployed at production scale (not pilot), revenue generated by ventures that passed through the CoE, and number of structured graduate placements. Showcases, summits, and demonstration labs should not be constituted and labelled as outcomes
- **Graduate training as a binding obligation, not a peripheral activity**: The structured training of graduates from UP institutions, particularly second and third-tier engineering colleges must be a contractual obligation embedded in the CoE's operating agreement, with annual intake minimums defined at inception and reported annually

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

AI Tutors via Feature Phones and IVR

UP's digital learning programmes assume device ownership and data connectivity. The **Annual Status of Education Report (ASER) 2024**, surveying 649,491 children across 17,997 villages, found that only 23.4% of Class III students in government schools could read a Class II-level text, with foundational literacy and numeracy gaps especially pronounced in the Hindi belt. Household smartphone access in rural UP remains uneven, and a child in Shravasti or Bahraich (for instance) cannot access any current AI learning tool.

A structural fix can be to deliver AI-curated learning over the one device rural households already own: a basic phone capable of voice calls.

- The state should fund a toll-free IVR learning line, a "**Paathshala on Call**" so to speak, accessible from any phone, delivering 10-minute AI-curated lesson pods aligned to the NIPUN learning framework in Hindi, Awadhi, Bhojpuri, Bundeli and English.
- Voice interactions should be powered by open-source Indic ASR/TTS models from AI4Bharat (IIT Madras) and Sarvam AI. This will allow students to ask questions in regional dialects and receive contextually appropriate responses with the system adapts difficulty based on response patterns, creating an intelligent tutoring layer over a 2G call.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

AI Tutors via Feature Phones and IVR

- Local-language voice delivery has measurable learning effects in rural contexts, not just convenience benefits. A 2024 randomised trial **published in Information Technology for Development** evaluated a phone-based IVR system in Burkina Faso and found that the local-language version produced a 30.33% increase in knowledge, 21.77% improvement in attitudes, and 35.38% improvement in practice, with substantially lower gains in the French-language control arm confirming that the language of voice delivery, not just the medium, is what drives the effect.
- The pilot should target five districts in Year 1, with out-of-school children aged 6 to 14 as the primary cohort. Calls should map to UP Board NIPUN learning objectives, with completion data piped to the existing Vidya Samiksha Kendra dashboard for teacher visibility.
- **The Telecom Regulatory Authority of India (TRAI) can be requested to wave costs since it is a government education number, and inference on open-source Indic LLMs is marginal. The system can support an estimated 2 million calls per month at under ₹2 per session, financed under the existing State Digital Empowerment budget.**

Shiksha Mitra: A UP-Teacher AI Co-Pilot

Karnataka has demonstrated that an AI co-pilot for government school teachers is both technically feasible and operationally valuable at state scale. UP, which employs the largest government teacher workforce in India, has the institutional infrastructure to replicate and significantly extend this model.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Shiksha Mitra: A UP-Teacher AI Co-Pilot

- On 18 October 2024, Karnataka's School Education and Literacy Minister Madhu Bangarappa launched **Shiksha Copilot** at Vidhana Soudha, an AI assistant. The initial rollout reached 1,000 government school teachers in Grades 5 to 10 across both urban and rural districts, in Kannada and English.
- **UP's existing infrastructure is well-positioned for a parallel deployment. The Basic Education Department employs 6,28,915 teachers (including assistant teachers, shiksha mitras, and instructors), and Vidya Samiksha Kendra tracks real-time data via the Manav Sampada portal.**
- **"Shiksha Mitra" should be the UP-specific instance: an AI assistant fine-tuned on UP Board and SCERT Hindi-medium textbooks, designed around the working realities of multi-grade classrooms.**

- Core functions to be mandated:
  - Auto-generated lesson plans aligned to UP Board curriculum by grade and subject, with regional language and Hinglish support
  - NIPUN learning-gap alerts at the student-cohort level, surfaced directly to the teacher
  - Attendance and assessment analytics integrated with Vidya Samiksha Kendra
  - A Hindi/Hinglish chatbot for teacher queries on curriculum, classroom management, and administrative procedure
  - Rollout should leverage existing NISHTHA teacher training infrastructure. Year 1: pilot with 5,000 teachers across five districts, structured as a controlled evaluation against the Karnataka baseline. Year 2: expand to all 75 districts using a master-trainer cascade model.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

AI-PRAGYA Dropout Track Extending the Programme to Out-of-School Youth

AI-PRAGYA is among UP's most ambitious skilling initiatives, but its current architecture is structurally inclined toward young people who are already a part formal institutions. The cohort that arguably needs digital skilling the most are out-of-school youth in the rural informal workforce that is not addressed by the programme as designed.

- A distinct 'AI-PRAGYA Dropout Track' should be created as a sub-scheme, delivered exclusively via WhatsApp Business API using AI-generated micromodules of 5 to 10 minutes each, accessible on any entry-level smartphone with a data connection.
- Onboarding should run through existing field networks rather than new institutional layers: Common Service Centre operators and UP State Livelihood Mission SHG networks at the panchayat level. The same district DM committee structure already established for AI-PRAGYA oversight extends naturally to this sub-track.
- Gamification and credentialing:
  - Track streaks, award digital badges at 10/25/50 module milestones
  - Final certification through an NSDC-linked blockchain credential, scannable by any MSME employer in UP
  - Integration with the e-Shram portal so credentials attach to gig-worker identity rather than living in a parallel system

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

AI-PRAGYA Dropout Track Extending the Programme to Out-of-School Youth

- UP's broader skilling track record supports feasibility. The UP Skill Development Mission has trained approximately **9.25 lakh young people** over five years, of whom 4.22 lakh secured placement demonstrating that the state has the institutional capacity to operate skilling-to-employment pipelines at this scale.

Predictive FLN Dropout

UP teachers and education administrators currently identify at-risk children reactively, typically after attendance has already collapsed and re-enrolment has become difficult. With a single teacher often managing 40 to 80 students across multiple grades, the early-warning signals of disengagement are humanly impossible to track at scale. A proven AI deployment in Gujarat has demonstrated the alternative.

- Government of Gujarat and UNICEF, for instance, have built and rolled out a **state-wide AI-powered Early Warning System (EWS)** for school dropouts. Launched at the Shala Praveshotsav 2025 enrolment drive, the system covers all 37 districts and over 50,000 schools, processing a full academic year of attendance, assessment, and socio-economic data for over 1 crore students in Grades 3 to 8. It has identified approximately 167,000 students requiring targeted support.

AI-assisted Services, Education and Training Ecosystems

5.1. Government Sector Initiatives – Recommendations

Predictive FLN Dropout

- Foundational literacy failure in early grades is the strongest predictor of later dropout. ASER 2024 found that only 48.8% of Class V learners could read a Class II-level text, with 76% of Class III, 55.2% of Class V, and 32.5% of Class VIII students still unable to do so. Intervening at the foundational stage is both more effective and more cost-efficient than intervening at the secondary stage where dropout becomes visible.
- UP holds the data pipeline required for a parallel deployment. The Vidya Samiksha Kendra already aggregates real-time student-level data for the state's school system, and the NIPUN assessment framework provides the academic performance signal. The **Early Warning System's codebase** is publicly available on GitHub and the organisation has stated an intent to keep the system open-source.
- The State Government should mandate an dropout early-warning ML layer built directly on top of the Vidya Samiksha Kendra's existing data infrastructure, taking some anchored inspiration from the Government of Gujarat's EWS system.

Sectoral Playbooks on AI Industry Impact

6 International Mobility

International Mobility

6.1. Private Sector Recommendations

Peer Collaboration Infrastructure — The Resident Cohort Model

- **Private operators should be supported to establish residential AI collaboration hubs modelled on organisations like AGI House based out of Kanpur, for instance, where early-stage founders and researchers live and build together in a structured, resource-equipped environment**
- These function as practical alternatives or complements to formal incubation, particularly for younger talent not yet formalised into registered enterprises; the state's role is facilitation through zoning, broadband infrastructure, and initial occupancy support, not direct management

6.2. Government Sector Initiatives – Recommendations

Mobilising NRI and Diaspora Capital — Human and Financial

The diaspora represents an underutilised resource of both expertise and networks:

- **A potential UP Pravasi Bharatiya Scheme should be reoriented specifically to channel NRI and diaspora professionals toward structured mentorship roles in Lucknow, Kanpur, Deoria and Noida (for instance)**
- Dedicated recurring forums spanning domestic and international geographies should be instituted to connect diaspora talent systematically with actively participating startups, entrepreneurs, investment promotion agencies, technology communities, and relevant government bodies
- This must be structured as a sustained engagement mechanism, not a one-off outreach event

International Mobility

6.2. Government Sector Initiatives – Recommendations

International Student and Professional Mobility — Structured Pipelines

- State universities should establish formal exchange programmes leveraging India's existing and emerging FTAs (EU, UK frameworks) to enable outbound internships, academic exchanges, and guest worker programme participation for students and graduates
- **Outbound fellowships should be structured with a return bond, either a commitment to return to UP-based employment for a defined period or graduated loan repayment, with the state providing partial loan guarantees to make international programme access financially viable for non-affluent students**
- Reciprocal inward mobility must be a condition of these partnerships — foreign students from partner institutions coming to UP colleges, both increasing revenue for institutions and raising academic standards through international exposure; this is structurally analogous to the Nalanda model of drawing global intellectual traffic rather than solely exporting talent
- Reference models: Invest in Bavaria (Germany) and comparable provincial programmes in Canada offer templates for sub-national government-led international academic and professional mobility frameworks

International Mobility

6.2. Government Sector Initiatives – Recommendations

Diaspora Pension Conversion Incentive

- UP residents who have retired abroad or are approaching retirement should be offered a voluntary one-time pension conversion option, converting periodic state pension entitlements into a lump-sum settlement as a financial incentive for returning to spend retirement years in UP
- The fiscal liability exists regardless of conversion; accelerating it into a lump sum repatriates both capital and human presence, returning technology and professional retirees represent an underleveraged source of mentorship and angel investment that this mechanism activates at near-zero incremental cost to the state

Sectoral Playbooks on AI Industry Impact

7 AI Infrastructure and Investments

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Attracting Institutions of National and Global Standing

Augmenting the supply of quality institutions is as important as reforming existing ones:

- **Formal invitation to quality institutions such as BITS Pilani and VIT (for example) and a few international technical universities in DACH countries (Deutschland (Germany), Austria, and Confoederatio Helvetica (Switzerland)) in Europe and South-East Asia to establish full campuses in Uttar Pradesh, especially in Lucknow, Noida, outer Varanasi and / or Kanpur, for instance**
- Targeted outreach to foreign universities for establishing physical research or teaching presence, with deliberate geographic emphasis on Lucknow, Deoria, some districts adjacent to Prayagraj (Naini, for example) and Kanpur and not confined to Noida to ensure equitable distribution of advanced academic infrastructure across the state

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

High-performance compute hardware, including GPU clusters in particular, is among the most depreciation-sensitive capital assets a government can procure. Unlike civil infrastructure, where a delayed bridge still functions as a bridge, a GPU procured under a **6–12 month approval cycle** and then held idle through usage authorisation processes loses a compounding proportion of its productive value: the models it was specified to train have moved on, the software stack it was benchmarked against has been superseded, and the talent pipeline that would have used it has found alternative routes. Standard government procurement and asset deployment frameworks are structurally ill-suited to assets of this nature and must not be applied to them without modification.

This **segment** of the **chapter** focuses on proposing a sectoral playbook around compute asset procurement and deployment governance, for the UP government as a model measure for all state governments in India.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

Assets Classification and the Financier-First Approach

- **High-Performance Computing (HPC) hardware**, inclusive of **Graphics Processing Unit (GPU) clusters**, should be legally and operationally decoupled from standard Information Technology (IT) infrastructure.
- In contrast to traditional physical infrastructure, computational capacity constitutes a time-sensitive asset subject to accelerated depreciation rates. The **un-utilised storage of GPU hardware** results in a compounding deficit to the sovereign Artificial Intelligence (AI) capabilities of the State.
- To mitigate hardware depreciation and optimise resource allocation, the Government of Uttar Pradesh must adopt a "**Financier-First**" operational framework. Under this model, the State's strategic mandate shall prioritise the funding and procurement of computational access over the direct acquisition, maintenance, and management of physical computational assets.
- As a foundational fiscal policy, it is recommended that total expenditure on computational access **must not exceed 25% of the overall UP AI Mission budget**. This ceiling ensures that the majority of state resources are preserved for critical non-compute pillars, such as human capital development, startup equity, and sectoral AI deployments.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

Governance Structure and Establishment of Special Purpose Vehicle (SPV)

- To ensure operational agility and expedite commercial processes, the State should mandate the establishment of a dedicated **Special Purpose Vehicle (SPV)**. This SPV shall be incorporated as a Section 8 company under the **Companies Act, 2013** and shall function as the primary institutional custodian of all State-funded computational resources.
- The centralisation of assets within a **Section 8 entity provides functional exemption from the rigidities of standard General Financial Rules (GFR)**. Consequently, the SPV is authorised to execute technology refresh cycles and capacity resale operations independently of standard departmental asset disposal protocols.
- The **State Data Centre Authority (SDCA)** must be reconstituted as the designated Regulatory and Auditing Body. The SDCA however **should not undertake direct hardware management duties**. Its statutory mandate must be strictly to monitor the performance of the SPV, conduct audits of resource utilization rates, and authorise the formal reallocation of computational access among participating institutions.
    - **Digital Compute Asset Register and Utilisation Audit**: To ensure absolute transparency, the SDCA shall maintain a publicly queryable Digital Compute Asset Register. This database shall function as a real-time ledger of "**Virtualized Assets,**" including pre-purchased IndiaAI credits, reserved cloud instances, and state-funded "Bridge" allocations. The register shall display real-time utilization rates, custodian identities, and "Use-it-or-Lose-it" expiry countdowns.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

The UP Government Must Act as an Active Compute Aggregator

The UP government must establish a clear policy hierarchy implemented through a phased roadmap as an aggregator.

- **Mandatory IndiaAI Prioritisation**: All state institutions and agencies requiring AI compute shall be directed to the IndiaAI Mission's national compute facility as the first resort. By leveraging the subsidized rate of **₹65 per hour**, the State ensures that its foundational compute needs are met with maximum fiscal efficiency before any standalone hardware procurement is initiated. This approach specifically addresses systemic bottlenecks in the validation-to-provisioning pipeline, where wait times exceeding six months can transform cost-saving measures into barriers to innovation. By balancing the economic benefits of subsidized sovereign infrastructure with the operational necessity of project timelines, the State ensures that administrative latency does not nullify its technological competitive advantage.
- **Establishment of an SLA-Driven "Deemed Approval" Trigger:** In the event that compute provisioning is not secured within this **30-day window**, the **Section 8 Special Purpose Vehicle (SPV)** must be mandated to issue a "**Deemed Approval**" certificate.
  - **Legal Clearance**: This certificate provides the applying institution with immediate legal clearance to bypass the national mandate and procure high-performance commercial cloud credits.
  - **State-Funded Reimbursement**: To maintain project momentum, the SPV shall utilize the Strategic Contingency Fund within the UP AI Mission Fund to provide **Tactical Bridge Credits.**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

- **Duration of Support**: These credits shall function as a state-reimbursed financial bridge, covering the costs of commercial cloud access strictly until the point the institution's application is successfully provisioned through the IndiaAI subsidy queue.
- **Operational Philosophy**: This mechanism ensures that the State's Financier-First approach is operationalised through immediate liquidity, ensuring that project timelines, rather than administrative cycles, remain the primary metric of success.

- **State-Led "Express Validation" via the AI Empowered Committee:** To maximise operational agility and accelerate processing, Uttar Pradesh shall establish a State AI Empowered Committee to act as a decentralised vetting node.
  - **Strategic Pre-Auditing**: The committee shall perform rigorous audits of institutional legitimacy and technical compute-worthiness at the state level.
  - **Bulk Inventory Procurement**: To eliminate external delays, the committee is authorised to pre-purchase IndiaAI compute credits to be held as a sovereign state inventory within the Digital Compute Asset Register.
  - **Agile Credit Distribution**: Rather than awaiting national-level provisioning for every request, the committee shall distribute these pre-purchased credits directly to vetted entities to ensure immediate project commencement.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

- **Verified Bulk Requests**: For capacity requirements exceeding the local inventory, the committee shall submit pre-cleared bulk requests to the IndiaAI Mission to move state projects to the front of the national provisioning queue.
- **Efficiency Mandate**: This dual-track approach reduces the administrative burden on the national mission while ensuring that Uttar Pradesh remains a high-velocity environment for AI development.

- **Strategic Ring-Fencing and the "Use-it-or-Lose-it" Liquidity Model**: The UP AI Mission's budget must ring-fence compute expenditure into two streams: **(a) National Access Credits, where the State acts as a bulk aggregator of IndiaAI resources, and (b) Strategic Contingency Fund, for cases where national access is technically infeasible or delayed**. The SPV shall utilize Category (a) funds to provide "**UP AI Top-Ups**", i.e., subsidised compute grants to deserving entities. To ensure maximum resource efficiency, all issued credits shall be subject to a "**Use-it-or-Lose-it**" policy, where unutilized credits automatically expire and revert to the **SPV's pool** after **180 days**.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

- **SPV-Led Technology Refresh and Portfolio Optimisation**: In alignment with its role as a Section 8 custodian, the SPV **must be empowered** to execute **High-Velocity Technology Refresh Cycles**, ensuring the State's AI initiatives are not tethered to rapidly depreciating silicon. Rather than **maintaining static hardware, the SPV may implement a performance-indexed pivot mechanism every 24 - 30 months**, transitioning workloads to the latest GPU architectures and interconnect standards as they emerge. This agility allows the State to optimize its compute portfolio by blending long-term subsidized access with high-performance commercial bursts, while the **SPV's mandate to engage in capacity resale ensures that any underutilized or legacy cycles are monetized** to support the broader ecosystem, **preventing the accumulation of legacy infrastructure liabilities** and ensuring Uttar Pradesh remains at the **global frontier of computational efficiency**.
- **Mandatory "Cloud-Default" Infrastructure Policy:** To eliminate the risks of hardware obsolescence and operational cost overruns including power, cooling, and security, the State must enforce a Cloud-Default mandate.
  - **Private Sector Provision**: All computational requirements must be met through empanelled private Cloud Service Providers (CSPs). To ensure operational agility and fiscal discipline, the State shall strictly refrain from establishing, owning, or operating its own cloud infrastructure.
  - **Prohibition of Physical Assets**: The direct procurement of physical hardware is prohibited unless the State Data Centre Authority (SDCA) certifies that a specific use case, such as extreme low-latency requirements or air-gapped sovereign security, cannot be met via empanelled private CSPs.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Compute Asset Procurement and Deployment Governance

- **Transfer of Technological Relevance**: Under this mandate, the requirement for Technological Relevance, defined as the continuous alignment of compute performance with current-generation industry benchmarks, is shifted entirely to the private provider.

- **Consortium Access as the Default Architecture:** To maximize the utility of state-funded resources, the SPV shall prioritize **Time-sharing and Consortium Access models**. No single institutional custodian shall be granted exclusive access to a specific compute allocation unless peak utilization projections strictly justify a dedicated instance. By default, all virtualised compute assets shall be managed as a shared state resource, ensuring that high-capacity GPUs are available to a broader pool of UP universities, research institutions, and registered startups.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Government as Direct Co-Investor — Beyond the LP Model

The current posture of government entities as Limited Partners (LPs) in VC funds is structurally disadvantageous to the state: the government bears early-stage risk through incubation funding, then pays fund management fees (typically 2% management, 20% carry) to VCs who harvest returns the state helped create. A more rational model with demonstrated precedent involves the state as a direct co-investor alongside VCs at early stages, eliminating fee drag and capturing upside proportionate to risk borne:

- The Central Government's incubation investment programme, pioneered under the DSIR (Department of Scientific and Industrial Research) framework, recovered returns on institutional incubation investments, establishing an Indian precedent that UP can reference and adapt
- Canada's BDC Capital and several provincial investment arms co-invest directly with private VCs in early-stage technology enterprises; the UK's ARIA initiative funds high-risk, high-return research ventures outside conventional grant logic.
- **UP should establish a state-level co-investment vehicle structured to invest alongside accredited VCs at pre-Series A and Series A stages in AI enterprises domiciled or operating in UP, with co-investment rights tied to VC deal participation.**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Government as Anchor Customer and Market Catalyst

Demand-side interventions are **as consequential as supply-side ones** in enabling early-stage enterprises:

- The state government should formalise a policy of serving as the **first customer for qualifying new AI enterprises through early procurement commitments, which is** a proven mechanism for **de-risking nascent ventures at the most capital-scarce stage**
- Where direct procurement is operationally constrained, the government should actively facilitate structured access to first customers through curated matchmaking
- **The state government should establish a structured programme to facilitate participation of UP-based AI enterprises in sector-specific tradeshows both within India and internationally covering or substantially subsidising entry, stall, and logistics costs for early-stage companies**
  - This should include dedicated UP pavilions or delegations at nationally and internationally significant events, in addition to organising state-level tradeshows with near-zero entry barriers for nascent enterprises
  - Several state governments have precedent here: Tamil Nadu's Global Startup Summit operates as a state-organised global exhibition platform hosting 30,000+ participants, 750+ exhibitors, and 100+ international delegates; West Bengal facilitates international trade fairs through its MSME directorate; and the Central Government's MSME scheme already provides financial assistance for airfare, stall charges, freight, and publicity for MSMEs at international fairs. **UP should build on and integrate with these existing mechanisms rather than construct parallel infrastructure from scratch**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Government as Anchor Customer and Market Catalyst

For all eligible AI-related government tenders, specifically covering AI pilots, workflow copilots, language and OCR tools, **AI-powered Integrated Grievance Redressal Systems (IGRS) designed to mitigate discretionary gaps and administrative manipulation**, and departmental AI assistants, a minimum 30% allocation must be reserved for startups and SMEs, structured as follows:

- **Split lots or sub-lots within a single tender, where the full scope is divided into modular components and smaller vendors can bid for defined sub-components without competing against the full-scope bid**
- Multi-vendor empanelment pools, from which departments procure specific AI modules directly, subject to applicable UP procurement rules; this structure avoids winner-takes-all mega contracts that exclude startups structurally rather than on merit
- **Modular scopes defined at the outset of tender design, and not retrofitted after a full-scope tender has already been drafted so the reservation is built into the procurement architecture, not appended to it**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

Government as Anchor Customer and Market Catalyst

In addition, start-up participation should be made procurement-safe. To enable that, a set of measures should be normalised as part of procurement processes:

- Standard eligibility definitions aligned to DPIIT-recognised startup criteria should be considered to avoid compliance uncertainty
- Since many startups cannot finance government payment cycles of 6–12 months, payment may be structured against defined deliverable milestones
- Ownership of IP created under the government contract, and rights over data used in delivery, must be specified unambiguously. Ambiguities in IP clauses is the most common reason capable startups decline government contracts
- Documentation, APIs, and deployment scripts must be handed over to the department in a form that allows a different vendor to take over without rebuilding from scratch

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

State Recognition as a Zero-Cost Investment Catalyst

- An annual UP State Samman for AI (say AI Udgam Samman) recognising outstanding AI entrepreneurs, researchers, and investors of UP origin based globally should be instituted as a low-cost, high-leverage instrument of diaspora engagement
- The reputational and emotional pull of formal state recognition has a demonstrable effect on diaspora investment intent; the financial cost is negligible while the potential to activate crores in inbound investment is disproportionately large

City Twinning as a Global Branding and Network Instrument

- Each UP city with a population above 5 lakh should be designated between 5 and 10 sister cities globally, selected for relevance to AI, technology, and innovation ecosystems rather than by historical diplomatic convention. **The state government may prefer to start with 5-10 cities as a pilot project**.
- These partnerships should function as active branding, investment prospecting, and talent network instruments not ceremonial designations with defined annual deliverables including joint events, faculty and student exchanges, and investment delegations

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

AI-Dedicated Power Infrastructure Strategy

AI infrastructure is power-intensive in ways that general industrial policy does not adequately address. A dedicated strategy is warranted:

- UP requires a dedicated power infrastructure strategy specifically scoped to AI data centres and compute-intensive enterprises, distinct from general industrial power provisioning under UPSIDA
- Dedicated substations for AI data centre clusters and startup compute infrastructure should be established in identified zones (Noida, Lucknow), insulated from general grid load to ensure stability and uninterrupted operations. **Also, the Vizag example in the case of Google can be followed, where the Government of Andhra Pradesh has allowed Google to have a dedicated power distribution license for the sole purpose of operating its $15 billion 1-GW hyperscale data centre, which is also India's largest.**
- A renewable energy policy specifically for AI data centres should be developed that addresses high-density operations and cooling requirements, including applicable water sourcing and recycling infrastructure for thermal management in inland locations. **Data centre-adjacent manufacturing, i.e., hardware assembly, cooling systems, power conditioning equipment, and peripheral infrastructure (excluding GPU fabrication, which remains beyond near-term domestic capacity) should be explicitly recognised as a priority manufacturing sub-sector within UP's industrial policy, creating supply chain depth around the data centre ecosystem.**
- **PPP structures should be available for private players to establish dedicated power distribution entities serving AI resource ecosystems, unburdening the general grid and enabling commercially structured reliability guarantees**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

AI-Dedicated Power Infrastructure Strategy

Private data centre operators should be actively invited to establish facilities in identified UP zones, with state-offered incentives including dedicated power infrastructure access, land allocation at UPSIDA rates, and single-window clearance.

- Water and cooling infrastructure must be treated as a first-order planning constraint, not an afterthought.
- The Vizag precedent is instructive and cautionary: Google's data centre originally proposed water-based evaporative cooling that would have consumed between 7 and 19 million litres of freshwater per day, with 80% evaporating permanently from the local water cycle.
- Google had ultimately decided to redesign the project, switching to air-based cooling systems. Andhra Pradesh's mitigation strategy, a 100 MLD municipal desalination plant ring-fenced for industrial and data centre use, is viable in a coastal city; UP, being entirely landlocked, has no equivalent seawater source and cannot replicate this model directly.

UP should embed a mandatory Water Usage Effectiveness (WUE) standard of 0.36 to 0.48 L/kWh for all data centres above a defined capacity threshold as a publicly disclosed performance obligation, with compliance data published on the UP government database within the first operational year.

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

AI-Dedicated Power Infrastructure Strategy

Cooling architecture preferences should be explicitly embedded in the state's data centre policy, in the following order of preference:

- Closed-loop cooling systems, where water is recycled within the facility and not evaporated; more electricity-intensive but does not deplete local water supply
- Immersion cooling, where servers are submerged in non-conductive synthetic fluid; eliminates evaporative water loss entirely and enables denser server installation; currently higher cost but rapidly maturing
- Air-based cooling, mandated as a minimum fallback where evaporative cooling is proposed, consistent with the redesign Google was required to undertake in Vizag

A dedicated industrial water supply chain, drawing from treated wastewater and not municipal or drinking water sources, must be established for data centre zones; circular water management strategies of this kind have demonstrated up to 75% water savings at the facility level and up to 50% reduction in freshwater consumption through wastewater treatment and reuse. **Where groundwater is the only proximate source, brackish water desalination at the facility or zone level should be required as a disclosed operational condition for participation in the state's data centre scheme, privately funded by the operator and not the state grid, ensuring no competition with agricultural or municipal freshwater allocation in UP's water-stressed districts.**

AI Infrastructure and Investments

7.1. Government Sector Initiatives – Recommendations

AI-Dedicated Power Infrastructure Strategy

In the strategic and public interest of ensuring transparent AI infrastructure development, all data centre operators receiving government support, land allocation, or participation rights in UP's data centre scheme should be subject to a mandatory open-data disclosure obligation:

- **Operators should be required to publish water consumption figures, Water Usage Effectiveness performance metrics, and water replenishment commitments on a centralised, publicly accessible database maintained by the UP government**
- This framework enables civil society organisations, researchers, and local communities to independently track water usage in real time, fulfilling the same accountability objective as clearance-based oversight without creating approval dependencies that delay buildout
- **The state government, as custodian of this public information infrastructure, is positioned to strengthen institutional credibility while reducing the direct oversight burden on administrative departments**
- **Private operators benefit from a predictable and transparent disclosure standard that addresses the public image considerations that accompany large-scale infrastructure investments in water-sensitive regions**

AI Infrastructure and Investments

7.2. Private Sector Recommendations

Private Capital — Co-Investment and Early-Stage Financing

- Private VC and angel funds with existing India mandates should be actively courted to establish UP-dedicated investment tranches or satellite offices in **Noida, Prayagraj, Kanpur, Deoria and Lucknow**, with the state's co-investment vehicle (referenced above) serving as a structural incentive for deal flow participation
- Corporate venture arms of large IT and technology companies operating in UP including those headquartered outside UP should be engaged to establish formal pre-seed and seed investment programmes for AI enterprises in the state
- **Domestic family offices and HNIs from the UP diaspora represent a significantly underleveraged source of early-stage capital; structured angel networks with credible deal screening should be created to channel this capital productively**

Sectoral Playbooks on AI Industry Impact

8 Healthcare AI & Bio-Engineering

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Last-Mile Diagnostic Deployment

- AI-powered diagnostic tools including AI-assisted stethoscopes and qXR-class chest imaging platforms already being deployed in UP for TB screening should be scaled statewide through frontline health workers (ASHAs, ANMs), with structured training and device provisioning integrated into the National Health Mission's annual plan
- The AI-enabled disease surveillance system under the Integrated Disease Surveillance Programme should be extended to real-time, district-level dashboards accessible to district health officers not merely to state-level aggregation enabling genuinely localised outbreak response rather than centralised pattern detection

Clinical Infrastructure and Regulatory Reform

- **Establish a "Nivesh Mitra - Bio" Single Window**: Leveraging the architecture of UP's successful industrial clearance portal (Nivesh Mitra), the state must build a dedicated sub-portal specifically for life sciences. This platform will fast-track clinical trial clearances, standardise Institutional Review Board (IRB) approvals across state universities, and align state permissions with CDSCO timelines to enforce a strict 45-day Service Level Agreement (SLA) for trial initiation.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Clinical Infrastructure and Regulatory Reform

- **Fund Dedicated Phase II/III Trial Wards:** State capital expenditure must not be diluted into general hospital IT. Instead, funds should be earmarked exclusively to construct physically separate, dedicated clinical trial wards within high-footfall institutions like KGMU, SGPGIMS, and BHU IMS. This ensures global pharma companies have access to dedicated, compliant infrastructure without placing additional burdens on the state's public healthcare operations.
- **AI-Assisted Patient Cohort Matching:** The foremost operational bottleneck in conducting global clinical trials remains the rapid identification of eligible patient cohorts. To resolve this structural inefficiency, Uttar Pradesh must systematically deploy artificial intelligence driven data extraction and anonymisation tools across the Electronic Medical Records (EMRs) of its state medical colleges. Algorithmic matching of complex trial criteria against strictly anonymised patient datasets empowers the state to instantaneously identify viable cohorts for targeted pharmaceutical trials. This strategic capability directly transforms the unprecedented demographic scale of Uttar Pradesh into a highly monetisable, data driven asset for the global life sciences ecosystem.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Funding Translational Research

Instead of simply funding university labs and hoping for commercialization, the UP government should establish **UP-TRE (Uttar Pradesh Translational Research Enterprise)** as an independent, **Section 8 (non-profit) corporate entity**. This is inspired from **IIT Bombay**'s recent launch of **TRYST (Translational Research Yielding Solutions for Tomorrow)**, a first-of-its-kind company dedicated entirely to **converting lab-stage innovations (TRL 3) into industry-ready products and prototypes within 6-12 months**. UP-TRE's sole mandate would be to scout high-potential healthcare and bio-engineering research (**stuck at Technology Readiness Level 3**) from state universities and forcefully push them through the prototyping, compliance, and clinical validation phases.

- **The Hub-and-Spoke Model**: Rather than being isolated in a single university, UP-TRE should operate as a centralized corporate hub with "spokes" integrated into the state's premier medical and technical institutions.
- **Key Nodes**: It should anchor its core clinical testing and engineering operations in institutions like SGPGIMS (Lucknow), KGMU (Lucknow), and IIT Kanpur's Gangwal School of Medical Sciences and Technology. This ensures immediate access to world-class clinical trial infrastructure and deep-tech engineering talent.
- **Industry-Led Management**: Like TRYST, UP-TRE must be led by a CEO with deep industry experience in product manufacturing, biotech scaling, and medical device regulatory approvals, rather than a purely academic board.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Funding Translational Research

- **Dedicated Product Teams**: The enterprise must hire product managers, regulatory compliance experts (for **CDSCO** and **FDA** approvals), and manufacturing engineers. When a university researcher develops a novel peptide or diagnostic algorithm, UP-TRE's staff can take over the heavy lifting of ISO certification, safety testing, and packaging design.
- **Milestone-Based Capital**: UP-TRE should be capitalized by the **state's AI Mission budget, but it will not distribute traditional academic grants**. Instead, it will use funds to build physical prototypes, pay for expensive clinical trial phases, and secure intellectual property rights.
- **Time-Bound Delivery**: The enterprise must operate on strict 6-to-12-month "sprints." If a lab-stage innovation cannot be transformed into a viable prototype or clinical trial candidate within this window, funding and resources are reallocated to the next viable project.

Targeted R&D Spending for Biological Computation

General GPU procurement is handled elsewhere; for life sciences, the bottleneck is often access to specialized bioinformatics environments and structured clinical data.

- **Procurement of Enterprise Bio-Software Licenses:** The state should centrally procure and distribute enterprise licenses for advanced drug discovery and protein-folding platforms (e.g., commercial tiers of AlphaFold, Rosetta, or specialized AWS HealthOmics instances). Individual researchers in state universities often cannot afford these out of their standard lab grants.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Targeted R&D Spending for Biological Computation

- **State-Hosted 'Bio-Compute' API Portal**: Create a centralized portal where researchers from institutions like SGPGIMS or KGMU can submit high-compute biological workloads (like genomic sequencing analysis or molecular dynamics simulations) to state-funded cloud environments without needing to be cloud-architects themselves.
- **Digitising Wet-Lab Data for ML**: Earmark **specific R&D funds for data engineering**, specifically, **paying data scientists to format the state's massive backlogs of clinical, phenotypic, and genomic data into machine-readable datasets** that life-science researchers can actually use to train AI models.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Biotech Park Incubators with 'Wet Labs as a Service'

Unlike software startups, biotech and MedTech companies cannot be incubated in a standard co-working space. They require heavy capital expenditure on physical infrastructure.

- **Shared BSL and Capital Equipment**: To eliminate the prohibitive capital costs that fundamentally stifle early stage biotechnology startups, state backed incubation centers such as those integrated into the **Lucknow Biotech Park** must transition from providing mere real estate to implementing a strict "**Wet Labs as a Service**" model. This approach formally mandates the state to provide deep tech founders with shared, on demand access to highly expensive and specialized infrastructure. Critical equipment provisioned must include **Next Generation Sequencers (NGS)**, mass spectrometers, high throughput screening robots, and certified **Biosafety Level 2 (BSL-2) containment facilities**, thereby lowering the barrier to entry for complex biological research and accelerating the timeline to commercialisation.
- **Pre-Cleared Institutional Review Boards (IRB)**: Startups building artificial intelligence diagnostics or novel medical devices frequently exhaust their financial runway waiting for necessary ethical approvals to legally test their algorithms on real patient data. To structurally solve this administrative bottleneck, dedicated state incubators must establish resident, fast tracked Institutional Ethics Committees (the Indian regulatory equivalent of IRBs). These specialized committees must be equipped with technical expertise in AI governance and strictly mandated to review and clear pilot studies for incubated companies within an enforceable 30 day window to ensure rapid clinical validation.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Biotech Park Incubators with 'Wet Labs as a Service'

- **Bio-Manufacturing Pilot Lines**: Moving from lab scale chemical synthesis to rigorous commercial testing requires compliance grade manufacturing, a step that is universally too capital intensive for a seed stage enterprise to undertake alone. To bridge this structural gap, the state should strategically construct modular, small-scale Good Manufacturing Practice (GMP) pilot lines directly within these biotech parks. This critical infrastructure intervention enables startups that are engineering new enzymes or proteins to produce sufficient, high quality material for early stage commercial testing and regulatory submission without bearing the devastating financial burden of building their own independent factories.

Interdisciplinary Curriculum Reform for Bio-Engineers

- **Mandatory 'In Silico' Validation Labs**: The state must update university biotechnology curricula to strictly require computational validation for all biological hypotheses. Students must model the binding affinity of a peptide through machine learning frameworks before attempting to synthesize that peptide in a physical laboratory environment.
- **Cross-Departmental Capstone Projects**: Universities must enforce an elective mandate requiring final year life sciences projects to integrate at least one computer science or data engineering student. These interdisciplinary teams will focus entirely on resolving biological problems through the direct application of computational methods, such as utilizing computer vision for cell quantification in microscopy images.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Interdisciplinary Curriculum Reform for Bio-Engineers

- **Regulatory Affairs as a Core Subject:** Academic bodies must introduce mandatory modules covering MedTech and pharmaceutical regulatory pathways, specifically including CDSCO and FDA frameworks alongside DPDPA (Digital Personal Data Protection Act, 2023) data compliance. This structural addition guarantees that graduating students fully comprehend the complex legal barriers associated with bringing an artificial intelligence health product to the commercial market.

Translational Leave

- **The "Translational Sabbatical" Policy:** To eliminate the career friction that currently deters academic innovators from commercializing their research, the UP government must direct state universities to formally institute a 1-to-2-year "translational leave" policy. This framework allows tenured life science faculty and clinical researchers to step out and serve as the Chief Scientific Officer (CSO) or technical lead of a biotech spin-off, with absolute guarantees from the state that their academic tenure track, pension accruals, and physical lab space will remain frozen and fully protected during their industry stint.

Healthcare AI & Bio-Engineering

8.1. Government Sector Initiatives – Recommendations

Translational Leave

- **Clinical-Adjunct Roles for Industry Execs:** To ensure that advanced academic research remains strictly aligned with actual market demands rather than theoretical exercises, the state must instruct its medical and technical institutions to establish formalized "Professor of Practice" pathways. This allows active R&D directors and product leads from private pharmaceutical or health-tech companies to hold formal adjunct titles, empowering them to officially co-supervise PhD and MTech students who are working on commercially viable medical AI and bio-engineering problems.

Healthcare AI & Bio-Engineering

8.2. Private Sector Initiatives - Recommendations

Targeted Investment in Advanced Bio-Engineering

Private capital in the health sector has historically over-indexed on generic healthcare IT (e.g., appointment booking apps, tele-consultation platforms, or basic EHRs). To build a high-margin ecosystem, venture capital and corporate R&D must pivot toward structural deep-tech biology.

- **Deep-Tech Capital Syndicates**: Regional VC networks and institutional investors must establish specialized syndicates focusing exclusively on high-value domains such as (for instance) peptide and protein design (leveraging AI to map protein folding for targeted therapies), gene editing research, and enzyme engineering (applicable to both pharmaceutical manufacturing and green industrial processes).
- **Corporate Venture Capital (CVC) for Bio-Manufacturing**: Established pharmaceutical and chemical manufacturing firms operating in UP must launch CVC arms to invest directly in early-stage bio-engineering startups. This capital should be specifically earmarked to help startups scale their chemical synthesis or bio-manufacturing processes from bench-scale to pilot-scale.

Healthcare AI & Bio-Engineering

8.2. Private Sector Initiatives - Recommendations

Bridging the Commercialisation "Valley of Death"

The "Valley of Death" occurs when academic research loses university grant funding but is still too unproven for traditional Series A venture capital. Private enterprises must step into this gap, not out of charity, but for strategic acquisition.

- **The "Venture Clienting" Model**: Large private hospital networks and pharma companies should adopt a venture client model. Instead of waiting to buy a finished company, they should act as the "first buyer" of an unproven AI diagnostic or bio-tool, providing the startup with critical early revenue and access to real-world clinical environments for validation.
- **Milestone-Based Joint Ventures**: Pharma enterprises must actively scout university labs for promising intellectual property (TRL 3 or 4) and form joint ventures. The corporate partner provides milestone-based funding specifically designed to pay for clinical safety trials and ISO compliance—the exact hurdles that typically bankrupt academic spin-offs.

Healthcare AI & Bio-Engineering

8.2. Private Sector Initiatives - Recommendations

Ecosystem Aggregation through High-Level Forums

Generic "AI Summits" are insufficient for the life sciences. The industry needs highly technical, domain-specific collision spaces to fuse AI talent with biological expertise.

- **"Reverse-Pitch" Clinical Summits**: Instead of startups building speculative solutions in search of a market, clinical directors and biotech R&D heads must publicly pitch their most critical, unsolved diagnostic or operational bottlenecks to an audience of AI researchers and bio-engineers. This flips the traditional innovation model, directing entrepreneurial talent exclusively toward validated, high-value industry needs and guaranteeing a built-in market for successful solutions.
- **Biological Hackathons with Real Data**: To move beyond theoretical software development, private consortia should sponsor biological hackathons powered by actual, sanitized clinical datasets or genetic sequences provided under a Non-Disclosure Agreement (NDA). By challenging researchers to build complex predictive models, such as drug-target binding affinities over an intensive 48-hour sprint, companies can create a low-risk environment for rapid prototyping while simultaneously establishing a direct, merit-based pipeline for talent acquisition.

Healthcare AI & Bio-Engineering

8.2. Private Sector Initiatives - Recommendations

Embedded Industry Mentorship

Mentorship cannot be limited to one-off guest lectures; it requires sustained, structural integration into the academic workflow to yield commercially viable talent.

- **Formalised Fractional Leadership (Executives in Residence)**: To bridge the gap between academic theory and commercial viability, private biotech and MedTech firms must institutionalise 'Executive in Residence' (EIR) programs. **They can enable the seconding of mid-level R&D managers or product leads to university labs for just 2 to 4 hours a week to act as active co-supervisors for PhD and MTech capstones**. Through this measure, companies can ensure that student research is continuously steered toward solving immediate, market-validated bottlenecks rather than purely theoretical exercises.
- **Strategic ROI via Right-of-First-Refusal (ROFR) Contracts**: Private enterprises require a tangible return on their mentorship and resource investment. In exchange for embedding their executives and providing student teams with proprietary software access and sanitized industry data, companies should establish ROFR agreements. This creates a legally structured pipeline, granting the mentoring firm the exclusive first option to either acquire the resulting intellectual property or recruit the specialized graduating talent before they enter the open market.

Sectoral Playbooks on AI Industry Impact

9 Agriculture, Cooperatives, Forests, and Civic Innovation

Agriculture, Cooperatives, Forests, and Civic Innovation

9.1. Government Sector Initiatives – Recommendations

AI-Enabled Dashboard and Corridor-level Pilots

- AI-enabled dashboards and advisory tools should be provided to cooperatives and FPOs covering: pricing trends (real-time and predictive), input optimisation, and basic risk flags on buyers and logistics so that small producers can negotiate better and align with export and sustainability standards
- These tools must be voice-first and Hindi-medium by design, not dashboard-first, given the digital literacy profile of FPO members
- **Corridor-level pilots should be run using drones, satellite data, and AI-assisted analysis to track forest cover, encroachment, and water bodies with UP's Terai, Vindhya, and Bundelkhand corridors as the priority geographies given their environmental monitoring deficit**
- Civic volunteer groups, i.e., student teams, NSS units, gram panchayat environmental committees should be formally integrated into data collection and ground- campaigns, converting state monitoring into a distributed citizen-powered data function
- Data outputs should be made publicly accessible at the district level not only to state agencies, enabling researchers, NGOs, and community organisations to independently analyse and respond, creating accountability through transparency
- **A small, lean Civic Innovation Sandbox should be established where individuals, student teams, or startups can propose AI-enabled civic solutions in defined domains: waste management, traffic optimisation, grievance redressal, and local climate adaptation**

Agriculture, Cooperatives, Forests, and Civic Innovation

9.1. Government Sector Initiatives – Recommendations

AI-Enabled Dashboard and Corridor-level Pilots

- Selected proposals should receive micro-grants alongside a defined pilot area (ward, block, or district level) and a named government counterpart responsible for facilitating the pilot
- A public input and voting mechanism, be it ward-level or panchayat-level, should be used to select or prioritise pilots, primarily to build community engagement and programme visibility

Operational Conditions for Sandbox Pilots

The Civic Innovation Sandbox will produce durable outcomes if the following conditions are embedded as approval requirements:

- **On budget**: Every approved pilot must carry an explicit operational budget for 18 months post-deployment covering data upkeep, model recalibration, staff training, and field feedback integration. This budget must be confirmed and ring-fenced at the time of micro-grant approval, not sought after deployment. A pilot budgeted only for deployment is to be considered like a demonstration. The recurring operational cost for any AI pilot should be assumed at a minimum of 30% of the initial deployment cost annually; proposals that do not account for this should be returned for revision.

Agriculture, Cooperatives, Forests, and Civic Innovation

9.1. Government Sector Initiatives – Recommendations

Operational Conditions for Sandbox Pilots

- **On measurement**: Every indicator must map to:
  - a specific field action that a named departmental official(role) can take, and
  - a measurable service outcome that changes because of that action.
- **If an indicator can`t be proven to connect those two items before launch, it should be removed. A pilot with five clean, actionable indicators may consistently outperform one with twenty indicators, three of which anyone pays attention to.**

- **On ownership**: Every pilot must name a specific departmental role not an individual, not an SPV, not a consultant. The named role is accountable for service-level outcomes driven by the dashboard indicators. The pilot must explicitly state that the role is responsible for transitioning into standard departmental operations by month 18. If the pilot has not identified this role before launch, the pilot should not be approved.

Sectoral Playbooks on AI Industry Impact

10 Data Governance and Open Data Infrastructure

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Foundational Principles for High-Fidelity Data Collection

Data quality is the primary determinant of whether UP-specific AI models are useful or harmful. **Poor data quality and restricted data access are structurally the same problem**: both produce AI systems that serve only those who control the data, creating monopolies that are as damaging to UP's AI ecosystem as market monopolies are to its economy. The following principles should anchor UP's data governance framework:

- **High-fidelity data collection standards must be defined and mandated for all government data collection programmes, specifying minimum requirements for completeness, accuracy, timeliness, schema consistency, and documentation of collection methodology.**
- **Data curation and ingestion pipelines must be designed with leak prevention as a first-order engineering requirement, since data lost or corrupted between collection and model ingestion is economically equivalent to data never collected. Data engineering and pipeline integrity are the unsung foundational layer of everything AI produces.**
- **Conditions to prevent vendor lock-in must be embedded in every government data sharing framework. Data collected through public infrastructure, public funding, or the exercise of state authority must not be made available exclusively to a small number of private entities; access tiers may exist but must not produce de facto exclusivity.**

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Data Localisation — What the State Can and Should Do

- **Contractual data localisation is already standard practice in enterprise deployments and is legally achievable under India's existing framework. This is neither novel nor aspirational:**
  - The state government should mandate, as a condition of all government AI procurement and data sharing agreements, that data collected within UP or pertaining to UP residents is stored, processed, and backed up within Indian borders, with specific geographic restrictions on replication to jurisdictions outside India written as enforceable contractual terms
- This is consistent with the Rule 15 framework of the Digital Personal Data Protection Rules, 2025, which grants the Central Government authority to impose restrictions on cross-border data transfers. **UP's contractual localisation requirements should be structured to anticipate and align with these evolving Central Government notifications rather than creating a parallel state-level regime that conflicts with national law**

- **Private companies should be formally engaged as partners in data governance and security framework implementation;** enterprises with demonstrable data governance, model testing, and AI quality assurance capabilities can represent the most effective implementation layer for the state's data governance standards, which the state machinery cannot operationalise alone.

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Preventing Data Monopolies — Open Data as Infrastructure

- **A UP Open Data Policy should be notified, establishing that all data collected by state agencies using public resources is presumptively available for access under defined terms with exceptions for personal data (governed under DPDP Act), national security-classified data, and commercially sensitive operational data explicitly justified on a category-by-category basis**
- Access to government datasets relevant to UP-specific AI development, such as agricultural yield data, health records (anonymised), transport flows, land records, urban planning data, should be available to qualified researchers, startups, and academic institutions through a structured application process with defined timelines, not subject to ad hoc departmental discretion.
- Some aspects of the UP Open Data Policy, under the purview of the UP Data Centre Authority may include:
  - Adopt a tiered **State Data Use License (similar to Creative Commons but for data)** that clearly defines rights for commercial vs. non-commercial research to prevent legal "gray zones" for AI startups.
  - Mandate a **real-time Metadata Registry** where every state agency must list their "Data Inventory," specifying the schema, update frequency, and "pedigree" (provenance) of datasets, even before they are fully curated for public release.
  - Include a "**Safe Harbour**" provision that protects researchers and startups from liability arising from errors in government-provided "as-is" datasets, provided they follow the state's 'High-Fidelity Data and Pipeline Integrity Standards'.

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Model Procurement Clause — Anti-Lock-In as a Mandatory Technical Condition

All government AI procurement above a threshold to be notified by the State Data Centre Authority, recommended at ₹50 lakh and above, must satisfy the following as mandatory technical evaluation criteria, not desirable features:

- **Open API access**: the system must expose all core functions through documented, non-proprietary APIs accessible to the procuring department without vendor intermediation
- **Full data portability**: all data ingested into, generated by, or stored within the system must be exportable in open, non-proprietary formats (CSV, JSON, or equivalent) at any time, on departmental request, within 72 hours
- **Source code escrow or replication rights**: Either the source code must be deposited with a designated state-controlled escrow agent, or the department must hold documented rights to replicate core system functionality using in-house or third-party resources without the original vendor's involvement
- **Maintenance runbook as a deliverable**: Every deployment must include a vendor-supplied maintenance and handover runbook written in plain language. This document must provide clear, accessible instructions enabling a competent in-house team or replacement vendor to operate and maintain the system independently within 90 days of the contract end date.

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Model Procurement Clause — Anti-Lock-In as a Mandatory Technical Condition

- **Third-party Safety and Ethical Audit Certification**: The bidder must provide a comprehensive audit report from an accredited third-party agency certifying that the AI system meets the State's thresholds for algorithmic fairness, security robustness (red-teaming), and data privacy compliance under the **Digital Personal Data Protection (DPDP) Rules, 2025**.
- **Bids that do not satisfy all five conditions must be disqualified at the technical evaluation stage. Post-award negotiation is prohibited. It will be the personal accountability of the procurement officer if he approves the prohibitory contract or for any resulting vendor lock-in costs. This accountability condition must be written into the procurement SOP.**

A Caution on Dashboard Architecture

- Aggregated dashboards spanning 20 or more indicators, presenting everything from sanitation compliance to power outages to grievance volumes on a single screen have a consistent failure pattern that UP's data infrastructure investments must explicitly avoid:
  - **No single authority in government has the operational mandate to act on every indicator a composite dashboard displays; when everyone is notified, no one is accountable**
  - Data quality across 20 indicators, for instance, is never uniform; a dashboard that blends high-quality sensor data with manually entered field data presents false equivalence that misleads rather than informs
  - When actionability is unclear, the dashboard becomes a monitoring artefact rather than a decision tool, i.e., it is maintained because it exists, not because anyone uses it

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

A Caution on Dashboard Architecture

- **The design principle that follows is simple: one dashboard, one accountable authority, one set of indicators that authority can act on without multi-agency clearance. Composite dashboards are appropriate for senior political and administrative review.**
- The related failure is equally specific: **predictive AI outputs, such as congestion forecasts, encroachment alerts, asset failure warnings** produce no value if the receiving department cannot act on them without convening an inter-departmental committee. Before any predictive AI system is procured, the procuring department must confirm **in writing that it holds unilateral enforcement authority for the outputs it will receive. Where it does not, procurement must be deferred; any jurisdictional ambiguity or delegation of power required must be resolved via a formal executive order within 30 days of the procurement filing. If resolution is not achieved within this window, the procurement should be suspended to prevent wasteful expenditure on non-actionable intelligence.**

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Sonbhadra Principles as UP's AI Social Governance Baseline

The Sonbhadra AI Principles, developed by ISAIL, provide a directly applicable governance baseline for UP's AI deployment in social welfare and digital governance contexts. The following principles are specifically recommended for adoption as binding conditions on all government-deployed AI in UP:

- AI systems should only be deployed for tasks within their demonstrated technical capabilities, with verified performance data from Indian population contexts required before any government deployment proceeds; pilots must be designed to fail safely at small scale before any rollout affecting vulnerable populations is authorised
- Human override must be preserved and made accessible at every critical decision point in AI systems deployed for social sector applications, ensuring no individual welfare outcome is determined without a meaningful option for human review
- All deployed AI systems must be subject to continuous post-deployment monitoring for performance degradation, with particular rigor applied in contexts where deteriorating performance carries direct consequences for vulnerable populations
- Community input must be incorporated as a substantive requirement in the design and deployment of AI systems affecting social welfare delivery, not treated as a procedural formality alongside technical and administrative review
- Beneficiaries must be clearly informed when AI systems are used in decisions affecting their welfare, including the extent of AI involvement, the data sources relied upon, and the options available to them for human review.

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Proposed Data Governance Recommendations

- **A data completeness standard, i.e., minimum representational thresholds by demographic category, must be notified as a procurement condition for all social welfare AI systems while involving**
- All government-deployed AI systems must produce monthly disaggregated performance reports, broken down by district, gender, caste category, and urban/rural classification filed with the State Data Centre Authority, triggering mandatory review if performance variance across categories exceeds a defined threshold
- **Model drift is particularly acute in agricultural and health applications**; continuous retraining pipelines with fresh UP-sourced data must be a contractual vendor obligation and not an optional update schedule
- A government officer cannot meaningfully override an AI decision without understanding the underlying data inputs. **Therefore, every government AI system affecting individual welfare must produce a human-readable decision log**. This log must specify the driving data inputs, the assigned confidence level, and any alternative outcomes considered. If the reviewing officer is a district or block-level functionary, this log must be provided in Hindi.
- **Standardised AI Decision Notices**, issued in Hindi and the relevant regional dialect, must accompany any AI-generated benefit determination, stating: **which datasets were used, what weight they were given, and the name and contact of the human officer available for review.**

Data Governance and Open Data Infrastructure

10.1. Government Sector Initiatives – Recommendations

Proposed Data Governance Recommendations

- **Data Disclosure & Proprietary Protections: Data sources must be disclosed at the category level. While proprietary model architectures remain protected and do not require disclosure, the specific data inputs that drove an individual citizen's outcome must be fully transparent and accessible.**
- Training data, fine-tuning datasets, and inference logs for all social welfare AI systems must remain under government custody, not vendor custody
- **Procurement contracts must specify that all data generated through government AI system operation including inference logs, error reports, and retraining datasets is government property, not usable by the vendor for any purpose other than contracted maintenance**

Sectoral Playbooks on AI Industry Impact

11 Heritage, Tourism, Mobility, and E-Commerce

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Enabled Sanitation at Spiritual Heritage Sites

- Sanitation at UP's spiritual and heritage sites is a direct economic variable since it determines repeat visitation, international tourist retention, and the state's Swachh Survekshan ranking and should be treated as a **semi-critical infrastructure**.
- AI-enabled sanitation monitoring should be mandated at all major spiritual heritage sites and high-footfall tourist destinations, covering tourist toilet facilities, waste collection points, and public spaces with IoT sensor networks tracking hygiene thresholds (**odour, occupancy, water availability, cleaning frequency**) and generating automated alerts for rapid cleaning intervention rather than scheduled cleaning cycles irrespective of condition
- Indore's **deployment of smart sensors across 350+ public toilets, generating real-time hygiene alerts and automated contractor accountability triggers**, is the most directly applicable Indian precedent; UP should pilot this model at **Varanasi, Prayagraj, Ayodhya, and Mathura in the first phase**
- All sanitation solutions at heritage and spiritual sites should be **gradually structured as private sector-managed operations**, since the government's role is mandate-setting, standards enforcement, and outcome-based contracting; private operators are better positioned to manage the rapid-response operational tempo that high-footfall sites require and to absorb the capital cost of sensor infrastructure under viability gap funding models

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Enabled Sanitation at Spiritual Heritage Sites

- Landscaping for environmental quality, i.e., selection and placement of foliage species that demonstrably contribute to groundwater recharge and local air quality improvement around heritage site perimeters, should be integrated into site development plans, with optional AI-assisted environmental modelling used to select species and placement for maximum ecological impact.

Crowd Management

- Varanasi is already the subject of Toyota Mobility Foundation's $3 million Sustainable Cities Challenge, with five finalists developing AI-powered pedestrian navigation, real-time crowd monitoring, and proactive crowd simulation systems (SANKALP by Arcadis, CityFlow by CITYDATA Inc., Behtar-Way by VOGIC AI); **UP should formally integrate the winning solution into the Varanasi Smart City infrastructure and fund its scale to other pilgrimage corridors rather than running parallel procurement**
- UP's AI surveillance rollout at Kashi Vishwanath using facial recognition, behavioural analytics, and emergency response systems should be extended with a data-sharing framework that feeds anonymised crowd flow data to private mobility and logistics operators, enabling them to dynamically adjust transport and service capacity in real time

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

Tourism Data as Economic Infrastructure

- A UP Tourism Data Platform should be established integrating visitor analytics from heritage sites, transport systems, hospitality, and e-commerce to enable data-driven tourism planning, investment prioritisation, and distribution of tourism benefits beyond saturated circuits (Agra, Varanasi, Ayodhya) to lesser-known districts with comparable heritage value but minimal current visitor infrastructure

- **This platform should be governed in line with the Open Data Policy recommendations as described in the Data Governance Playbook (Chapter 10), ensuring access to anonymised, aggregated tourism data for private operators, researchers, and district administrations for planning purposes, rather than being held exclusively by the state tourism department.**

- All data collection at heritage sites, for instance through crowd sensors, ticketing systems, mobility data, sanitation IoT should feed into this platform under a unified schema, preventing the fragmented, siloed data architecture that has **historically made Indian smart city data operationally unworkable**

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Integrated Timed Entry and Zone-Based Visitor Circulation

Heritage and spiritual sites in Uttar Pradesh must not be limitedly ascribed as single-point destinations. Most of such sites are large, multi-functional campuses spanning significant acreage, with distinct precincts, processional routes, inner sanctums, and ancillary spaces. Thus, a more effective intervention should be upstream, treating the monitoring of crowd outflows with a prepared estimation, at the point of entry scheduling with a clear understanding of spatial distribution.

- Timed-entry slot booking should be mandated at all high-footfall heritage and spiritual sites, using AI-assisted demand forecasting to distribute visitor volume across defined time windows throughout the day; this prevents footfall from peaking at a single point and instead creates a rolling, regulated flow that is both safer and more conducive to a quality visitor experience.
- Crucially, from a heritage protection angle, unregulated crowd concentration causes micro-vibration damage, humidity spikes, and surface wear to historic stone and painted surfaces. **Therefore, timed entry functions not just as a visitor experience measure, but as a vital conservation measure, directly reinforcing the framing of heritage as economic infrastructure.**

Furthermore, as these sanitation and site solutions are gradually structured as private sector-managed operations, these timed-entry systems must maintain a dedicated walk-in or offline booking quota. This ensures equitable access for visitors without smartphones or internet connectivity, which is particularly relevant for the pilgrimage demographics in rural UP.

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Integrated Timed Entry and Zone-Based Visitor Circulation

- This scale of intervention is well-supported by international precedents that directly mirror Uttar Pradesh's unique spatial and conservation challenges.
    - **For example, Angkor Wat (Cambodia) proves that zone-rotation and timed-entry can be seamlessly implemented at massive, active spiritual sites in Asia without disrupting religious sentiment or overwhelming local infrastructure**.
    - **Similarly, the Uffizi Gallery (Florence) demonstrates how crowd regulation effectively mitigates micro-vibration and humidity damage in highly confined historic spaces, offering a direct structural parallel to the conservation needs of enclosed monuments and inner sanctums (*garbhagrihas*) across UP.**
- **Each major site should be internally divided into functional visitor zones based on spatial capacity, heritage sensitivity, and circulation logic.** Visitors should be routed through these zones in staggered rotation so that no single precinct absorbs disproportionate crowd load at any given time; this is **particularly critical at sites like Kashi Vishwanath Mandir in Varanasi, Shri Ram Janmabhoomi Mandir in Ayodhya, and Taj Mahal in Agra, for instance, where inner sanctum areas (or *garbhagrihas*) are structurally and ceremonially sensitive to overcrowding.**

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Integrated Timed Entry and Zone-Based Visitor Circulation

- The zoning framework may be developed through **AI-assisted spatial analysis of site plans, mapping visitor movement patterns, dwell times, and bottleneck nodes. In addition, this data should feed back into the timed-entry system dynamically, adjusting slot allocation in real time based on observed zone occupancy rather than fixed caps.**

- **To achieve this efficiently, site administrators must cross-reference the AI-enabled sanitation infrastructure recommended earlier in this framework; the exact same IoT sensor network deployed to track occupancy in toilet facilities can simultaneously inform zone-level crowd density mapping, effectively avoiding parallel procurement and redundant capital expenditure.**

- Timed-entry and zone data should integrate directly into the UP Tourism Data Platform proposed in this **playbook (Chapter 11). This enables site administrators, transport operators, and hospitality providers to align capacity in advance rather than reacting to surges after they occur.**

- For pilgrimage-scale events such as Kumbh and Magh melas in Prayagraj, where timed-entry at the individual level is not operationally feasible, **the zone-rotation model should still apply** at the group and precinct level. **AI-assisted crowd simulation can be used to pre-model flow scenarios and define dynamic zone thresholds that trigger real-time rerouting through PA systems, digital signage, and on-ground marshalling.**

Heritage, Tourism, Mobility, and E-Commerce

11.1. Government Sector Initiatives – Recommendations

AI-Enabled Mobility — Urban and Tourism Corridors

- AI-based route optimisation, traffic prediction, and dynamic scheduling should be deployed for bus and rail services in Lucknow and Kanpur as priority cities, with Varanasi, Prayagraj, and Agra added in the tourism corridor phase to cover dynamic timetabling, demand-responsive routing, and real-time passenger information systems

- Smart parking systems integrated with real-time occupancy data and dynamic pricing should be introduced at heritage site clusters and major urban nodes, reducing congestion, improving air quality in high-density heritage zones, and generating revenue for site maintenance

Heritage Commerce

- AI recommendation systems should explicitly link tourism and commerce suggesting authentic local craft purchases to visitors before, during, and after travel, integrating with hotel booking platforms, travel apps, and heritage site digital interfaces to create a continuous commercial touchpoint throughout the visitor journey

- **Private e-commerce platforms operating in UP should be incentivised through data sharing agreements and preferential marketplace listing to develop dedicated traditional craft verticals with verified artisan provenance, converting UP's heritage brand into a commercially exploitable digital asset rather than leaving it to undifferentiated general marketplaces**

Sectoral Playbooks on AI Industry Impact

12 AI, Media and the Orange Economy

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

The Karnataka Precedent — and Why UP Can Do This Differently

- Karnataka became the first Indian state to have a separate AVGC policy back in 2017. The third version, AVGC-XR Policy 2024–29, came out after the first two being a success. It has grown to more than 300 studios, over 15,000 professionals which is about 20% of India's total media and entertainment output. The annual flagship event GAFX attracts the attention of the Chief Minister, Deputy Chief Minister, and industry leaders from around the world.
- Karnataka makes its policy frameworks very well but, Uttar Pradesh's story is different from Karnataka's infrastructure, so it should be treated that way. The Orange Economy is what makes Uttar Pradesh truly competitive. Its cultural heritage is deep and unique in Hindi, Awadhi, Braj, and Hindustani, and it has a huge pool of talent that no other southern state can match. The AVGC-XR sector`s expected growth is approx. $2 billion today to more than $25 billion in the next few years. However, India's share is still less than 1%, so Uttar Pradesh is still early to enter this space, given where the market is going.

IICT Campuses in Lucknow and Noida

- The Indian Institute of Creative Technologies (IICT) established under the Ministry of Information and Broadcasting, mandated as India's apex institution for AVGC-XR talent development, innovation, and IP creation, should be formally invited to establish campuses in Lucknow and Noida specifically

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

IICT Campuses in Lucknow and Noida

- A Noida campus serves the NCR's existing media and animation industry cluster; a Lucknow campus anchors UP's Hindi-medium creative economy development. These are not interchangeable locations and both are necessary
- **IICT targets 10,000+ domain experts, 500+ original Indian IPs, and 1 million learners to be skilled by 2035; UP hosting two campuses materially accelerates that national mandate while positioning the state as a co-owner of national creative infrastructure, as an active recipient**
- The ask should be framed as a co-investment: the UP government may provide land at UPSIDA-alloted rates, broadband and power infrastructure, and a student pipeline through curriculum linkages; IICT can bring its ministerial mandate, national industry partnerships, and institutional credibility

UP AVGC-XR Policy — Developing UP's Own Framework

- UP should develop a dedicated UP AVGC-XR Policy by adapting Karnataka's three-iteration model to UP's creative and linguistic asset base; Karnataka moved without a national template in 2017 and the first-mover advantage was decisive.

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

UP AVGC-XR Policy — Developing UP's Own Framework

- Core pillars should mirror Karnataka's proven architecture:
  - Financial incentives for studio establishment and international market access
  - Industry-aligned curriculum at state technical and creative institutions
  - A dedicated AVGC-XR zone within Noida or Lucknow
  - An annual flagship creative economy event anchored in Hindi-medium and Hindustani cultural content apart from English-medium orientation in general

Annual UP Creative Economy Summit — Learning from GAFX, Odisha, and WAVES

- An annual UP Creative Economy Summit should be established as UP's flagship Orange Economy event, modelled structurally on GAFX but anchored specifically in Hindi, Awadhi, and Hindustani content; the deliberate design principle is that the Chief Minister and relevant cabinet ministers attend as ecosystem builders. Karnataka's GAFX demonstrates that this level of sustained political investment is what converts an event into an ecosystem

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

Annual UP Creative Economy Summit — Learning from GAFX, Odisha, and WAVES

- The summit should combine: original IP showcases and launch platforms for UP-origin creative enterprises; hands-on workshops in AI-assisted animation, VFX, and game development and international buyer and co-production meetings connecting UP creators with global distribution platforms
- **The summit should include a dedicated digital creator and influencer track from its first edition. Odisha's Information and Public Relations Department issued a dedicated Social Media Agency RFP in 2025 specifically covering influencer management, blogger engagement, and digital creator partnerships as a permanent government communication function and not a one-off campaign**
- UP should similarly issue a standing UP Creative Economy Digital Agency empanelment, open to UP-domiciled agencies, with explicit preference for women-led and youth-led creative enterprises responsible for year-round creator outreach and digital amplification of the summit and broader Orange Economy programme

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

AI and the Hindi Creative Economy

- The UP Orange Economy AI Fund, which is privately anchored and state-catalysed, should specifically prioritise the following areas:
  - Original IP Production: AI-assisted production of Hindi-medium original IPs, including animation series, games, and interactive experiences rooted in UP's mythological, historical, and folk traditions.
  - Creator Enablement: AI tools for music, performance, and visual arts enabling individual creators from non-English backgrounds to produce globally distributable content.
  - Cultural Localisation: AI-driven localisation of global content into Awadhi and Braj, creating a two-way cultural exchange rather than a one-directional import.
  - **GenAI vs. AI Disambiguation in GAFX: Clear disambiguation between Generative AI (GenAI) and other forms of AI within the GAFX (Gaming, Animation, and VFX) sectors. This distinction is critical because the use of GenAI in an exploitative sense is generally not accepted by the broader gaming and creative industries, as demonstrated by strict policies at events like the Indie Games Utsav.**

- Compute-Based Incentives: AI Creativity and Media Competitions offering GPU compute access as prizes rather than cash. These competitions should feed directly into this Fund as the talent discovery pipeline, ensuring winners have both the recognition and the computational resources to continue building immediately.

AI, Media and the Orange Economy

12.1. Government Sector Initiatives – Recommendations

AI and the Hindi Creative Economy

- Parity in Ecosystem Valuation: AI filmmaking, animation, and media competitions that run alongside technical AI Olympiads with equivalent prize structures. This explicitly signals that creative AI talent is valued on par with technical AI talent within UP's ecosystem.

Cultural Asset Mapping

The UP Orange Economy AI Fund, should be developed considering these aspects:

- AI-assisted creation of original IPs in Hindi, such as animated series, games, and interactive experiences, based on UP's mythological, historical, and folk traditions
- AI tools for music, performance, and visual arts enabling individual creators from non-English backgrounds to produce globally distributable content
- AI-driven localization of global content into Awadhi and Braj creates a two-way cultural exchange instead of just importing it.
- AI Creativity and Media Competitions should go directly into this Fund as a way to find new talent.
- Instead of cash prizes, winners should get access to GPU compute resources so they can keep building right away.

AI filmmaking, animation, and media competitions should run alongside technical AI Olympiads with equivalent prize structures, signalling explicitly that creative AI talent is valued on par with technical AI talent in UP's ecosystem.

AIACT

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Testimonials

Dr Shobhit Mathur

Vice-Chancellor
Rishihood University, Sonipat

The next phase of India's AI growth will be shaped as much by states as by national policy. The **UP.AIACT.IN** Report 2026 provides a rigorous assessment of Uttar Pradesh's AI-adjacent economy and offers actionable pathways for accelerating innovation, competitiveness, and inclusive development.

Dr Brijendra Singh Yadav

Director
School of Legal Studies
Chandigarh University Uttar Pradesh

As an Academic leader, its my responsibility to ensure that promising academic research in Central India does not hault before reaching the market. **The UP.AIACT.IN Report 2026 provides such a highly pragmatic and necessary roadmap for bridging this gap, offering structural solutions**. It is an essential blueprint which is well drafted and reasonably researched to provide or achieve **genuine industry-academia fusion** and finally turning campus innovation into a viable and dynamic enterprise with thinking incubation.

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Testimonials

Sanjay Notani

Partner
Economic Laws Practice, Mumbai

In the race to lead in AI adoption following the recent summit in Delhi, Indian states are rapidly gaining traction. **The UP.AIACT.IN Report 2026** is a timely and much-needed contribution, offering a clear and actionable roadmap for **Uttar Pradesh—one of the country's largest and most significant states**—to seize this opportunity. Its grounded, implementation-focused approach makes it especially relevant for shaping the next phase of AI-driven growth. Congratulations to the team and especially Abhivardhan - the resident ambassador who understands tech and the State.

Roger Spitz

President & CEO
Disruptive Futures Institute

In a sea of **abstract AI frameworks**, we rarely see the level of granular accountability found here. By answering the '**who, where, and when**' of AI development, this report moves beyond observations into actionable foresight. **The UP.AIACT.IN Report** is the new benchmark for AI policy.

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Testimonials

Abhinav Gupta

Faculty Coordinator
Chair on Consumer Research and Policy
National University of Study and Research in Law, Ranchi

The **UP.AIACT.IN Report 2026** provides a comprehensive, forward-looking analysis of Uttar Pradesh's AI ecosystem and **practical sectoral insights that can inform AI policy, governance, and regulation** in India's evolving digital economy.

Ankur Gupta

Legal & Policy Professional, Singapore

The UP.AIACT.IN Report 2026 stands out as an "**implementation-first playbook**" prioritizing "**operational specificity**" over policy theatre. Its unique "**Shippable formula**" delivers "**city-rooted, testable outcomes**" that leverage Uttar Pradesh's massive talent scale for sovereign AI transformation.

Sohom Banerjee

Senior Research Associate
CUTS International
Research Scholar
Jaipuria Institute of Management, Noida

This is not another AI vision document, it is a shippable blueprint. A **first-of-its-kind report for Central India's AI and IT landscape**, it fuses ambition with execution, showing how Uttar Pradesh can leap from policy theatre to population-scale impact, grounded in talent, sovereignty, and real institutional capacity.

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Testimonials

Dr Taruna Jakhar

Assistant Professor (Law)
School of Law, Forensic Justice & Policy Studies
National Forensic Sciences University, Gandhinagar

This report **presents a distinctive and pragmatic vision for UP** by **integrating AI governance with manufacturing potential, resource optimization and employment generation**. Its clear distinction from Bengaluru-centric IT service model and emphasis on utilising UP's Industrial and demographic strengths **make the recommendations both practical and regionally relevant in India Law Plus AI governance regime**.

Vignesh Ram, PhD

Assistant Professor
Department of Geopolitics and International Relations
Manipal Academy of Higher Education, Manipal

The report provides a **comprehensive take** on pitching UP as the the next probable destination for hosting a growing interest in India's AI plans. The report provides a **comprehensive forecasting based on contemporary reality in India's tech space**, learning lessons and bringing out merits about '**Why UP, Why Now**' as the next frontier of AI development in the country.

Edited with Gratitude, by

Testimonials

Dr Vivek Manoharan, PhD

Coimbatore-based Scientist and Entrepreneur, working in the AI & Computer Vision space

The UP.AIACT.IN 2026 report is a refreshing departure from the usual high-level "policy-speak." As someone who builds AI that works—minus the hype—I find its skepticism regarding the "copy-paste" model of innovation particularly sharp. Blindly obsessing over the Bengaluru or Silicon Valley blueprint is a strategic blunder; **we cannot simply transpose elite-tier frameworks onto diverse, non-elite geographies and expect results**. For states to move from abstract mandates to shipping tangible code, we need the operational specificity **ISAIL champions: industry-led technical stewardship and a pivot from generic bootcamps to sector-specific rigour**. **It's time we stop treating execution as a "post-strategy" problem.**

Sakshi Abrol

Senior Manager
UK India Business Council (UKIBC)

Uttar Pradesh combines scale and complexity in MSMEs and talent, requiring tailored AI strategies. This **first state AI execution playbook** is a critical resource to federating India's AI future and supporting subnational policymaking.

Edited with Gratitude, by

Testimonials

Suresh Kumar

Founder & Managing Attorney
Unimarks Legal Solutions

Abhivardhan and his team are emerging voices for original thinking grounded in the significance of Uttar Pradesh as a governing jurisdiction. Their **UP.AIACT.IN Report 2026, especially the playbook on Data Governance**, reflects a thoroughness that only comes from minds that comprehend the friction between what law can enforce and what policy can only aspire to. Essential reading for policymakers, legal professionals, and anyone serious about building regulatory frameworks that hold.

Animesh A. Bordoloi

Senior International Case Counsel
Asian International Arbitration Centre

The work on **UP.AIACT.IN** by **Abhivardhan and his colleagues** could be a game-changer for Uttar Pradesh's road map for AI integration and implementation. Their report caters to regional macro & micro-level issues, is insightful, well-structured, and offers the clarity and depth needed for informed state policy considerations.

“The AI-internet complex and its supply chains are increasingly being seen as the fulcrum of modern economic, social, and psychological organization. The focus on AI development and regulation will rapidly shift from economic and privacy-related concerns to those pertaining directly to its supply chains, and more importantly, their embedded values.”

GAUTAM R. DESIRAJU &
DEEKHIT BHATTACHARYA

Authors

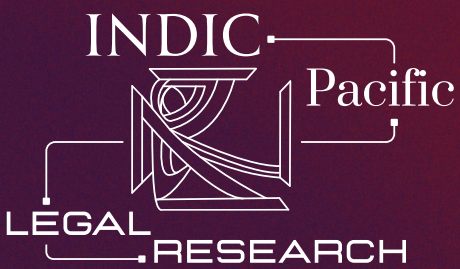
India's Supply Chains in a World at War: Trade, Power, Conflict, and Entanglement among Empires in the New Global Order

“Reforms are over-rated. Competent management is underrated. Execution trumps strategy, every day of the week.”

SOMNATH MUKHERJEE

Chief Investment Officer
ASK Wealth Advisors

Indic Pacific Legal Research



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