STRATEGIC OPPORTUNITY REPORT

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THE OPPORTUNITY BEYOND THE FAB

Technology Sovereignty Series – Strategic Opportunity

Startup and MSME Opportunities Emerging from India's Technology Sovereignty Economy (2026–2035)

BUILDING INDIA'S TECHNOLOGY SOVEREIGNTY.
CREATING ENDURING VALUE.

100 OPPORTUNITIES IDENTIFIED & SCORED

10 TECHNOLOGY DOMAINS

10 STATES ANALYSED

5 PROPRIETARY INDICES

2035 A ROADMAP FOR TECHNOLOGY LEADERSHIP

THE OPPORTUNITY BEYOND THE FAB

Executive Brief — Startup and MSME Opportunities from India's Technology Sovereignty Economy (2026-2035)

Techadyant Private Limited
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The thesis in one page

India has committed roughly ₹1.6 lakh crore to semiconductor manufacturing — thirteen projects across seven states, with the first facilities now operational. The national conversation treats the fab as the story. It is not; it is the opening of a much larger one. This is not an argument against the fab — the fab is the anchor that creates the surrounding demand. The argument is about where the value is *captured*: around the fab, not instead of it.

A fab is the visible peak of a ten-layer industrial pyramid. The layers around it — the materials and precision components beneath, the design tools and software beside, the applied AI, security and services above — are where most of the capturable economic value sits, where the capital requirements are a fraction of a fab's, and where India's existing industrial and talent base can actually compete. This brief is the condensed decision map; the full report identifies, scores and ranks **one hundred startup and MSME opportunities** created by India's technology-sovereignty push and converts a national-policy ambition into a founder's and an investor's playbook.

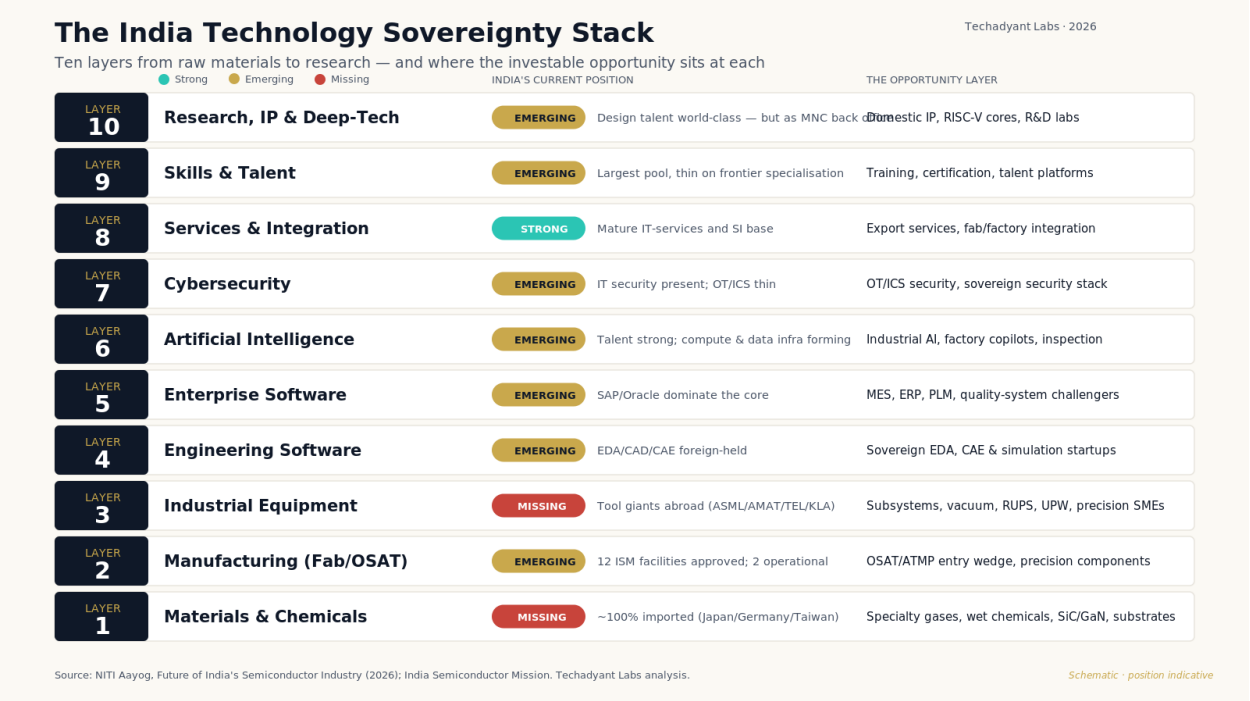

Figure 1 — The India Technology Sovereignty Stack.

The stack is uneven by design, and the unevenness *is* the opportunity. India is strong at the downstream end (electronics manufacturing — ninety-nine per cent of phones sold are locally made; design services — a fifth of the world's chip-design work). It is emerging across the middle (manufacturing, software, AI, engineering tools, security). And it is missing at the up-

stream end (materials, chemicals and capital equipment, roughly ninety to ninety-five per cent imported). Each position implies a different move: convert capability to ownership where India is strong; climb from participation to value capture where it is emerging; build behind a sovereignty mandate where it is missing.

In the full report: the Executive Summary and Part I (Chapters 1-2), with the complete India Technology Sovereignty Stack.

Where the value escapes

The single most important exhibit in the analysis is the shape of the value chain. Industry value-added is not spread evenly: chip design plus the EDA and IP that enable it account for over half of all value-added, fabrication about a quarter, equipment around twelve per cent, materials and packaging roughly five each (BCG-SIA, 2021; Yeung et al., 2023). Margins tell the same story — EDA runs near seventy per cent gross margin, the foundry leader around sixty, and then the floor drops out: the largest OSAT earns about eighteen per cent and the largest contract manufacturer about six.

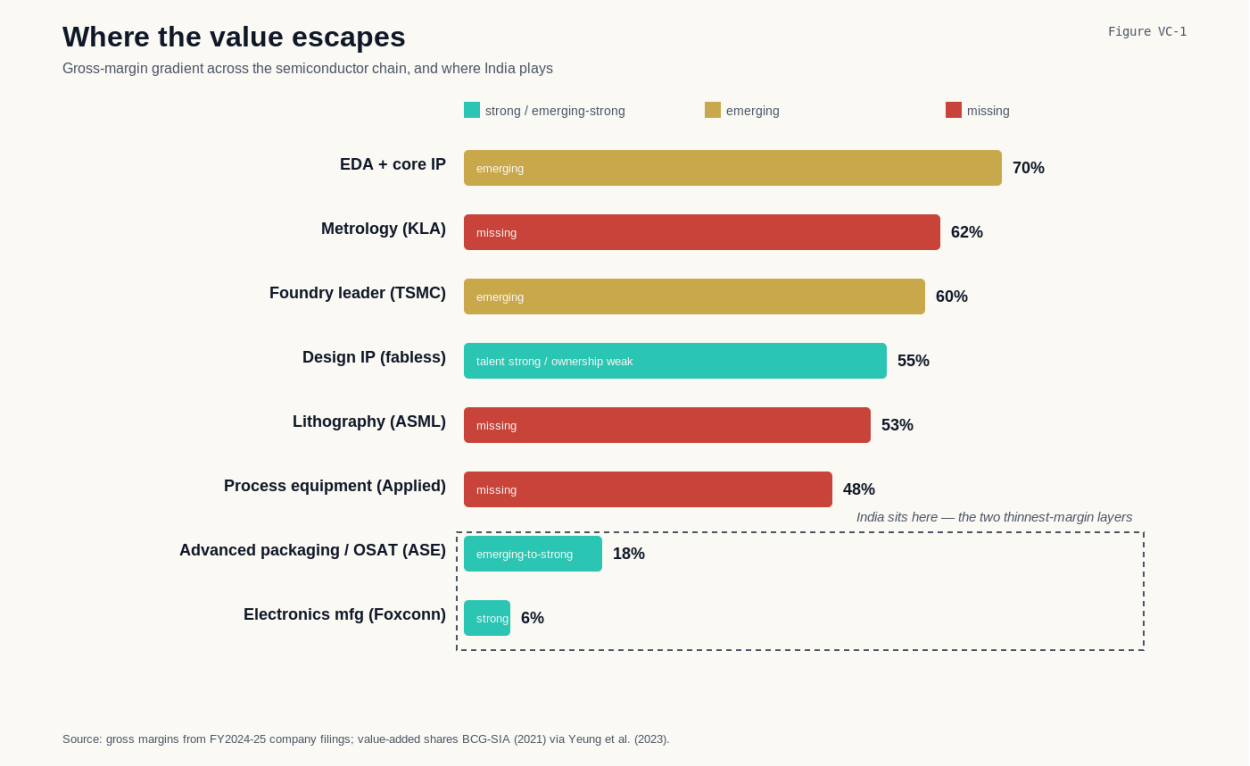

Figure 2 — Where the value escapes: the gross-margin gradient across the semiconductor chain.

India today is concentrated at the two thinnest-margin slices — OSAT and electronics assembly — plus captive design *labour* whose output is booked as value by foreign principals. The roadmap's promise of fifty-five-to-seventy per cent value retention is not won at the fab; it is won by moving *up and left* on the chain — into design-IP ownership, equipment subsystems, and the materials chokepoint. **Assemble at the bottom and value flows through India; own the top-left and it stays.**

In the full report: Part II, Chapter 5 (§5.1 “How value escapes India”), and the market sizing in Appendix D.

The framework: one hundred opportunities, scored

Every opportunity is scored on a single, reproducible system of five proprietary indices. Three diagnostics — the **Technology Sovereignty Value Index** (how strategic), the **India Readiness Rating** (can India compete today), and the **Go-to-Market Ease Matrix** (how hard to commercialise) — feed one headline **Technology Opportunity & Market Index (TOMI)**. A portfolio engine, the **Strategic Opportunity Engine**, then sorts the hundred onto two axes — strategic pull and executability — into four classes: twenty-one Strategic Quick Wins, fifty-eight National Bets, fifteen Cash Engines, and six to watch.

Two honest results define the system. The highest TOMI in the hundred is 70 — firmly Tier-2, not Tier-1: no opportunity scores highly on market, sovereignty, readiness *and* ease at once, because in India's current position none does. And the scoring is robust — a ±10-point shock to any single attribute moves a TOMI by at most 1.8 points, and a uniform ±5-point shift leaves the top-20 ranking unchanged.

In the full report: the five-framework methodology and scoring mathematics in Appendix B, and all 100 scorecards in Appendix A.

What China's climb teaches India

China has just run the experiment India is contemplating, spending roughly USD 145 billion of state capital on semiconductors since 2014. The results are the most useful dataset a planner could ask for, because they separate what subsidy can build from what it cannot.

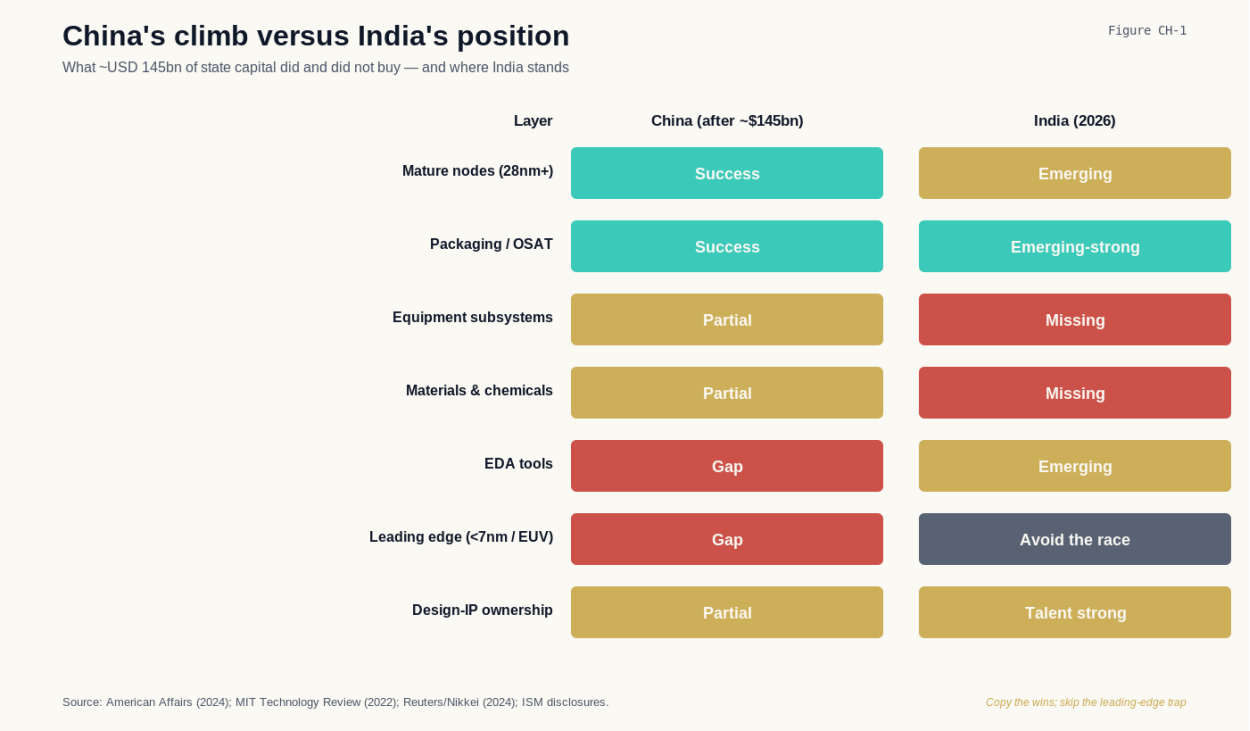

Figure 3 — China's climb versus India's position, layer by layer.

What the money bought: mature-node capacity (nineteen to thirty-three per cent of global share, 2015-2023), a complete domestic packaging industry (JCET, the world's third-largest OSAT), and the start of equipment localisation. What it could not buy: the leading edge (blocked from EUV, stuck at seven-nanometre-class), a domestic EDA industry (barely a tenth of its home market), or immunity from waste (the Wuhan Hongxin venture lost USD 20 billion and produced zero wafers). The lessons are direct — **copy** the sequence (packaging and mature nodes first, then subsystems and materials, then owned IP); **avoid** the traps (no leading-edge wafer race; no disbursement on headline numbers rather than verified capability). India's ATMP-first path mirrors China's best move, not its most expensive mistake.

In the full report: Chapter 3 (China) and Chapter 4 (Taiwan, Israel, Korea, Japan).

The Top 25 opportunities

The full hundred are ranked in the report; the twenty-five that lead are below. They span all four classes — a portfolio, not a shopping list — but they are where attention should start.

Table 1 — The Top 25 opportunities by TOMI.

#	Opportunity	Part	TOMI	SOE class
1	Engineering R&D (ER&D) services export	VII	70.4	Strategic Quick Win
2	Chip-design services export (VLSI/embedded)	VII	70.0	Strategic Quick Win
3	Precision machining: vacuum chambers / UHV	II	69.0	National Bet
4	RISC-V IP cores and design services	V	68.4	National Bet
5	Cross-border IP licensing / fabless export	VII	68.3	National Bet
6	OT/ICS security platform	VI	68.1	National Bet
7	AI/ML services export	VII	67.7	Cash Engine
8	AI visual quality inspection	IV	67.6	Strategic Quick Win
9	Industrial ERP for MSMEs	III	67.5	Strategic Quick Win
10	AI for semiconductor design (EDA-AI)	IV	67.5	National Bet
11	Manufacturing Execution System (MES)	III	67.3	Strategic Quick Win
12	Precision-components export	VII	67.3	National Bet

#	Opportunity	Part	TOMI	SOE class
	to tool OEMs			
13	Advanced packaging (2.5D/3D, chiplet)	II	67.1	National Bet
14	Sovereign SOC / managed detection	VI	67.1	Strategic Quick Win
15	Semiconductor IP verification / EDA services	V	66.7	National Bet
16	Stainless-steel bellows / fluid-control	II	66.6	Strategic Quick Win
17	AI inference infrastructure / GPU cloud	IV	66.5	National Bet
18	Sovereign EDA tools / open-source flow	V	66.5	National Bet
19	Yield optimisation / defect prediction	IV	66.3	National Bet
20	Cybersecurity services export	VII	66.3	Strategic Quick Win
21	Predictive maintenance	IV	66.0	Strategic Quick Win
22	OSAT/ATMP assembly and test lines	II	65.9	National Bet
23	Data sovereignty / encryption and key mgmt	VI	65.9	National Bet
24	Industrial-software SaaS export	VII	65.9	Strategic Quick Win
25	Hardware security / root-of-trust	VI	65.7	National Bet

The sharpest finding is in the top two: the highest-scoring opportunities are not the glamorous ones. Engineering-R&D and chip-design services export top the table because India already has the capability at world scale, the capital intensity is low, and the only gap is the shift from being someone else's back office to owning the relationship and the IP.

In the full report: §12.1 here, the full 100-opportunity ranking in Appendix A, and a one-page scorecard for every opportunity.

The investment agenda

The opportunities sort into four capital tiers, each matched to a kind of capital, a horizon, and a role for the state. Matching the capital type to the opportunity is the difference between a portfolio that compounds and one that strands.

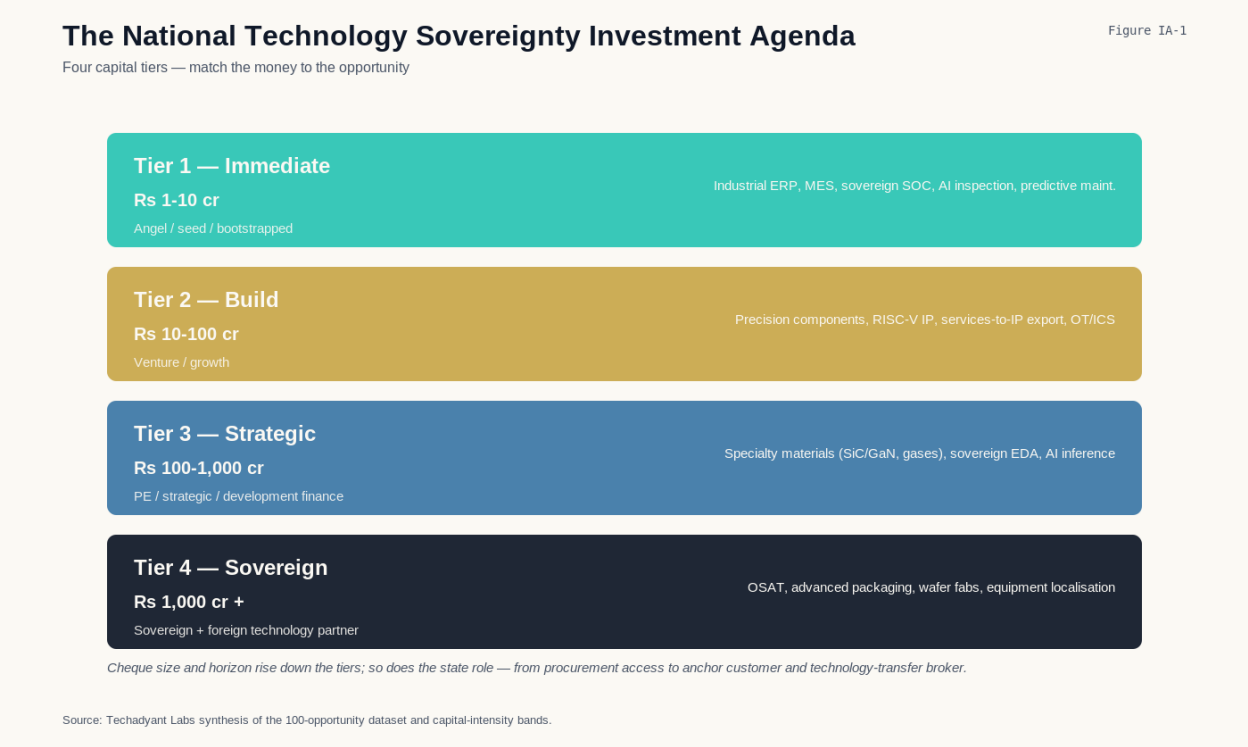

Figure 4 — The National Technology Sovereignty Investment Agenda: four capital tiers.

Table 2 — The four capital tiers.

Tier	Cheque	Representative opportunities	Capital type	State's role
Tier 1 — Immediate	₹1-10 cr	Industrial ERP, MES, sovereign SOC, AI inspection	Angel / seed	Procurement access
Tier 2 — Build	₹10-100 cr	Precision components, RISC-V, services-to-IP export, OT/ICS	Venture / growth	Qualification labs, anchor demand
Tier 3 — Strategic	₹100-1,000 cr	Specialty materials, sovereign EDA, AI inference	PE / strategic / DFI	Co-investment, offtake
Tier 4 — Sover-	₹1,000 cr+	OSAT, advanced	Sovereign + tech	Anchor customer,

Tier	Cheque	Representative opportunities	Capital type	State's role
eign		packaging, fabs, equipment	partner	tech-transfer broker

In the full report: Chapter 13 — the capital-tiered agenda in full, plus investment models and procurement pathways in Appendix C.

The 2026-2035 roadmap

The agenda sorts by cheque size; the roadmap sorts by time. Each window funds the next.

Figure 5 — The technology-sovereignty roadmap, 2026-2035.

2026-2028 — quick wins and the qualification base. Bank the capital-light Strategic Quick Wins (MSME software, security, applied AI, services-to-IP export) and stand up the one public lever that unlocks everything after it: state-backed metrology, testing and qualification infrastructure. **2028-2031 — scale bets on the de-risked layers:** precision components, RISC-V products, advanced packaging to volume, AI inference infrastructure. **2031-2035 — the strategic stack:** specialty materials, sovereign EDA, equipment localisation — the National Bets where the value-retention target is actually won or lost. Attempt the strategic stack in 2026 and it strands; attempt it in 2031 on a qualified supplier base and it has a chance.

In the full report: Chapter 16 — the three windows in detail.

Where to build: state specialisation

Geography decides probability of success: the same opportunity has a different chance in Gujarat than in Punjab. The efficient national outcome is specialisation — each state owning the layer its base, talent and policy already favour.

Table 3 — The state specialisation matrix — what each state should own.

State	Own this
Karnataka	Chip design, EDA, applied AI
Telangana	Design, cybersecurity, data centres
Tamil Nadu	Electronics manufacturing, precision, export
Gujarat	Packaging / OSAT, materials, fab anchor
Maharashtra	ER&D, precision engineering, industrial software
Uttar Pradesh	Electronics manufacturing, domestic-market scale
Andhra Pradesh	ATMP, electronics, port-linked export
Odisha	Compound semiconductors (SiC), materials
Punjab	Discrete / power semiconductors, light engineering
Assam	OSAT / ATMP (anchor-led)

In the full report: Part VIII — ten state dashboards, the ranking, opportunity-to-state matching, and state-by-state evidence.

Four findings and the bottom line

Four findings define the work. **First, the strongest opportunities are not the glamorous ones** — services and precision-component plays that build on assets India already has top the table. **Second, no opportunity is risk-free** — the highest TOMI is 70, Tier-2, because every opportunity requires a trade. **Third, the market will under-fund what the country most needs** — fifty-eight National Bets are strategically vital but capital-heavy or policy-dependent, the gap for patient and state capital. **Fourth, the binding constraint is qualification, not capital or skill** — funding state-backed certification infrastructure is the cheapest lever with the largest effect on how many of these opportunities actually get built.

The strategic stakes reduce to a sentence: value can flow *through* India while the leverage stays abroad, and whether the roadmap's value-retention target is met depends entirely on whether the missing and emerging layers are built with domestic ownership rather than domestic assembly. The fab is the seed. The economy is the forest. The hundred opportunities mapped in the full report are the forest — and they are where India's strategic position, its employment, and its value capture will actually be decided.

Inside the full report

This brief condenses a far larger body of work. The full edition — *The Opportunity Beyond the Fab* (Master edition) — runs to eleven parts, seventeen chapters and four appendices, and scores all one hundred opportunities individually.

By the numbers: 100 scored opportunities · 5 proprietary frameworks · 11 parts · 17 chapters · 4 appendices · 49 analytical figures · 100 one-page scorecards (34 plates) · 20 data tables.

Table 4 — The full report at a glance.

Part / Appendix	What it covers
I — The Technology Sovereignty Economy	The economy geopolitics built; the Stack; lessons from China; how Taiwan, Israel, Korea and Japan built theirs
II — The Semiconductor Opportunity Map	The value chain, where value escapes, and 28 entry points across materials, manufacturing and equipment
III — The Industrial Software Opportunity	The factory's operating layer and 16 software entry points
IV — The AI Opportunity Map	Applied industrial AI, the AI-infrastructure layer, and 18 AI entry points
V — The Engineering Software Opportunity	EDA, CAD/CAE and 12 engineering-software entry points
VI — The Cybersecurity Opportunity	OT/ICS security and 12 security entry points
VII — The Export Opportunity	Selling sovereignty to the world and 14 export entry points
VIII — The State Opportunity Map	Ten state dashboards, the ranking, opportunity-to-state matching, and the specialisation matrix
IX — The Investment Playbook	The hundred as a portfolio, market sizing, and the four-tier investment agenda
X — The Startup Playbook	From capability to company, and failure modes by domain
XI — The 2035 Outlook	The 2026-2035 roadmap, adjacent opportunities, and the shape of the economy
Appendix A	The Top 100 ranked, with a one-page scorecard for every opportunity

Part / Appendix	What it covers
Appendix B	The five-framework methodology and the scoring mathematics (reproducible)
Appendix C	Investment models, payback shapes and procurement pathways
Appendix D	Full TAM / SAM / SOM market sizing and the import-replacement prize

What the full edition adds beyond this brief. All one hundred opportunities scored and ranked (this brief shows the Top 25); a one-page scorecard for each — attributes, TOMI, tier, investor archetype and modelled TAM; the complete five-framework methodology and reproducible mathematics; the six sector deep-dives (28 + 16 + 18 + 12 + 12 + 14 entry points) with competitive-landscape tables; all ten state dashboards with evidence; investment models and procurement pathways; full market sizing; and "in practice" boxes profiling the live Indian companies already building in each layer.

Get the full report. *The Opportunity Beyond the Fab* (Master edition) is the complete decision map — one hundred scored opportunities, five frameworks, eleven parts and four appendices. [Insert purchase / access link before publishing.]

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