Accelerating aerospace and defence manufacturing through operational excellence and supply chain resilience

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Foreword by PwC

India stands at a decisive economic inflection point. One that demands a fundamental transformation of its industrial base. The ambition is clear: grow from a $4.15 trillion economy today to $30 trillion by 2047.[1]

Manufacturing sits at the heart of this ambition. Currently contributing 12–14% of the GDP, the sector must scale approximately 16 fold in order to meet the Viksit Bharat target of 25% of GDP. Aerospace and defence (A&D) manufacturing is uniquely positioned to be a catalyst in this leap—driving high-skill employment, deep-tech innovation, strategic autonomy, and export credibility simultaneously.

The policy architecture is firmly in place, anchored on Aatmanirbharta, iDEX, PLI, Make-II, and the defence industrial corridors. Demand is strong, with production touching a record high of ₹1.54 lakh crore in FY25.[2] Yet, at the current throughput rates, parts of the order book could take up to a decade to fulfil. The constraint is no longer demand—it is execution at scale with operational efficiency.

This paper aims to contribute to the conversation around scaling A&D manufacturing through operational excellence and supply chain resilience. It offers data-driven diagnostics, practical transformation levers, and India-specific supply chain priorities to help the sector convert backlog into predictable, cost-efficient, world-class delivery.

We believe India's A&D sector can decisively shape the Viksit Bharat journey towards Aatmanirbharta. We hope this report empowers the defence manufacturing sector with the insights, frameworks, and conviction to act with the urgency and precision that the moment demands.

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1. https://www.niti.gov.in/sites/default/files/2025-04/Working%20Paper%20on%20Strategic%20Imperatives_04042025_NEW.pdf
2. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2025/nov/doc20251120699601.pdf

Message from ET

India's aerospace and defence sector is entering a defining phase. After decades of import dependence, the country is now exporting to nearly 100 nations,[3] and the ambition is no longer modest. "India . . . cannot be stopped from becoming the world's largest exporter of weapons within the next 25–30 years. No power in the world can stop that," noted the defence minister while inaugurating an ammunition manufacturing facility at Shirdi, in Maharashtra, on 23 May 2026.[4]

The numbers back this conviction. Defence exports reached a record ₹38,424 crore in FY 2025–26—a 63% jump over the previous year—while production crossed ₹1.54 lakh crore. The next set of targets is already in sight—₹3 lakh crore in production and ₹50,000 crore in exports by 2029,[5] aligning with the vision of a Viksit Bharat, in which defence manufacturing plays a strategic role, not a supporting one.

However, the sector stands at an inflection point. Recent global conflicts and supply chain disruptions have highlighted a fundamental reality: modern wars are won as much in factories as on the battlefield, by industries that can build at depth, speed, and scale. India has the policy push, the orders, and the private sector appetite to drive this. What it needs now, is the ability to deliver consistently at world-class quality, cost, and pace. Current order book-to-revenue ratios across several DPSUs suggest at least 5–10 years of work to clear the backlog. Closing this gap will be the real test of this decade.

As you read this report, I invite you to reflect on a critical question: Are we, as an industry, building the operational depth to sustain our ambition? PwC's analysis shifts the conversation from why to how—from policy and intent, to the everyday realities of shopfloors, supplier networks, project planning, and digital systems. Ambition may get us to the door, but operations will determine whether we walk through it.

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3. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191937&reg=3&lang=2
4. https://www.ndtv.com/india-news/india-to-become-major-arms-exporter-in-25-30-years-rajnath-singh-11537919
5. https://ddpdashboard.gov.in/

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Introduction

Aerospace and defence (A&D) manufacturing is at an inflection point. The sector faces strong demand driven by growing defence needs, even as supply chains remain fragile, quality expectations rise, and costs for materials, and capital escalate. Skilled labour shortages, strict regulatory framework, and increasing sustainability requirements add to the complexity.

The challenge is clear: build more, build faster, get it right the first time, and do so with fewer people, and tighter cash flows. In this context, cost optimisation (strategic reduction of expenses while maintaining or enhancing quality) and throughput improvement (increase in production speed and volume without sacrificing standards) while establishing a resilient, self-sufficient supply chain are not just side projects. They are core enterprise capabilities essential to protecting schedules, maintaining quality, freeing up capital, and sustaining competitiveness.

As the sector prepares to move forward, A&D sector leaders need to consider the following:

- **What strategic and structural operational changes across the value chain can help sustain profitability while maintaining the highest standards of product and service quality?**
- **Given the strong demand outlook, how can businesses improve productivity by balancing timely delivery with cost constraints?**
- **What should be the strategic priorities of the supply chain in view of this growing demand?**

We conducted a data-backed analysis of revenues and order books for major A&D manufacturers to understand and quantify A&D manufacturing demand and supply gap. The analysis indicates that, although the revenues have increased, output must improve significantly to successfully fulfil the order book and exceed customer expectations. **Order book-to-revenue multiples range from 1.71x to 6.88x, representing roughly 2 to 7 years of execution based on the current backlog.**

This thought paper explores critical methodologies and best practices for reshaping cost management and productivity improvement through operational excellence and building supply chain resilience in the A&D sector. By exploring relevant, need of the hour interventions, we aim to empower industry leaders to enhance their capabilities, streamline processes, and unlock unprecedented value within their operations. Covering the full spectrum—from order receipt to order delivery—will facilitate industry leaders to enhance efficiency, reduce costs, and accelerate delivery.

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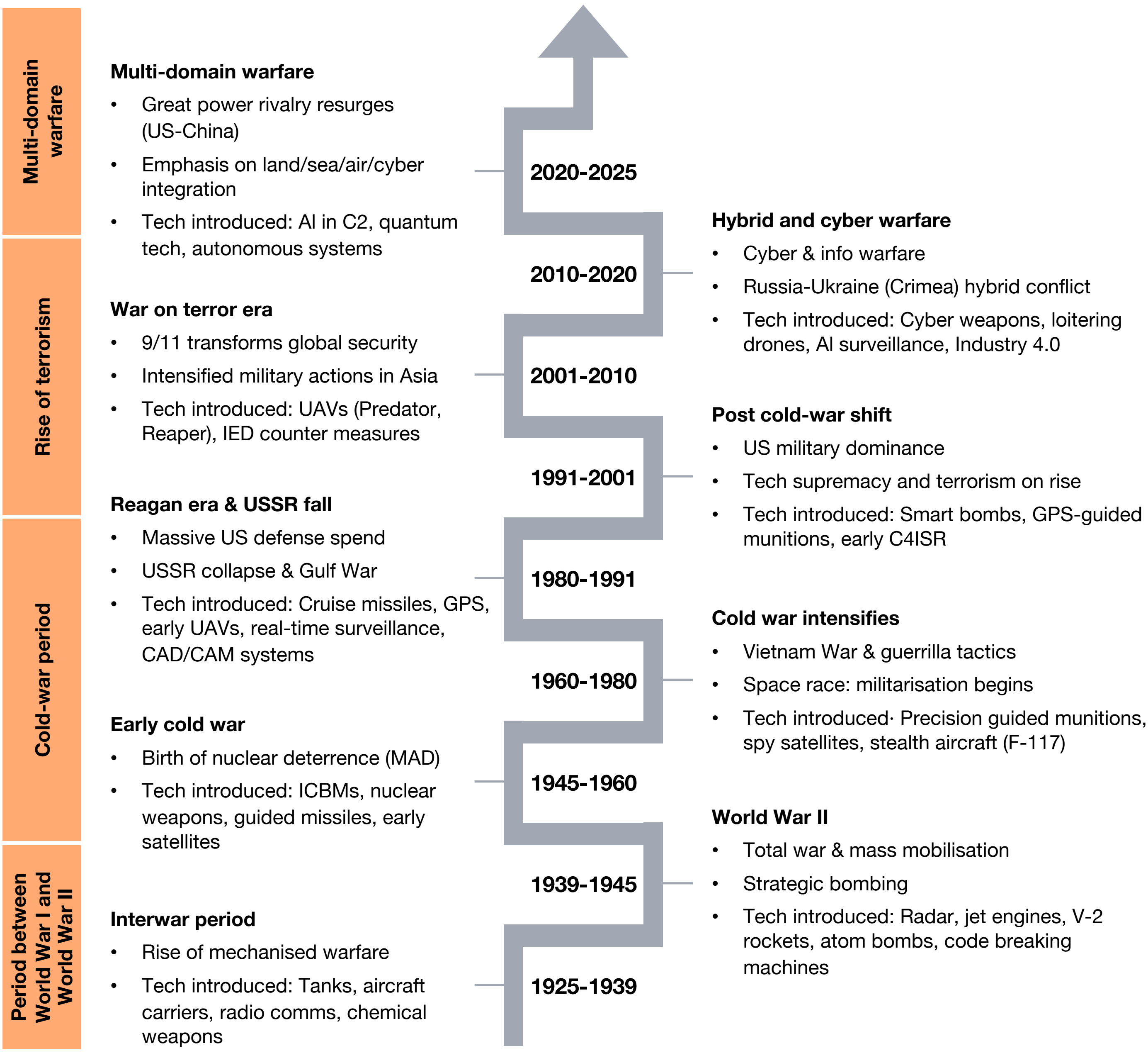
Evolution of the global and Indian A&D manufacturing sector

Over the past 100 years, global A&D manufacturing has undergone a remarkable transformation. In the early 20th century, production was largely manual, with basic mechanical tools, riveting, and welding dominating the shop floor. During World War II, the need for scale led to mass production techniques, dramatically increasing output.

Figure 1: Evolution of A&D industry over the last 100 years



Source: PwC analysis

Each wave of industrial revolution raised the ceiling on precision, scale, and complexity—moving from craft-based fabrication to electrified mass production, then to computerised automation and, today, to cyber-physical, human-centric systems.

Figure 2: Evolution of A&D manufacturing through various industrial revolutions

Industry 1.0

(late 18th century – early 20th century): The era of mechanisation

- Triggered by the First Industrial Revolution (≈ 1760–1870)
- Firearms and artillery manufacturing began using interchangeable parts and machine tools
- Steam propulsion revolutionised naval warfare—transition from sail ships → ironclads → steam-powered warships
- Defence manufacturing started multidisciplinary industrial work

Industry 2.0

Mass production & standardisation (≈ 1920s–1940s)

- Transition from artisan production to assembly lines and large-scale factories
- Heavy emphasis on standardisation, riveted aluminum structures, and high-volume wartime output
- Rapid scaling of aircraft production in WW II (e.g., B-17, Spitfire, Messerschmitt)

Industry 3.0

Electronics, automation, & digital design (≈ 1950s–1990s)

- Electronics & digital control became central (avionics, radar, fly-by-wire)
- Computers, CAD/CAM, CNC machining, industrial robotics entered production
- Jet engines, guided missiles, space vehicles—high-complexity systems
- Introduction of CAD (1970s–80s), enabling complex aerodynamic shapes and integrated design

Industry 4.0

Digitalisation, connectivity, & autonomy (≈ 2000s–present)

- Smart manufacturing: IoT sensors, networked machines, data analytics, predictive maintenance
- Advanced manufacturing: additive manufacturing (metal AM), automated composites layup, precision laser processes
- AI/ML, autonomy, software-defined systems and increasing role of software over hardware
- Cybersecurity & secure-by-design become mandatory considerations

Source: PwC analysis

This progression reshaped supply chains, workforce skills, quality systems, and the pace of innovation across the sector.

While the Indian defence industry is following a similar trajectory as the rest of the globe, it functions within a monopsony market structure, comprising a complex network of stakeholders who play a vital role in advancing national security and driving innovation. This includes government bodies such as the Ministry of Defence, operational forces, DPSUs, and private sector entities. Also vital are research bodies, regulatory authorities, international partners, industry associations, academic institutions, and think tanks. This non-exhaustive list brings out some of the key stakeholders in the A&D sector:

Figure 3: Indian defence ecosystem

R&D and technology bodies

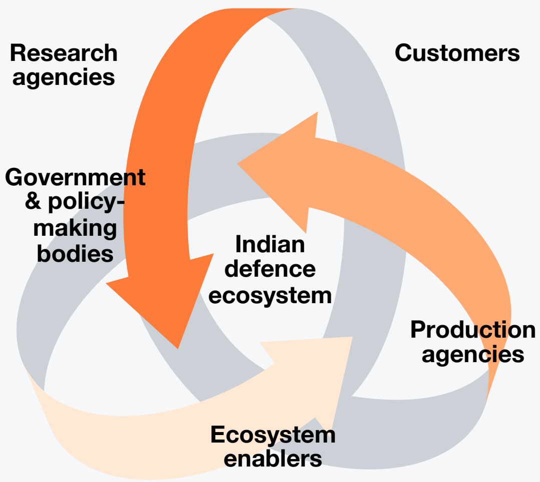
- DRDO
- DIAT Pune
- DIA-CoEs

Ministry of Defence (MoD)

- Department of Defence (DoD)
- Department of Military Affairs (DMA)
- Department of Defence Production (DDP)
- Department of Defence R&D (DR&D)

Regulatory & oversight bodies

- Directorate General of Quality Assurance (DGQA)
- Directorate General of Aeronautical Quality Assurance (DGAQA)
- Directorate General of Civil Aviation (DGCA) – for aerospace interfaces



- **Infra & testing ecosystem:** UPDIC, TNDIC, DRDO test facilities
- **Financial institutions:** DGFT, EXIM Bank, SIDBI
- **Academic institutes:** IITs, IISc, NITs, and other tech universities
- **Industry associations:** SIDM, FICCI

Armed forces & operational users

- Indian Army, Navy, Air Force, Coast Guard
- Assam Rifles and Central Armed Police Forces

DPSUs & ordnance entities

- Nine original DPSUs: HAL, BEL, BDL, BEML, MIDHANI, MDL, GRSE, GSL, HSL
- Seven newly created DPSUs from OFB restructuring: MIL, AVNL, AWEIL, TCL, YIL, IOL, GIK

Private sector stakeholders

- Large corporates: L&T Defence, TASL, Adani Defence & Aerospace
- MSMEs & startups
- Offset partners: Engaged under partnership model
- Foreign OEMs: Lockheed Martin, Boeing, Airbus
- JVs: Tata-Airbus, Adani-Elbit

Source: PwC analysis

As the A&D sector in India prepares for the next phase of growth, a significant push is expected through India's most ambitious national agenda—Viksit Bharat 2047. The alignment of every stakeholder—from policymakers and PSUs to private OEMs and academia—with this overarching vision will determine whether India's A&D sector merely participates in, or decisively shapes, the Viksit Bharat journey.

As per the defence secretary, "Aatmanirbharta in defence is critical not only for preserving the strategic autonomy of the country, but also for achieving the broader goal of Viksit Bharat."[6]

6. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2132946&reg=3&lang=2

03

A&D a key contributor in the Viksit Bharat agenda

The A&D industry is central to India's headline ambitions—growing GDP from an estimated $4.15 trillion in FY26 to $30 trillion by 2047, expanding manufacturing, strengthening the innovation ecosystem, widening the industrial base, and generating employment. NITI Aayog's working paper on strategic imperatives reinforces this, explicitly identifying the mitigation of supply chain disruptions and the strengthening of public–private partnerships in national defence as a critical pillar for realising the goal of Viksit Bharat.[7]

The Viksit Bharat @ 2047 vision positions defence production as a strategic lever, driven through:

- **Aatmanirbharta in defence**: Achieving self-reliance through indigenous design, development, and manufacturing under initiatives like Make in India, Innovation for Defence Excellence (iDEX), and the Positive Indigenisation Lists.
- **Defence production target**: ₹3 lakh crore by 2029 (from current ~₹1.27 lakh crore in FY24)[8]
- **Defence exports target**: ₹50,000 crore by 2029, positioning India among the top global defence exporters[9]
- **Strategic autonomy**: Reducing import dependency through indigenous content mandates under DAP 2020
- **Innovation ecosystem**: Establishing India as a hub for dual-use technologies via iDEX-DIO and Defence Testing Infrastructure Scheme

The manufacturing sector—currently contributing ~12–14% of GDP on a nominal basis—must grow 16x over the next two decades to reach the aspirational target of 25% of GDP by 2047. Defence manufacturing can be a potential strategic catalyst in this transformation. In FY25, defence production was recorded at ₹1.54 lakh crore.[10] The government has set near-term targets of ₹3 lakh crore (2x of FY25) in annual defence production and ₹50,000 crore in defence exports by 2029[11] —a clear signal of intent to position India as a global defence manufacturing hub.

With manufacturing required to scale to approximately $7.5 trillion under the Viksit Bharat vision, defence production itself would need to register a multi-fold increase to sustain or expand its share in the overall GDP.

Meanwhile, the government's target of ₹50,000 crore in defence exports by 2029 appears within reach given FY26's ₹38,424 crore performance. However, for defence exports to become a material contributor to India's trade balance by 2047, they would also need to register a quantum jump in scale, from the current ~$4.5 billion.

Achieving this leap will demand sustained execution acceleration, global supply chain integration, and after-sales support infrastructure. Delays in fulfilling orders could erode India's credibility as a reliable supplier—the very foundation of sustained export growth.

7. https://www.niti.gov.in/sites/default/files/2025-04/Working%20Paper%20on%20Strategic%20Imperatives_04042025_NEW.pdf
8. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191937&reg=3&lang=2
9. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191937&reg=3&lang=2
10. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2025/nov/doc20251120699601.pdf
11. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2050090&reg=3&lang=2

The defence manufacturing base currently comprises 350+ major manufacturers and 16,000+ MSMEs integrated into supply chains.[12] Defence manufacturing is inherently high-skill, capital-intensive, and has a significant employment multiplier effect. The US A&D sector, for instance, supports 2.2 million jobs with average labour income of ~$112,000 per worker.[13] India's defence innovation ecosystem, anchored by 676+ startups, MSMEs, and innovators (iDEX), is building the foundation for a similar multiplier.[14]

In summary, while headline numbers (record production, 31x export growth) reflect momentum, the road ahead is far more demanding. Failure to scale defence production in time could not only delay 'Aatmanirbharta' but could also constrain manufacturing's leap to 25% of the GDP—which is the cornerstone of a developed India.

It is precisely this imperative—to scale faster, deliver smarter, and build at Viksit Bharat scale—that frames the purpose of this paper. We showcase the methodologies, levers, and best practices that can fundamentally reshape cost management and productivity in India's A&D sector.

12. https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=2191937&reg=3&lang=2
13. https://government.economictimes.indiatimes.com/blog/indias-defence-innovation-a-catalyst-for-economic-growth-and-job-creation/123903438
14. https://www.ibef.org/download/1778060651_Defence-Manufacturing-Feb-2026.pdf

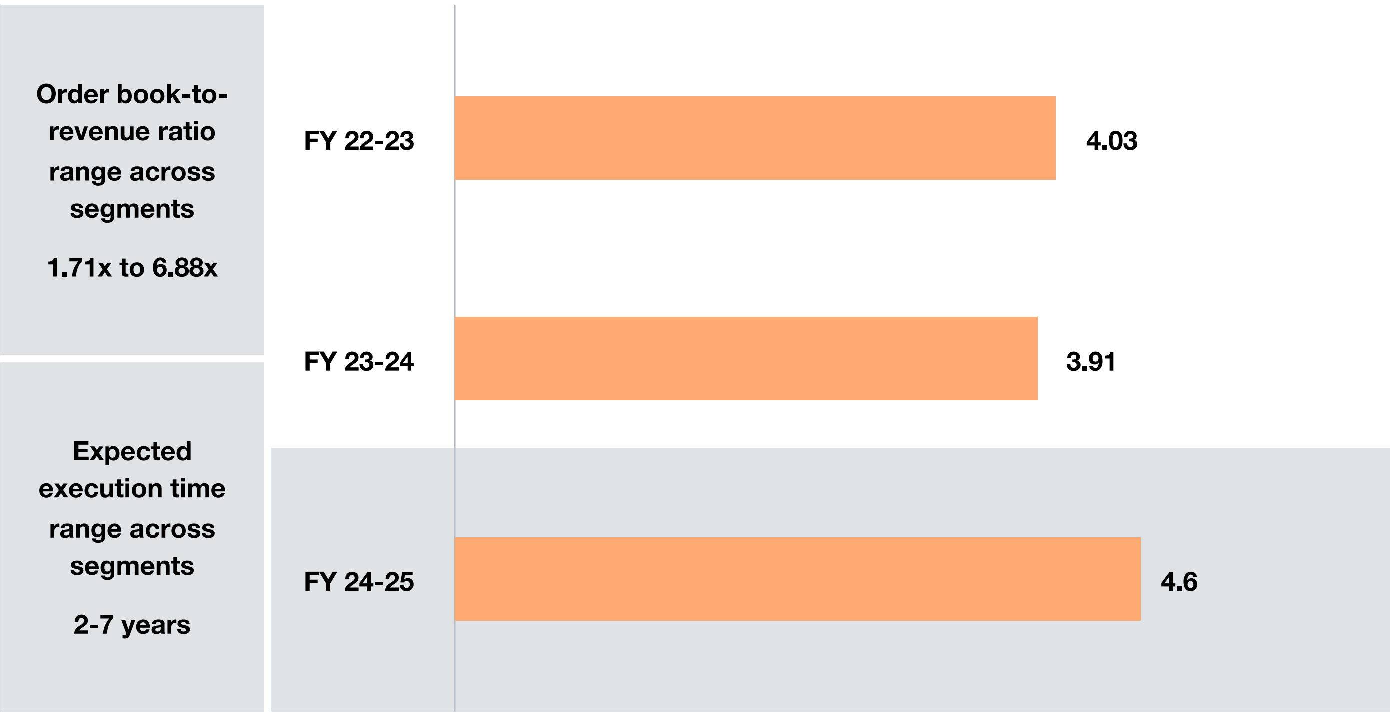
04

Rapid and cost-efficient execution needed to address increasing A&D order book

India's defence industry is entering a decisive scale-up phase, supported by sustained policy tailwinds and multi-year budget visibility. Annual defence production reached a record ₹1,50,590 crore ($17.57 billion) in FY25, with DPSUs/PSUs contributing about 77%, signalling robust public order books. Acceptance of Necessity (AoN) approvals touched about ₹3.5 lakh crore in 2023, with the majority slated for manufacture in India—another clear indicator of a swelling order book.

At the same time, India's defence manufacturing base stands at a pivotal juncture where operational efficiency will determine how quickly backlog converts to capability. The sector is defined by highly specialised technology and capital-intensive production, but its sustainable growth and global competitiveness fundamentally hinge on robust cost optimisation and enhanced throughput. To gauge execution dynamics, we analysed order book and revenue across six segments including **aerospace manufacturing, defence electronics, shipbuilding, warship construction, missile systems, and special metals** over three fiscal years (FY22–23 to FY24–25). Our analysis showcases a practical lens on approximate execution timelines:

Figure 4: Order book-to-revenue ratio of major DPSUs



Source: Publicly available annual reports and PwC analysis

Some observations:

Order book-to-revenue multiples span 1.71x to 6.88x, translating into roughly 2–7 years of execution on the current backlog.

All segments including warship construction, shipbuilding, aerospace and missile systems continue to have backlog multiples well above 4x, implying execution timelines of 5–10 years.

This creates an urgent need for A&D manufacturers to resurrect their operations through cost optimisation and productivity improvement levers to regain a competitive advantage.

The implication is clear: while the demand outlook is accelerated and structurally positive, delivery speed must keep pace. However, converting a strong backlog into timely, mission complete handovers is a challenge. This will require tighter quality control to avoid rework, rigorous material planning, identification and de-bottlenecking capacity constraints, reducing integration and certification lags and stronger programme/quality management across integrators and tiered suppliers. In short, the growth runway is clear; capturing it at scale will depend on how quickly industry converts a swelling order book into predictable, cost-efficient throughput.

05

Execution challenges across value chain impacting timely and cost-efficient delivery

India's defence manufacturing value chain comprises five tightly linked stages:

- **R&D**, which translates service requirements into demonstrators and test plans
- **Design & engineering (D&E)**, which turns concepts into designs
- **Material procurement** for critical components
- **Manufacturing and integration**, which executes build-to-print fabrication and special processes into sub-assemblies and line builds
- **Quality**, which assures safety, reliability, and compliance of equipment meet required standards.

Figure 5: A&D value chain

A

Research and development (R&D)

Generation of new concepts and tech that form foundation for innovative product designs

B

Design and engineering

Transformation of R&D outputs into detailed, manufacturable blueprints, and system specifications

C

Material procurement

Sourcing and delivery of required materials and components to realise engineered designs

D

Manufacturing & integration

Production and assembly of components into functional systems, turning materials into finished products

E

Quality control

Validation and ensuring that manufactured and integrated products meet all performance standards

Source: PwC analysis

Across this chain, cost and productivity challenges accumulate in a certification-heavy, low-volume/high-mix context. Challenges accumulate across six themes: cost overruns—driven by requirement churn, multi-stage and delayed approvals; price volatility—stemming from unplanned procurement planning; re-works—caused by skill gaps, special-process variability; resource availability and flow—due to prototype/component delays, few qualified sources, multi-tier supplier integration gaps, and kitting shortfalls; process reliability and conformance—affected by legacy tech stacks, high customisation/variant proliferation, and stringent certification/testing; and planning efficiency and capacity—constrained by talent scarcity, capex limits and ageing assets, weak inventory planning, and equipment downtime.

Table 1: Challenges in A&D manufacturing

		Design & engineering	**Material procurement**	**Manufacturing and integration**	**Quality**
Cost management	R&D project delay leading to cost overruns (especially for mission mode projects)	Legacy, siloed design tools and weak path tracking cause version mismatch leading to design change	• High critical material costs from limited supplier base • Inventory blocking working capital • High reliance on imports • Cost impact due to forex fluctuations and inefficient procurement planning	• High conversion costs due to poorly optimised legacy plant and machines • Planning gaps raise rework costs	
Resource availability & flow	Raw material unavailability for prototyping leads to high turnaround time			• Equipment downtime due to inefficient maintenance plans and adherence • Lack of bottleneck visibility • Outdated factory layouts with inefficient material flows and congested shop floors	High quality testing lead time due to limited availability of testing infrastructure

<table>
<tr><th></th><th>R&D</th><th>Design & engineering</th><th>Material procurement</th><th>Manufacturing and integration</th><th>Quality</th></tr>
<tr><td>Process reliability & conformance</td><td>Multi-stakeholder approval processes slow R&D progress</td><td>Legacy technologies and variable processes prolong development cycles</td><td>Multi-stage procurement approvals and stringent guidelines cause material delays</td><td>High product variants and frequent changeovers reduce line efficiency</td><td>Gaps in quality plan and adherence render quality checks ineffective</td></tr>
<tr><td>Planning efficiency & capacity</td><td colspan="2">Standard work content is difficult to define and adherence to stage gates is limited</td><td>Limited inventory planning causes stockouts and flow interruptions</td><td>Inadequate production planning and unclear dependencies cause part shortages and capacity underutilisation

Uncertainties in assembly of custom builds</td><td>Rigorous quality approval process involving internal and external stakeholders</td></tr>
</table>

Source: PwC analysis

06

Priorities for manufacturing and supply chains for defence in India

Considering the above challenges and the policy levers coming in focus as part of the Viksit Bharat vision, the following India-specific priorities define how A&D supply chains must now be redesigned to convert a record backlog into capability on time and on cost.

1. Localisation and indigenisation as drivers of cost and control:

While Aatmanirbharta and positive indigenisation lists have been discussed earlier as policy levers, their operational and economic impact for A&D manufacturers is often understated. A stronger domestic supply base reduces lead times, logistics cost, import duties, and foreign exchange exposure, and enables closer collaboration on design-to-cost, engineering changes, and schedule recovery. Importantly, localisation does not always imply the lowest unit price—imported parts can be cheaper at the part level due to scale or supplier maturity. The true cost driver in A&D programmes is the total cost of disruption—expediting, downtime, excess buffers, and milestone slippages—most acute in defence electronics, avionics, sensors, semiconductors and specialty alloys, where lead times stretch across multiple quarters. Two illustrations make this concrete:

Figure 6: Chandrayaan-3 – cost-effective execution through indigenous capability and domestic supplier participation

Outcome	Execution	Takeaways
• Delivered at an estimated cost of ~$75 million—60–85% cheaper than comparable global lunar south-pole missions • Achieved full mission success on the first attempt, demonstrating strong execution reliability • Completed within planned schedule	• Combined strong design discipline with indigenous capability • Leveraged a broad Indian industrial base across manufacturing and assembly • Included private sector and MSME participation in launch vehicle and spacecraft sub-systems	• Localisation can improve cost, coordination, and delivery control. • Indigenous depth is the most powerful when linked to supplier integration, not just import substitution. • Programme-level cost effectiveness improves when domestic capability is embedded early.

Source: PwC analysis

- **Airbus C-295:** Of the 56 aircraft contracted by India, 40 are to be manufactured and assembled in India through the Tata-Airbus final assembly line in Vadodara, Gujarat—the first private-sector military aircraft assembly line in the country. The programme is also creating a wider supplier base, with more than 13,000 parts being produced in India and dozens of domestic suppliers onboarded. This makes the C-295 not just a 'Make in India' milestone, but a case of localisation translating into ecosystem creation and deeper manufacturing capability.[15]

2. From indigenisation to coordinated supplier collaboration:

India's supplier collaboration architecture now spans the full arc from problem definition to scale-up (Figure 7). The opportunity lies less in any single instrument and more in stitching them together at the category level—using SRIJAN to identify localisation candidates, iDEX or TDF to co-fund prototyping, DTIS for validation, and Make-II for assured offtake—to compress what has historically been a multi-year, fragmented cycle. (HAL's vendor-ecosystem approach in Figure 7 illustrates resilience built through this layered model.)

Figure 7: Key enablers supporting supplier collaboration in India's defence ecosystem

01 Innovation & prototyping

iDEX and DRDO's TDF support challenge-led prototype development across UAVs, sensors, and other priority defence technologies.

02 Digital vendor discovery

SRIJAN portal acts as a structured marketplace and connects import-substitution demand with Indian suppliers, reducing market information gaps.

03 Order assurance

The Make-II procedure under DAP 2020 provides post-development order visibility, helping bridge the gap between prototype to procurement.

04 Testing & certification

DTIS and DRDO's revised ToT policy improve access to testing, validation, and industrial scale-up, particularly for MSMEs.

05 Manufacturing depth

Defence corridors and PLI schemes are strengthening the upstream component base for defence production.

iDEX: Innovations for Defence Excellence

TDF: Technology Development Fund

DTIS: Defence Testing Infrastructure Scheme

ToT Policy: Transfer of Technology Policy

DAP 2020: Defence Acquisition Procedure 2020

Source: PwC analysis

15. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2068818&reg=3&lang=2

3. Strategic supplier portfolio design to improve throughput predictability:

Alongside supplier segmentation and rating, three additional dimensions are particularly important for A&D in shaping a resilient supplier portfolio:

AI-enabled IBP, S&OP, and predictive programme management: Linking order-book commitments to supplier capacity, surfacing category-level risk early, and modelling cost and performance at the sub-assembly and supplier level—especially valuable in low-volume, high-mix environments where each delay carries disproportionate impact on throughput.

Generative AI for procurement throughput: Accelerating tender drafting, contract review, and supplier-data harmonisation to compress procurement cycle time, so that sourcing decisions keep pace with manufacturing schedules and stop becoming the gating constraint for downstream throughput.

Trust, security clearance, and cyber maturity as throughput enablers: Embedding these alongside cost, quality, and delivery in supplier qualification, so that pre-cleared, cyber-mature suppliers can be onboarded and ramped without certification-driven delays that would otherwise stall mission-critical production lines.

Figure 8: Pinaka – scaling through a distributed domestic production model and strategic supplier portfolio design

Outcome	Execution	Takeaways
• Enabled scaling of a critical indigenous rocket system • Expanded manufacturing capacity while reducing dependence on a narrow set of suppliers • Built a more scalable domestic industrial structure for sustained output and future growth	• Collaboration across DRDO, DPSUs, and private sector partners • Distributed production across launchers, vehicles, rockets, ammunition, and sub-systems • Industrialised capability through a portfolio of domestic partners rather than a concentrated source base	• Strategic supplier portfolio design can support both scale and autonomy. • Multi-partner production models reduce single-source risk. • Production growth is more sustainable when supplier-side bottlenecks are distributed.

Source: PwC analysis

4. Critical materials and semiconductors – the upstream determinant of indigenisation:

Beneath every defence platform sits a thinner, more concentrated layer of inputs that disproportionately shapes cost, schedule, and sovereignty: specialty alloys, rare-earth-linked magnets, carbon prepregs, optical and radio frequency (RF) materials, and, increasingly, semiconductors and advanced packaging. Global supply for several of these is concentrated in a handful of geographies, exposing programmes to export controls, price volatility, and geopolitical leverage that no amount of downstream localisation can offset. India's response is operating on two horizons: in the near term, the National Critical Mineral Mission, strategic stockpiling and trusted allied-source diversification provide a pragmatic hedge; in the longer term, the India Semiconductor Mission, PLI schemes for semiconductors, electronics, and Advanced Chemistry Cell batteries, and emerging investments in domestic mineral processing aim to build durable upstream capacity. For A&D manufacturers, ownership of critical materials and trusted-foundry access must be treated as a programme-level risk—managed through long-horizon contracts, qualified second sources and tier-3/4 visibility—rather than a procurement line item.

5. Frugal engineering meets large-scale production – the drone manufacturing imperative:

The economics of combat are being reshaped by lower-cost unmanned and autonomous platforms, where the ability to manufacture, replenish and upgrade rapidly and affordably is itself a strategic advantage. Indian players are designing to cost using composite airframes, modular payload bays, and software-defined autopilots that allow a single platform to be reconfigured across surveillance, logistics, and strike roles—shifting cost out of hardware variants into software upgrades. On the scale side, the Drone Shakti initiative, the drones-and-components PLI scheme, the import ban on consumer drones and Defence Industrial Corridor capacity are creating the demand certainty and manufacturing depth needed to move from prototype batches to series production.

The remaining constraint is the upstream layer—flight-control electronics, high-density cells, secure datalinks and edge-AI compute—where qualification and certification pathways still lag manufacturing readiness. Closing this gap through concurrent design, certification, and offtake is what will translate current momentum into scaled, mission-ready output.

Drone BOM – an illustrative view of where indigenisation stands:

Drones are a useful lens to make the supply chain conversation concrete: dual-use, electronics-heavy, software-enabled, and sensitive to component-level fragility. Figure 9 illustrates where Indian capability is strong, where dependencies persist, and the schemes and players currently working to close the gap.

Figure 9: Mapping of key drone subsystem layers by current sourcing mix, the main reason import dependence persists, and the most credible pathway for domestic capability development in India

BOM layer	Key items	Current sourcing	Why the dependency persists	Indigenisation pathway
Airframe & structures	Composite and machined structures, mounts, harnesses, enclosures, final assembly	Largely Indian	-	MSME capacity is strong and expanding through defence corridors and rising domestic demand.
Power & actuation	Motors, ESCs, servos, batteries, power management	India + imports (China, Taiwan, South Korea, Japan)	Battery cells and precision actuators still lack sufficient domestic suppliers.	ACC PLI and iDEX/TDF are supporting domestic batteries, motors, and controllers.
Avionics & controls	Flight controllers, autopilot boards, ruggedised compute hardware	Mostly imported (China, Taiwan, US, EU)	High-reliability airborne electronics and certification ecosystems remain underdeveloped domestically.	Domestic autopilot development is advancing with iDEX and DRDO-backed qualification support.
Sensors & payloads	GNSS, IMUs, gyros, RF modules, secure datalinks, EO/IR and thermal imaging cores	Mostly imported (US, EU, Israel, China)	Advanced sensors need deep IP, precision fabrication and scale.	DRDO, BEL, and private firms are building selective domestic sensor capabilities.
Compute, AI, & secure comms.	Edge-AI modules, onboard compute, anti-jam navigation, SATCOM terminals	Largely imported (US, Taiwan, Israel, EU)	Semiconductor, packaging and secure-comms design capabilities remain nascent domestically.	Semiconductor schemes and defence programmes are building domestic compute and comms capabilities.
Critical materials	Specialty alloys, rare-earth-linked inputs, carbon prepregs, optical and RF materials	Largely imported (China, Japan, US, EU)	Domestic processing is limited; global supply chains remain highly concentrated.	Stockpiling, allied sourcing, and critical minerals investments can gradually reduce dependence.

Source: PwC analysis

As the BOM view clarifies, the indigenisation frontier in drones, and by extension in most modern defence platforms, has shifted from airframes and assembly to avionics, sensors, compute, secure communications, and critical materials.

6. Supply chain resilience by design to reduce execution risk:

Building on the vendor management, rating, and portal mechanisms outlined earlier, A&D supply chains require resilience to be designed into the operating model itself—through real-time control-tower visibility, calibrated redundancy, deeper supplier development, disciplined inventory management, and tight cross-tier coordination. The cost of disruption in A&D is disproportionate: a single delayed item can hold up integration, testing, certification, or final dispatch, triggering cascading programme delays—particularly where a delayed semiconductor or specialty material can crunch entire testing-and-certification timelines.

Practical resilience extends procurement KPIs with an end-to-end continuity lens, anchored in three priorities:

- Tier-2 and Tier-3 transparency through digital control towers and AI-driven early-warning systems, with risk-adjusted inventory for critical items
- Deeper supplier collaboration and calibrated redundancy—technical support, quality assurance, joint capacity planning, and pre-qualified second sources, supported by faster escalation and recovery mechanisms
- Cyber assurance, firmware provenance, and software bills of material (SBOMs)—given that every new digital connection across the supply chain is both a window for visibility and a potential entry point for cyber threats

Figure 10: HAL's ecosystem approach as an illustration of resilience through vendor depth, supplier capability building, and domestic capacity creation

Outcome	Execution	Takeaways
• Increased domestic supplier participation in aerospace manufacturing • Built a deeper and more responsive supply base around complex programmes • Improved readiness to support higher production rates over time	• Sustained ecosystem building with a wide network of Indian industry partners • Progressive expansion of domestic suppliers' role in manufacturing • Supplier capability building alongside long-term capacity creation	• Resilience comes from vendor depth and ecosystem maturity • Reduced dependence on fragile external sources improves continuity and turnaround times • Supplier development is a long-term resilience lever, not just a sourcing initiative

Source: PwC analysis

Learning from global models:

The US DARPA model, for example, compresses time through challenge-led programmes funding multiple parallel performers—universities, startups, primes, labs—under aggressive milestone discipline, with scale-up designed in from the start. China's strength, in contrast, lies in state-coordinated industrial absorption, military-civil fusion, and clustered manufacturing depth that allows rapid scaling once a technology is selected. India's emerging architecture draws on elements of both approaches, spanning iDEX, TDF, Make-II, DRDO ToT, DTIS, corridors, and PLI. The opportunity is to run this stack with greater speed, transition discipline, and concurrent engagement—rather than serial handoffs—across user, designer, manufacturer, and certifier.

Bringing it together:

Done well, frugal-by-design platforms, resilience-by-design supply chains, sovereign critical-material access, and a stitched-together scheme architecture lower not only direct supply costs but the **hidden cost of disruption**, thereby building the adaptive industrial ecosystems needed to compress India’s order book-to-revenue cycle in an era of record backlogs and geopolitical volatility.

07

Focused improvements across six transformation areas critical to accelerate and scale A&D manufacturing in India

To bridge the gap between huge order books and manufacturing execution and aligning with supply chain priorities, defence manufacturing firms, especially DPSUs, should focus on a paradigm change across six transformation areas:

Figure 11: Transformation areas for A&D manufacturing

01 Supply chain efficiency

Build an indigenous, collaborative, and resilient vendor ecosystem for a scalable supply chain

02 Operational excellence

Lean manufacturing techniques to maximise asset utilisation and drive throughput

03 Plan & govern

Project-backed capacity and resource planning to convert the backlog into predictable deliveries

04 R&D acceleration

R&D roadmaps aligned with customer needs and project prioritisation to accelerate completion and optimise costs

05 People & productivity

Optimise workforce planning and productivity to align closely with demand and eliminate idle time and overtime crisis

06 Digital thread

Leveraging digital tools and emerging technologies from R&D to delivery is critical to eliminate rework, slippages, and cost leakage

Source: PwC analysis

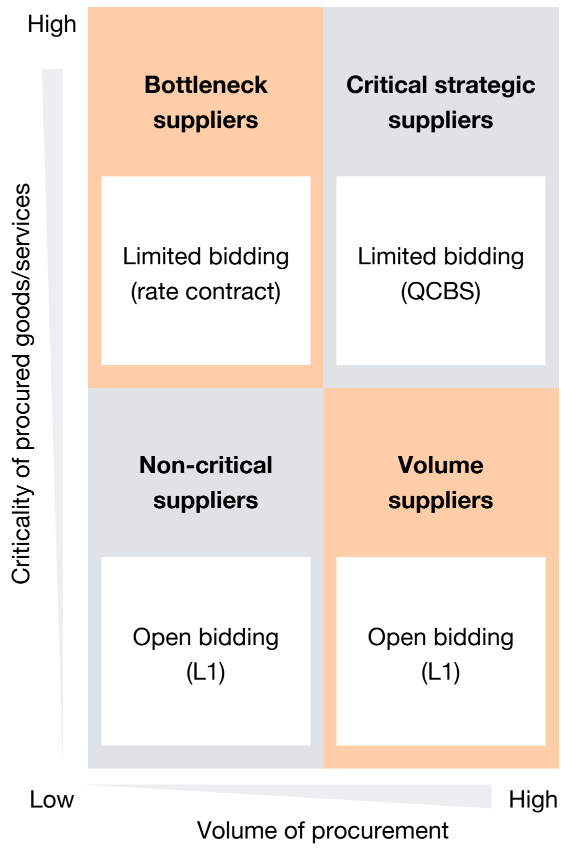
Fostering an indigenous vendor ecosystem and scalable supply chain while driving down procurement costs

DPSUs should pursue aggressive indigenisation and vendor development for critical imports using long term development contracts, assured offtake, and deployment of a multi-year framework or rate contracts. India's supplier-development ecosystem—SRIJAN, iDEX, TDF, DTIS, Make-II, PLI—offers a layered architecture to compress what has historically been a multi-year, fragmented cycle from concept to production scale.

- **Vendor selection and contracting criteria:** A strategic supplier selection framework categorising suppliers by criticality and volume enables tailored procurement approaches. The nature of this industry is such that a single delayed semiconductor can compress entire testing-and-certification windows. Therefore, supplier selection must weigh schedule reliability alongside cost. Traditional criteria—cost, quality, delivery—must now include trust, security clearance, and cyber maturity. Design-to-cost capability is essential and hence suppliers must participate in concurrent design optimisation. DPSUs must extend visibility into Tier-2 and Tier-3 suppliers for critical materials as a single upstream bottleneck can disable multiple programmes. Implementation of digital control towers identifies risks before they cascade into manufacturing delays. Matching procurement methods to supplier categories—rate contracts with bottleneck suppliers, cost-based selection for non-critical items—reduces cycle times and transaction costs while maintaining high procurement standards.

Figure 12: Supplier selection for procurement of goods and services

Proposed procurement models for goods and services in A&D



Bottleneck suppliers (high criticality, low volume)

- **Supplier relationship:** To be strengthened
- **Contingency plans:** Maintain buffers
- **Rate contract:** Compress procurement time

→ **Limited bid (rate contract)**

Non-critical suppliers (low criticality, low volume)

- **Short-term contract:** Flexible to needs
- **Standard contract:** Simplify procurement
- **Repeat order provisions:** For urgent need

→ **Open bid (L1)**

Volume suppliers (low criticality, high volume)

- **Competitive bid:** Drive down prices (L1)
- **Diversification:** Maintain pool of suppliers
- **Bulk discount:** Exploit economies of scale

→ **Open bid (L1)**

Critical strategic suppliers (high criticality, high volume)

- **Strategic alliance:** Stabilise supply chain
- Collaborate for tailored needs (**QCBS**)
- **Assess supplier:** Suitability for future order

→ **Limited bid (QCBS)**

Source: PwC analysis

By employing this strategic supplier selection framework, market complexities can be navigated, maintaining high standards of procurement.

- **Vendor rating framework:** Objective evaluation of vendors across parameters such as innovation, reliability, compliance, and cost-effectiveness strengthens procurement by enabling vendors to make informed capital decisions. Early identification of non-performing vendors and prioritisation of high-quality vendors along with re-allocation of business shares based on recent performance leads to improved cost control and increased productivity.
- **Integrated vendor portal:** An integrated vendor portal enables collaborative planning and continuous vendor monitoring. DPSUs must evolve the portal from one utilised for transactional communication into a strategic resilience platform with real-time upstream visibility—critical material availability, semiconductor capacity constraints. Further, the portal should be linked to programme-level S&OP, providing suppliers forward demand visibility for capacity calibration. This will drive proactive risk management, faster issue resolution, and improved productivity.
- **Zero-based costing and should-cost analysis:** Conducting regular, ongoing cost reviews enables continuous identification of cost-saving opportunities and elimination of inefficiencies. This supports cost optimisation by ensuring all expenses are justified and aligned with value creation, while also improving productivity by streamlining processes and resource allocation for better operational performance.

Lean manufacturing techniques to maximise asset utilisation and drive productivity

Initiatives such as manufacturing excellence, lean flow, digital operations along with deployment of lean tools such as value stream mapping, line balancing, Single-Minute Exchange of Die (SMED), theory of constraints (ToC) and Kanban can improve efficiency and eliminate waste across the value chain. A structured maintenance regime, complemented by layout redesign initiatives and debottlenecking based on industrial engineering studies, will improve overall equipment effectiveness (OEE), shorten lead times, and reduce rework, directly supporting reduction of order book pile-up and cost.

Figure 13: Lean manufacturing techniques to balance the assembly line, reduce variability, and de-bottleneck operations

Equal work distribution through assembly line balancing

Smoother workflows increase OEE. As production volumes increase, average cost per product comes down. Layouts can be redesigned.

Reduction in process variability to control costs

Process variability leads to defects. Statistical method control variability and improve output; interchangeable parts reduce inventory costs.

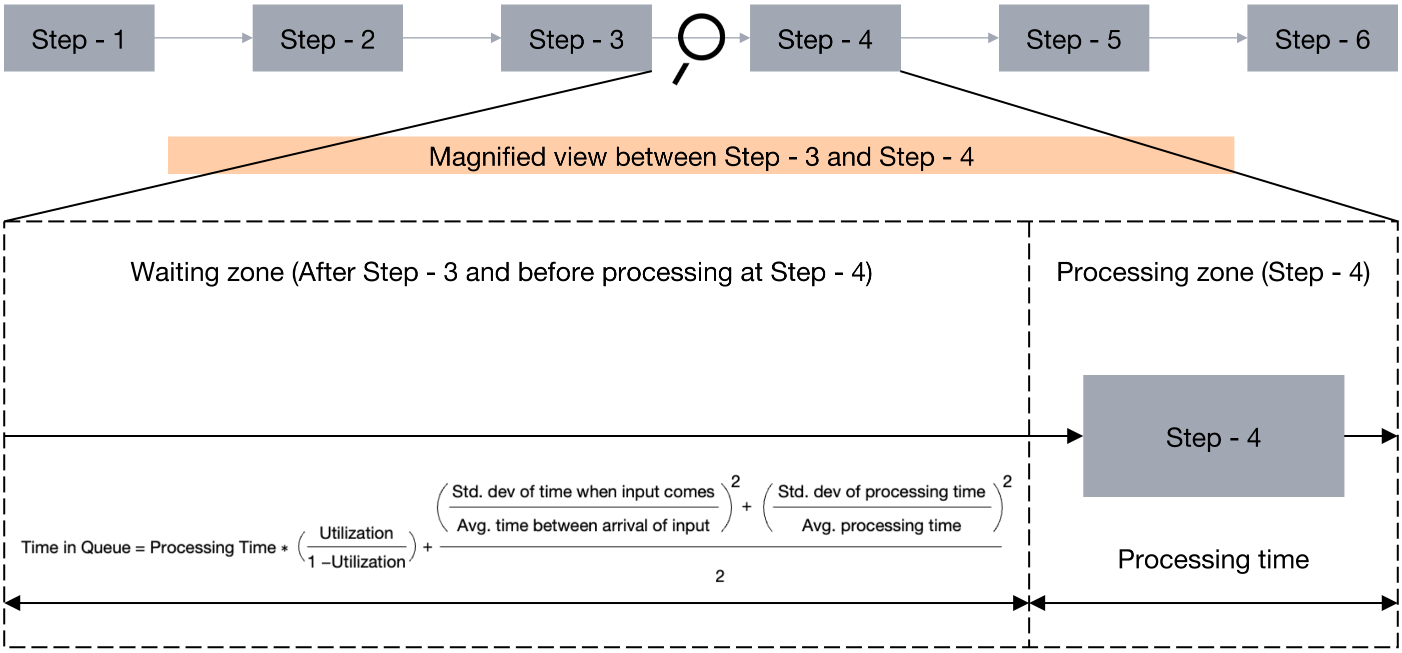
Kanban, de-bottlenecking and supply chain optimisation

Bottleneck elimination, queue time, & processing optimisation, managing utilisation, supply chain planning, and co-ordination improve productivity.

Source: PwC analysis

The figure below represents an assembly line process organised in a linear sequence from step 1 to step 6, indicating the flow of work through various stages of production. The flow of events between step 3 and step 4 has been magnified for the purpose of illustration, assuming it has the potential to cause bottlenecks, or opportunities for process improvement. The figure underscores the importance of examining and optimising this segment to enhance efficiency and ensure smooth operation within the assembly line. This can be replicated across all the other steps of the assembly line.

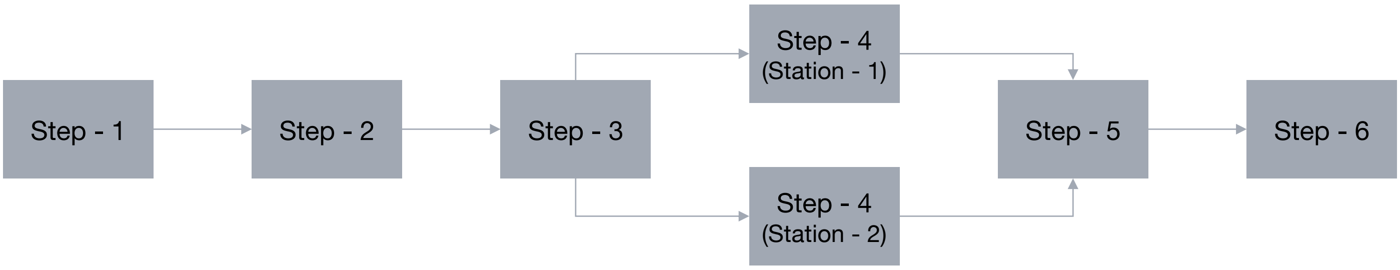
Figure 14: Manufacturing and production throughput improvement



Source: PwC analysis

- **Optimise utilisation (<1)**: Ensure that production facilities are never operating at or near full capacity. Maintaining headroom enables quickly adaptation to rush orders or design changes. Develop cross-functional teams capable of shifting between projects when demand fluctuates.
- **Reduce variability in arrival times**: Coordinate closely with suppliers to synchronise delivery schedules, minimising delays in critical components.
- **Reduce variability in processing times:** Establish standardised procedures for tasks such as precision machining of aerospace components to minimise processing variability.
- **Shorten processing times:** Identify and remove wasteful steps that extend processing times. If a particular processing station requires significant processing time, causing it to become a bottleneck, a parallel processing unit can be added. Although this will incur additional capital costs, the throughput will significantly improve.

Figure 15: Parallel processing units to improve throughput



Source: PwC analysis

- **Implement layout re-design techniques to reduce processing times:** Layout redesign techniques can be implemented to reduce processing times and lower costs by improving and maximising workflow efficiency. This involves optimising the layout for smoother and faster movement of materials and personnel, implementing no-touch flow systems to reduce manual labour. These approaches not only enhance productivity and reduce delays but also minimise operational expenses and capital costs.

Project-based capacity and resource planning to convert the backlog into predictable deliveries

Implement integrated business planning (IBP) that links corporate strategy and commitments to capacity, financials, and supply over a long-term horizon. This starts with an integrated S&OP process that takes the order books for each platform and converts them into multi-year, platform wise high-level manufacturing plans. These plans are then translated into required machine hours on critical shops, test facility slots, engineering and technician hours, and material demand. This creates a single, quantitative view of the manufacturing work orders for each year.

On top of this, robust formal programme management offices (PMOs) sit at the centre of each major programme, owning an integrated schedule that links R&D, procurement, manufacturing, and testing and delivery milestones. PMOs will essentially help in governance and oversight, planning and monitoring, and resource and stakeholder management.

Figure 16: Programme-backed capacity and resource planning to convert backlog into predictable deliveries

Source: PwC analysis

R&D roadmaps aligned with end customer needs and technology trends, and project prioritisation to accelerate completion and optimise costs

This alignment enables concurrent design, certification, and offtake rather than sequential handoffs between R&D, designer, manufacturer, and certifier. Early supplier participation in design validation compresses time-to-scale for critical technologies.

- **Enhancing R&D efficiency through clear roadmaps:** Having a well-defined R&D roadmap with realistic targets helps improve productivity by preventing duplication of efforts and over-deployment of engineers across multiple projects. It ensures focused allocation of resources, better time estimation, and strict adherence to milestones, which accelerates project completion and maximises progress on each technology development initiative.

Figure 17: Development of an R&D strategy roadmap to expedite technology development

Key challenges in technology development

Multiple deployments for engineers

- Engineers work on **multiple assignments**
- It hampers innovation & project outcomes
- Significant time of engineers/scientists goes to **administrative tasks**

Duplication of efforts

- Teams **duplicate efforts** by working on technologies from scratch each time
- Design for **reusability and modularity not always envisioned**

Development timelines are underestimated

- Time taken in technology development is **underestimated** and estimation is **not objective**
- Incorrect tech readiness assessment **underestimates tech development timelines**

Inadequate assessment of support facilities

- Assessment of required testing facilities and their availability can not be envisaged accurately
- **Unavailability of support facilities** may become a **bottleneck** in **tech development**

Over-deployed engineers/scientists working on multiple assignments + **Underestimation of time in technology development completion**

Outcomes of improper planning

More number of tech development projects undertaken → Less progress on each tech development project → Less number of projects get completed on time

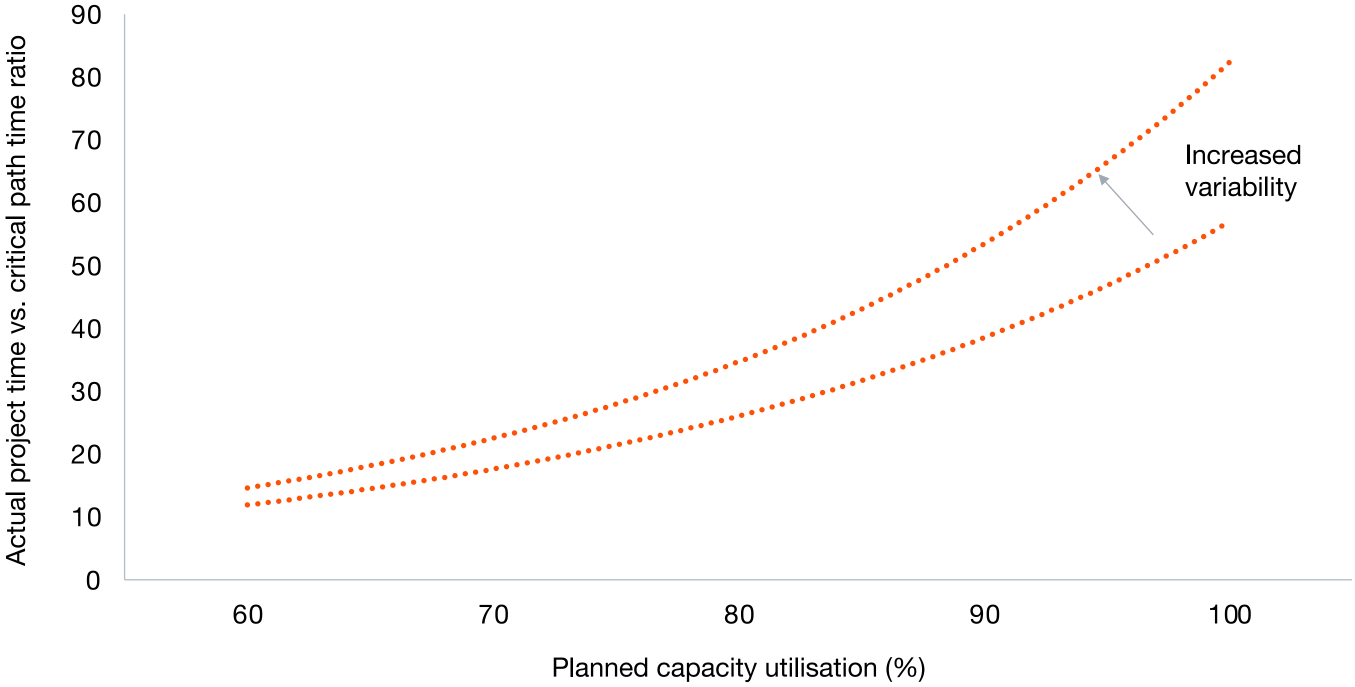
Strategic approach

Build tech roadmap with realistic targets and ensure strict adherence

Source: PwC analysis

- **Prioritisation of projects:** In environments with many projects but a limited number of skilled engineers, high utilisation rates (over 90%) can drastically delay completion—sometimes extending timelines by up to 60 times the critical path duration. Prioritising assignments and strategic resource allocation is essential to reduce variability and improve productivity. Incorporating stage gates enables DPSUs to regularly review projects, discontinue underperforming ones, and focus resources on high-potential initiatives. This approach optimises costs, minimises overruns, and aligns project execution with organisational goals and capacity constraints.

Figure 18: Impact of increased variability on actual project timelines



Source: PwC analysis

To improve development productivity, the firm should avoid being overloaded with multiple projects, keeping utilisation at moderate levels. This allows room for unforeseen circumstances, such as changes in customer requirements or internal failures to be accommodated. Additionally, maintaining moderate utilisation rates can provide a competitive edge by reducing lead times.

Optimisation of workforce planning and productivity to align closely with demand and eliminate idle time and overtime crisis

This requires instituting a disciplined, enterprise-wide workforce planning and productivity initiative that spans both supporting functions and shop-floor operations along with knowledge and skill upgradation of the workforce. At the programme level, forward-looking resource and skills planning is needed that clearly defines utilisation targets and competencies linked to the rolling plan that guides hiring, upskilling, and deployment decisions. On the shop floor, a scientifically driven workforce planning model translates demand to the precise workforce requirements at each stage of manufacturing. This must be complemented with a data-driven workforce productivity system that captures programme-level schedule adherence and line-wise output, as well as opportunities to improve both by underlining a key principle, namely 'what gets measured, gets maximised'. Three key enablers that are crucial for defence organisations to institutionalise this are: strategic alignment (SA), systems, data and processes (SDP), and performance management (PM). The resulting insights can be leveraged to provide incentives by introducing a tiered rewards architecture at the individual, team, and programme levels. This approach would improve schedule reliability, optimise labour costs, and increase predictable throughput.

Figure 19: Optimise workforce planning to eliminate idle time

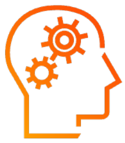
Strategic planning and alignment

- Demand and workload visibility
- Skill mapping and resource database

Systems, data, and process

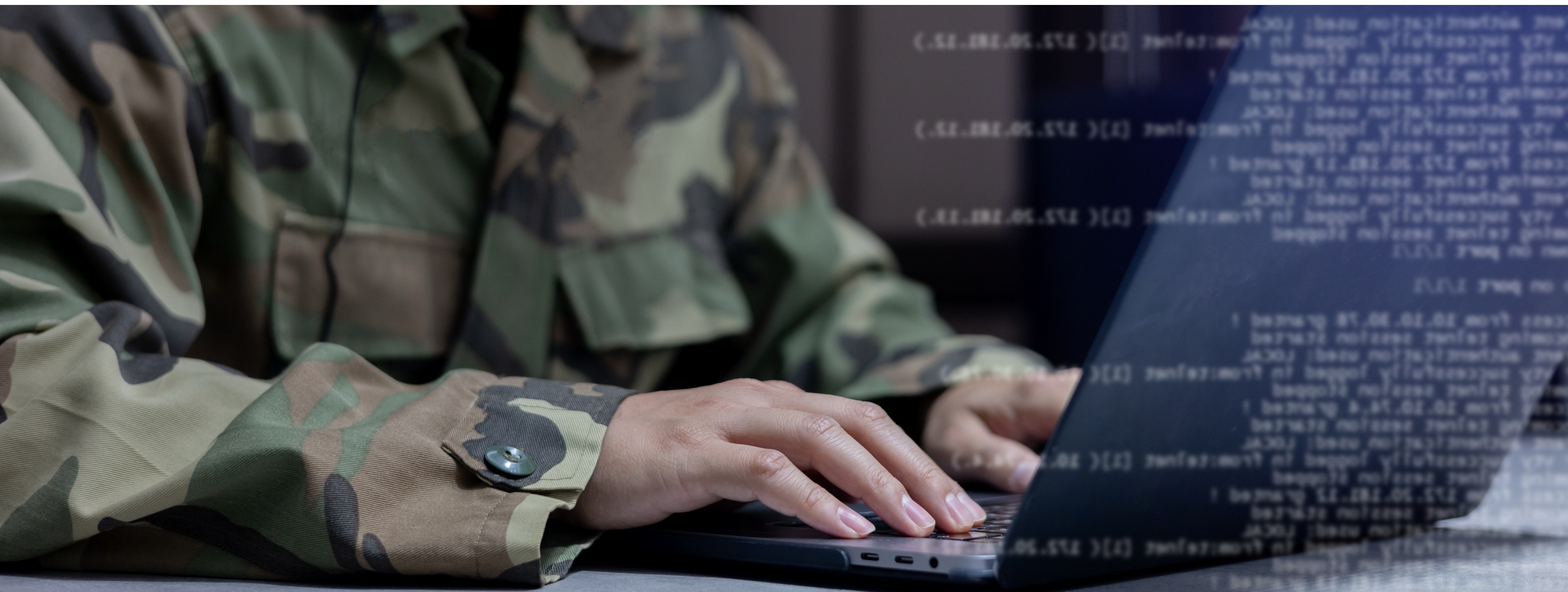
- Integrated systems and data
- Data quality and governance
- Lean tools for process streamlining

Performance management



- Performance management framework
- Incentive architecture design
- Workforce development and flexibility

Source: PwC analysis



Leveraging digital tools and emerging technologies for delivery critical to eliminating rework, slippages, and cost leakage

This requires the deployment of a modern product lifecycle management (**PLM**) system, tightly integrated with enterprise resource planning (ERP) and manufacturing execution system (MES), so that BOMs, configurations, and engineering change orders flow seamlessly from design into production. Design teams should embed **design for manufacturability and assembly** (DFM/A) principles to simplify product structures, reduce component complexity, and minimise assembly steps, while selectively using **additive manufacturing** (3D printing) for rapid prototyping and custom tooling in R&D and early production, supported by advanced **simulation and modelling tools** to validate designs before they reach the shop floor. In parallel, **scientifically driven inventory planning models** should be used to optimise stock levels and safety buffers in line with production plans.

Figure 20: Leveraging digital tools for efficiency improvement

Product lifecycle management (PLM)	Single source for BOMs, configurations, and version changes which reduces expensive reworks and provides traceability
Additive manufacturing	Rapid prototyping of sub-assemblies accelerating design iterations
Simulation and modelling tools	Validate designs before the assemblies hit the shop floor; helps avoid cost of physical prototyping and reduces R&D timelines significantly
Integrated business planning (IBP)	Models orderbook scenarios against constraints to decide what, where, and when to build; facilitates faster backlog clearance to match the demand
Manufacturing execution systems (MES)	Captures machine status, operator cycle times and WIP movement; complete visibility of factory, optimum utilisation of machines
Inventory optimisation models	Statistical models that set reorder points, lot sizes, buffer based on demand variability; helps in cost savings of emergency buys and improves material availability
AI in quality	Camera-based vision systems detect surface defects and dimensional errors; facilitates early detection of defects and high productivity with the help of automated quality checks

Source: PwC analysis

Summarising key interventions for operational excellence and supply chain resilience across six dimensions

Table 2: Operational excellence and supply chain resilience interventions vis-à-vis the legacy approach

Dimension	Legacy approach	New approach
Indigenous vendor ecosystem and scalable supply chain while driving down procurement costs	Transactional procurement, weak vendor performance management, and low cost transparency	• Strong vendor ecosystem through indigenisation and vendor development, vendor rating frameworks, integrated vendor portals • Integrated vendor portals with real-time upstream alerts and digital control towers • Zero-based analysis to improve reliability and reduce procurement cost • Strategic sourcing for critical materials and semiconductors
Lean manufacturing and throughput improvement	Traditional factory operations with inefficient layouts, unbalanced lines, bottlenecks, reactive maintenance, high variability, and under-optimised asset utilisation	• Factory modernisation and lean manufacturing using value stream mapping, line balancing, SMED, Kanban, de-bottlenecking, and layout redesign • Improved OEE, reduced variability, shorter processing times, and higher throughput
Project-backed capacity and resource planning	Reactive execution against large orderbooks; siloed planning across production, procurement, engineering and finance; limited visibility of long-term capacity, materials, workforce and test infrastructure; weak programme governance	• Integrated business planning (IBP) and conversion of order books into multi-year platform-wise manufacturing plans • Formal PMOs drive integrated schedules across R&D, procurement, manufacturing, testing, and delivery
R&D roadmap and project prioritisation	Multiple overlapping projects with poor prioritisation; overloading of scarce engineering resources; duplication of effort and long development timelines	• Clear R&D roadmaps aligned to customer needs and technology trends • Stage-gated project prioritisation, resource allocation to focus on high-potential initiatives, reduction in overruns and accelerated completion • Concurrent design, certification with early supplier participation

Dimension	Legacy approach	New approach
Workforce planning and productivity	Workforce planning not linked closely to programme demand; weak measurement of productivity and schedule adherence	• Enterprise-wide workforce planning linked to rolling demand, utilisation targets, and skill requirements • Stage-wise workforce planning to improve schedule reliability and labour efficiency
Digital tools and technology enablement	Disconnected engineering, planning, and manufacturing systems; high rework, slippages, and inventory inefficiencies	• Integrated digital backbone with PLM linked to ERP • DFM/A-led product design, additive manufacturing for prototyping, inventory planning to reduce rework and delays • Supplier portal enabling real-time component maturity visibility • Embracing AI and Industry 4.0 capabilities

Source: PwC analysis

08

How PwC can help

PwC is a trusted advisor in the A&D sector, specialising in enhancing operations, supply chain efficiency, and cost-effectiveness for defence organisations worldwide. With deep expertise in supply chain optimisation, operations, and procurement consulting, we deliver tailored solutions that improve the reliability, availability, and affordability of critical defence assets.

Our experience spans the full A&D value chain—with governments, defence forces, OEMs, and public sector units—in India and globally. We understand the evolving challenges in the sector, from complex supply chains to changing acquisition environments, and leverage this knowledge to help clients stay ahead of industry trends.

We start with rapid data-driven diagnostics to pinpoint true constraints and quantify the value that can be realised. This approach identifies inefficiencies and risk areas across supply chain and sustainment functions. Based on these insights, we develop focused implementation plans that align with priorities and optimise overall performance. These plans are then executed across strategic cost management, productivity improvement, and integrated planning.

Figure 21: How PwC can help

Rapid diagnostic & roadmap

- Cost and throughput baselining
- Identify areas of improvement
- Prioritise areas for early benefit realisation
- Build business case and implementation roadmap

Strategic cost management

- Value-analysis (VA) and value-engineering (VE)
- Should-cost analysis
- Category spend strategies
- Supplier development
- Operations transformation

Throughput and plant performance

- Lean Six-Sigma, total productive maintenance (TPM)
- Asset optimisation, quality management systems (QMS) implementation
- Operations transformation through OEE assessment, smart automation, digitisation, Industry 4.0
- Throughput improvement through operating model redesign

Integrated planning

- Integrated business planning
- Inventory optimisation
- MRO transformation
- Make vs buy outsourcing decisions
- Cost variabilisation through operating model design

About PwC

We help you build trust so you can boldly reinvent

At PwC, we help clients build trust and reinvent so they can turn complexity into competitive advantage. We're a tech-forward, people-empowered network with more than 364,000 people in 136 countries and 137 territories. Across audit and assurance, tax and legal, deals and consulting, we help clients build, accelerate, and sustain momentum. Find out more at www.pwc.com.

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