
TECHNOLOGY TRANSFER AND INTELLECTUAL PROPERTY IN INDIA'S DEFENCE PROCUREMENT

Nandan Rathi, Maharashtra National Law University, Chhatrapati Sambhajnagar

ABSTRACT

Technology transfer (ToT) is what converts a defence platform purchase into indigenous design capability, and its absence is what leaves a purchase a purchase. This paper examines the intellectual property architecture underlying ToT in Indian defence procurement (patent licensing, trade secret and know-how transfer, technical data rights, and joint-IP ownership) and evaluates the adequacy of India's current legal framework, which rests principally on the Defence Acquisition Procedure, DRDO transfer-of-technology policy, and platform-specific contracts rather than any dedicated defence-technology statute. It analyses six case studies: the 2016 Rafale acquisition and the ongoing Multi-Role Fighter Aircraft negotiations with France; the Su-57/Fifth Generation Fighter Aircraft engagement with Russia; the competing Rolls-Royce and proposed Safran-GTRE arrangements for the AMCA Mk2 engine; the BrahMos joint venture; the Barak-8/MR-SAM programme with Israel; and the sixteen-year Javelin procurement journey with the United States. These are read against the United States' own export-control practice, principally its country-specific restrictions on F-35 sales and licensing friction over the F414 engine, with the statutory prohibition on exporting the F-22 Raptor cited as the outer limit of that practice rather than as the primary comparator. The paper identifies the absence of a dedicated defence-technology IP framework, weak institutional absorption capacity, and a misaligned offset policy as India's principal structural weaknesses, and proposes a tiered technical-data-rights regime, mandatory absorption audits, and a statutory default rule for jointly generated IP as corrective measures. A methodological caveat applies throughout: several of the deals discussed remain live and unsigned as of late August 2026, and the source base necessarily mixes official material with defence trade press of uneven reliability, a limitation addressed directly in Part I.

Keywords: Technology Transfer; Defence Procurement; Intellectual Property; Offsets; Export Control; Atmanirbhar Bharat; ITAR; AMCA; know-how and know-why.

I. INTRODUCTION

"Technology transfer" is used loosely in Indian defence discourse to describe everything from screwdriver assembly under licence to full design-level co-development, and the imprecision has real legal consequences. For this paper, ToT means the transfer of proprietary technical knowledge, including trade secrets, design data, source code, and manufacturing know-how, sufficient for the recipient to independently reproduce, modify, and upgrade a defence system without recurring reliance on the transferor. Two things commonly mislabelled as ToT fall outside this definition: licensed production, where a recipient assembles or manufactures under supervision using drawings it does not own and cannot modify without the licensor's consent (India's decades of Su-30MKI manufacture under Hindustan Aeronautics Limited (HAL) is the paradigm case), and the offset, a financial or industrial obligation discharged through local spending that need not involve any technology transfer at all. Conflating the two is one of the most persistent errors in Indian defence commentary, as the Rafale case study in Part III shows.

Four categories of legal instruments typically operate within a genuine ToT arrangement, each governed by a distinct body of law with different enforceability.

Patent licences confer use rights over registered inventions and are the most transparent instrument, since what is licensed is fixed by the patent's claims and is a matter of public record under statutes such as India's Patents Act 1970.¹

Trade secret and know-how transfer, covering unpatented design data, manufacturing processes, metallurgical specifications, and test protocols, is far less transparent: with no public register, protection depends entirely on the confidentiality terms of the contract, and a transferor can lawfully withhold the "why" of a design (the engineering rationale) while disclosing only the "how" (assembly instructions), leaving the recipient able to build but not redesign.

Technical Assistance Agreements (TAAs) and related defence-service authorisations operate within the United States' International Traffic in Arms Regulations (ITAR) regime; they can define what technical assistance, drawings, software, and data may be provided to a foreign person, but ITAR itself is an export-control regime rather than an IP-ownership instrument. Contractual data-rights clauses therefore remain critical, and are often the site of the most

¹ The Patents Act 1970 (India), ss 48, 68.

consequential ToT negotiation, as the Rafale discussion below illustrates.

Finally, joint-development and joint-venture contracts must specify, in advance, ownership of IP generated during collaborative work. Indian patent law does contain a statutory regime for co-ownership of patents, but that regime does not by itself resolve ownership of trade secrets, source code, technical data, improvements, derivative works, or export rights arising from a defence co-development programme. The legal problem is therefore not an absence of all default rules, but the absence of a comprehensive defence-specific allocation rule covering the full technology stack.

This paper's starting point is that ToT is not an incidental clause traded off against unit price, but the central strategic and legal issue in any major defence acquisition. India's post-2014 policy, organised around the Atmanirbhar Bharat initiative and successive iterations of the Defence Acquisition Procedure (DAP), reflects this view at the level of stated policy. Whether that goal has been translated into enforceable contractual outcomes is a separate, empirical question, and it is the one this paper addresses. The analytical mistake throughout Indian procurement discourse is to treat five distinct assets as interchangeable: permission to manufacture, access to technical data, ownership of IP, freedom to modify the design, and freedom to export a derivative system. They are legally and commercially separable. A contract can grant manufacturing rights while reserving design authority; it can provide data without source code; it can confer patent ownership while withholding trade secrets; or it can permit domestic production while requiring foreign approval for every upgrade. The case studies below therefore assess ToT along these separate dimensions rather than using local production or headline technology-transfer percentages as proxies for autonomy.

A methodological caveat belongs here rather than in a footnote. Several negotiations examined below (the AMCA Mk2 engine contest, the revived Su-57 pitch, and the Rafale MRFA talks) were unresolved and unsigned at the time of writing, while the Javelin procurement had just reached an LOA stage and its co-production arrangements were still being developed. This account is therefore a snapshot, not a verdict. The source base mixes official material, such as the Comptroller and Auditor General's audit of the Rafale offset contract and official DRDO/MoD material, with defence trade press of variable editorial rigour; where a claim rests on the latter, that is stated in the text, and the article avoids treating unverified press reports as established contractual facts.

The paper proceeds in five further parts. Part II sets out the current Indian legal architecture governing defence ToT and proposes reforms. Part III analyses six case studies spanning four supplier states, France, Russia, the United Kingdom, and the United States, and one bilateral joint venture. Part IV consolidates the structural challenges these cases reveal and proposes a remedy for each. Part V compares United States export-control practice with Israel's structurally different, co-development-first posture, and situates the F-22 export ban as a limiting case rather than the main one. Part VI concludes.

II. THE INTELLECTUAL PROPERTY ARCHITECTURE OF DEFENCE TECHNOLOGY TRANSFER: INDIAN LAW AND ITS ADEQUACY

India's legal framework for defence ToT is not contained in a single statute but assembled from several instruments, none designed as a comprehensive defence-industrial IP code. The Patents Act 1970 contains, in section 157A, a national-security power concerning publication and disclosure of inventions, while sections 48 and 68 address patent rights and the formal requirements for licences. The Official Secrets Act 1923 is a penal instrument governing wrongful communication, retention, and disclosure of protected official information, not a licensing or ownership framework. The rules actually governing ToT in a given transaction are found principally in the Defence Acquisition Procedure 2020, the draft DAP 2026 released for consultation, DRDO's transfer-of-technology policy, and the individual contract negotiated for each platform. In effect, India has no comprehensive statute of defence-technology IP, but a policy-and-contract architecture spread across several instruments.²³⁴

The DAP's offset framework has historically been the principal mechanism through which India sought to extract industrial and technology value from foreign suppliers, and its design reveals the central weakness of the model: offset discharge is ultimately measured through monetary credits rather than independently demonstrated technological capability. DAP 2020 permits offset discharge through specified routes, including technology acquisition and transfer, but verification of offset discharge is not the same as an independent audit of whether the recipient has acquired the ability to reproduce, modify, or upgrade the technology. The CAG's audit of the Rafale offset contract found that Dassault Aviation and MBDA, having

² *ibid*, s 157A (national-security restrictions concerning publication/disclosure of inventions).

³ The Official Secrets Act 1923 (India), s 5.

⁴ Ministry of Defence, Government of India, Defence Acquisition Procedure 2020 (DAP 2020), ch VI (Defence Offsets); Ministry of Defence, Draft Defence Acquisition Procedure 2026 (released for stakeholder comments, February 2026).

proposed in September 2015 to discharge 30 per cent of their offset obligation through high technology to DRDO's Kaveri engine programme, had not fulfilled that commitment four years after signing. India subsequently removed offset requirements for government-to-government and certain single-vendor procurements in DAP 2020 rather than creating a technology-depth metric. That policy choice reduced administrative exposure but also removed a source of leverage, leaving the depth of ToT largely to the negotiated contract.^{5 6}

A second deficiency is the absence of a comprehensive default rule governing ownership of IP generated during joint defence development. Where an Indian public-sector entity such as DRDO, HAL, or Bharat Dynamics Limited (BDL) co-develops a system with a foreign partner, patent co-ownership may be governed by the Patents Act, but ownership and use of resulting improvements, source code, technical data, trade secrets, derivative IP, and export rights remain heavily contract-dependent. This is not merely theoretical: a 2025 defence report alleged that Israel Aerospace Industries (IAI) was marketing export versions of the jointly developed Barak-8/MR-SAM system without Indian-origin components. The allegation is not, by itself, proof of a contractual breach; its significance is that it exposes how a jointly developed platform can generate competing claims about contribution, ownership, and export control when the full technology stack is not allocated expressly at the outset.⁷

A third deficiency concerns absorption verification. DAP mechanisms can verify offset discharge, but India does not presently require a general, independent technical audit demonstrating that a recipient has actually absorbed transferred technology at the level of independent reproduction, modification, or upgrade before the transfer is treated as technologically successful. The Kaveri experience illustrates the distinction: formal access to technology does not itself establish design capability, precisely the concern that should inform evaluation of current engine-transfer proposals such as the Rolls-Royce AMCA offer.⁸

Comptroller and Auditor General of India, Report No 3 of 2019, Performance Audit Report on Capital Acquisition in Indian Air Force, observations on the Rafale offset obligations.⁵

Ministry of Defence, Government of India, Defence Acquisition Procedure 2020 (effective 1 October 2020), ch VI (Defence Offsets).⁶

'Is Israel Sideline Indian Tech of Jointly Developed Barak-8 Missile System in Global Sales? Recent Unilateral Marketing Points So' (Defence News India, 26 July 2025) <<https://defence.in/threads/is-israel-sideline-indian-tech-of-jointly-developed-barak-8-missile-system-in-global-sales-recent-unilateral-marketing-points-so.15040/>>. The report is cited only as an allegation, not as proof of a contractual breach.⁷

Rolls-Royce, 'Reliance Industries and Rolls-Royce announce strategic intent to partner and develop India's indigenous combat engine for the AMCA programme' (14 August 2026) <<https://www.rolls-royce.com/media/press-releases/2026/14-08-2026-reliance-industries-and-rolls-royce-announce-strategic-intent-to-partner-and-develop-indias-indigenous-combat-engine-for-the-amca-programme.aspx>>.⁸

These deficiencies point toward three reforms.

First, India should adopt a defence-specific technical-data-rights taxonomy modelled on the United States' DFARS, which distinguishes "unlimited rights," "government purpose rights," and "limited rights" and assigns each a default meaning at the point of contracting. This would give negotiators a statutory starting position rather than requiring each deal to define these terms from scratch. The taxonomy should also distinguish the subject matter of the right, not merely its duration or permitted user. Drawings, bills of material, manufacturing process data, test results, software object code, source code, algorithms, and design rationale carry different strategic value. An Indian framework should therefore attach rights to defined data classes and specify whether the recipient may reproduce, modify, disclose to approved subcontractors, use for sustainment, and create derivative designs. The absence of such granularity is precisely how a nominally broad ToT clause can coexist with practical dependence on the foreign supplier.⁹

Second, the successor to the DAP offset mechanism should grant credit in proportion to independently verified technology depth, rather than rupee value alone, closing the loophole the Rafale audit exposed. The credit should also be outcome-sensitive: a transfer of production drawings should earn less than transfer of source code and design rationale; training should earn credit only when tied to demonstrable capability; and improvements developed after transfer should be subject to the same audit. This would convert offsets from a spending-accounting exercise into a measurable industrial-capability instrument without requiring every procurement to disclose sensitive technical information publicly.

Third, Parliament should legislate a defence-specific default rule for jointly generated technology, covering patents, trade secrets, source code, technical data, improvements, and export rights, with a rebuttable presumption based on documented technical contribution rather than equity percentage alone. Such a rule should distinguish background IP from foreground IP. Background patents, proprietary software, and pre-existing trade secrets should remain with their original owners unless expressly licensed; foreground inventions, improvements, and jointly generated technical data should be allocated according to documented contribution and the agreed operational purpose. The statute should also require express treatment of derivative works, maintenance data, export permissions, and post-contract upgrades, because these are

US Department of Defense, Defense Federal Acquisition Regulation Supplement (DFARS), subpart 227.71 (Rights in Technical Data).⁹

often more important to long-term design autonomy than ownership of the initial patent itself.¹⁰

III. CASE STUDIES: CURRENT STATUS

A. France: Rafale and the persistence of source-code denial

The 2016 Rafale acquisition is frequently, and wrongly, cited as a ToT case study; as contracted, it was principally a government-to-government acquisition with an offset obligation, not a design-level ToT programme. The 36-aircraft deal carried a 50 per cent offset obligation, and the CAG's audit found that Dassault and MBDA's proposal to route 30 per cent of that offset through high technology to DRDO's Kaveri programme went unfulfilled at the time of audit. The pattern is more complicated in the current negotiation. In February 2026, the Defence Acquisition Council granted Acceptance of Necessity for 114 additional Rafales, with the majority to be manufactured in India; reporting put the planned indigenous content for the locally manufactured aircraft at about 50 per cent. This is an industrial-localisation commitment, not proof of design-level ToT, and DAP 2020 does not impose the earlier offset requirement on a government-to-government procurement. By mid-2026, reporting indicated that France would not provide the Rafale's core source code, while India was seeking Interface Control Documents (ICDs) to integrate indigenous weapons and sensors. An ICD is materially different from source-code access: it can provide the interfaces and specifications necessary for integration without transferring control of the underlying software. France submitted its techno-commercial proposal in July 2026, but the contract remained under negotiation by August. The legally significant question is therefore no longer whether India will receive local manufacturing work, but whether the final contract converts that work into enforceable access to the technical data, modification rights, and integration freedom required for genuine design

'Rolls-Royce makes final pitch to power AMCA' (ThePrint, 23 June 2026) <<https://theprint.in/defence/engine-core-by-2030-test-flight-by-2034-production-by-2036-rolls-royce-makes-final-pitch-to-power-amca/2967532/>>.¹⁰

autonomy.¹¹¹²¹³¹⁴¹⁵

B. Russia: FGFA to Su-57, repeating a broken promise

Russia's current Su-57 pitch cannot be assessed independently of its predecessor, the Fifth-Generation Fighter Aircraft (FGFA) programme. India and Russia signed the 2007 IGA and completed the preliminary-design phase, but India withdrew from the FGFA effort in 2018 amid technical, work-share, cost, and capability concerns. The earlier programme therefore demonstrates the danger of treating political alignment or preliminary design cooperation as equivalent to transferable design autonomy. In June 2026, President Putin publicly offered India unrestricted technology transfer and joint production of the Su-57, and subsequent reporting described possible access to sensitive software and radar technologies. Those statements are offers, not contractual rights. Reporting has also described a proposed two-seat Su-57 variant for India, but that aircraft remained a proposal rather than an established production platform. If India re-engages, the central legal task is to convert the public offer into an enforceable schedule covering source code, technical data, modification rights, derivative IP, audit access, and export permissions, because the FGFA experience shows that broad political assurances are not substitutes for contractually enforceable rights.¹⁶¹⁷¹⁸¹⁹²⁰

CAG (n 5).¹¹

'DAC clears proposal to buy 114 Rafale jets from France, 90 to be manufactured in India with 50% indigenous content' (The Indian Express, 12 February 2026) <<https://indianexpress.com/article/india/india-rafale-fighter-jets-from-france-p8i-submarine-10528398/>>.¹²

'France Blocks Rafale Source Code for India's \$36 Billion MRFA Deal' (Defence Security Asia, 26 February 2026) <<https://defencesecurityasia.com/en/france-blocks-rafale-source-code-india-36bn-mrfa-su57-tech-transfer-showdown/>>; the source is cited for reported negotiation claims, not as an official contractual statement.¹³

'No ICD, No Deal': India Threatens to Walk Away From Rafale Fighter Deal as France Refuses Source Code Access' (Defence Security Asia, 28 April 2026) <<https://defencesecurityasia.com/en/india-no-icd-no-deal-rafale-fighter-source-code-france-refusal-43-billion-deal/>>; cited as reporting of the negotiation, not proof of a concluded contractual position.¹⁴

ibid.¹⁵

'Putin offers India full access to Su-57 instead of Su-57E to revive failed FGFA fighter partnership' (Army Recognition, 8 June 2026) <<https://www.armyrecognition.com/news/aerospace-news/2026/putin-russia-offers-india-full-access-su-57-fighter-technology/>>.¹⁶

'Russia ready to offer Su-57 & air defence systems to India without any limitations: Putin' (The Economic Times, 6 June 2026) <<https://economictimes.indiatimes.com/news/defence/russia-ready-to-offer-su-57-air-defence-systems-to-india-without-any-limitations-putin-sukhoi-fighter-jets/articleshow/131545441.cms>>.¹⁷

Army Recognition (n 16).¹⁸

'Russia Desperately Offers India Two-Seat Su-57 That Doesn't Exist Yet' (Defense Express, 14 March 2026) <https://en.defence-ua.com/industries/russia_desperately_offers_india_two_seat_su_57_that_doesnt_exist_yet_plus_new_engines_tech_transfer_to_close_sale-17818.html>.¹⁹

Defence Research and Development Organisation, material noting India's 2018 withdrawal from the FGFA programme and the technical/work-share concerns surrounding it; see DRDO, News clipping, 14 April 2021 <<https://www.drdo.gov.in/drdo/sites/default/files/drdo-news-documents/NPC%2014-15%20April%202021.pdf>>.²⁰

C. The United Kingdom and France competing for AMCA Mk2

The AMCA Mk2 engine competition is the most legally significant of the current cases because the competing proposals are framed explicitly around IP and technology depth. Rolls-Royce has proposed a clean-sheet 120 kN-plus class engine, with joint development in India and commitments concerning transfer of know-how and know-why and ownership of newly generated IP. In June 2026, Rolls-Royce described its final proposal as targeting core testing by 2030 and first flight by 2034 if an agreement were concluded by the end of 2026. France's Safran is pursuing a proposed joint-development arrangement with DRDO's GTRE for a 120 kN-class engine; reports have described negotiations over technology transfer, IP, cost, and export rights, but the arrangement should not be described as an already-established joint venture until formally approved and contracted. The selection will therefore turn on design ownership, modification freedom, hot-section technology, data access, and long-term strategic control rather than headline thrust alone. Rolls-Royce has also linked the proposal to its ambition to expand India's propulsion capability. Two caveats matter: the Rolls-Royce offer remains unsigned, and the Safran-GTRE proposal also remained under consideration. With GE Aerospace's F414 discussions for AMCA Mk1 and Tejas Mk2 subject to reported commercial friction, the case for defining the Mk2 partnership through enforceable co-development and IP terms is particularly strong.²¹²²²³²⁴²⁵²⁶²⁷²⁸²⁹³⁰³¹

D. Russia again: BrahMos as a qualified success

BrahMos Aerospace, established under a 1998 intergovernmental agreement between DRDO

Rolls-Royce (n 8).²¹

ibid.²²

ibid.²³

'Rolls-Royce Pledges Full IP Rights For India-AMCA Jet Engine Partnership' (Indian Defence News, February 2026) <<https://www.indiandefensenews.in/2026/02/rolls-royce-pledges-full-ip-rights-for.html>>.²⁴

'Rolls-Royce Submits Final Proposal for AMCA 120kN Engine' (Defence News India, June 2026) <<https://defence.in/threads/rolls-royce-submits-final-proposal-for-amca-120kn-engine-offers-full-ip-to-india-and-core-testing-by-2030-if-pact-signed-by-2026.18092/>>; cited for reported proposal terms.²⁵

'As Rolls-Royce Challenges Safran for the AMCA, India Moves Toward Full-Spectrum Military Aircraft Manufacture' (Meta-Defense, 26 June 2026) <<https://meta-defense.fr/en/2026/06/26/rolls-royce-vs-safran-amca-india-full-spectrum-aeronautics/>>.²⁶

'Rolls-Royce Proposes Full IP Rights in Joint Development of AMCA Mk2 Engine in India' (SSBCrack, 5 June 2026) <<https://shop.ssbcrack.com/blogs/blog/rolls-royce-proposes-full-ip-rights-in-joint-development-of-amca-mk2-engine-in-india>>; cited as secondary reporting of the proposal.²⁷

Defence News India (n 8).²⁸

Rolls-Royce (n 8).²⁹

Meta-Defense (n 26).³⁰

Business Standard, reporting that negotiations over the GE F414 engine continued despite reports of a commercial deadlock (June 2026).³¹

and Russia's NPO Mashinostroyeniya, is the closest Indian example of a sustained cross-border defence co-development enterprise. Its structure is a 50.5:49.5 equity joint venture, with DRDO holding the Indian majority, and the venture itself responsible for design, development, production, and marketing. The public record supports joint development and shared institutional participation, but equity ownership does not automatically establish majority ownership of every item of jointly generated IP. Nor does the public record justify treating all export rights as equal or unrestricted. BrahMos is therefore valuable to this paper not because it proves a simple equity-to-IP rule, but because it shows what a durable intergovernmental joint venture can achieve when development, production, and commercialisation are institutionalised from the outset.³²³³³⁴

The qualifications are real. The missile's range was deliberately kept below 300 km for years in the context of the Missile Technology Control Regime, and after India's 2016 MTCR accession the extended-range BrahMos variant was developed and tested. More recently, Kharon reported shipping data suggesting that BrahMos Aerospace had exported Western-origin dual-use electronics to its Russian partner, raising questions about third-country export-control exposure. That report is an allegation of compliance risk, not proof of a legal violation. BrahMos remains India's strongest example of a durable co-development structure, but its lesson is institutional rather than simplistic: joint ownership and production can deepen capability while simultaneously importing the partner state's geopolitical and export-control exposure.³⁵³⁶

E. Israel: Barak-8/MR-SAM, co-development and its discontents

The Barak-8, also known as the MR-SAM/LR-SAM in its Indian configurations, was jointly developed by DRDO and Israel Aerospace Industries under an arrangement initiated in 2006, with production involving Indian and Israeli industry. Official Indian sources confirm the joint-

Manohar Parrikar Institute for Defence Studies and Analyses, 'BrahMos: 25 Years of the Joint Venture' (3 March 2025) <<https://idsa.in/publisher/issuebrief/brahmos-25-years-of-the-joint-venture>>; see also DRDO, BrahMos product page <<https://drdo.gov.in/drdo/en/offering/products/brahmos>>.³²

BrahMos structure and 50.5:49.5 equity share are confirmed by the joint venture's public materials and DRDO; equity ownership is not cited here as proof of IP ownership.³³

The Wire, 'The Questions That Need to Be Asked as BrahMos Emerges as India's Flagship Defence Export' (July 2026) <<https://m.thewire.in/article/security/the-questions-that-need-to-be-asked-as-brahmos-emerges-as-indias-flagship-defence-export>>.³⁴

MP-IDSA (n 32).³⁵

Kharon, 'India-Russia Joint Venture Exports Western Dual-Use Technology to Russia' (19 January 2024) <<https://www.kharon.com/brief/india-russia-joint-venture-exports-western-dual-use-technology-to-russia>>; cited only as a reported export-control risk.³⁶

development character of the programme, while IAI has reported cumulative Barak-8 sales exceeding \$6 billion. The public record, however, does not establish a complete item-by-item allocation of IP in the seeker, software, rocket motor, airframe, and other subsystems. A 2025 defence report alleged that IAI was marketing export versions without Indian-origin components; that allegation should be treated as reported concern rather than a judicially established dispute. The legal lesson is narrower and stronger: even successful co-development does not by itself answer who owns improvements, who may export a derivative configuration, or whether one partner may commercialise the system without the other's consent. Those questions must be settled expressly in the IP and export-control schedules of the development agreement.³⁷³⁸³⁹⁴⁰⁴¹⁴²

F. The United States: the sixteen-year Javelin impasse

India's pursuit of the FGM-148 Javelin anti-tank guided missile is the clearest illustration in this paper of how ToT expectations can prolong a defence procurement. India first sought the Javelin in 2010 and, over the following years, explored technology-transfer and local-production options while also considering Israel's Spike and the indigenous MP-ATGM. The negotiations repeatedly stalled, making the Javelin a sixteen-year procurement journey rather than a sixteen-year completed ToT negotiation. The position changed materially in August 2026: on 28 August the Indian Army signed a Letter of Offer and Acceptance to acquire the Javelin through the US Foreign Military Sales process. On 30-31 August, Tata Advanced Systems and the Javelin Joint Venture, comprising Raytheon and Lockheed Martin, signed an MoU to explore co-production of the Javelin All Up Round in India, including final assembly, integration, and component-production capabilities. The MoU is significant because it moves the relationship from procurement toward industrial participation, but it does not establish unrestricted source-code access or ownership of the underlying Javelin technology. The next legal question is therefore whether the proposed co-production arrangement delivers

Defense Industry Daily, 'India & Israel's Barak-8 SAM Development Project(s)' (22 March 2021) <<https://www.defenseindustrydaily.com/india-israel-introducing-mr-sam-03461/>>.³⁷

Defence News India (n 7).³⁸

Israel Aerospace Industries, 'IAI to provide \$777 million worth of Barak 8 LRSAM air & missile defence systems to state-owned BEL in India' (2018) <<https://www.iai.co.il/press/iai-to-provide-777-million-worth-of-barak-8-lrsam-air-missile-defence-systems-to-state-owned-bel-in-india/>>; IAI reported cumulative Barak-8 sales exceeding \$6 billion and described the system as developed collaboratively with Indian and Israeli entities.³⁹

Defence News India (n 7).⁴⁰

ibid.⁴¹

Indian Defence News, 'India Interested In Israel's Advanced Barak-MX Missile Defence System' (April 2025) <<https://www.indiandefensenews.in/2025/04/india-interested-in-israels-advanced.html>>.⁴²

measurable design, manufacturing, maintenance, and modification capability rather than assembly alone.⁴³⁴⁴⁴⁵⁴⁶⁴⁷⁴⁸

IV. STRUCTURAL CHALLENGES FOR INDIA AND HOW TO FIX THEM

The case studies in Part III converge on five structural problems, each addressed here with what would actually fix it.

1. Absorption capacity is the real bottleneck, not access. The Kaveri programme's decades-long failure to produce a combat-ready engine shows that granting ToT does not automatically create capability; it only creates the opportunity for it, which the recipient institution must be organisationally equipped to use. The fix is a binding absorption-capacity assessment, conducted by an independent technical body, before any ToT-heavy contract is signed, with disbursement staged against demonstrated milestones and technical outcomes. The audit should not be satisfied by attendance certificates, delivery of manuals, or the physical transfer of drawings. It should test whether Indian personnel can independently reproduce a component or subsystem, diagnose failures, alter specified parameters, maintain the relevant software or hardware, and generate an approved design change without the transferor's continuing engineering intervention. The milestones should therefore be capability-based and should separate basic production competence from modification and redesign competence. This would also give the government an evidentiary basis for deciding whether an offset or ToT milestone has actually been achieved, rather than relying on the supplier's documentary certification.⁴⁹⁵⁰

2. Third-country export control can override a bilaterally negotiated ToT right. Any US-origin component embedded in a UK- or France-sourced platform can trigger ITAR or Export

ThePrint, 'India's 15-yr quest for anti-tank missile: Israeli Spike, DRDO option, back to US for Javelin talks' (2 March 2025) <<https://theprint.in/defence/israeli-spike-delayed-native-solution-back-to-us-for-javelin-talks-indias-15-yr-search-for-atgms/2140053/>>.⁴³

ibid.⁴⁴

ibid.⁴⁵

The Wire, 'India's Interest in the US's Javelin Anti-Tank Missile is Back. Here's Why it Matters' (1 June 2026) <<https://m.thewire.in/article/security/indias-interest-in-the-american-fgm-148-javelin-atgm-is-back-heres-why-it-matters>>.⁴⁶

The Indian Express, 'Why India took 16 years to acquire Javelin fire-and-forget missiles' (30 August 2026) <<https://indianexpress.com/article/explained/india-javelin-atgm-deal-us-16-years-spike-israel-10855746/lite/>>.⁴⁷

Tata Advanced Systems, 'Javelin Joint Venture and Tata Advanced Systems Signs Agreement for Missile Co-Production in India' (31 August 2026) <<https://www.tataadvancedsystems.com/>>; see also Lockheed Martin, 30 August 2026 <<https://news.lockheedmartin.com/2026-08-30-Javelin-Joint-Venture-and-Tata-Advanced-Systems-Signs-Agreement-for-Missile-Co-Production-in-India>>.⁴⁸

ThePrint (n 26).⁴⁹

Rolls-Royce (n 8).⁵⁰

Administration Regulations restrictions, so India's negotiated ToT rights can be constrained by a third state's regime to which India was never a party, a live risk wherever platforms incorporate controlled foreign components. India should schedule every third-country-origin component against the export-control regime governing it in multi-sourced platform contracts and make the supplier responsible for identifying the resulting licensing constraints before contract signature.⁵¹⁵²

3. Offset policy rewards spend value over technology depth. India's 2020 response to the Rafale offset problem was to remove offset requirements from specified procurement categories rather than create a capability-based verification metric. The fix is to reintroduce an equivalent obligation for large deals, weighted toward verified design-level ToT, with credit on a sliding scale keyed to the technical-data rights and demonstrated absorption actually delivered.⁵³

4. No comprehensive default rule for ownership of jointly generated defence technology. The Barak-8 example shows what happens when a co-development programme's patent, software, data, improvement, and export rights are not allocated across the entire technology stack. A statutory default, based on documented technical contribution and expressly covering non-patent rights, would shift the burden onto whichever party wants non-proportional terms to justify them explicitly.⁵⁴

5. Political commitments are not contractual commitments. The FGFA-to-Su-57 case is the clearest demonstration that a head-of-state statement carries no legal weight until reduced to an enforceable IP-ownership and technical-data schedule with audit clauses. Negotiators should treat every public ToT pledge as an opening position, not a commitment.⁵⁵⁵⁶

6. A parallel, domestic ToT track is now opening, and India's private sector should be positioned to absorb it. On 25 August 2026, Defence Minister Rajnath Singh approved the transfer of DRDO-developed technologies of conventional missile systems to eligible Indian

Arms Export Control Act 1976, 22 USC § 2751 et seq; International Traffic in Arms Regulations, 22 CFR pts 120-130; Export Administration Regulations, 15 CFR pts 730-774.⁵¹

Business Standard, reporting in June 2026 that government sources disputed reports of a deadlock in the GE F414 negotiations.⁵²

DAP 2020 (n 6).⁵³

Defence News India (n 7); official Indian sources confirm Barak-8/MR-SAM as a joint development programme.⁵⁴

The Economic Times (n 17).⁵⁵

Defense Express (n 19).⁵⁶

industry for domestic production, subject to applicable qualifications, certifications, and regulatory requirements. The policy is important because it moves technology from development laboratories toward wider industrial production, but the precise licensing, selection, and integration arrangements must still be implemented programme by programme. This is a live instance of the absorption-capacity and data-rights problems discussed above, only running domestically rather than cross-border: DRDO remains the technology source, and whether the private licensee actually acquires design-level capability rather than merely assembling under supervision will depend on the licence terms, technical-data access, training, and independent absorption audits this paper argues should govern foreign ToT as well.⁵⁷⁵⁸

The analogy to the United States is instructive because it shows where this model leads over decades rather than years. A relatively small group of large prime contractors dominates the US defence industrial base, operating within procurement and technical-data regimes that give the government substantial rights in technology developed with public funding. That structure has produced sustained private systems-integration expertise and an export-ready industrial base, but it has also produced concentration risk that Congress continues to examine. If India's private defence firms are to capture the capability gains of the model without reproducing its concentration risk, the technology-transfer terms attached to the new DRDO track, audited absorption milestones, clear IP-ownership schedules, and genuinely competitive rebidding rather than one-time licence grants will matter more than the headline decision to transfer technology at all.⁵⁹⁶⁰

V. COMPARATIVE ASPECT: UNITED STATES EXPORT-CONTROL PRACTICE AND THE ISRAELI ALTERNATIVE

A. United States practice

The most relevant American comparator for India is not total refusal but conditional access,

Ministry of Defence, Government of India, Press Release: 'Raksha Mantri approves Transfer of Technology of DRDO-developed missile systems to Indian defence industry to bolster indigenous manufacturing' (25 August 2026) <<https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2303014&lang=2®=48>>.⁵⁷

Bhaswar Kumar, 'DRDO cleared to transfer all conventional missile tech to pvt industry' (Business Standard, 25 August 2026) <https://www.business-standard.com/external-affairs-defence-security/news/drdo-conventional-missiles-private-sector-production-rajnath-singh-126082500666_1.html>.⁵⁸

Congressional Research Service, Defense Primer: U.S. Defense Industrial Base, IF10548 (Library of Congress, 15 December 2025) <<https://www.congress.gov/crs-product/IF10548>>; Congressional Research Service, Defense Primer: Department of Defense Contractors, IF10600 (Library of Congress, 6 February 2026) <<https://www.congress.gov/crs-product/IF10600>>.⁵⁹

Congressional Research Service, The U.S. Defense Industrial Base: Background and Issues for Congress, R47751 (Library of Congress, 23 September 2024) <<https://www.congress.gov/crs-product/R47751>>.⁶⁰

since that is the category India's own negotiations generally fall into. The F-35 programme illustrates differentiated access rather than a single rule: Turkey was removed from the programme after acquiring the Russian S-400 system; Thailand's request was declined on training and technical-readiness grounds; the UAE suspended its F-35 discussions; and Qatar's request did not result in a publicly announced sale. These cases should not be collapsed into a single category of "denial." India's own F414 arrangement for Tejas Mk2, which involves licensed production rather than transfer of the underlying engine design, sits inside the same broader pattern of controlled access to sensitive technology. Reports of commercial friction in the F414 negotiations should likewise be treated as negotiation evidence, not proof that talks have failed. The consistent lesson is that US suppliers separate platform access, manufacturing rights, technical data, and deeper design authority rather than treating them as one entitlement.⁶¹⁶²⁶³

The F-22 Raptor sits at the far end of the same policy spectrum: it marks that spectrum's outer limit, and it is cited here for that reason, not because it is the case most comparable to India's negotiations. In 1998, Congress enacted the provision commonly associated with the Obey Amendment in the Department of Defense Appropriations Act, prohibiting the use of appropriated funds to approve or license the sale of the F-22 to any foreign government. The prohibition was maintained through subsequent appropriations legislation, making the F-22 a statutory example of platform-specific non-exportability rather than ordinary executive licensing discretion. The important point is not to generalise from the F-22 to all US defence exports, but to recognise that US law can place an absolute ceiling on what a negotiator may offer. For India, the practical lesson is that the depth of any American ToT offer will track the sensitivity and replicability of the particular technology, not merely the closeness of the bilateral relationship.⁶⁴⁶⁵⁶⁶⁶⁷

US Department of Defense, Department of Defense Appropriations Act 1998, Pub L No 105-56, conference report, § 8097 (prohibiting use of funds to approve or license sale of the F-22 to a foreign government).⁶¹
ibid.⁶²

The National Interest, 'Why America Will Never Sell the F-22 Raptor Fighter' (23 April 2026) <<https://nationalinterest.org/blog/buzz/why-america-will-never-sell-f-22-raptor-fighter-210282>>.⁶³

Department of Defense Appropriations Act 1998, Pub L No 105-56, § 8097 (the provision commonly associated with the Obey Amendment), prohibiting use of appropriated funds to approve or license the sale of the F-22 to any foreign government; the restriction was maintained through subsequent appropriations legislation.⁶⁴

The National Security Journal, 'The F-22 Raptor Is the Only U.S. 5th-Generation Fighter That Cannot Be Legally Exported' (12 May 2026) <<https://nationalsecurityjournal.org/the-f-22-raptor-is-the-only-u-s-5th-generation-fighter-that-cannot-be-legally-exported/>>.⁶⁵

The National Interest (n 63).⁶⁶

The National Interest (n 63).⁶⁷

B. Israel: co-development as a default posture

Israel is a structurally different comparator (see Part III.E). Rather than treating co-development as a universal national default, the stronger observation is that Israel has repeatedly used joint-development and industrial-partnership arrangements, including Barak-8, to combine foreign demand with domestic technological capability. That model changes the character of the dispute from whether technology was transferred at all to who controls the resulting rights, but it does not remove the dispute. Co-development can produce a stronger ToT outcome, but only when paired with clear rules on IP ownership, technical data, modification, export, and derivative systems.⁶⁸

VI. CONCLUSION AND RECOMMENDATIONS

Three conclusions follow from the foregoing analysis. First, the 2016 Rafale acquisition was not a design-level ToT programme; it was a government-to-government acquisition with an offset obligation. The prospective 114-aircraft MRFA programme is different: it contains a substantial Indian-manufacturing component, but its ultimate ToT value will depend on the final contractual allocation of technical data, modification rights, integration freedom, and source-code access. The distinction matters because local manufacture is not synonymous with design autonomy.⁶⁹⁷⁰

Second, the Russia-Su-57 relationship demonstrates that verbal or press-conference commitments to "unrestricted" technology access are not a substitute for enforceable IP-ownership, technical-data, and audit clauses. That lesson is written into the FGFA programme's collapse and is now being tested by Russia's 2026 public offer, which India had not converted into a binding contract as of late August 2026.⁷¹

Third, the Rolls-Royce AMCA Mk2 proposal is legally significant because it competes on the substance of IP ownership, know-how, and domestic development rather than merely assembly. Yet it remains a proposal, as does the competing Safran-GTRE arrangement. Their ultimate value to India will depend less on the headline promise of "full ToT" than on the contractual definition of source code, technical data, improvement rights, export rights, and the

Patents Act 1970 (n 1).⁶⁸

Defence Security Asia (n 13).⁶⁹

Defence Security Asia (n 14).⁷⁰

The Economic Times (n 17).⁷¹

institutional capacity to absorb them.⁷²

The BrahMos, Barak-8, and Javelin cases add three further lessons. BrahMos shows the value of institutionalised intergovernmental co-development, but also the need to separate equity ownership from the legal ownership of individual IP assets and to account for the partner state's export-control exposure. Barak-8 shows that co-development does not eliminate disputes over derivative systems, components, and export rights; those matters require express allocation at the outset. Javelin shows the same problem at a different stage: after a sixteen-year procurement journey, India has now secured the purchase and opened a co-production track, but the depth of technology actually available to Indian industry remains the critical legal question.⁷³⁷⁴⁷⁵

Recommendations:

- (1) Enact a dedicated statutory framework for defence-technology IP establishing a tiered technical-data-rights taxonomy analogous to the US DFARS model.
- (2) Reintroduce an offset-equivalent mechanism for large single-vendor and government-to-government deals, weighted to reward verified design-level technology transfer over rupee-denominated local spending.
- (3) Legislate a rebuttable statutory default for ownership of jointly generated defence IP, proportional to documented contribution.
- (4) Require an independent, pre-contract absorption-capacity audit of the receiving Indian institution before any ToT-heavy contract is signed, with disbursement staged against demonstrated milestones.
- (5) Treat every political-level ToT pledge as a non-binding opening position until reduced to an IP-ownership schedule with audit and enforcement clauses.
- (6) Require a standard contractual schedule identifying every third-country-origin component and its governing export-control regime in multi-sourced platform contracts.

Rolls-Royce (n 8).⁷²

Kharon (n 36).⁷³

Defence News India (n 7).⁷⁴

The Indian Express (n 47).⁷⁵

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