

New Frontiers: Accounting Challenges in Deep Tech Startups

Vikram Venkat
Investment Professional

India's ecosystem of deep tech startups is rapidly growing, backed by investor funding and government policies. These companies are building highly innovative, disruptive technologies, rooted in substantial research and development, over long timelines. Consequently, application of accounting principles to these startups has several complexities – revenue recognition is uncertain and difficult to estimate for milestone-based contracts with multiple diverse revenue streams; costs need to be appropriately expensed or capitalized; grants and different funding received need to be carefully recognized; intangible assets should be captured appropriately on the relevant financial statements. To handle this complexity, accountants should blend rigorous application of standards and frameworks with careful interpretive judgment and a deep technical understanding of the product and business model.

Deep Tech in India: An Introduction to the Emerging Ecosystem

Deep tech companies are organizations that build transforming, cutting-edge technologies that are rooted in substantial scientific research, engineering, and innovation. Often, these companies build both hardware and software. Some examples of sectors typically considered to be deep tech are robotics, aerospace and defense, advanced semiconductors, quantum computing, frontier biotechnology, advanced manufacturing, and new energy technologies.

India has already built a strong base of deep tech companies. NASSCOM estimates[1] that there are over 4,200 deep tech startups active in India currently, making it the sixth largest market globally. Deep tech startups have also raised significant amounts of funding, together raising $1.65 billion in investments from leading Indian and global investors in 2025, as per TechCrunch estimates.[2] This represented a 50% growth over 2024; it was also the fourth year in a row where startups raised over $1 billion cumulatively. According to the India Deep Tech Alliance's 2026 Report,[3] deep tech accounted for 15% of all venture capital and private equity funding raised in India in 2025, a sharp and rapid growth from just 4% in 2016. Deep tech is an even more massive market globally, with US deep tech startups raising $147 billion in funding in 2025, and Chinese deep tech startups raising $81 billion.[2]

Key Structural Drivers Behind the Deep Tech Growth Story

Deep tech startups now operate under an extended regulatory horizon—longer recognition tenure and higher turnover thresholds, aligned with their inherently long gestation and innovation cycles.

Government policies are becoming more startup-friendly and also allowing for more deep tech innovation. The government recently strengthened the Startup Indian Action Plan by revising the recognition framework[4] for startups. Under the traditional DPIIT criteria, startups are recognized based on their age (up to ten years from incorporation), turnover (up to ₹200 Crore in any previous year), their corporate structure (partnership or

1 NASSCOM. (n.d.). Deep Tech. https://nasscom.in/deeptech/

2 TechCrunch. (2026, February 7). India has changed its startup rules for deep tech. https://techcrunch.com/2026/02/07/india-has-changed-its-startup-rules-for-deep-tech/

3 India Deep Tech Alliance. (2026). AI and Deep Tech Investments Landscape 2026 (Released at the AI Impact Summit on February 17, 2026). https://idtalliance.org/files/AI-%26-Deep-Tech-Investments-Landscape-2026.pdf

4 Ministry of Commerce and Industry. (2026, February 5). Government revises Startup Recognition Framework to strengthen Startup India Action Plan (Press Release). Press Information Bureau, Government of India. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2224069&reg=3&lang=2

private limited or limited liability company), and a commitment towards innovation or improvement of products or services, with the potential to generate employment and/or wealth. The revised criteria extended the age limit for deep tech companies up to twenty years from incorporation and also increased the turnover limit to ₹300 Crore. This was especially useful as deep tech startups need longer time horizons for R&D, product building, and navigating long sales cycles.

Additionally, multiple new funding pathways are emerging. Government funding for startups has grown rapidly, especially with the launch of the Research Development and Innovation (RDI) Fund[5] (which has a corpus of rupees one lakh crore) as well as the rise of deep tech venture capital firms in India.

Leading technical and business universities across the nation are encouraging innovation and entrepreneurship through accelerators, student funds, and academia-industry collaborations.

Both Indian and multinational organizations, such as leading semiconductor companies, automotive manufacturers, aerospace organizations (both public and private) continue to grow their interest and footprint in India. These act as early customers and partners for Indian deep tech startups, as well as provide additional talent pool for founders to draw from.

Structural Differences: Why Traditional Accounting fails for Deep Tech

Deep tech startups have several characteristics that set them apart from most traditional companies and even most startups.

First, revenue and cost structures for deep tech startups tend to be highly complicated. Revenue is often across multiple different streams leading to significant uncertainty and complications while modeling. There are often significant gaps between signing of contracts, recognition of revenue, and actual cash flows, leading to complex accounting judgments when correlating across the different financial statements. Cost structures have similar issues, with multiple different cost heads that need to be accounted for. Handling these requires accountants to make judgments across different types of expenses and capitalization and represent the relevant depreciation and amortization schedules.

Second, deep tech companies have extremely long development cycles, often needing seven to ten years before commercialization. This R&D phase results in extended periods of losses before any revenue can be generated; the company only sustains itself based on external funding during this period. Given the large amounts of funding needed over extended periods, deep tech companies often have multiple different sources of financing. These are often delivered through multiple different vehicles, instruments, and structures. Many of these instruments come with restrictions around their usage, differing maturity dates, and other constraints, and need to be treated appropriately on financial statements.

Third, there are various intangible assets that are often significant determinants of company valuation and success. These include intellectual property, ongoing research, and human capital related to the expertise and capabilities of the team. Valuing these appropriately and capturing them in financial statements requires significant specialized expertise.

We now explore each of these in detail.

Complex Revenue Models in Deep Tech Startups: Application of Ind AS 115

Deep tech companies often have a mix of hardware and software products which are monetized across multiple different streams, including:

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- Sales or leasing of hardware
- Software subscription fees
- Usage-based / consumption-based fees for specific software elements, such as AI tokens
- Non-recurring engineering fees for custom development and installation
- Specific maintenance or support contracts, which are often recurring
- Royalties, if the technology is embedded into the customer's product (for example, driver assistance systems being embedded into a vehicle)
- Licensing fees if the technology is transferred to a customer

Different revenue streams for hardware, software, and maintenance within contracts need to be unbundled to ensure appropriate treatment. Further, many deep tech contracts are structured to be milestone-based, with revenue tied to validation of prototypes, successful integration with customer systems, achievement of goals set out in the proof-of-concept phase, and receipt of relevant regulatory approvals. Consequently, there is often significant uncertainty in the actual accrual of revenue; this is especially complex for accountants reviewing management projections.

While there is uncertainty around the revenue, the cash flow often occurs independently. Contracts may have upfront payments, or regular payments on a monthly, quarterly, or annual basis, or milestone-based payments. Consequently, cash flows as recorded in the financial statements are often detached from revenue recognition timelines; this leads to significant challenges while matching across the statement of cash flows and the profit and loss statement.

Ind AS 115, "Revenue from Contracts with Customers," lays down a clear five-step model for recognizing revenue appropriately. This involves:

- Identifying the contracts with the customer and validating all the terms to ensure clarity and reliability
- Identifying the relevant performance obligations as per the contract
- Determining the transaction price the seller expects to be entitled to
- Allocating the transaction price appropriately against each performance obligation, based on standalone selling prices
- Recognizing the revenue when the entity satisfies the performance obligations and transfers control of the technology, product, or service

For deep tech companies, the key accounting challenge arises from the complexity of pinpointing the change of control. Recognition of revenue often would require estimating progress against contract goals and proportionately allocating revenue against these; if not clearly defined in the contracts, this needs to be done with caution and only recognized when the probability of payment reversal is extremely low. Estimating progress using the percentage-of-completion method often requires usage of proxies, such as the amount of costs incurred during development. Intellectual property licensing also requires differentiated treatment; functional IP (such as software) can be recognized at a specific point in time when it is made available to the customer for control and usage, while symbolic IP can be recognized over a period.

Cost Structures in Deep Tech Companies and Application of Ind AS

As discussed earlier, deep tech companies tend to have very long research and development cycles. These are associated with various costs, including:

- Payroll for team members and contractors working on R&D as well as in other functions (sales, finance, human resources, and others)
- Purchase/lease and usage of equipment, materials, and supplies for R&D and prototyping
- IP and legal costs associated with patent filings and maintenance, regulatory compliance and certification, and legal counsel
- Non-recurring engineering costs for one-time or sporadic design and development
- Manufacturing and shipping costs, especially when hardware is involved
- Traditional general and administrative costs, including rent, travel, utilities, and other similar cost heads

As with the revenue, many of these costs are difficult to appropriately measure and recognize. Various standards – including Ind AS 16 "Property, Plant, and Equipment," Ind AS 36 "Impairment of Assets,"



Ind AS 38 "Intangible Assets," and Ind AS 116 "Leases" provide guidelines that help untangle this complexity.

The distinction between research and development is not merely technical in deep tech startups; it directly shapes financial reporting outcomes.

As per Ind AS 38 (Intangible Assets), all research costs must be expensed as there is a high uncertainty about technical feasibility and future economic benefits. Development costs, on the other hand, can only be capitalized if six conditions are met; else, they should be expensed:

- **Technical feasibility**: The asset can be completely developed for future sale or use
- **Intention to complete**: Management intends to complete developing the asset
- **Available resources**: Adequate technical, financial, and other relevant resources are available to complete development of the asset
- **Ability to use or sell**: Clear demonstrations exist of how the asset will be used and/or sold in the future
- **Future economic benefits**: Proof of existence of a market or internal usefulness that can generate future cash flows
- **Reliable measurement**: Development expenses related to the asset can be clearly measured and attributed

Applying capitalization thresholds consistently is complex but essential. This is especially challenging during the early stages of development. Technical feasibility is especially complex to analyze until late in the development cycle, as it requires underwriting complex scientific and engineering risks. Treatment of failed prototypes and tests need to also be consistent to prevent incorrect capitalization.

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Premature capitalization of pre-technical-feasibility costs carries several risks. It inflates assets and net income initially and could potentially violate the matching principle by misaligning expenses and revenues. Capitalization could also have tax implications by limiting early expense deductions. Any failed projects (a common occurrence in the pre-feasibility stage) would need to be written off as an impairment loss, damaging future earnings.

Consequently, impairment testing, as explained under Ind AS 36, becomes critical in every reporting period. In the pre-technical-feasibility phase, individual assets are usually insufficient to generate cash flows; consequently, a Cash Generating Unit (CGU) i.e., the smallest identifiable group of assets that can independently generate cash flow, needs to be identified for impairment testing. If the CGU's carrying amount (including any allocated goodwill) exceeds the recoverable amount (calculated basis fair value less disposal costs, or the present value of future cash flows), impairment exists. This could occur due to multiple internal or external factors, such as market value decline, regulatory or legal changes, variances in interest rates, physical damage, technical obsolescence, or evidence of economic underperformance of the asset.

Additionally, deep tech companies often have high levels of capital expenditure associated with property, plants, and equipment. Classifying these assets appropriately and amortizing or depreciating them over a relevant time-period requires an additional layer of decision-making for the accountant; the defined schedules should keep in mind the long development cycle associated with the company. Resale value of specialized equipment should be calculated appropriately, based on its applicability or relevance to other potential users outside of the company.

Ind AS 12 Implications for Tax Losses, R&D Expenditure and Startup Tax Incentives

Given the high R&D spending and recurring losses in early years, deep tech startups can often accumulate Deferred Tax Assets (DTAs). These typically arise when the tax base of an asset is greater than its carrying amount, or the base of a liability is less than its carrying amount. Capitalized development costs can also create DTAs, due to differences between accounting amortization and tax depreciation treatment.

Under Ind AS 12, DTAs can be recognized on the balance sheet when the company has recognized R&D expenses in its books, has tax losses that can be carried forward, and it is probable that future taxable profit will be available against which the deductible differences can be utilized. However, given the uncertainty of future profitability, accountants should rigorously measure DTA recoverability through future cash flows, using evidence such as contracts, secured IP, funding raised, or pipeline. Subsidies and

exemptions, such as the 100% tax exemption (for three consecutive assessment years within the first ten years of their incorporation) offered to DPIIT-recognized deep tech startups should also be carefully accounted for.

Accounting and Classification of Funding Instruments in Deep Tech Startups under Ind AS

Deep tech startups receive funding through a variety of different instruments and structures, including:

- Dilutive, equity-based financing, usually from venture capital or private equity investors, accelerators, incubators
- Non-dilutive grants, usually from governments, foundations, non-profits
- Debt, both from banks as well as from venture capital firms (often in the form of convertible debt, which can be converted to equity at the time of maturity or in case of a liquidation event)
- Subsidies, usually from government agencies

Ind AS 32 and 109 "Financial Instruments" provide guidance for



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treatment of these various funding structures and how they should be represented in financial statements.

Grants and subsidies often cause significant challenges and need to be treated as per Ind AS 20 "Accounting for Government Grants." While many founders treat these as revenue, and they can be a precursor to genuine government contracts, they need to be handled carefully and classified as funding or income based on appropriate criteria.

Further, Ind AS 102 provides guidance relating to share-based payments, which are often used by early-stage deep tech startups to compensate their employees.

Conclusion

In deep tech startups, long development cycles, uncertain commercialization timelines, milestone-based contracts, multiple funding structures, and heavy reliance on intellectual property create accounting challenges that often require substantial professional judgment.

Accordingly, accountants working with deep tech startups must first understand the company's technology, business model, stage of development, and expected revenue structure before applying accounting standards. Such understanding becomes essential while evaluating revenue recognition, capitalization of development costs, impairment testing, classification of grants and funding instruments, deferred tax assets, and valuation of intangible assets.

Ultimately, the accounting challenges in deep tech startups cannot be addressed through mechanical application of standards alone. They require a balanced combination of technical accounting knowledge, professional skepticism, industry understanding, and careful interpretive judgment. As India's deep tech ecosystem continues to expand, accountants will play an increasingly important role in ensuring transparency, compliance, and credibility in financial reporting for these innovation-driven businesses.

References

- *Department for Promotion of Industry and Internal Trade. (2026, February 4). Notification No. G.S.R. 108(E). Ministry of Commerce and Industry, Government of India. https://www.dpiit.gov.in/static/uploads/2026/02/119eS2e2a36f65221Sa 32c3ccc5f9c66.pdf*
- *Institute of Chartered Accountants of India. (2026). Educational Material on Indian Accounting Standards (Ind AS). https://icai.org/post/8202*
- *Institute of Chartered Accountants of India. (2026). Compendium of Indian Accounting Standards (2025–2026). https://www.icai.org/post/compendium-of-indian-accounting-standards*
- *NASSCOM. (n.d.). Deep Tech Initiatives. https://nasscom.in/deeptech-initaitives*

Author may be reached at vikram.venkat@gmail.com and eboard@icai.in