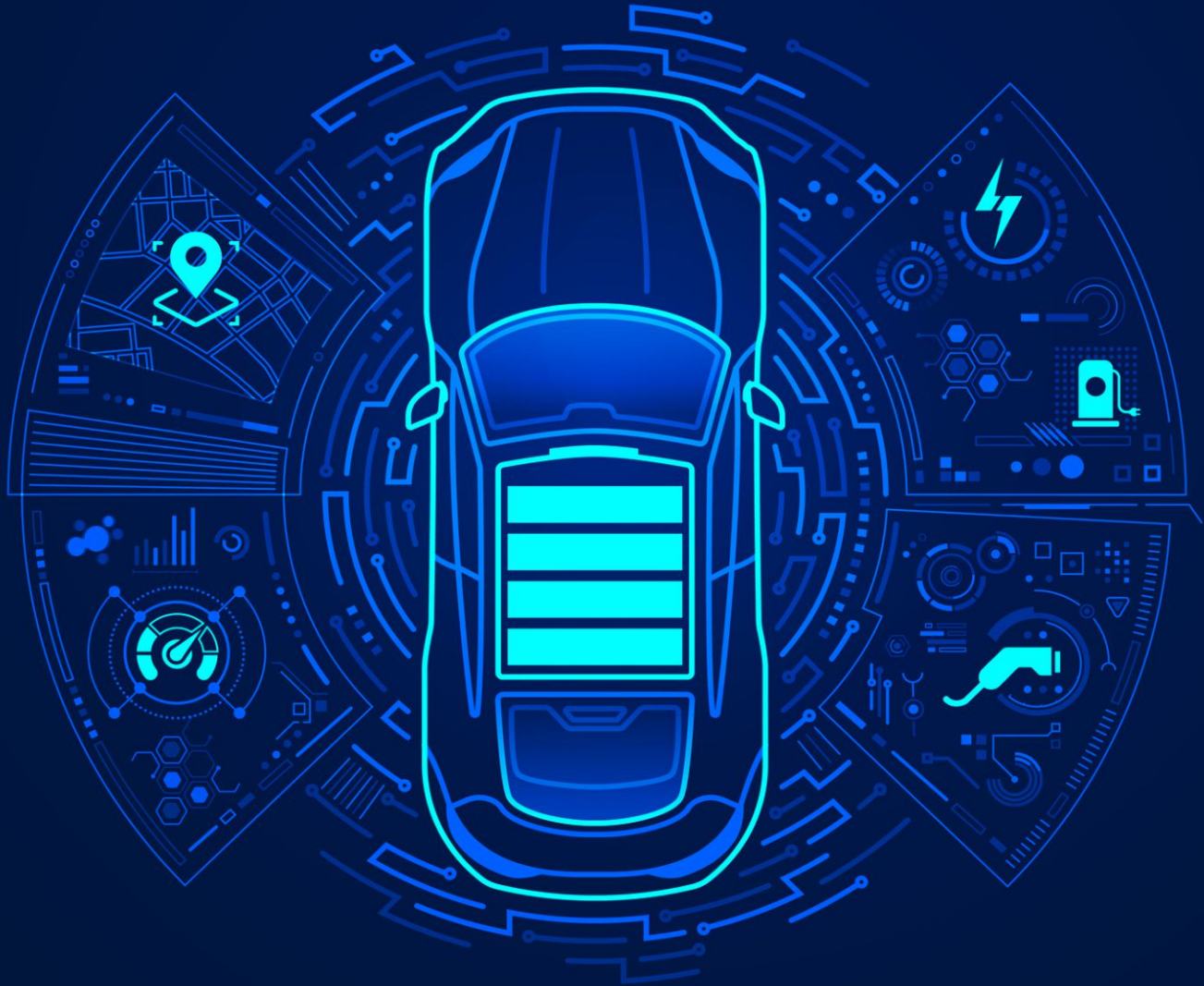


# Auto ER&D

## Charged up for a long-range



**Electrification and Softwarisation to drive c.USD 80bn of outsourced Auto ER&D opportunity**

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**3Cs - Cost, Capacity and Capability constraints facing Auto OEMs  
to trigger outsourcing wave**

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**Tata Technologies - a play on Electrification;  
KPIT - a play on Softwarisation opportunity;  
Initiate with BUY**

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Simultaneous transition towards EVs and SDVs is putting unprecedented constraints on Auto OMEs' cost, capacity and capability – all at once. This could trigger a multi-year outsourcing wave. This phase will be as much about offshoring as about outsourcing, in our view. Indian ESPs are well placed to gain share. A comparison of their recent growth trends with European counterparts indicates the share shift is already in motion. Tata Technologies and KPIT are the best bets to play this emerging theme. We initiate coverage on both with BUY.

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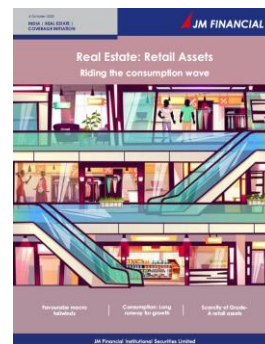
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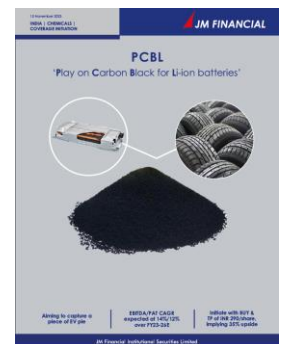
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# Auto ER&D: Charged up for a long-range

The automotive industry is undergoing a foundational shift. Electrification and “Softwarisation” of vehicles are two parallel threads underpinning this change. Among others, these will usher in changes to the engineering service providers’ (ESP) landscape. Today, just a tenth of c.USD 180bn (and rising) Auto ER&D spend is outsourced. The pie going to third party ESPs is even lower. Moreover, a majority of the outsourcing to ESPs is to European players, reflecting near-shoring bias. The dual transition (to EV and Software Defined Vehicle) is putting unprecedented constraints on cost, capacity and capability of OEMs, simultaneously. The constraints are exacerbated by the rise of Chinese EV players, which is threatening the hegemony of European OEMs. These constraints, typical drivers for outsourcing, should trigger an immutable rise in Auto ER&D outsourcing. We estimate that Electrification can drive USD 35bn of incremental outsourced auto ER&D spend over 2023-27E. “Softwarisation”, on the other hand, can translate into another USD 46bn of outsourced spend over the same period. India’s large engineering and digital talent, cost advantage and its growing relevance as a global R&D hub position it favourably to gain higher share of the outsourced pie. In fact, we believe the share shift is already in motion. The sharp uptick in Indian ESPs’ auto revenues post Covid, in contrast to subdued growth of their European counterparts, reflects this. While the step-up in OEMs’ ER&D spend will likely normalise by 2030, the offshoring trend it will trigger will outlast the investment cycle, paving the way for a multi-year growth runway for the Indian Auto ESPs.

Tata Technologies, with its full vehicle proposition and end-to-end EV capability is a play on the Electrification-led outsourcing theme. KPIT is a play on “Softwarisation” as it leverages on its middleware strength to entrench itself deeper in OEMs’ SDV programs. The structural nature of demand ahead should help sustain the seemingly elevated valuations, in our view. We initiate coverage on Tata Technologies (TATATECH IN; BUY; TP: INR 1,360) and KPIT (KPIT IN; BUY; TP: INR 1,830) with BUY, valuing both at 60x forward PER.

## Electrification and Softwarisation: USD 80bn opportunity

Electrification – transition to Battery/Plug-in Hybrid EV – and Softwarisation – shift to software defined vehicle – are two mega trends underpinning Auto OEMs’ R&D spend. IEA expects the number of EV models globally to double from the current 500 in the next few years. That, along with higher outsourcing of mid-cycle refresh of ICE models could drive USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E, per our estimate. Softwarisation, on the other hand, could increase OEMs’ software spend by 70% till 2030 to c.USD 43bn. We estimate outsourcing of downstream services, e.g., integration, maintenance and testing could translate into USD 46bn of opportunity over the next 5 years.

## Cost, Capacity and Capability: 3 C’s aligning

The dual shift is putting unprecedented constraints on OEMs. Cost of software in a car is already at c.USD 3000. It is estimated to increase to 50% of cars’ cost by 2030. Bill of material of an EV is anyway higher than ICE’s, raising the ownership cost of an EV. Price pressure from Tesla and Chinese players are further constraining OEMs’ budgets. Need to maintain both ICE and EV platforms is constraining OEMs’ economic capital. Shortage of software talent is draining their resource capacity. Rising complexity of software and OEMs’ limited experience in managing that is testing their capabilities in this space. These should trigger higher outsourcing – in both mechanical and embedded services. India ticks most boxes to gain share from EU players. That might already be underway.

## Tata Technologies: a play on Electrification theme

Tata Technologies is a pure-play ER&D services player with predominantly automotive focus (88% of services rev). Strength in traditional areas (e.g., Body engineering) and capabilities in full vehicle EV programs put it at a vantage position to benefit from the electrification trend. Its engagement with anchor clients’ (TML + JLR) EV programs and deep relationships with EV start-ups offer strong references to win clients/mine existing ones in the EV space. Empanelment with Airbus could drive non-auto services as well. We estimate 15% EPS CAGR over FY23-26E. Importantly, we believe earnings trajectory should improve over the medium term as drag from likely ramp-down in the Vinfast account recedes. We initiate coverage with a BUY and TP of INR 1,360, valuing the stock at 60x PER, implying 16% upside.

## KPIT: a play on the Softwarisation opportunity

KPIT is a 100% auto focused ER&D service provider. Its pivot in 2019 completely towards auto ER&D services reflects the company’s conviction in the opportunity size as well as its capability to capture that, in our view. KPIT is using its deep expertise in middleware, a core component of the SDV architecture, to enter into a OEMs’ SDV program. That gives it an opening into other associated areas of OEMs’ software spend. We, therefore, believe its recent growth – driven by middleware consulting – is just a precursor to the growth ahead. Existing relationship with leading global OEMs and early wins in SDV programs (Renault and Honda) lend long-term visibility. We estimate 24%/31% USD rev/EPs CAGR over FY23-26E. Such a strong earnings visibility should merit premium valuation. We initiate coverage with BUY and TP of INR 1,830, valuing it at 60x PER.

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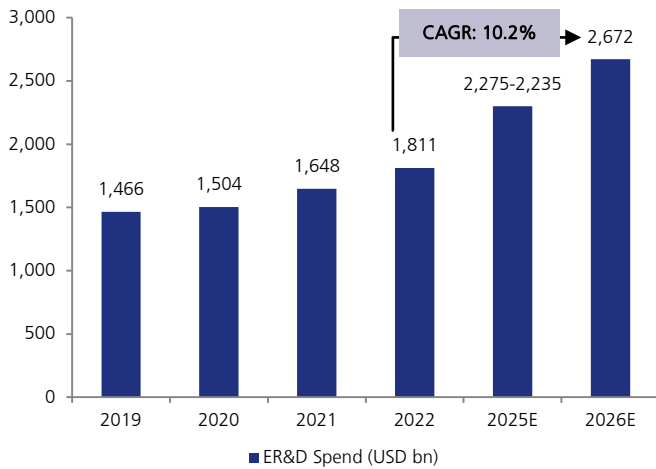
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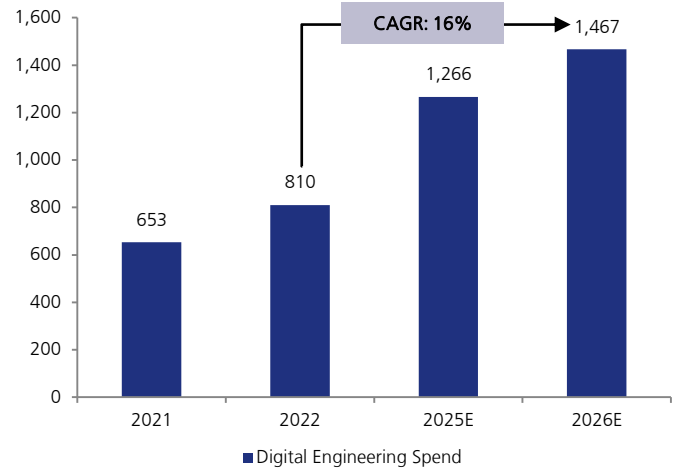
Focus charts

Exhibit 1. Global ER&D Spend (USD bn)



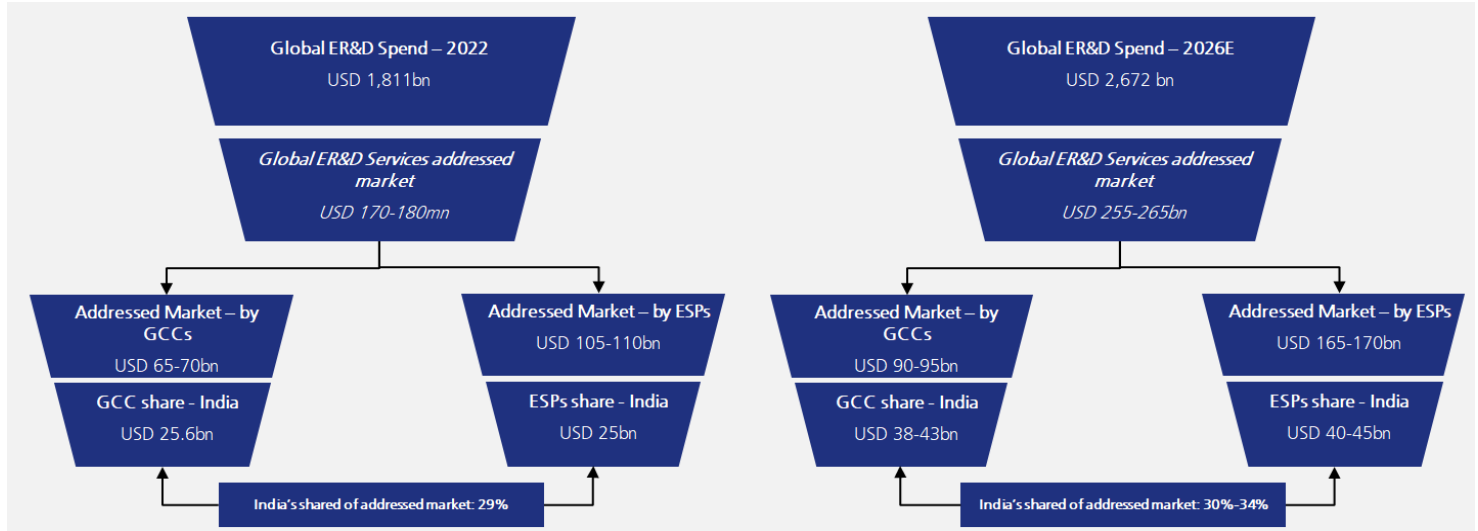
Source: Zinnov, JM Financial

Exhibit 2. Digital Engineering Spend (USD bn)



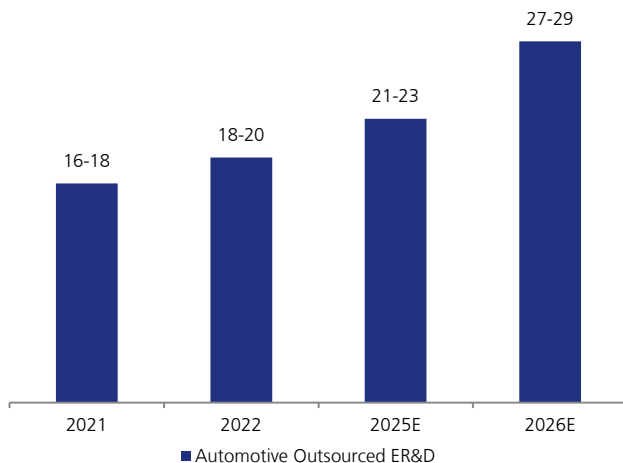
Source: Zinnov, JM Financial

Exhibit 3. Global ER&D Services addressed market



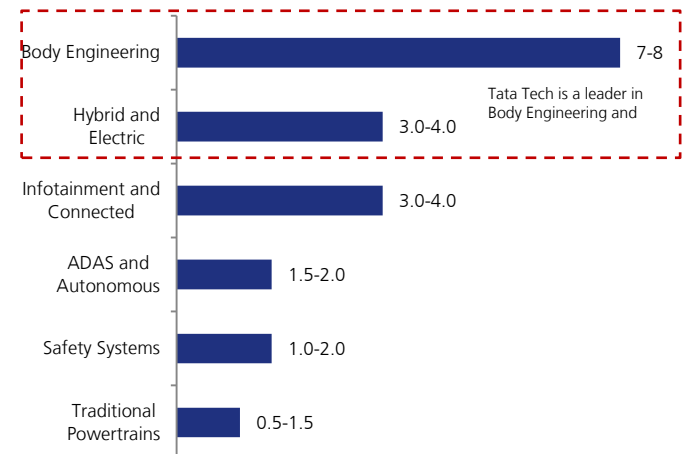
Source: Zinnov, JM Financial

Exhibit 4. Automotive Outsourced ER&D (USD bn)



Source: Zinnov, JM Financial

Exhibit 5. Outsourced Automotive ER&D sub-segments (USD bn)



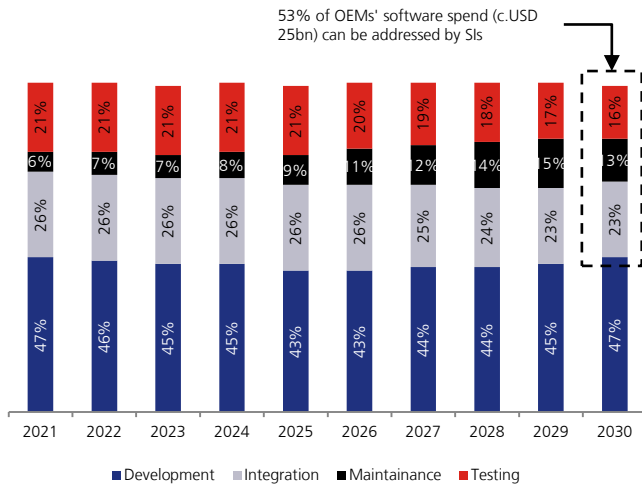
Source: Zinnov, JM Financial

**Exhibit 6. Softwarisation and Electrification present c.USD 80bn of outsourced Auto ER&D opportunity over next 5 years**

USD mn	2023E	2024E	2025E	2026E	2027E	Cumulative (2023-27E)
<b>A. Electrification</b>						
<b>EV</b>						
Body Engineering	2,036	2,224	2,430	2,654	2,900	12,244
Hybrid and Electric	2,691	3,172	3,738	4,407	5,194	19,202
<b>ICE</b>						
Body Engineering, Incremental	441	597	719	811	878	3,445
<b>Outsourced mechanical/mechatronics spend due to Electrification</b>	<b>5,167</b>	<b>5,993</b>	<b>6,887</b>	<b>7,872</b>	<b>8,972</b>	<b>34,891</b>
<b>B. Softwarisation</b>						
Outsourced software ER&D spend (Vehicle OS, Infotainment, Connected, ADAS)	7,716	8,725	9,783	10,123	10,306	46,653
<b>Total opportunity, Outsourced Auto ER&amp;D (A + B)</b>	<b>12,884</b>	<b>14,717</b>	<b>16,670</b>	<b>17,995</b>	<b>19,278</b>	<b>81,544</b>

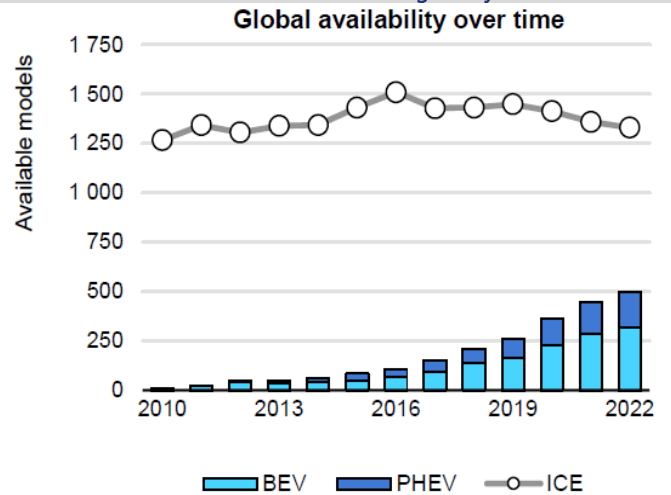
Source: JM Financial Estimates

**Exhibit 7. Break-down of automotive software development cost**



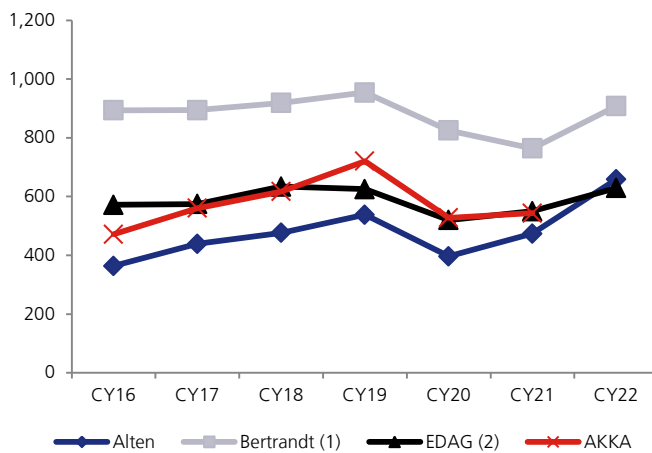
Source: Roland Berger, JM Financial

**Exhibit 8. Number of EV models available globally**



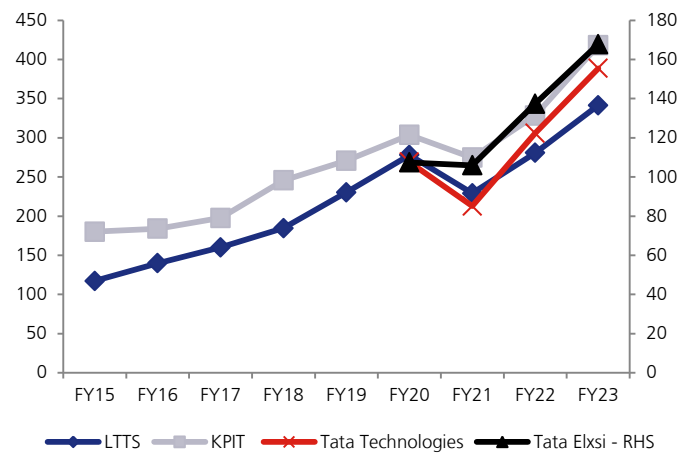
Source: IEA, JM Financial

**Exhibit 9. Automotive revenue, Select European ESPs (EUR mn)**



Source: Company, JM Financial

**Exhibit 10. Automotive revenue, Pure-play Indian ESPs (USD mn)**



Source: Company, JM Financial

**Exhibit 11. Valuation Comp: JM Financial ER&D coverage universe**

Company	CMP (INR)	Reco.	Target Multiple (x)	Target Price (INR)	USD revenue growth (%)			EPS			P/E			EV/EBIT			ROE		
					FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E
KPIT Tech	1,506	BUY	60	1,830	38.3	18.3	17.1	21.3	26.3	31.7	70.6	57.3	47.5	53.0	43.1	35.9	31.4	31.3	30.4
Tata Tech	1,172	BUY	60	1,360	12.3	13.1	14.7	17.8	20.1	23.4	66.0	58.4	50.1	55.5	46.7	39.8	24.2	25.1	24.7

Note: Valuation as of 8 Jan 2024. Source: JM Financial estimates

## Investment Summary

### ER&D Services is a large and underpenetrated opportunity

Global ER&D spend is upwards of USD 1.8tn. But only 9-10% of that is currently addressed (or outsourced). c.40% of the addressed opportunity is captured by Global Capability Centres (GCCs). Outsourcing penetration of third party ER&D services is just 5.9%. The share going to Indian ESPs is even lower at USD 25bn, representing 14% of addressed market or 1.4% of overall spend. This suggests there are multiple levers of growth for Indian ESPs, i.e., increase in global ER&D spend, higher outsourcing to ESPs and rising penetration of Indian ESPs. Unsurprisingly, Zinnov expects Indian ESPs to growth at 14-16% CAGR over 2022-26E, outpacing not only Indian GCCs but also global ESPs.

### Automotive ER&D: Riding the “ACES” wave

Automobile industry is the largest manufacturing-led ER&D vertical with USD 180bn ER&D spend. New age digital technologies, sustainability initiatives and regulatory push are driving OEMs to ramp up their R&D spend towards “ACES” – Autonomous, Connected, Electrical and Shared mobility. Like overall ER&D, outsourcing penetration in Auto ER&D Services is also relatively lower at 10-11% (including GCCs). Unlike IT Services, the top-5 Auto ESPs are Europe based, indicating most of the outsourcing is concentrated to local, near-shore players. That means offshoring penetration in Auto ER&D is likely even lower.

### Electrification: c.USD 35bn of outsourced Auto ER&D opportunity

Shift towards EV (Electrification) and software-defined-vehicle (Softwarisation) represent two parallel threads that are likely to drive higher outsourcing in Auto ER&D. We estimate that Electrification will drive USD 35bn of incremental outsourced ER&D over 2023-2027E. IEA expects number of EV model globally to double from current 500, driving USD 32bn incremental outsourced work, per our estimates. Additionally, incremental outsourcing in ICE models (mid-cycle refresh only) could add another USD 3.5bn to the opportunity.

### Softwarisation: c.47bn of outsourced Auto ER&D opportunity

Transition to software-defined-vehicle is as profound a shift for OEMs as Electrification. Industry estimates expect software spend by OEMs to increase by at least 70% by 2030. While the propensity to outsource development of these new-age software currently remains low, the downstream work (integration, testing etc.) could drive significant outsourced ER&D services demand, in our view. We estimate that outsourcing of these downstream tasks itself could drive USD 46bn of cumulative opportunity for ESPs (incremental: c.USD 15bn).

### Cost, Capacity and Capability: 3Cs aligning

Auto OEMs are facing simultaneous constraints on Cost, Capacity and Capability. Rising cost of software in a car (USD 3,000/car and rising), and pricing pressure from Tesla and Chinese EV players are putting significant pressure on traditional OEMs’ cost structure. Capacity constraint is coming from the need to maintain both ICE and EV platforms. Besides, already acute shortage of software talent in Western Europe is constraining their human capital. This is further accentuated by rising software complexity, challenging their development capabilities. These constraints, typical drivers of outsourcing, should trigger a multi-year outsourcing wave. While the step-up in OEMs’ ER&D spend due to ACES will likely normalise by 2030, the outsourcing wave should outlast the investment cycle, in our view.

### India: best placed to benefit from incremental outsourcing

India’s ER&D talent supply is likely to more than double from 1mn in 2021 to 2.2mn by 2030. Indian ESPs’ 50-70% lower revenue/employee vs. European ESPs reflects their cost advantage. Further, India is becoming a global ER&D hub for OEMs. These place India favourably to gain incremental share of outsourced Auto ER&D, in our view.

### Tata Technologies and KPIT are our pick to play these themes

KPIT is a play on Softwarisation. Tata Technologies is a play on Electrification. We believe Softwarisation and Electrification are two large but distinct opportunities. Our target multiple of 60x PER for both reflects this view. Our TP implies a USD revenue CAGR ask of 18-22% over FY23-33E to justify our target multiple. This appears achievable, given structural demand ahead. That should help sustain the valuations. We initiate coverage on Tata Technologies (TATATECH IN; BUY; TP: INR 1,360) and KPIT (KPIT IN; BUY; TP: INR 1,830) with BUY.

Traditional areas such as Body Engineering and Hybrid & Electric represent 55-60% of outsourced spend. This could grow as OEMs’ core focus shifts to new tech

IEA estimates that a number of 500 new EV models could be launched in the next few years, before stabilising

53% of OEMs’ automotive software spend is towards integration, testing and maintenance, which can be addressed by ESPs

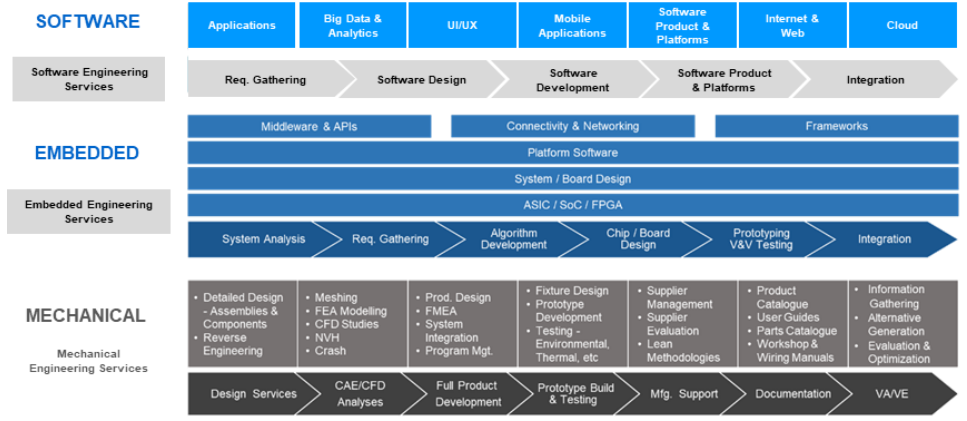
Number of EV platforms globally is likely to increase from 53 currently to 96 by 2030 even as ICE platforms are operational

Indian ESPs’ auto revenue growth has pulled ahead of their European counterpart post Covid, indicating share shift might already be in motion

## Industry overview: The next growth engine

Engineering research and development (ER&D) services is defined as the set of services offered to enterprises to help them develop their own products for their end-customers through software development or a manufacturing process. ER&D services are broadly broken down into software, embedded, and mechanical engineering services as shown below.

**Exhibit 12. Break-up of ER&D services**



Source: Zinnov, Financial

## Global ER&D: Buoyed by Digital Engineering

Global ER&D spend is estimated at USD 1,811bn in 2022, according to Zinnov, an industry research firm. Rapid technological changes, evolving industry standards, changing client preferences and regulatory push towards carbon neutral emission norms are characterising the engineering services technology solutions industry. These factors underpin the resilient spend on ER&D despite uncertain macro factors. Global ER&D spending grew 10% YoY in 2022 and is likely to grow at a CAGR of 10% over 2022-2026, as per Zinnov’s estimates.

**Exhibit 13. Structural changes underpin ER&D long-term growth prospects**

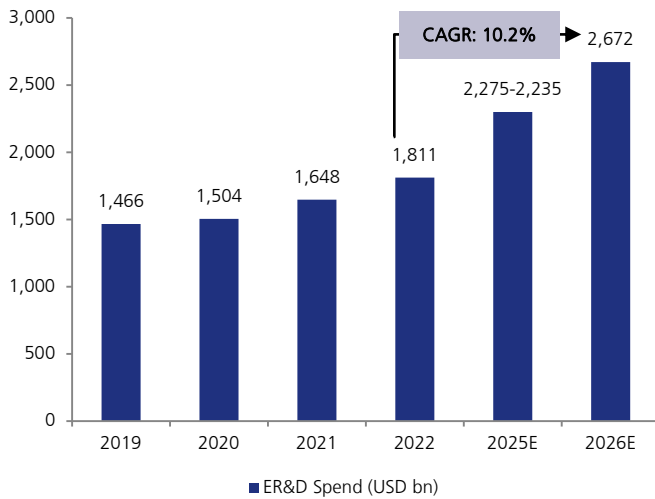
Drivers	Description
Sustainability	Sustainability is driving higher focus on energy-efficient product design and clean energy transition for operations across industries. As countries across the globe announce phasing out of Internal Combustion Engine (ICE) powered engines, electric powered vehicle is likely to replace ICE vehicles
Shrinking Innovation Cycles	Product lifespans are shortening and innovation cycles are shrinking as consumers demand evolve. During the period 2022 to 2026, automakers are projected to launch an average of 61 new models annually. This represents a 50% increase compared to the average number of new models introduced in the preceding two decades.
Digital Thread	Digital technologies create value by connecting machines through a ‘Digital Thread’ across the value chain—making it possible to generate, securely organize, and draw insights from disparate sources of data. Integration of Product lifecycle management (“PLM”), manufacturing execution systems (“MES”), and enterprise resource planning (“ERP”) is key for any manufacturing enterprise to drive insights from production to sale and improve efficiencies. The need for ‘Digital Thread’ is further accentuated by macro factors like supply chain disruptions, capital re-allocation needs owing to demand swings, reconfiguration of management and manufacturing flows due to remote work and increasing focus on environmental impact of manufacturing.
Growing Product Complexity	Higher penetration of digital technologies in products across industries is increasing the product complexity. Digital technology has percolated the entire value chain - from production to after-sales services. This is further driving higher demand for ER&D services

Source: Zinnov, JM Financial

Within the overall ER&D spend, growth will likely be led by digital engineering. Digital engineering ER&D spend is pegged at USD 810bn (45% of overall ER&D spend) and includes new age technologies such as Internet of Things (“IoT”), blockchain, 5G, AR/VR, cloud engineering, digital thread initiatives, advanced analytics, embedded engineering, and AI/ML. Zinnov estimates digital technologies to grow ahead of overall ER&D spend at 16% CAGR over 2022-2026.

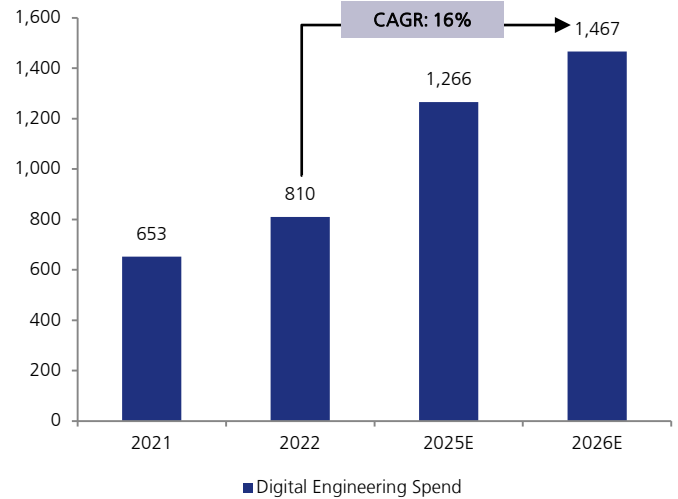
ER&D spend on digital technologies (45% of overall spend) is likely to grow at 1.5x overall ER&D spend

**Exhibit 14. Global ER&D spend likely to sustain healthy growth as...**  
Global ER&D Spend (USD bn)



Source: Zinnov, JM Financial

**Exhibit 15. ...technology adoption drives digital engineering spend**  
Digital Engineering Spend (USD bn)

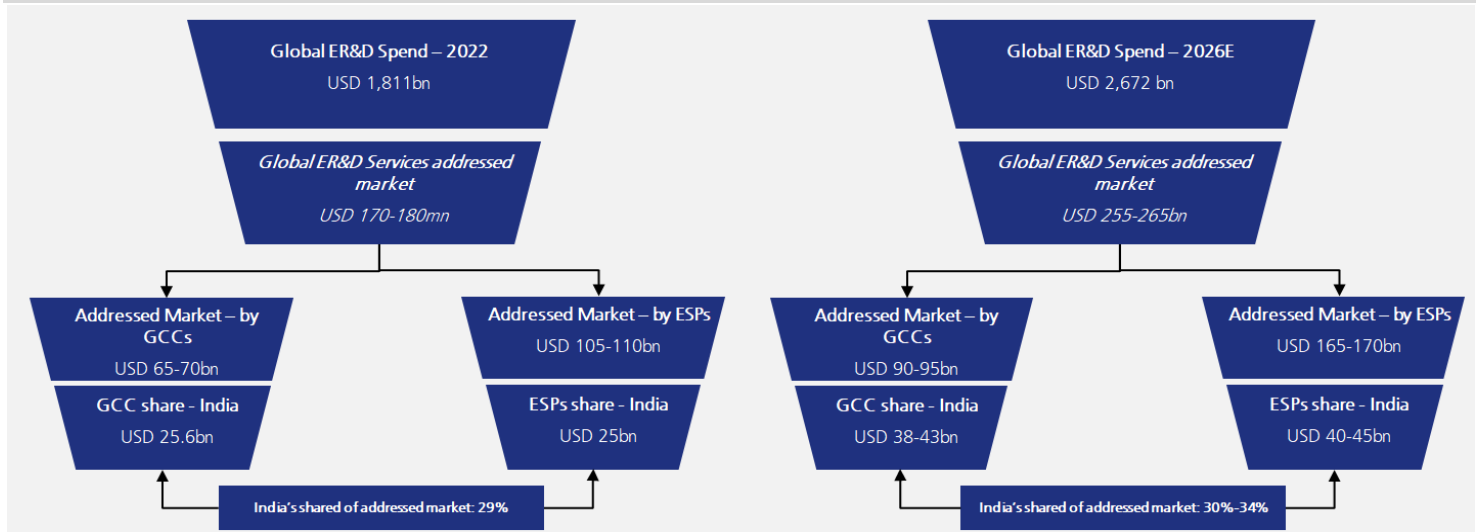


Source: Zinnov, JM Financial

**Global ER&D Services addressed market: Large and under-penetrated**

Global ER&D Services addressed market refers to the spend that is either offshored by OEMs to their captive centres (Global Capabilities Centres or GCC) or outsourced to third party Engineering Services Providers (ESPs). Global ER&D Services addressed market remains under-penetrated with only USD 170bn-180bn or 9-10% of overall ER&D spend currently catered by GCCs or ESPs. This is estimated to grow at 9-10% CAGR and reach USD 255bn-265bn by 2026.

**Exhibit 16. Global ER&D Services addressed market**



Source: Zinnov, JM Financial

## Exhibit 17. ER&amp;D spend - Global addressed market (GAM)

USD bn	2022			2026E			CAGR (2022-2026)			Incremental opportunity - GAM
	Low	High	Median	Low	High	Median	Low	High	Median	
Global Addressed market	170	180	175	255	265	260	10.7%	10.2%	10.4%	85
<b>Global Capability Centres (Captives)</b>	65	70	67.5	90	95	92.5	8.5%	7.9%	8.2%	25
- India			25.6	38	43	40.5	10.4%	13.8%	12.2%	14.9
- Other Offshore/Near-shore centres			41.9	52	52	52	5.5%	5.5%	5.5%	10.1
<b>Global ESPs</b>	105	110	107.5	165	170	167.5	12.0%	11.5%	11.7%	60
- India			25	40	45	42.5	12.5%	15.8%	14.2%	17.5
- Other Offshore/Near-shore centres			82.5	125	125	125	10.9%	10.9%	10.9%	42.5
<b>Automotive</b>										
Outsourced ER&D	18	20	19	27	29	28	10.7%	9.7%	10.2%	9

Source: Zinnov, JM Financial

## Outsourcing penetration set to increase

Within the addressed market, third party ESPs have a majority share and account for USD 105bn-110bn (61%-62%). ESPs' opportunity is estimated to grow at a faster pace as well (11-12% CAGR over 2022 vs. 8-9% for GCC) and reach USD 165bn-170bn by 2026, as per Zinnov. In fact, ESPs are projected to capture c.71% of incremental ER&D Services addressed market over 2022-2026. Apart from cost saving, flexibility (in terms of variable demand) and scalability are key advantages that ESPs offer vis-à-vis GCCs.

## India likely to be a key beneficiary

India is a favoured offshore ER&D services destination for both GCCs and third party ESPs. Total Global ER&D Services addressable market addressed through India stands at c.USD 51bn (29% of addressable market); of this, GCCs in India account for USD 26bn while Indian ESPs account for USD 25bn. Indian ESPs accounts for almost one fourth of ER&D outsourced spend. Further, 85% of top-50 ER&D spenders have GCCs in India, underlining India's strong structural advantages.

Of the overall share of ESPs, western European service providers account for the largest share of the ER&D outsourced market (approximately 35%) followed by Indian service providers (approximately 24%). In the past four years, the outsourced market of Indian service providers grew at a CAGR of ~14%-16%, which is more than twice the growth rate of the Western European service providers.

## Exhibit 18. Penetration levels

USD bn	ER&D Spend*	2022		2026E	
		% of Total ER&D spend	% of Addressable spend	% of Total ER&D spend	% of Addressable spend
Global ER&D Spend	1,811	100.0%		2,672	100.0%
Global Addressed market	175	9.7%	100.0%	260	9.7%
<b>Global Capability Centres (Captives)</b>	<b>67.5</b>	<b>3.7%</b>	<b>38.6%</b>	<b>92.5</b>	<b>3.5%</b>
- India	25.6	1.4%	14.6%	40.5	1.5%
- Other Offshore/Near-shore centres	41.9	2.3%	23.9%	52	1.9%
<b>Global ESPs</b>	<b>107.5</b>	<b>5.9%</b>	<b>61.4%</b>	<b>167.5</b>	<b>6.3%</b>
- India	25	1.4%	14.3%	42.5	1.6%
- Other Offshore/Near-shore centres	82.5	4.6%	47.1%	125	4.7%
<b>Automotive</b>					
Outsourced ER&D	19	1.0%	10.9%	28	1.0%

Note: Median ER&amp;D spend; Source: Zinnov, JM Financial

Higher digital thread and increasing software component in end-products are playing into India’s strength. These trends not only increase the offshorability of such product development and services, they raise India’s attractiveness given availability of a large pool of digital talent in the country.

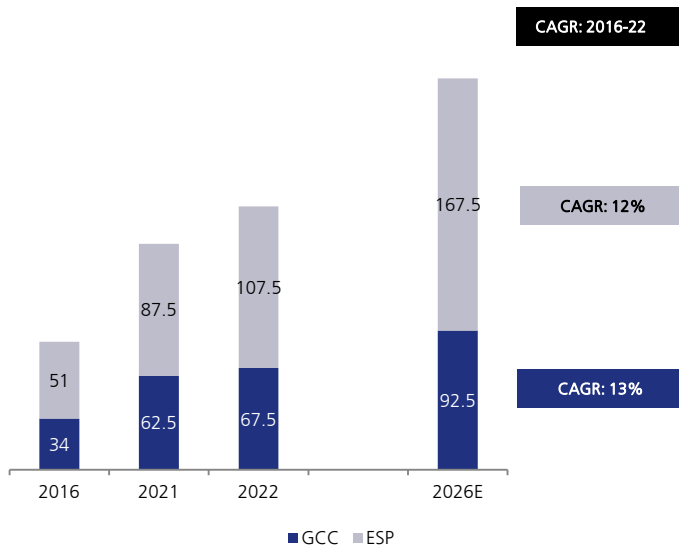
**Exhibit 19. India and Eastern Europe have strong structural advantages and have become preferred locations for outsourcing**

	India	Eastern Europe	Western Europe	North America
Total Spend -2022(USD bn)	25	8	37	16
Characteristics	Large IT services & pure-play ER&D service providers	Software engineering for ISV clients	Large key vertical focused service providers	Large onshore staffing organizations
Focus Verticals	Diversified	Software / internet, Telecom, Auto	Auto, Aerospace, Energy	Aerospace, Auto, Software, Telecom
Client Segments	North American and European end markets	Near shore outsourcing for European and US companies	Local European clients for on-shore needs and staffing	Local R&D units of large companies
Advantages	Availability of next generation digital talent pool	Emergence as a strong near shore presence due to skilled workforce, favourable ecosystem and costs to build scalable teams	Onshore presence for manufacturing - heavy verticals	Vibrant Tech Start-up Ecosystem
Average Billing Rate (USD/FTE/Annum)	35-45K	60-70K	90-110K	90-110K

Source: Zinnov, JM Financial; Note: Currency conversion for USD to INR is calculated using the value of 30<sup>th</sup> Jun 2023 i.e. 1USD= INR 82.09

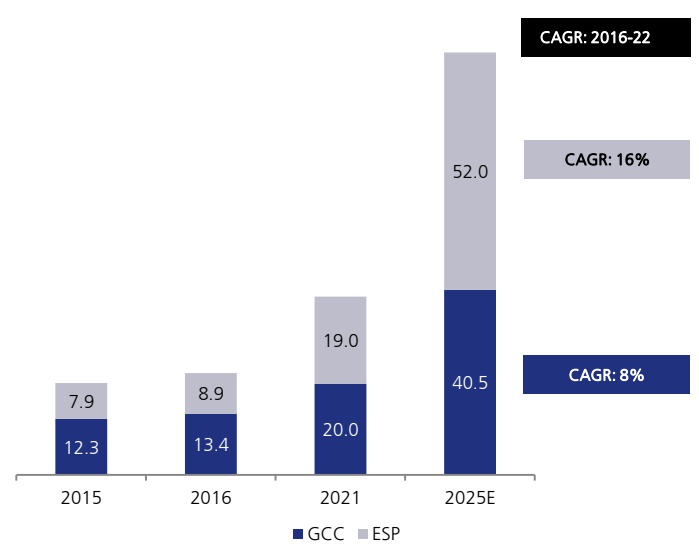
Not surprisingly, Indian ESP market is expected to grow at a CAGR rate of 14-17% and reach USD 40bn-45bn by 2026, taking India’s share of overall ESP market from 23% in 2022 to 24% by 2026. This shift is already in motion. ER&D exports out of India-based ESPs have outpaced not only that of India’s GCCs but also that of global ESPs.

**Exhibit 20. Indian ESPs have not only outgrown India’s GCC but... ER&D export, Global GCC and ESPs (USD bn)**



Source: Zinnov, JM Financial

**Exhibit 21. ... also global ESPs over 2016-22, reflecting share gains ER&D exports, Indian GCCs and ESPs (USD bn)**



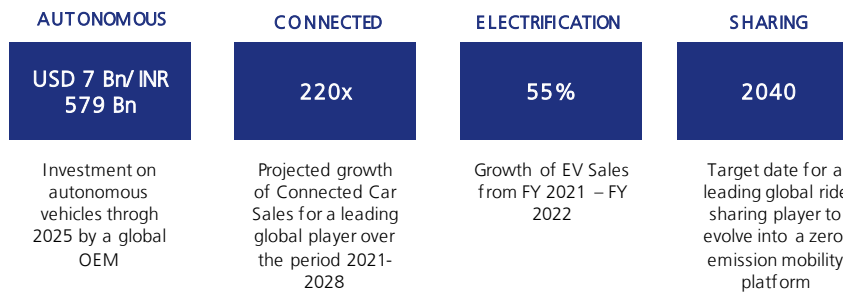
Source: Zinnov, JM Financial

## ER&D in Automobiles: Riding the “ACES” wave

Automobile industry is the largest manufacturing-led ER&D vertical with overall ER&D spend currently pegged at USD 180bn (INR 14,758bn). The automobile vertical constitutes 21% of manufacturing led-ER&D spend and 10% of the overall ER&D spend globally. ER&D spend in automobiles is witnessing a shift from traditional R&D spend (lean manufacturing, fuel efficiency material science etc.) to electrification, autonomous, automated production and Factory 4.0.

New age digital technologies, sustainability initiatives and regulatory push is driving OEMs to ramp up their R&D spend towards “ACES” – Autonomous, Connected, Electrical and Shared mobility. As these new technologies disrupt the automobile industry, it is not only increasing the requirement for specialised ER&D support, it is also making the ER&D services (especially on the digital engineering side) more offshorable. This is likely to drive higher outsourcing penetration for the automotive vertical.

### Exhibit 22. Key highlights of ACES



Source: Zinnov, JM Financial

### Exhibit 23. Initiatives taken under ACES

Focus area	Growth Driver	Key Initiatives
Autonomous	Automotive players are keen to provide advanced safety and autonomous driving with environmental sensor technologies. This includes AI/ML to provide enhanced levels of vehicle motion control.	<p><b>Ford:</b> Plans to invest USD 7bn 2021-2030 in autonomous technology development</p> <p><b>Toyota:</b> Invested USD 28 Bn in launching a company (TRI AD) that builds software for self driving cars</p> <p><b>GM:</b> invested an excess of USD 3 5 Bn (INR 0 29 Tn) on its self-driving technology unit Cruise</p>
Connected	Bi-directional connectivity is becoming one of the key differentiators in PVs now. The connectivity in a vehicle enables infotainment, safety, roadside assistance, diagnostics efficiency, navigation, and payments	<p><b>Volkswagen:</b> Allocated c.USD 35 B from 2021-2025 towards digitization and self driving cars</p> <p><b>Stellantis:</b> Plans to invest USD 33 Bn+ over 2021-2025 to make technological advancements in software and electrification</p> <p><b>Toyota:</b> Invested USD 500 M in the Telecom provider KDDI Corp to strengthen connected car R&amp;D</p>
Electrification	Electrification has already picked up pace with sale of electric vehicles has increased by more than 55% annually in 2022 vs 2021. Focuses to meet carbon targets and incentivization policies by governments across the globe are further accelerating the transition towards electric vehicles.	<p><b>Volkswagen:</b> Announced USD 193bn in EVs and Digital Technologies over 2023-2028.</p> <p><b>Stellantis:</b> Committed USD 30bn+ over electrification and software development over 2023-2030</p> <p><b>Volvo:</b> Committed to transition its entire model line up to fully electric vehicles by 2030</p> <p><b>Nissan:</b> To invest USD 17.6 bn over 2021-26 for its long term electric vehicle strategy</p> <p><b>JLR:</b> Plans to invest USD 3.5 bn every year, to take all Jaguars and 60% of Land Rovers electric by 2030</p>
Shared Mobility	Sharing of transportation services and resources among users has gained importance over the last few years with the growth of the mobility industry.	<p><b>Toyota</b> (along with Denso and Softbank’s Vision Fund) invested USD 1 Bn in Uber’s self-driving car business</p>

Source: Zinnov, JM Financial

### Exhibit 24. Regulatory push by different countries towards alternative fuel

Country	Regulation
USA	The president’s economic plan has set a 2030 target of electric vehicles comprising 50% of all vehicles sold in the United States
European Union	European union has set a target to achieve climate neutrality in EU by 2050, including the intermediate target of an at least 55% net reduction in greenhouse gas emissions by 2030. EU member states have also agreed on the EU’s original proposal to reach zero emission road mobility by 2035
India	The Government of India intends to have EV sales penetration of 30% for private cars, 70% for commercial vehicles, 40% for buses, and 80% for two and three wheelers by 2030
China	China is aiming to have carbon dioxide emissions peak before 2030 and achieve carbon neutrality before 2060

Source: Zinnov, JM Financial

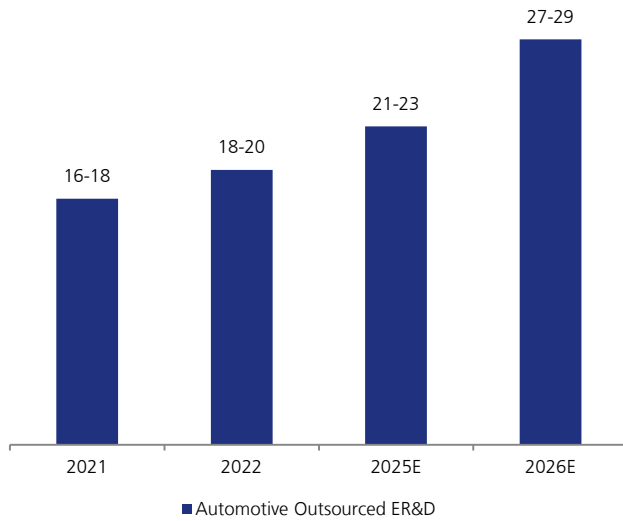
## Automotive Outsourced ER&D Market

The automotive outsourced ER&D market is pegged at USD 18bn-20bn (INR 1,478bn-1,642bn) in 2022 and constitutes 20% of the overall outsourced ER&D market (Source: Zinnov). Outsourcing penetration in automotive ER&D is similar to overall ER&D spend. Zinnov expects outsourced Auto ER&D to grow from USD 18bn-20bn currently to USD 27bn-29bn by 2026E, implying an incremental annual opportunity of USD 9bn-10bn.

Rising digitization in the automotive industry is driving higher demand for technology enabled skills, widening the skill gap for OEMs who have traditionally possessed ICE-based skill gap. ESPs’ access to large digital-tech enabled talent pool (in India and Eastern Europe) and ability to scale engineering teams for automotive clients is likely to translate into an opportunity to take higher wallet share of automotive ER&D spend from supply constrained automakers.

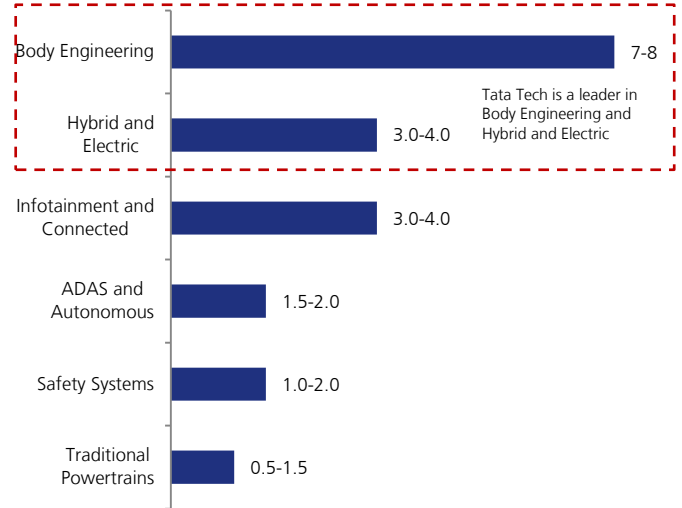
Alternate propulsion engines, e.g., hybrid and electric mobility is likely to drive higher outsourcing in the automotive sector, with OEMs looking to work with ESPs having full body EV capabilities.

**Exhibit 25. Increase outsourcing in Auto ER&D will likely be led by...**  
Automotive Outsourced ER&D (USD bn)



Source: Zinnov, JM Financial

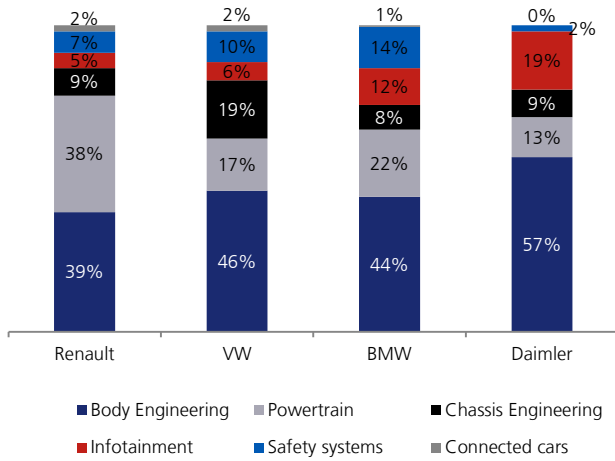
**Exhibit 26. ...Electrification while Body Engineering will remain key**  
Outsourced Automotive ER&R market, by sub-segments (USD bn)



Source: Zinnov, JM Financial

Besides, as OEMs sharpen their focus on ACES initiatives, they seek to outsource body engineering segments completely to third-party service providers. Interestingly, almost two-third of OEMs outsourced work comprises traditional spend areas, e.g., body engineering, chassis engineering, powertrain etc. Given these are more mature and commoditised services, naturally the propensity to outsource these spend areas are significantly higher as compared to the latest technologies. As we will discuss in greater detail in the next section of this report, we believe the outsourcing in the traditional mechanical/mechatronics segment will rise further as OEMs balance their investment across traditional and new-age initiatives.

**Exhibit 27. OEMs tend to outsource non-core components more...**  
 Top-4 ER&D outsourcer, by segment (2017)



Source: Zinnov, JM Financial

**Exhibit 28. ...while core software is likely to remain in-house**  
 Propensity to outsource automotive ER&D component

Segment	Propensity to outsource	Key sub-segments outsourced
Body Engineering	●	Body Electronics, Body Interior, Interior Exterior Development, BIW
Powertrain	●	Engine Systems, Hybrid Electric Vehicle, Diesel Engine, Drivetrain systems
Chassis Engineering	●	Braking Systems, Steering systems, suspension systems, Chassis sensors
Infotainment	●	HMI, Instrument Clusters, Connectivity systems, Navigation systems
Safety Systems	●	ADAS, Passive & Active Safety systems, Intelligent Parking Assist
Autonomous/Connected	●	RADAR, Adaptive Cruise Control, Collision Warning, Vehicle & Asset tracking

Source: Zinnov, JM Financial

## “Softwarisation” and Electrification: Two mega trends

While ACES is the popular industry acronym representing the factors driving incremental ER&D spend, we identify softwarisation and electrification as two distinct threads that will drive incremental services demand. From an ER&D services perspective, the embedded ER&D work associated with software defined vehicle (including Vehicle OS, middleware, virtualisation, verification, FOTA/SOTA, etc.) is included in the softwarisation opportunity. The more traditional mechanical/mechatronics tasks (Body, Chassis, drivetrains etc.), needed for both EVs and ICE are included in the electrification opportunities. One common investor argument has been that players with higher exposure to embedded software have a much bigger opportunity ahead of them versus players with larger mechanical ER&D footprint. We differ. We believe that, from an outsourced Auto ER&D demand perspective, both embedded software (Softwarisation) and mechanical (Electrification) present large but distinct opportunities for service providers. We estimate that Softwarisation can lead to incremental outsourcing demand of USD 47bn over 2023-2027. Electrification, on the other hand, can generate incremental outsourced Auto ER&D services demand of USD 35bn cumulatively over the same period. We discuss these two opportunities in greater detail below.

Our estimate of outsourcing opportunity may not be comparable to Zinnov’s estimate mentioned in Exhibit 25

### Exhibit 29. Softwarisation and Electrification are two large but distinct outsourced Auto ER&D opportunities

USD mn	2023E	2024E	2025E	2026E	2027E	Cumulative (2023-27E)
<b>A. Electrification</b>						
<b>EV</b>						
Body Engineering	2,036	2,224	2,430	2,654	2,900	12,244
Hybrid and Electric	2,691	3,172	3,738	4,407	5,194	19,202
<b>ICE</b>						
Body Engineering, Incremental	441	597	719	811	878	3,445
<b>Outsourced mechanical/mechatronics spend due to Electrification</b>	<b>5,167</b>	<b>5,993</b>	<b>6,887</b>	<b>7,872</b>	<b>8,972</b>	<b>34,891</b>
<b>B. Softwarisation</b>						
Outsourced software ER&D spend (Infotainment, Connected, ADAS, Safety)	7,716	8,725	9,783	10,123	10,306	46,653
<b>Total opportunity, Outsourced Auto ER&amp;D (A + B)</b>	<b>12,884</b>	<b>14,717</b>	<b>16,670</b>	<b>17,995</b>	<b>19,278</b>	<b>81,544</b>

Source: JM Financial Estimates

## Softwarisation

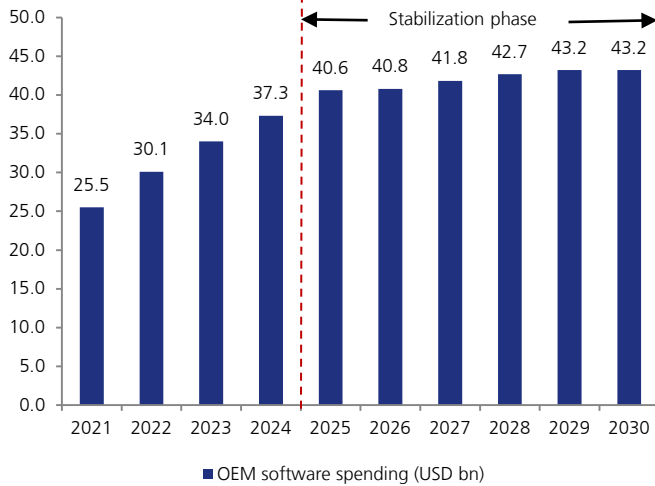
Software defined vehicle represents a profound shift in the way cars are designed. In an SDV, cars are built around software instead of integrating software into a car. Softwarization or putting software at the core will drive significant increase in software R&D budgets of OEMs over the next few years. Roland Berger, a consultancy, estimates that the necessary software spend in automotive industry will rise by 70% over 2021-30 and reach USD 43bn by 2030. McKinsey, another consultancy, estimates overall software development spend in the Auto industry will reach USD 84bn by 2030. While the propensity to outsource development of these new-age software currently remains low, the downstream work (integration, testing etc.) could drive significant outsourced ER&D services demand, in our view.

### Exhibit 30. Annual Software R&D spend of traditional OEMs is estimated to be USD 1bn-3bn

OEM	2021 Software R&D Estimate <sup>1</sup>	Approximate Per Vehicle Cost	Estimated Software Staffing Commitment
BMW	\$1-\$1.5 billion	\$3,000	3,000-5,000
Ford	\$1.5-\$1.75 billion	\$1,500	7,000+
GM	\$1.5-\$1.75 billion	\$1,000	3,000 new between 2020 and 2021
Mercedes-Benz	\$1.3-\$1.7 billion	\$3,000	4,000-7,000
Toyota	\$3.5-\$4 billion	\$1,100	18,000 across Toyota and all subsidiaries
Volkswagen	\$3-\$3.5 billion	\$1,750	10,000+ by 2025

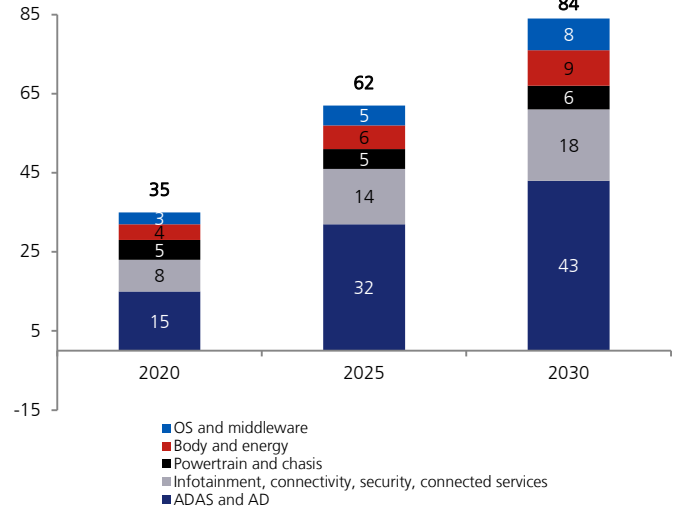
Source: SBD, JM Financial

**Exhibit 31. Roland Berger estimates that spend on automotive software, even conservatively, could rise by 70% to USD 43bn**  
OEM automotive software spending forecast, 2021-30



Source: Roland Berger, JM Financial

**Exhibit 32. Mckinsey pegs the overall automotive software market size at USD 84bn by 2030**  
Breakdown of software development effort, by domain (USD bn)



Source: Mckinsey, JM Financial

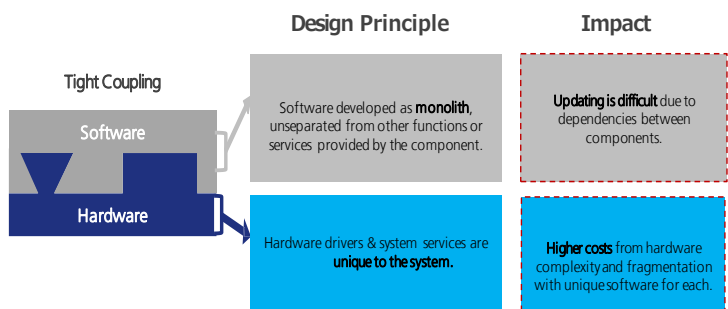
**Software defined vehicle: Demystified**

Embedded software is not new to a car. Autosar (AUTomotive Open System Architecture), an industry alliance on standardization of in-vehicle software applications and Electronic Control Units (ECU), has existed for over two decades. However, those earlier in-vehicle applications were tightly coupled with hardware in what we can call a hardware-defined vehicle (HDV). In HDVs, the software was written on the system-on-chip components of a specific hardware, which was sourced from various tier-1s as a “blackbox”. Think of an Anti-lock Braking System (ABS) of a car. The sensor and the software that make ABS work are very specific to the braking module of a car. This ABS capability – sensor, system-on-chip, software – would typically be housed in an ECU that will be tightly coupled with the braking hardware. Similarly, there will be multiple ECUs in the car, each tightly coupled with a specific hardware. Such a distributed Electrical and Electronic (E/E) architecture of an HDV has resulted in over 100 ECUs within a car. Among other things, the key challenge this architecture poses is lack of OEMs’ control over software as different software/ECUs are provided by different component providers. This makes software reusability and scalability (across different models) as well as their updates, especially over-the-air challenging.

The transition from tight coupling to light coupling is the ethos of a software defined vehicle. Light coupling would mean introduction of a hardware abstraction and middleware layer. The abstraction layer will allow centralisation of ECUs and development of software application independent of hardware. Apart from a central/zonal E/E architecture, an SDV also requires a High-Performance Computer (HPC), high-performance microprocessors/ microcontrollers and a powerful software platform called Vehicle OS.

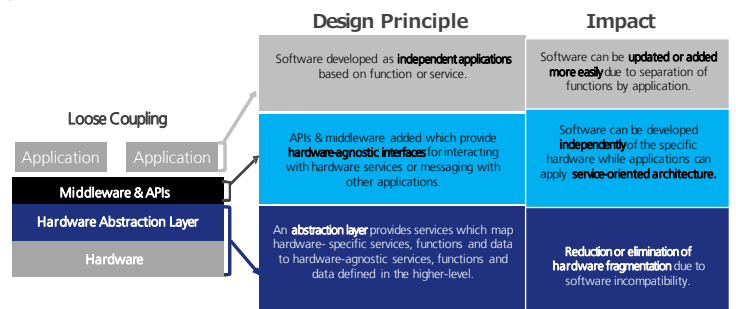
A centralised E/E architecture would require High-Performance Computer (HPC) in the vehicle to allow more advanced computing “at-the-edge”, in this case the car

**Exhibit 33. Tight coupling in a Hardware-defined vehicle makes software less reusable/scalable across models/variants**



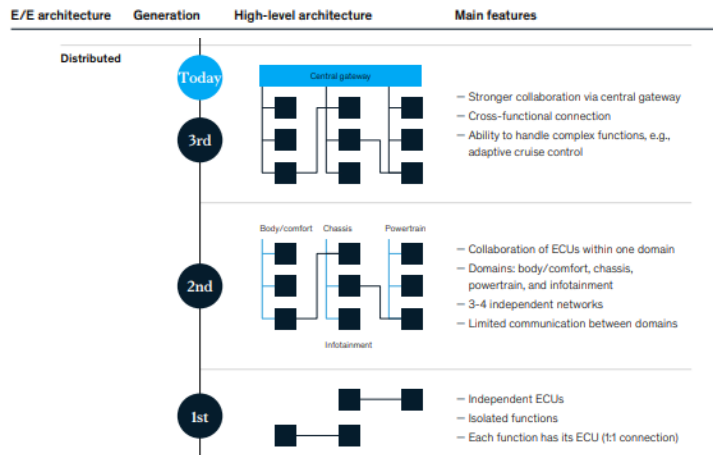
Source: SDB, JM Financial

**Exhibit 34. Loose coupling in an SDV allows applications to be built/reused/ updated independent of the hardware**



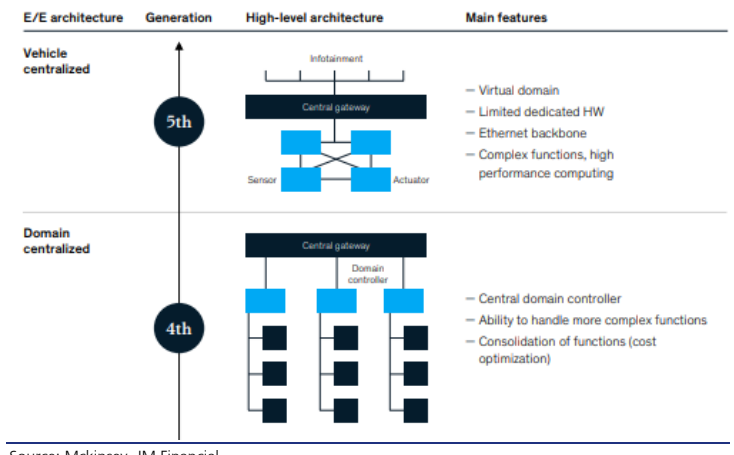
Source: SDB, JM Financial

**Exhibit 35. Loose coupling will allow current distributed E/E...  
Current distributed E/E architecture in a vehicle**



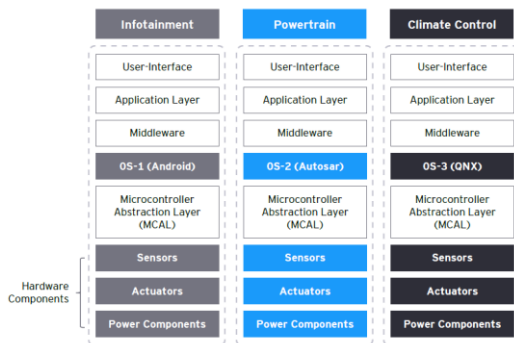
Source: Mckinsey, JM Financial

**Exhibit 36. ...architecture to evolve into a centralised one  
Future domain/centralised E/E architecture in an SDV**



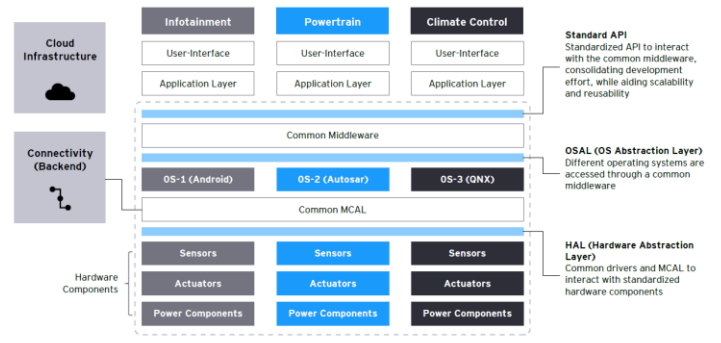
Source: Mckinsey, JM Financial

**Exhibit 37. A centralised E/E architecture will enable the  
transformation of current monolithic embedded software stack...  
Current vehicle software stack, monolithic and coupled**



Source: EY, JM Financial

**Exhibit 38. ... into a standardized platform through abstraction layers  
so that applications can be built independent of the H/W  
Future vehicle software platform, integrated and de-coupled**



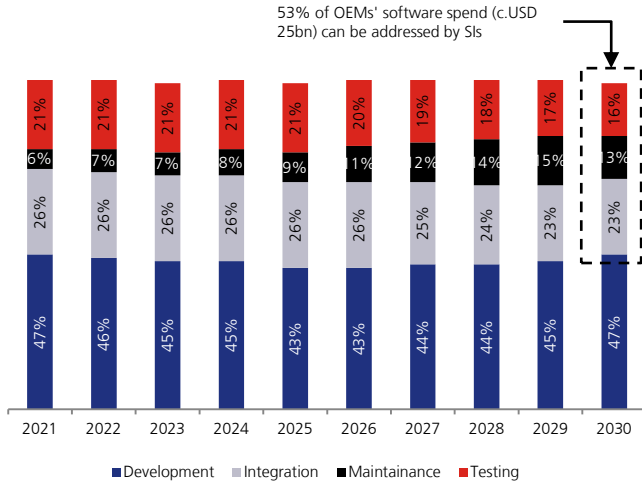
Source: EY, JM Financial

Most OEMs consider Vehicle OS as core areas of their differentiation and are trying to assume control and responsibility of the Vehicle OS used. After all, the differentiating software that will run on top of this Vehicle OS is only as capable as the underlying services and APIs (offered by the Vehicle OS) that enable them. Mercedes, for example, is building its own base software and middleware MB.OS. Volkswagen Group created a software division called CARIAD, which provides a scalable stack consisting of the software platform VW.os, a unified electronic architecture connecting to the VW automotive cloud.

**Downstream services: Opportunity for system integrators (SIs)**

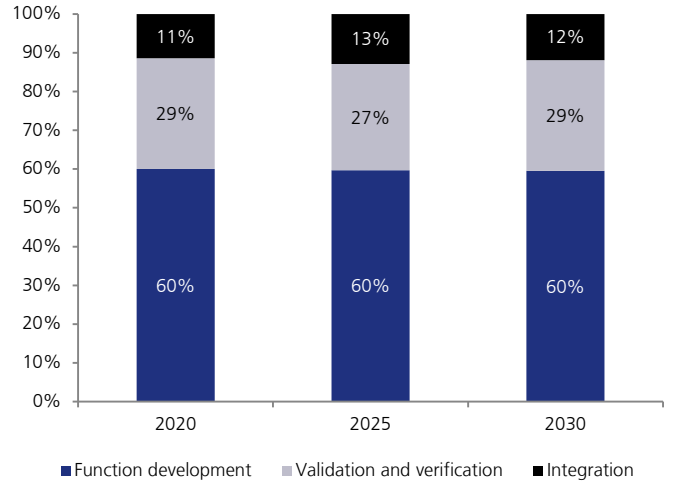
Development of the core platform is just the first step in the overall automotive software development effort. Subsequent efforts would include customisation for a specific vehicle platform, validation, verification and integration (especially in case of safety systems, autonomous driving). Besides, centralised E/E architecture, vehicle connectivity, HPC, edge computing and various applications in an SDV will entail significant integration, testing and maintenance work across modules. These areas are likely to constitute 53% of OEMs' software budgets by 2030, as per Roland Berger. Even though the development work is likely to stay with OEMs or their technology partners, associated downstream services (testing, integrations etc.) is the opportunity addressable by domain specific SIs, in our view. KPIT, with its middleware capabilities and early wins in SDV from leading OEMs (Renault and Honda), is well positioned to capture this.

**Exhibit 39. As per various industry estimates, downstream services...**  
Break-down of automotive software development cost



Source: Roland Berger, JM Financial

**Exhibit 40. ... could constitute 40-50% of overall software spend**  
Split of automotive software cost, by type of work



Source: Mckinsey, JM Financial

**Outsourced Auto ER&D opportunity size from Softwarisation**

We estimate that softwarisation can drive USD 46.7bn of cumulative outsourcing demand over 2023-27E, implying an incremental annual opportunity of c.USD 9bn. We have used total projected spend on automotive software (as per Roland Berger) and current outsourced software ER&D spend (as per Zinnov) as base to forecast the opportunity size.

According to Zinnov, outsourced spend on embedded automotive software such as Infotainment, ADAS, safety systems was USD 6.75bn in 2022. That is 41.5% of the total software development spend on downstream services such as integration, testing and maintenance (as estimated by Roland Berger). We have applied a gradually improving outsourcing penetration to the downstream software spend. Note, we assume that core product development work will remain either in-house to with OEMs' tech partners.

**Exhibit 41. 41.5% of downstream automotive software spend is currently outsourced**

2022	USD mn
Current outsourced spend towards:	
- Infotainment and connected	3,500
- ADAS and Autonomous	1,750
- Safety Systems	1,500
<b>Total outsourced spend towards automotive software</b>	<b>6,750</b>
Total OEM automotive software spend on downstream services	16,254
<b>% of downstream automotive software spend outsourced</b>	<b>41.5%</b>

Source: Zinnov, Roland Berger, JM Financial estimates

Downstream services are Integration, Maintenance and Testing

**Exhibit 42. We estimate USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E due to Softwarisation**

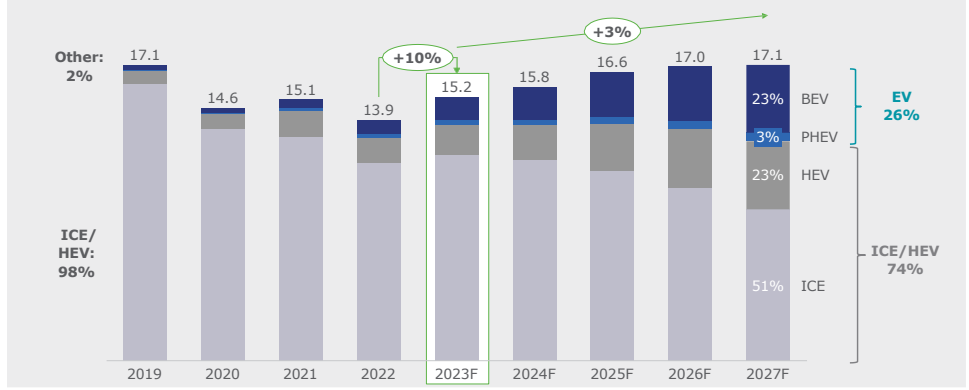
USD bn	2023	2024	2025	2026	2027	Cumulative 2023-27E
<b>Upstream</b>						
Development	15.3	16.8	17.5	17.5	18.4	
<b>Downstream</b>						
Integration	8.8	9.7	10.6	10.6	10.5	
Maintenance	2.4	3.0	3.7	4.5	5.0	
Testing	7.1	7.8	8.5	8.2	7.9	
<b>Sub-total, Downstream</b>	<b>18.4</b>	<b>20.5</b>	<b>22.7</b>	<b>23.3</b>	<b>23.4</b>	<b>108.3</b>
<b>Total</b>	<b>34.0</b>	<b>37.3</b>	<b>40.6</b>	<b>40.8</b>	<b>41.8</b>	<b>194.5</b>
% of downstream services outsourced	42.0%	42.5%	43.0%	43.5%	44.0%	43.1%
<b>Outsourced Auto ER&amp;D software opportunity</b>	<b>7.7</b>	<b>8.7</b>	<b>9.8</b>	<b>10.1</b>	<b>10.3</b>	<b>46.7</b>

Source: Zinnov, Roland Berger, JM Financial estimates

Electrification

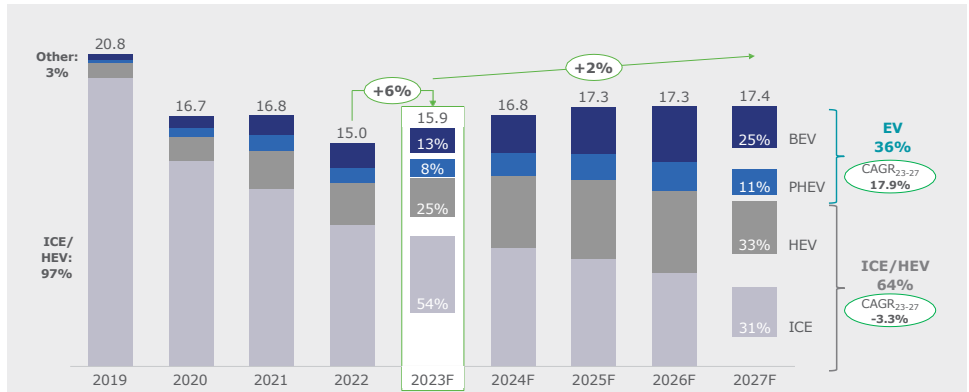
Tesla, regulation (net zero) and changing consumer preference are driving an accelerated shift towards alternate propulsion engines. EVs – Battery EV (BEV) and Plug-in Hybrid EV (PHEV) – have taken a lead. According to IEA, 14% of all new cars sold in 2022 were EV, up from less than 5% in 2020. Alix Partners, an automotive consultancy, estimates that by 2027, 26% of all new cars sold in US and 36% in Europe will be EVs. Under IEA’s Stated Policies Scenario (STEPS), the share of electric cars based on existing policies by 2030 has gone up to 35% (from 25% earlier). Total global EV investments announced for the 2023-2027 period has doubled in the past two years to USD 616bn.

**Exhibit 43. Share of EV (BEV + PHEV) is likely to reach 26% by 2027**  
US Total light vehicle sales volumes, millions



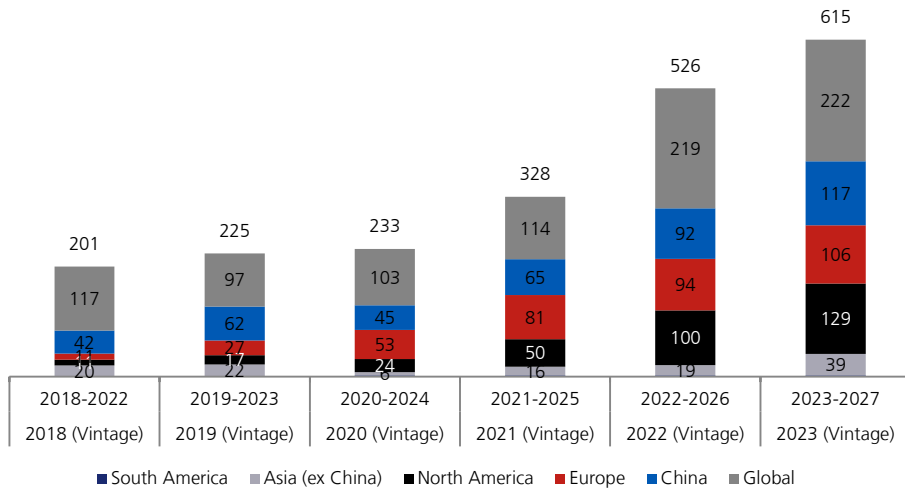
Source: S&P Global Mobility, EV-volumes, AlixPartners Analysis, JM Financial

**Exhibit 44. Share of EV (BEV + PHEV) in EU is likely to reach 35% by 2027**  
EU Total light vehicle sales volumes, millions



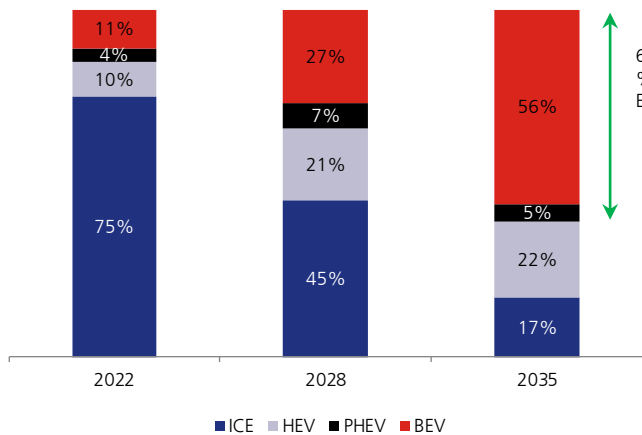
Note: EU – 27 + Non-EU 13 countries; Source: S&P Global Mobility, EV-volumes, AlixPartners Analysis, JM Financial

Exhibit 45. EV investment announcements by region – rolling 5 year period, USD bn



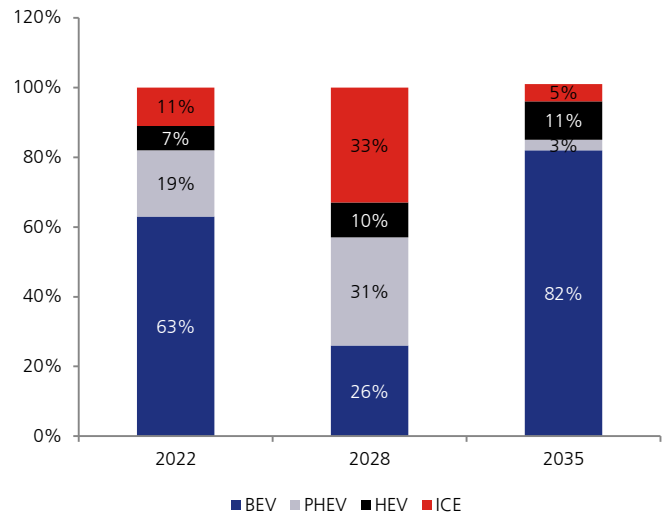
Source: AlixPartners, JM Financial

Exhibit 46. Global BEV share could reach as high as 56% by 2035



Source: AlixPartners, JM Financial

Exhibit 47. EU's BEV share will likely be the highest at 82%



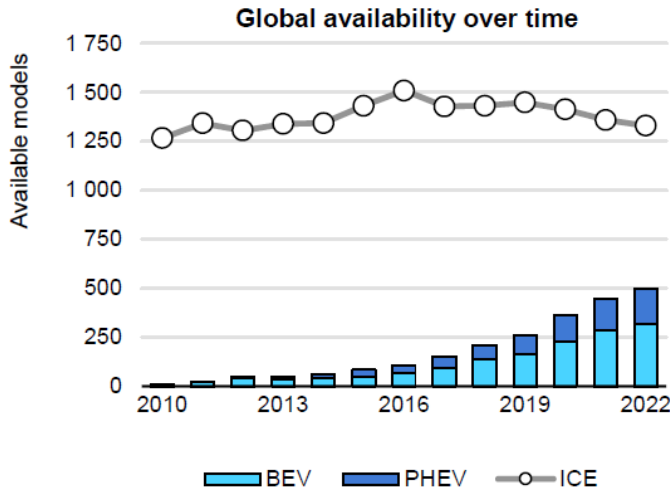
Source: AlixPartners, JM Financial

Such high and front-loaded investments towards EVs should drive higher Auto ER&D Services demand as well, in our view. We discuss a few of the factors that could contribute to higher services demand below:

- Higher number of models:** Number of EV models (BEV and PHEV) available globally has more than doubled to 500 from 2018 to 2022. IEA estimates that number of EV models available in the market could double from current levels before stabilising. The reduction in available ICE models over the same period has been relatively lower, resulting in net increase in total car models available. An EV model will not only entail traditional mechanical/mechatronic engineering services, e.g., body, chassis engineering but also electric vehicle specific services, e.g., e-powertrain, DC-to-DC inverter, E/E architecture, etc. We estimate that current outsourced spend per model on Body Engineering, etc. is ~USD 30mn/year while that on Hybrid and Electric work is ~USD 35mn/year.

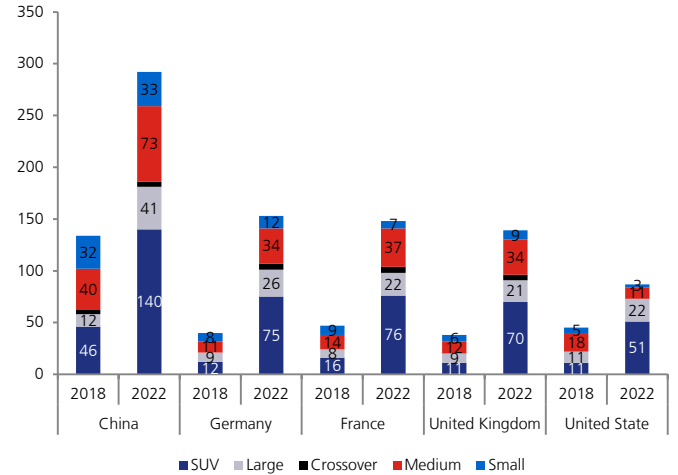
IEA estimates number of EV models available globally to double from current 500 before stabilising

**Exhibit 48. Number of EV models available globally has doubled over 2018-2022 to 500**



Source: IEA, JM Financial

**Exhibit 49. In most developed nations, number of EV models available has exceeded 150**



Source: IEA, JM Financial

- **Increased outsourcing in mid-cycle refresh of existing ICE models:** Additionally, we believe that as OEMs focus on new EV models, they will be more disposed towards outsourcing mid-cycle refresh of existing models to ESPs. A mid-cycle refresh program could be as large as USD 25mn-30mn for an ESP, per our checks. This ties in with our calculation that annual outsourcing spend on a mid-cycle refresh/model currently is c.USD 14mn.
- **Higher offshoring by new-age EV start-ups:** The rapidly growing EV market has given rise to many EV start-ups. These EV players have quickly ramped up their ER&D spend as they take on the more established OEMs. Moreover, unlike traditional automotive OEMs, EV start-ups are less fixated on relying on local, existing partners. A case in point is Vinfast, which outsourced a significant part of its ER&D spend to ESPs such as Tata Technologies. Need for a faster time-to-market, desire to adopt best practices from third party ESPs and limited existing supplier base are reasons for higher offshoring by these new age players. Tata Technologies, with existing relationships with some of the leading EV start-ups such as Rivian, Nio and Vinfast, is well placed to capture this opportunity.

**Outsourced Auto ER&D opportunity from Softwarisation**

We estimate that Electrification can directly and in-directly drive USD 35bn of cumulative outsourced Auto ER&D demand over 2023-27E, implying an incremental annual opportunity of c.USD 7bn. We have used current outsourced ER&D spend on mechanical tasks such as Body Engineering and Hybrid and Electric (as per Zinnov) to calculate average spend/model/year. We have then used IEA forecast on expected number of new EV models to project total outsourced ER&D opportunity due to electrification.

**Exhibit 50. We calculate that average outsourced ER&D spend/model/year on body engineering/ Electric work is USD 18mn/35mn**

2022	Value
EV, number of new models launched	100
Total number of ICE models available	1,300
Number of ICE models undergoing mid-cycle refresh	325
<b>% of cars with mid-cycle refresh</b>	<b>25%</b>
Total number of models (EV+ICE) which need ER&D investments	425
<b>Body Engineering</b>	
Total outsourced spend on Body Engineering (USD mn)	7,500
Total outsourced Body Engineering spend/model/year (USD mn)	18
- Body Engineering spend on new models	29
- Body Engineering spend on mid-cycle refresh	14
<b>Hybrid and Electric</b>	
Total outsourced spend on Hybrid and Electric (USD mn)	3,500
Total outsourced spend on Hybrid and Electric/model/year (USD mn)	35

Source: Zinnov, IEA, JM Financial estimates

Number of EV models increased by c.100 in 2022 as per IEA. Further, while net new ICE models have been declining, we estimate that c.25% of current ICE models on the road might be undergoing mid-cycle refresh annually. We have then used current total outsourced ER&D spend on mechanical work to calculate outsourced ER&D spend/model/year attributable to Electrification

We believe new EV models will not only directly drive higher outsourcing ER&D demand, they will also in-directly drive higher outsourcing in ICE models. We have, therefore, assumed slightly higher outsourcing of mechanical work in case of ICE models. However, note that we have not assumed any demand from new ICE model launches. This is because, on a net basis, ICE models are likely to shrink. We have, therefore, considered incremental demand only from mid-cycle refresh of extant ICE models.

Our new EV model projection is based on IEA's forecast that number of models are likely to double from current 500. We have assumed ICE models to shrink at a CAGR of 5%, in line with the past 5-years' trend. Applying average outsourced ER&D spend on the projected model count, we arrive at a cumulative opportunity of USD 34.9bn over 2023-2027E.

#### Exhibit 51. We estimate USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E due to Electrification

	2023E	2024E	2025E	2026E	2027E	Cumulative (2022-27E)
<b>EV</b>						
Number of EV models	575	661	760	875	1,006	506
Growth rate	15%	15%	15%	15%	15%	
Incremental models	75	86	99	114	131	
Outsourced ER&D deal size/EV model - Body Engineering (USD mn)	27	26	24	23	22	
Growth rate	-5.0%	-5.0%	-5.0%	-5.0%	-5.0%	
Outsourced ER&D deal size/EV model - Hybrid and Electric (USD mn)	36	37	38	39	40	
Growth rate	2.5%	2.5%	2.5%	2.5%	2.5%	
Total Outsourced ER&D deal size/EV model - Mechanical	63.0	62.6	62.2	61.9	61.7	
Growth rate	-0.9%	-0.7%	-0.6%	-0.5%	-0.3%	
<b>Total incremental outsourced ER&amp;D size, EV (USD mn)</b>	<b>4,726</b>	<b>5,396</b>	<b>6,168</b>	<b>7,061</b>	<b>8,094</b>	<b>31,446</b>
<b>ICE</b>						
Number of ICE models	1,235	1,173	1,115	1,059	1,006	-294
Growth rate	-5%	-5%	-5%	-5%	-5%	
No. of models undergoing mid-cycle refresh	309	293	279	265	251	
% of existing models undergoing mid-cycle refresh	25%	25%	25%	25%	25%	
Current Outsourced ER&D deal size/model in mid-cycle refresh (USD mn)	14	14	13	12	12	
Growth rate	-5%	-5%	-5%	-5%	-5%	
Incremental outsourcing of ICE's mid-cycle refresh ER&D work	10%	15.0%	20.0%	25.0%	30.0%	
Future Outsourced ER&D deal size/model in mid-cycle refresh (USD mn)	16	16	15	15	15	
<b>Total incremental outsourced ER&amp;D size, ICE (USD mn)</b>	<b>441</b>	<b>597</b>	<b>719</b>	<b>811</b>	<b>878</b>	<b>3,445</b>
<b>Total incremental addressable demand due to Electrification</b>	<b>5,167</b>	<b>5,993</b>	<b>6,887</b>	<b>7,872</b>	<b>8,972</b>	<b>34,891</b>

Source: JM Financial estimates

## Outsourced Auto ER&D: The three Cs aligning

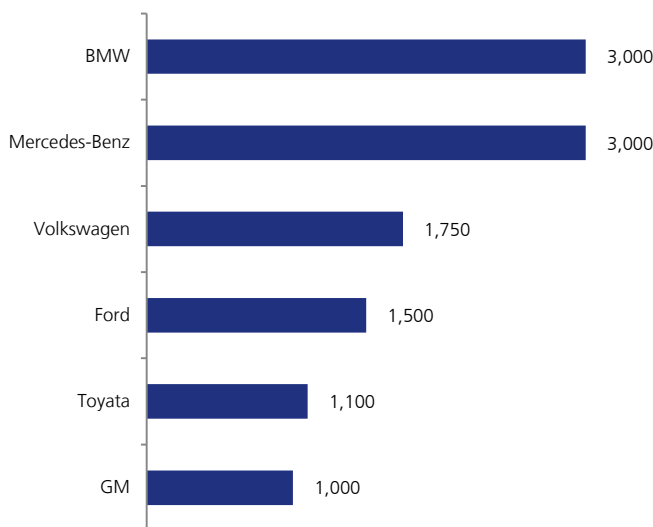
Outsourcing in IT Services over the past four decades has been driven by three constraints at clients' end – Cost, Capacity and Capability – in that order. The first phase of IT Services outsourcing growth was driven predominantly by cost arbitrage that India offered. The next inflection point – Y2K problem in the year 2000 - propelled significant outsourcing in application development, driven by capacity constraint faced by global enterprises. The sheer volume of man-hours needed to handle the Y2K date problem across applications made it near impossible for enterprises to do it themselves. Adoption of recent technologies at scale, e.g., Digital, Cloud, AI, etc. has driven capability-at-scale-led outsourcing of IT Services. This, we believe, is a very natural progression of how demand for outsourcing should evolve over time.

Outsourcing evolution in Auto ER&D should be no different. The only difference is that Auto OEMs are facing all the three constraints – Cost, Capacity and Capability – simultaneously today. These constraints, as we discuss below, appear to be structural in nature. We, therefore, believe that we are at the cusp of a multi-year, immutable outsourcing wave in the Auto ER&D space. We also discuss why, in this phase, sourcing will shift from near-shore to off-shore. India today ticks most boxes to be the destination of choice, as has been the case with IT Services. Importantly, these are not just conjectures and assumptions. There are already clear signs that the shift is in motion. It is only going to accelerate going forward.

### Cost

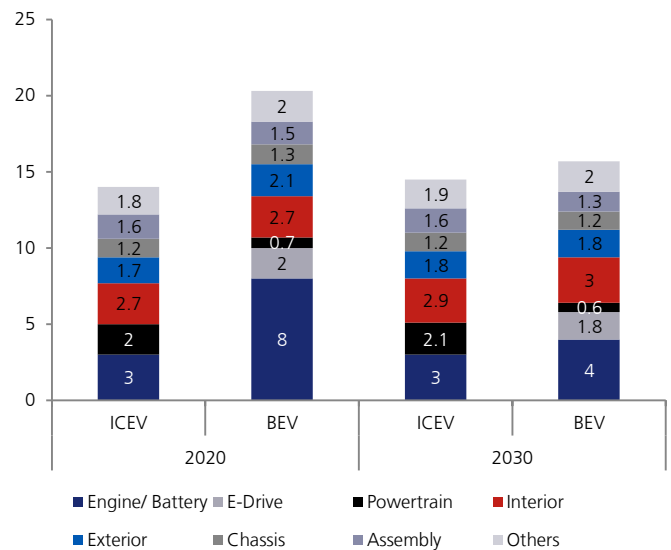
Cost pressures on Auto OEMs are multi-pronged today. Shift to software-defined-vehicle is pushing up cost of software in a car. One industry estimate pegs cost of software to as high as USD 3,000/vehicle. This is only going to rise as vehicles become more software-driven. Deloitte, a consultancy, estimates that software cost as a % of car's BOM (Bill of Material) could rise from 10% currently to 50% by 2030. Software aside, even physical cost of a BEV is still materially higher than ICE vehicles. At a time when cost of living situation in developed nation has worsened and credit standards have made auto-loans dearer, BEVs are becoming less affordable. Unsurprisingly, cost advantage of Chinese BEV OEMs is already driving significant market share gains in the BEV segment. Price cuts by Tesla and rising labour cost due to recent strikes by United Auto Workers are incremental factors. OEMs have little choice but to reduce cost of the car to stay competitive.

**Exhibit 52. Software cost could rise from 10% currently to 50% of car's BOM by 2030 making prices even dearer**  
Software R&D cost/vehicle, select OEMs (USD)



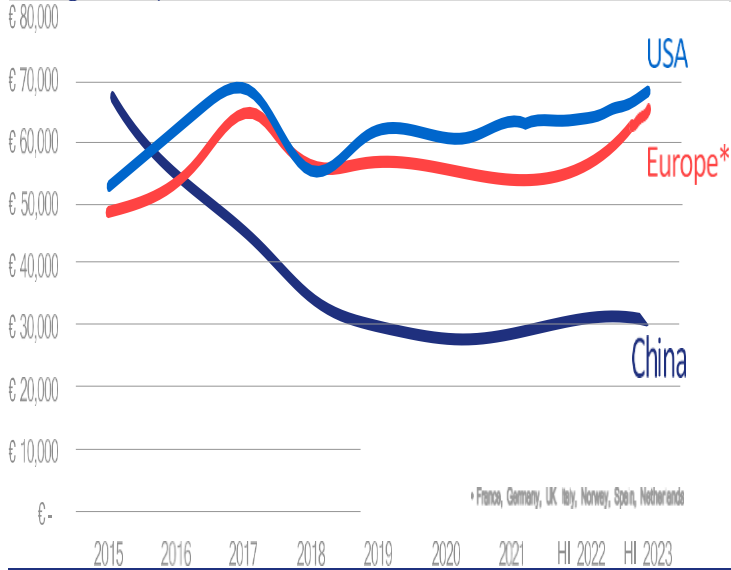
Source: SBD, JM Financial

**Exhibit 53. Besides, higher structure cost of BEVs could trigger higher outsourcing in order for OEMs to lower overall cost of the car**  
Cost structure of current and future BEV vs ICE, USD



Source: World Electric Vehicle Journal, JM Financial

**Exhibit 54. OEMs are not only facing cost escalation, but also...**  
Average retail price of EV available, EUR



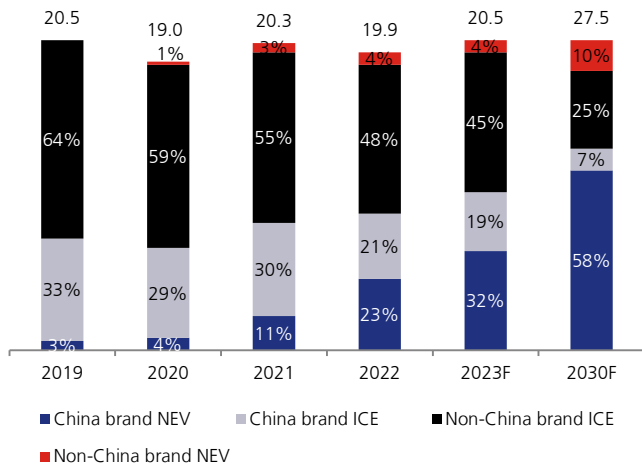
Source: Jato, JM Financial

**Exhibit 55. ...competition for Chinese players to lower prices**  
Price comparison of Chinese and non-Chinese EVs, EUR

Average retail price of electric cars available H1 2023 (EUR)		
Chinese brands		Non-Chinese brands
35,315	Australia NZ	73,637
24,478	China	55,061
48,600	Europe	67,721
26,145	India	54,711
56,748	Israel	1,17,451
27,961	Japan	63,430
	Korea	74,409
46,394	Latin America	1,00,104
31,710	Southeast Asia	1,16,799
-	South Africa	95,113
44,183	Turkey	96,994
-	USA-Canada	64,630

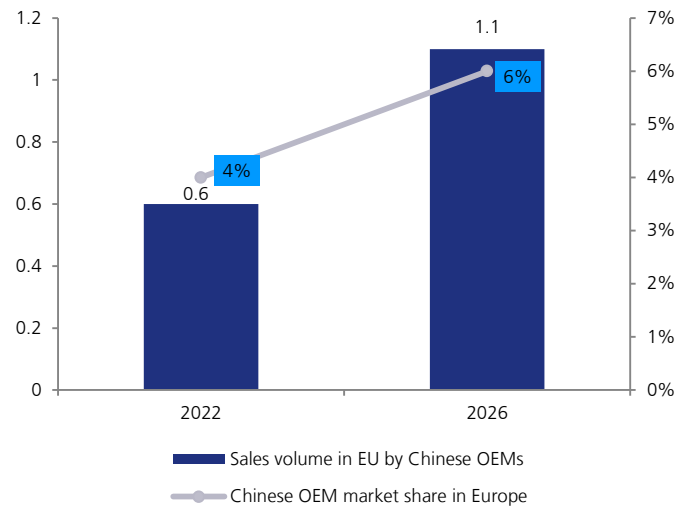
Source: Jato, JM Financial

**Exhibit 56. Lower cost and improved performance/quality of Chinese brands are not only helping them capture Chinese EV market...**  
China PV sales by brand country of origin (units, mn)



Note: NEV = New Energy Vehicle; Source: AlixPartners, JM Financial

**Exhibit 57. ...but take market share from European OEMs in their home market as well**  
Sales volumes in EU by Chinese OEMs (millions)



Source: AlixPartners, JM Financial

**Capacity**

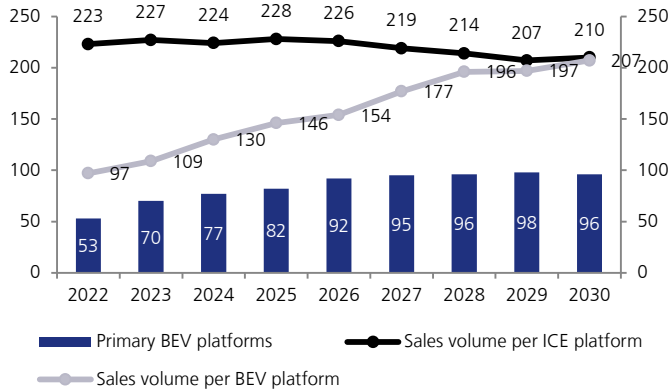
Capacity constraints for Auto OEMs are emanating from two directions. One is caused by parallel development of ICE and BEV models. OEMs are faced with a regulatory deadline to transition their portfolio to EVs. But the money to fund that transition will come from their ICE portfolio. The recent slowdown in BEV sales due to higher cost means OEMs can't take their eyes off ICE models. AlixPartners estimates that number of BEV platforms is likely to grow from 53 in 2022 to 96 in 2030, even as existing ICE platforms remain operational. Not only will this stretch the OEMs' balance sheets, but also put pressure on their engineering workforce.

The second capacity constraint will be of software talent at OEMs' disposal. ACES trends are making software an increasingly central aspect of a vehicle, increasing demand for specialised software engineer. This pressure is likely to be more pronounced for Western European OEMs. Not only are software professional in Western Europe (WE) significantly expensive than their Asian counterparts, they are also increasingly scarce. Mckinsey pegs the overall full

time equivalent (FTE) requirement in automotive software at 234,000 by 2025, up from 177,000 in 2020. The talent shortage is reflected in number of unfilled positions in WE in ICT (Information and Communication Tech) jumping from 117,000 to 167,000 between 2016 and 2018.

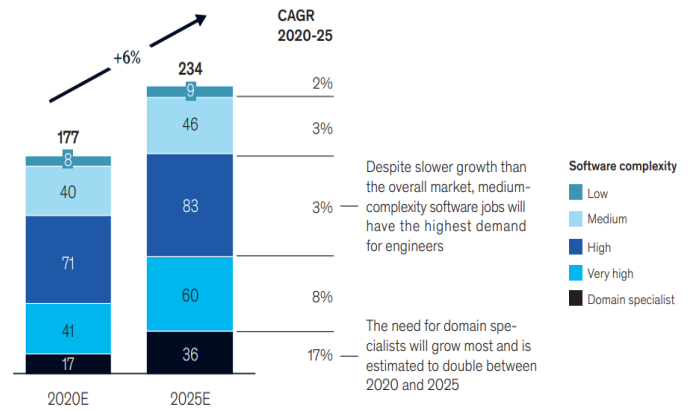
Outsourcing offers the solution to address this capacity issue. In fact, when it comes to software talent at scale, India clearly has an upper hand.

**Exhibit 58. Parallel development of ICE and BEV vehicles and platforms will constrain OEMs' engineering capacity, thus triggering higher demand for outsourcing**



Source: AlixPartner Analysis, S&P Sales Forecast, JM Financial

**Exhibit 59. Already, software talent shortage in WE is likely to get accentuated with rising automotive software FTE requirement**  
Global software FTEs in automotive industry, 000



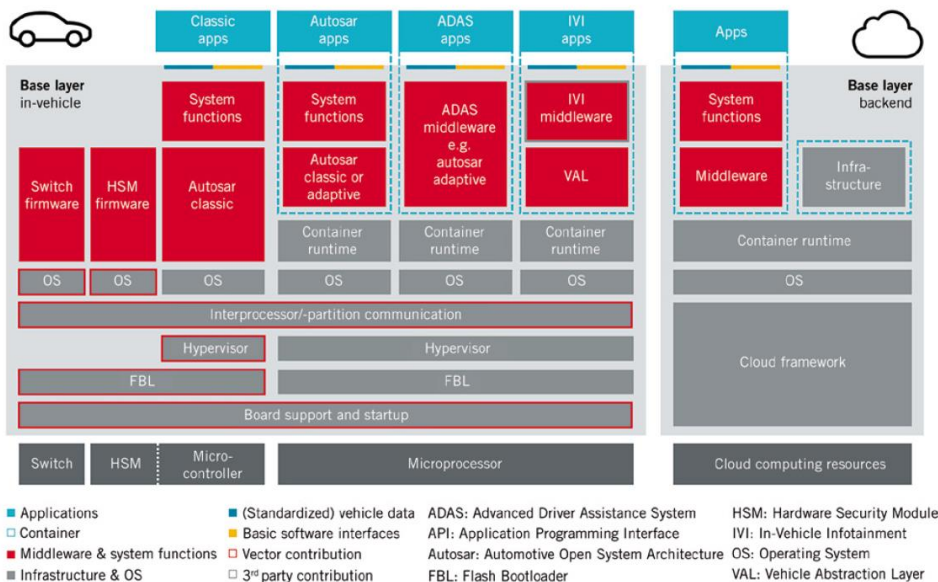
Source: Mckinsey, JM Financial

## Capability

### Challenges in transitioning to a software defined architecture

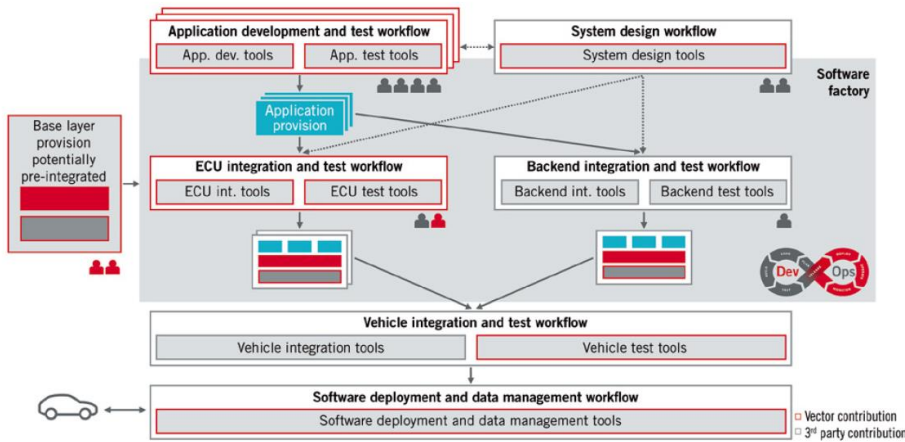
Software defined vehicle is a complex mesh of Infrastructure, OS and application layer. The exhibit below demonstrates a typical architecture of an in-vehicle and associated backend base layer. The architecture depicted below is just to emphasise the complexity of a vehicle OS. Software that will manage hundreds of ECUs and other functions within the vehicle is expected to grow to hundreds of millions of lines of code. Some estimates predict an increase to 300mn+ lines of codes by 2030. Even in smaller ECU projects, the integration of application software and base layer is time-consuming. The effort required increases exponentially with the number of applications to be integrated in a centralised E/E architecture.

**Exhibit 60. Architecture and building blocks of the base layer of a Vehicle OS**



Source: Vector Informatik, JM Financial

### Exhibit 61. Dev-ops/Agile methodology of software development associated with an SDV: A demonstration



Source: Vector Informatik, JM Financial

While building own Vehicle OS allows OEMs greater autonomy over their next generation software defined vehicle, their lack of software development experience and rising complexity of the software/application stack in a car are becoming a challenge.

A case in point is CARIAD, Volkswagen group's software division. CARIAD plans to cut 2,000 out of 6,500 jobs this year as part of a restructuring, per media reports. Delay in rolling out software has already delayed launch of Audi Q6 e-tron and Porsche Macan.

#### System integrators key to an OEM's successful SDV transition

Whether an OEM chooses to develop its Vehicle OS in-house or depend on a combination of proprietary, partner-provided and open-source software, the role of domain specific system integrators will be key. Even if SIs will have limited role to play in the product development of various software components, they will have to play a central role in the integration, maintenance and validation of these software. Unfortunately, given the still nascent stage of SDV development, there aren't many established SIs in this domain. KPIT and Vector are two such niche providers with clear head-start in this domain.

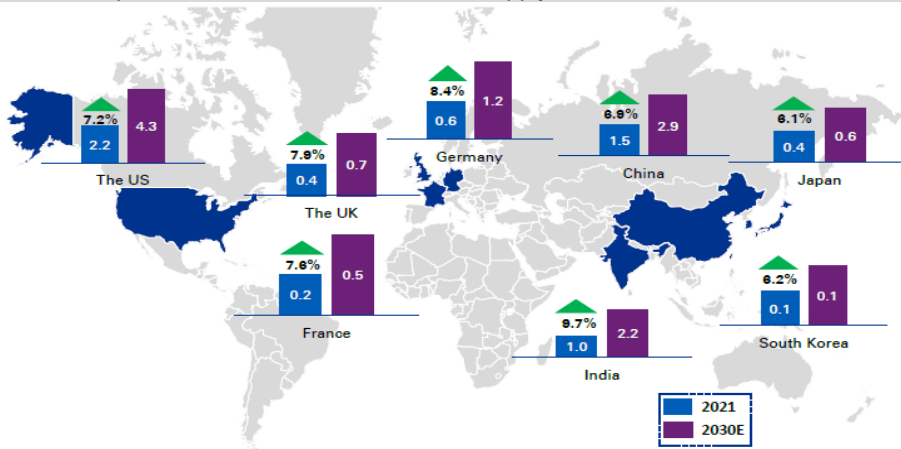
## India's right to win

India has an enviable position today to emerge as a location of choice for the imminent increase in Auto ER&D outsourcing. Key factors enabling India as a sourcing destination include (but not limited to) are India's large engineering and digital talent pool, significant cost advantage, its growing relevance as an R&D hub for global OEMs and Tier 1s and a large domestic market make. We discuss some of these factors in detail below:

### Talent

India's ER&D talent supply is likely to more than double from 1mn in 2021 to 2.2mn by 2030, making it a significant talent supply market. India's STEM graduates alone in 2020 were c.2.5mn, more than the entire EU's STEM graduates. However, despite such a large talent pool, India's share of ER&D sourcing has remained low. Need for closer collaboration by OEMs' engineering teams in ER&D projects has historically worked against far-shoring in this space. But things have started to change post Covid. Successful delivery of engineering services remotely during Covid is leading to more de-centralised ER&D centres/service providers to global locations. Further, as software/digital component increases in products, the demand for digital engineering talent will grow where India has a huge advantage.

Exhibit 62. Top countries in terms of ER&D talent supply, millions



Source: KPMG, JM Financial

### Cost advantage

India not only offers large and scalable talent pool, but offers them at a lower cost. As per Zinnov, annual billing rate per FTE in India is around USD 35K-45K, compared to USD 60K-70K in Eastern Europe. The cost differential is also reflected in 50-70% lower revenue/employee of Indian ESPs as compared to their global counterparts. This is despite over 50% of Indian ESPs' revenue share coming from onsite/near-shore locations. Clearly, the global delivery model of Indian ESPs is far more cost efficient. As auto OEMs look to offset some of the cost escalation they are facing, shifting their sourcing to India should be a logical step.

Exhibit 63. Indian ESPs' rev/emp is 50-70% lower than their global counterparts

Revenue per employee (USD)	FY19	FY20	FY21	FY22	FY23
<b>Indian Companies</b>					
LTTS	51,525	50,188	48,034	45,060	47,418
KPIT tech	42,964	46,074	46,985	43,047	40,594
Tata Elxsi	37,522	34,234	33,481	35,574	33,016
Tata Technologies		38,281	34,875	41,662	40,413
Cyient	43,154	42,940	41,566	37,496	42,631
<b>Global Companies</b>					
Alten	71,977	65,016	69,677	74,434	64,725
Bertrandt	69,256	60,908	62,424	71,553	74,840
EDAG	82,185	66,763	77,220	88,447	88,205
AKKA	76,525	58,881	65,196	-	-
	1,29,276	1,45,441	1,30,673	1,18,962	1,32,154
Etteplan	68,199	65,158	73,184	82,830	83,278

Source: Company, JM Financial

## Engineering and R&D Hub

Cost is an important consideration in sourcing decisions. But it cannot come at the expense of quality of deliverables. Opening of new engineering centres and expansion of existing facilities by global OEMs and Tier 1s in India (see Exhibit below) reflect presence of quality engineering talent in the country. GCCs in the country also pose risk of insourcing. More than that, however, it should help India turn into a global ER&D hub, which should over time help India's reputation as a sourcing destination.

### Exhibit 64. Global OEMs and Tier 1s have announced investment in India's R&D centres recently, underlining India's growing importance as a global Auto R&D/engineering hub

Company	Employee Capacity	Location	Key Capabilities	Investment	Rationale of investment
Marelli	2,200	Bengaluru, Gurugram	DCU (Domain Control Units), digital clusters, powertrain, and electric powertrain products	USD 120 mn	Investing for the combination of brain arbitrage, humility, hunger, innovation and speed that India uniquely offers.
Daimler Truck Innovation Centre	1,250	Bengaluru			India has the richest pool of talent for conventional engineering, as well as software and electronics.
Magna International	1,000	Bengaluru	Vehicle systems development and IP creation (especially in the areas of e-mobility)	INR 10 bn	Technical expertise available in India
Rockwell Automation		Pune, Noida, Bengaluru	Software and control systems, intelligent devices, and lifecycle services		India is relevant as a country to all verticals — software and control systems, intelligent devices, and lifecycle services — of our global business from a software development perspective
Renault Technology & Business Centre		Chennai, Hyderabad, Bengaluru			
Volvo	240	Bengaluru	Virtual reality zone, a driving simulator, a 3D printing machine for prototyping, a live mock-up chassis space		
Continental	6,500	Bengaluru	Hi-tech software, hardware, and vehicle test facilities for R&D	INR 10 bn	strong local ecosystem, progressive legislation, and our huge engineering talent
BorgWarner	250	Bengaluru	Systems software development, fuel handling design and mechanical simulation for internal combustion engines, and hydrogen engine management systems.		
Marquardt	450	Pune	Electrical vehicles, Authorisation systems, Human machine interfaces for cars, trucks, and off-road vehicles.	INR 1 bn	

Source: Media articles, JM Financial

## Closing the capability gap

Indian ESPs have, over the years, bridged the capability gap with global engineering service providers. This is applicable even in Auto ER&D. In fact, as per Zinnov's capability rankings, Indian ESPs feature in the leadership zone. Interestingly, in body engineering and electrification, two areas where we believe the incremental outsourcing could be higher, Tata Technologies is a leader. With comparable service offerings and capabilities, substantial cost advantage and access to a large talent pool, Indian ESPs are poised to take share away from Europe-based ESPs, in our view.

**Exhibit 65. Indian ESPs' are at par with European providers in Auto ER&D capabilities**  
Zinnov Zone, Auto/Aerospace ER&D

	Automotive	Electrification	Body Engineering	Aerospace
Tata Technologies	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
KPIT	Leadership Zone	Leadership Zone	Execution Zone	Leadership Zone
L&T TS	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Tata Elexi	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Bertrandt	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Akkodis	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Akka	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Cappgemini	Leadership Zone	Leadership Zone	Execution Zone	Leadership Zone
Alten	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
TCS	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
HCL Tech	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Tech Mahindra	Leadership Zone	Execution Zone	Leadership Zone	Leadership Zone
Wipro	Leadership Zone	Execution Zone	Execution Zone	Leadership Zone
Cognizant	Leadership Zone	Execution Zone	Leadership Zone	Leadership Zone
Quest Global	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Expelo Group	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
IAV	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Altran	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Global Logic	Leadership Zone	Leadership Zone	Leadership Zone	Leadership Zone
Harman DTS	Leadership Zone	Execution Zone	Execution Zone	Breakout Zone
Sasken	Leadership Zone	Breakout Zone	Leadership Zone	Leadership Zone
Cyient	Execution Zone	Execution Zone	Leadership Zone	Leadership Zone
Caresoft Global	Execution Zone	Leadership Zone	Leadership Zone	Leadership Zone
VVDN Technologies	Execution Zone	Breakout Zone	Leadership Zone	Breakout Zone
Apexon	Execution Zone	Breakout Zone	Leadership Zone	Leadership Zone
eInfochips	Execution Zone	Breakout Zone	Leadership Zone	Execution Zone
Ignitarium	Execution Zone	Leadership Zone	Leadership Zone	Leadership Zone
Itransition	Breakout Zone	Leadership Zone	Leadership Zone	Leadership Zone
MulticoreWare	Breakout Zone	Leadership Zone	Leadership Zone	Leadership Zone
Centum	Breakout Zone	Leadership Zone	Leadership Zone	Execution Zone
Ness Digital Engineering	Breakout Zone	Leadership Zone	Leadership Zone	Leadership Zone
Happiest Minds	Breakout Zone	Breakout Zone	Leadership Zone	Leadership Zone
UST	Breakout Zone	Breakout Zone	Leadership Zone	Leadership Zone
Softdel	Breakout Zone	Breakout Zone	Leadership Zone	Leadership Zone

Tata Technologies is a leader in Body Engineering and Electrification, two areas which should see higher offshoring/outsourcing, in our view

**Legends:**

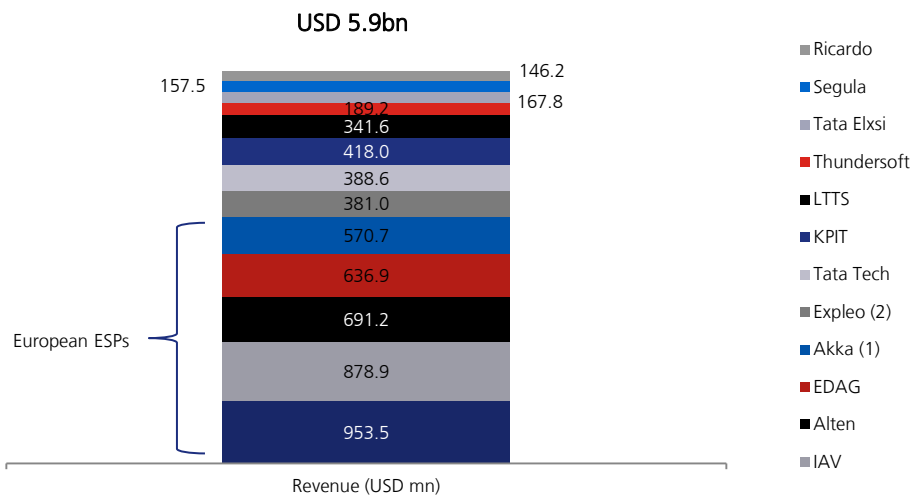
	Leadership Zone
	Execution Zone
	Breakout Zone
	Not rated

Note: Zinnov Zone 2019 ratings for Body Engineering, 2023 ratings for rest; Source: Zinnov Zones, JM Financial

## Market share shift already in motion

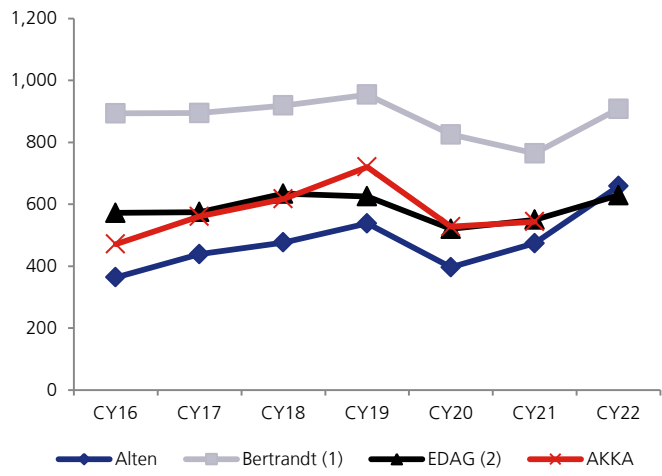
Building blocks are in place for Indian ESPs to take greater share of Auto ER&D’s rising outsourcing pie. Cost, capacity and capability constraints facing Auto OEMs, India’s growing relevance as an offshore sourcing destination and Indian ESPs’ world-class capabilities are some of those. In fact, we believe the share shift is already in motion. Exhibits below demonstrate the point. In Exhibit 66, we have stacked together available Auto ER&D revenues of third party ESPs. Interesting here is to note that the top-5 ESPs in Auto ER&D are all European. Proximity to OEMs, their higher perceived engineering skill-set and cultural alignment could be plausible reasons that can explain their higher share. Even in IT Services, cultural and language barriers in European countries hindered outsourcing for a long time. Only after the 2010-12 Euro crisis was there a sharp uptick in IT outsourcing from EU region. Auto ER&D today is possible where IT Services was a decade ago. Exhibit 67 and 68 highlight the divergent growth between Indian and European ESPs’ auto revenues. Note the sharp uptick in Indian ESPs’ revenues post Covid. We believe this is clear evidence of Indian ESPs already taking market share. We expect the trend to only accelerate going forward.

**Exhibit 66. European players still dominate automotive ESP market...**  
Automotive revenues of third party ESPs (USD mn, 2022)



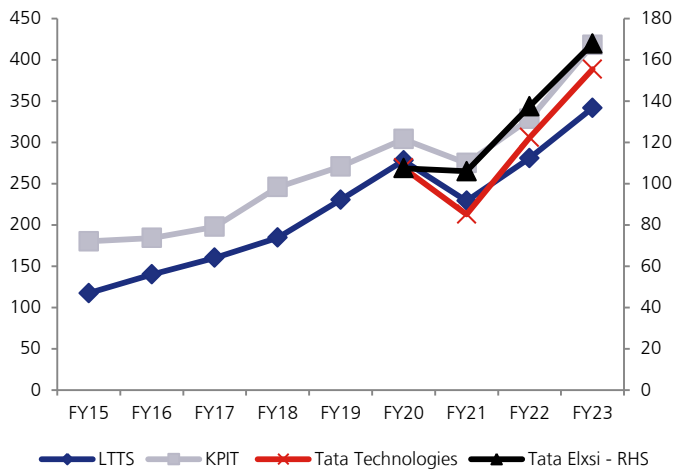
Note: (1) FY21 revenues for Akka; (2) 35% auto share assumed for Expleo; FY23 revenues for Tata Tech, KPIT, Tata Elxsi and LTTS; CY22 revenues for others; Source: Company, JM Financial

**Exhibit 67. ...though their growth has been stagnating**  
Automotive revenues, Select European ESPs (EUR mn)



Note: (1) We have assumed 90% automotive share for Bertrandt from CY16-CY20 – similar to the disclosed share in CY21/22; (2) : EDAG is a 100% transportation vertical focussed service providers; we have assumed 80% automotive share; balance are aerospace and rail; Source: Company, JM Financial

**Exhibit 68. India-based pure play ESPs have been growing faster**  
Automotive revenues, Pure-play India based ESPs (USD mn)

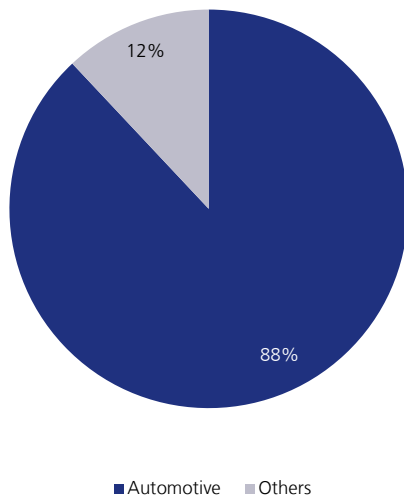


Source: Company, JM Financial

## KPIT and Tata Technologies: Stocks to play the theme

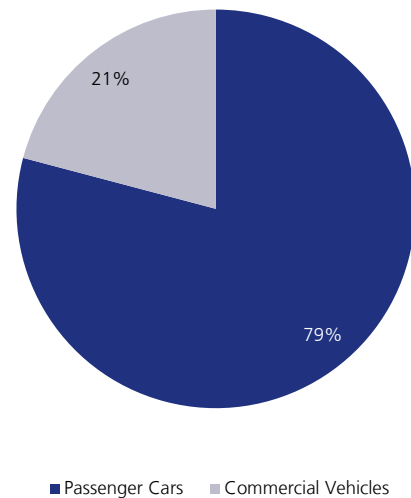
KPIT and Tata Technologies are two of the pure-play ESPs focussed on the automotive sector. KPIT, with its capabilities in middleware and Vehicle OS, is well placed to play the emerging softwarisation opportunity in the sector. Tata Technologies, on the other hand, is a better bet to play the electrification trend. Its early exposure to EVs (worked on eMO in 2012), full vehicle proposition and relationship with some of the new age EV start-ups position it strongly to benefit from electrification-led higher offshoring in automotive ER&D space.

**Exhibit 69. Tata Technologies' services offerings are primarily focussed on the automotive vertical**  
Services revenue split, by vertical (Tata Technologies)



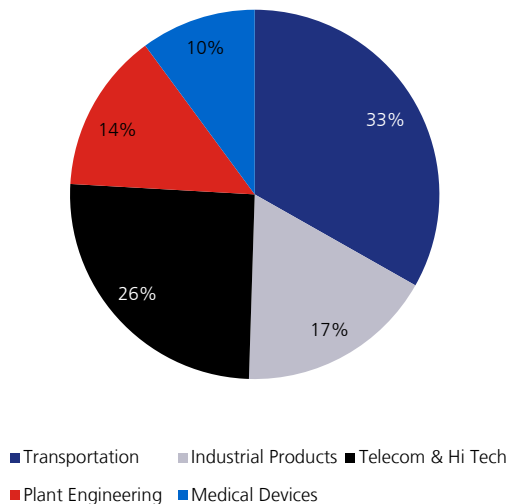
Note: As of 1HFY24; Source: Company, JM Financial

**Exhibit 70. KPIT is the only 100% automotive focussed Indian listed ER&D services player**  
Revenue share, by vertical (KPIT)



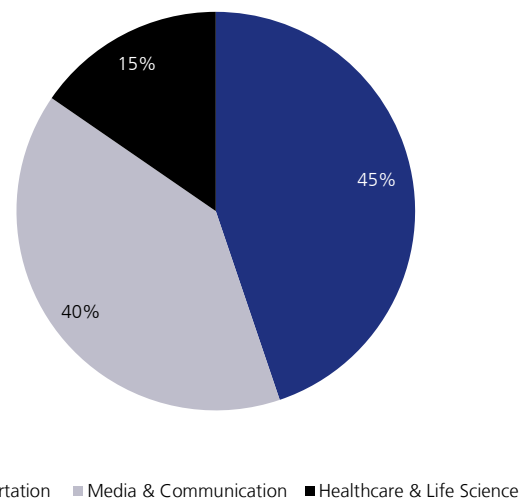
Note: As of 2QFY24; Source: Company, JM Financial

**Exhibit 71. LTTS is the most diversified ER&D services player from India with transportation as the largest vertical**  
Revenue share, by vertical (LTTS)



Note: As of 2QFY24; Source: Company, JM Financial

**Exhibit 72. Tata Elxsi has 45% revenue coming from Transportation, making it the closest peer of KPIT and TATATECH**  
Revenue share, by vertical (Tata Elxsi)



Note: As of 2QFY24; Source: Company, JM Financial

## Valuation: The big elephant in the room

Valuations in the ER&D space appear elevated, especially when compared to IT Services. They are even higher for companies more exposed to Auto ER&D. However, given a clear line of sight on demand for at least the next 10 years, valuations could stay elevated for the foreseeable future, in our view. Our reverse DCF analysis indicates that KPIT and Tata Tech's CMP imply USD revenue CAGR of 22%/18% over the next 10 years. This, we believe, is achievable. A relatively low base, early lead in their respective focus areas and structural uptrend in outsourced Auto ER&D addressable market lend support. We also believe, unlike general market perception, that growth runway in both softwarisation and electrification opportunities could be equally long. Our target multiple for Tata Tech and KPIT - 60x PER for both - reflects the view.

FY25E PERs of TATATECH, KPIT and ELXSI – companies with highest exposure to Auto ER&D – are 56-58x, reflecting the structural demand prospects in this space

### Exhibit 73. ERD – Valuation Comp

Company	CMP (LC)	Mcap (LC m)	P/E			PEG	EV/EBITDA			EV/Sales		
			FY24	FY25	FY26		FY24	FY25	FY26	FY24	FY25	FY26
<b>India</b>												
Tata Tech	1,172	5,716	66.0x	58.4x	50.1x	4.0x	49.5x	42.2x	36.1x	9.2x	8.1x	7.0x
KPIT	1,506	4,966	70.6x	57.3x	47.5x	2.6x	43.3x	35.6x	30.1x	8.5x	7.2x	6.1x
Tata Elxsi	8,584	6,430	66.4x	56.0x	46.7x	2.9x	48.2x	40.7x	34.4x	14.6x	12.3x	10.4x
L&T TS	5,159	6,561	42.0x	36.4x	31.2x	2.3x	27.7x	24.2x	21.0x	5.5x	4.9x	4.3x
Cyient	2,240	2,986	32.7x	27.8x	23.7x	1.6x	18.8x	16.5x	14.6x	3.5x	3.0x	2.8x
<b>Average</b>			<b>55.5x</b>	<b>47.2x</b>	<b>39.8x</b>		<b>37.5x</b>	<b>31.8x</b>	<b>27.2x</b>	<b>8.3x</b>	<b>7.1x</b>	<b>6.1x</b>
<b>Global</b>												
Alten	128	54	15.9x	13.9x	12.6x	1.1x	9.7x	8.7x	8.0x	1.1x	1.0x	1.0x
Bertrandt	52	6	12.1x	9.0x	7.8x	0.4x	5.7x	4.9x	4.4x	0.6x	0.6x	0.5x
EDAG	13	4	10.5x	9.4x	8.5x	0.8x	6.1x	5.6x	5.2x	0.7x	0.7x	0.6x
Desay SV	112	747	41.3x	29.7x	22.3x	0.8x	35.6x	25.3x	19.3x	3.1x	2.4x	1.9x
Etteplan	14	4	19.9x	14.7x	13.6x	0.7x	9.2x	8.6x	8.1x	1.2x	1.1x	1.1x
Assytem	49	9	18.0x	15.7x	13.9x	1.2x	13.9x	12.4x	11.3x	1.2x	1.1x	1.1x
Ricardo	490	4	14.0x	12.1x	10.3x	0.7x	7.1x	6.6x	5.9x	0.8x	0.8x	0.7x
Thundersoft	70	386	40.0x	30.8x	22.9x	1.0x	30.9x	23.7x	18.1x	4.7x	3.7x	2.9x
Arcsoft	36	174	100.9x	61.3x	40.5x	1.1x	73.3x	40.1x	25.8x	18.1x	13.6x	9.9x
<b>Average</b>			<b>28.5x</b>	<b>20.8x</b>	<b>16.2x</b>		<b>19.9x</b>	<b>14.3x</b>	<b>11.3x</b>	<b>3.2x</b>	<b>2.6x</b>	<b>2.0x</b>

Note: JM Estimates for Tata Tech Ltd and KPIT Tech, Bloomberg estimates for others. Source: Bloomberg, JM Financial. Valuation as on 8 Jan 2024.

### Exhibit 74. DCF Analysis: Our TP implies ask rate of 18-22% USD rev CAGR over FY23-33E for Tata Technologies and KPIT

	Explicit Forecast Period FY24-26E	Growth Driver Period FY27-33E	Fade Period FY34-43E	Terminal
<b>Tata Technologies</b>				
USD Revenue CAGR	13.4%	20.6%	11.7%	
Average EBITDA Margin	19.1%	21.1%	21.7%	
DCF (INR mn)	15,927	64,123	1,61,517	2,99,558
Enterprise Value (INR mn)				5,41,126
Equity Value (INR mn)				5,51,410
Equity Value/Share (INR)				1,360
<b>KPIT</b>				
USD Revenue CAGR	24.2%	20.4%	11.7%	
Average EBITDA Margin	20.1%	21.9%	22.0%	
DCF (INR mn)	10,441	59,856	1,49,399	2,73,312
Enterprise Value (INR mn)				4,93,008
Equity Value (INR mn)				4,98,809
Equity Value/Share (INR)				1,830
<b>DCF Parameters - Tata Technologies and KPIT</b>				
Terminal Growth				5%
WACC				10.75%

Source: JM Financial estimates

**Initiate coverage on Tata Technologies and KPIT with BUY**

We initiate coverage on Tata Technologies with a BUY and TP of INR 1,360, valuing the company at 60x 24-M forward EPS. We expect USD revenue to grow at a CAGR of 13% over FY23-26E. We also build in a gradual improvement in EBITDA margin (+100 bps) driving 15% EPS growth. Strong EV demand from its anchor clients (+35% YoY in 1HFY24), improving demand outlook in non-anchor traditional auto OEMs and emerging opportunity in the aerospace vertical are key growth drivers over the near term.

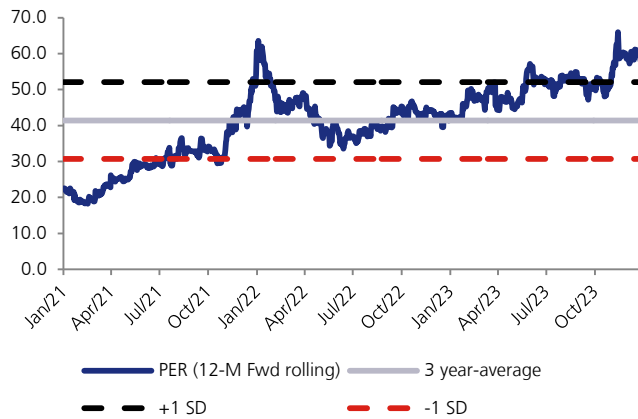
We initiate coverage on KPIT with a BUY and TP of INR 1,830, valuing it also at 60x 24M-forward EPS. Recent strong deal wins, healthy headcount addition and continued uptick in rev/employee point to its growth momentum sustaining. We estimate 24% USD revenue and 31% EPS CAGR over FY23-26E. KPIT's recent SDV engagements with OEMs have given it a foothold in their software development eco-system. This should not only help KPIT build a strong reference to win future SDV engagements with other OEMs but also get entrenched deeper in existing SDV programs and win incremental wallet share from OEMs' software spend.

**Exhibit 75. Valuation Comp: JM Financial ER&D coverage universe**

Co Name	CMP (INR)	Reco.	Target Multiple (x)	Target Price (INR)	USD revenue growth (%)			EPS			P/E			EV/EBIT			ROE		
					FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E
KPIT Tech	1,506	BUY	60	1,830	38.3	18.3	17.1	21.3	26.3	31.7	70.6	57.3	47.5	53.0	43.1	35.9	31.4	31.3	30.4
Tata Tech	1,172	BUY	60	1,360	12.3	13.1	14.7	17.8	20.1	23.4	66.0	58.4	50.1	55.5	46.7	39.8	24.2	25.1	24.7

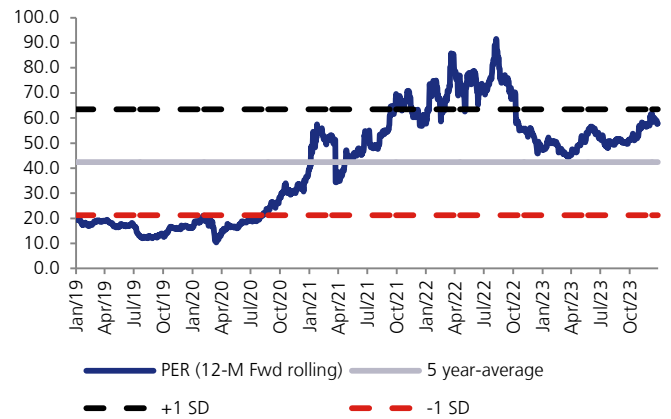
Source: JM Financial estimates

**Exhibit 76. KPIT Tech - PER**



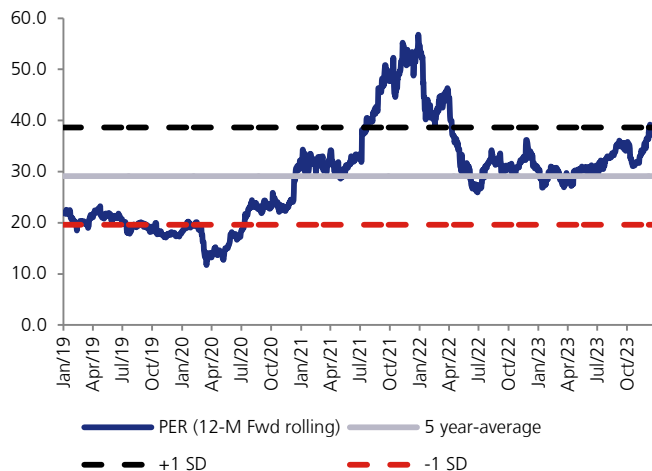
Source: Bloomberg, JM Financial

**Exhibit 77. Tata Elxsi - PER**



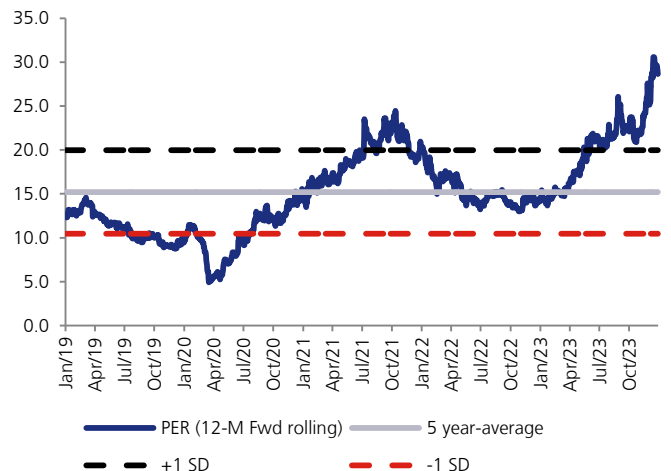
Source: Bloomberg, JM Financial

**Exhibit 78. LTTS - PER**



Source: Bloomberg, JM Financial

**Exhibit 79. CYL - PER**



Source: Bloomberg, JM Financial

## ER&amp;D services landscape: Databook

## Exhibit 80. Global ER&amp;D Spends trends

Global ER&D Spend	2015	2017	2018	2018	2019	2021	2022
USD bn	Z500	Z1000	Z1000	Total	Total	Total	Total
<b>Manufacturing</b>							
- Automobile	109	122	130	151	158	167	180
- Industrial	43	45	46	73	80	74	78
- Aerospace and Defence	21	27	27	54	57	50	52
- Others	8	14	14			547	562
<b>Sub-total</b>	<b>181</b>	<b>207</b>	<b>217</b>	<b>278</b>	<b>295</b>	<b>838</b>	<b>872</b>
<b>Hi-Tech</b>							
- Software and Internet		99	117	162	196	305	370
- Consumer Electronics	46	61	67	70	76	102	113
- Semiconductor	51	57	61	65	71	91	102
- Others	68	81	84	76	80	126	133
<b>Sub-total</b>	<b>165</b>	<b>298</b>	<b>329</b>	<b>373</b>	<b>423</b>	<b>624</b>	<b>718</b>
<b>Services Led</b>							
- BFSI						70	98
- Retail	13	15	15			44	51
- Healthcare	131	168	179	45	48	40	48
- Others	18	70	72	573	592	18	23
<b>Sub-total</b>	<b>162</b>	<b>254</b>	<b>266</b>	<b>618</b>	<b>640</b>	<b>172</b>	<b>220</b>
<b>Total</b>	<b>508</b>	<b>759</b>	<b>812</b>	<b>1,269</b>	<b>1,358</b>	<b>1,634</b>	<b>1,810</b>

Note: 2015 data is for the ER&D Spend by top-500 ER&D companies as defined by Zinnov (Z500), 2017/2018 data is for the ER&D Spend by top-1000 ER&D companies as defined by Zinnov (Z1000), We have regrouped ER&D spend wherever needed as spend by vertical reported by Zinnov differs in different years; Source: Zinnov, JM Financial

## Exhibit 81. Digital Engineering spends

Digital engineering spend across industries	2018	2019	2021	2022	2025E**	2026E**
USD bn	Z1000	Z1000	Total		Total	Total
<b>Manufacturing</b>						
- Automobile	22	24	38	46	64	85
- Industrial	9	11	12	15	20	25
- Aerospace and Defence	2					
-Pharmaceutical			31	36	50	51
<b>Sub-total</b>	<b>33</b>	<b>35</b>	<b>81</b>	<b>97</b>	<b>134</b>	<b>161</b>
<b>Hi-Tech</b>						
- Software and Internet	129	160	269	338	571	740
- Consumer Electronics	12	24	21	25	38	47
- Media	4	11				
- Telecommunication	28	33	45	51	74	83
<b>Sub-total</b>	<b>173</b>	<b>228</b>	<b>335</b>	<b>414</b>	<b>683</b>	<b>870</b>
<b>Services Led</b>						
- BFSI	9	32	70	98	146	145
- Retail	6	19	44	51	87	96
- Healthcare	15	30	40	48	81	96
- Others	57	60	0		0	
<b>Sub-total</b>	<b>87</b>	<b>141</b>	<b>154</b>	<b>197</b>	<b>314</b>	<b>337</b>
<b>Total</b>	<b>293</b>	<b>404</b>	<b>570</b>	<b>708</b>	<b>1,131</b>	<b>1,368</b>

Note: 2026 Estimates reported in 2022 and 2025 estimates reported in 2019. Source: Zinnov, JM Financial

## Exhibit 82. R&amp;D Spends by OEMs

R&D Spends (USD bn)	FY18	FY19	FY20	FY21	FY22	CAGR (18-22)
Volkswagen	12	13	11	14	18	10.2%
Ford	8.2	7.4	7.1	7.6	7.8	-1.2%
Honda	6.7	7.6	8.0	6.8	6.1	-2.1%
Toyota Motor Co	9.7	9.7	10.8	9.5	8.6	-3.1%
Renault	2.3	2.4	2.1	2.0	2.1	-1.9%
Volvo	1.8	2.0	2.0	2.0	2.2	4.7%
Bosch	5.2	5.4	4.8	5.4	6.8	6.6%
BMW	4.7	5.3	4.7	5.6	6.2	7.3%
Nissan	4.8	5.0	4.9	4.2	4.0	-4.4%
GM	7.8	6.8	6.2	7.9	9.8	5.9%
Tesla	1.5	1.3	1.5	2.6	3.1	20.5%
Daimler	1.4	1.6	1.3	1.4	1.7	4.6%
Stellantis			5.1	5.2	6.3	na

Source: Company filings, JM Financial

## Exhibit 83. Indian ESPs : Key financial parameters

	FY20A	FY21A	FY22A	FY23A	FY24E	FY25E	FY26E
<b>Revenue (USD mn)</b>							
KPIT Tech*	304	275	328	418	579	685	802
Tata Technologies*	402	322	474	547	614	695	798
LTTS	786	737	880	990	1,167	1,314	1,492
Tata Elxsi	225	246	334	390	436	506	590
Cyient	551	461	504	504	868	985	1088
<b>EBITDA Margin</b>							
KPIT tech	13.7%	15.0%	18.0%	18.4%	19.7%	20.1%	20.4%
Tata Technologies	16.5%	16.2%	18.3%	18.6%	18.6%	19.2%	19.5%
LTTS	19.8%	18.4%	21.5%	21.4%	19.8%	20.1%	20.3%
Tata Elxsi	21.3%	28.6%	31.0%	30.6%	30.2%	30.0%	30.2%
Cyient	13.5%	14.8%	18.1%	17.0%	18.4%	18.5%	18.9%
<b>PAT Margin</b>							
KPIT tech	8.8%	10.0%	12.4%	13.7%	14.2%	14.1%	14.3%
Tata Technologies	6.8%	7.2%	11.3%	11.3%	12.1%	12.5%	12.9%
LTTS	14.6%	12.2%	14.6%	14.6%	13.5%	13.8%	14.1%
Tata Elxsi	15.9%	20.2%	22.2%	24.0%	22.4%	22.9%	22.9%
Cyient	7.7%	8.8%	11.5%	8.6%	10.6%	11.0%	11.6%
<b>ROE</b>							
KPIT tech	14.6%	12.9%	21.6%	25.5%	32.8%	32.8%	32.2%
Tata Technologies	14.0%	12.2%	19.8%	23.0%	24.2%	25.1%	24.7%
LTTS	31.0%	22.6%	25.1%	25.6%	24.6%	24.7%	24.4%
Tata Elxsi	23.5%	30.2%	37.2%	41.0%	35.1%	34.9%	34.7%
	13.4%	12.0%	23.0%	13.0%	20.4%	21.5%	22.6%
<b>OCF/EBITDA</b>							
KPIT tech	131.6%	206.1%	108.3%	74.5%	64.8%	72.8%	71.6%
Tata Technologies	56.8%	288.5%	-6.0%	85.5%	90.0%	78.6%	65.1%
LTTS	57.7%	132.7%	71.3%	76.4%			
Tata Elxsi	75.1%	83.7%	62.6%	50.6%			
	110.2%	169.3%	93.3%	80.2%			

Note: \* - JM estimates for Tata Technologies Ltd and KPIT Tech, Bloomberg estimates for others. Source: Company, Bloomberg, JM Financial Estimates

## Exhibit 84. Top 50 Engineering Service Providers- 2022 by Everest Group

Rank	Service provider	Revenue (CY 2022) USD bn	Growth rate (YoY)	Category	Key ES offerings by horizontal				
					Embedded engineering	Manufacturing	Mechanical engineering	Network engineering	Software product engineering services
1	Capgemini <sup>3,4</sup>	5.83	14%	Broad-based	✓	✓	✓	✓	✓
2	HCLTech <sup>2,4</sup>	3.67	18%	Broad-based	✓	✓	✓	✓	✓
3	Alten <sup>1</sup>	2.99	29%	Broad-based	✓	✓	✓	✓	✓
4	Tata Consultancy Services <sup>3,4</sup>	3.33	13%	Broad-based	✓	✓	✓	✓	✓
5	Accenture <sup>3</sup>	2.75	25%	Broad-based	✓	✓	✓	✓	✓
6	Akkodis <sup>2</sup>	2.80	12%	Broad-based	✓	✓	✓	✓	✓
7	Cognizant <sup>3,4</sup>	2.49	16%	Broad-based	✓	✓	✓	✓	✓
8	AFRY <sup>1</sup>	2.33	17%	Pure-play	✓	✓	✓	✓	✓
9	EPAM <sup>3</sup>	1.93	28%	Broad-based	✓	✓	✓		✓
10	Wipro <sup>2,4</sup>	2.36	13%	Broad-based	✓	✓	✓	✓	✓
11	AVL <sup>3</sup>	1.96	16%	Pure-play	✓	✓	✓		✓
12	Globant <sup>1,2</sup>	1.33	37%	Broad-based	✓	✓		✓	✓
13	GlobalLogic <sup>2</sup>	1.20	33%	Broad-based	✓	✓			✓
14	DXC Technology <sup>2</sup>	1.60	15%	Broad-based		✓			✓
15	Expleo Group <sup>2</sup>	1.34	23%	Broad-based	✓	✓	✓		✓
16	Bertrandt <sup>1</sup>	1.11	20%	Pure-play		✓	✓		✓
17	FEV <sup>3</sup>	1.05	22%	Pure-play	✓	✓	✓		✓
18	Infosys <sup>2</sup>	1.22	14%	Broad-based	✓	✓	✓	✓	✓
19	Softserve <sup>2,4</sup>	0.82	31%	Broad-based		✓			✓
20	Endava <sup>1</sup>	0.56	36%	Broad-based		✓			✓
21	L&T Technology Services <sup>1,2</sup>	0.97	14%	Pure-play	✓	✓	✓	✓	✓
22	Tech Mahindra <sup>2</sup>	1.02	11%	Broad-based	✓	✓	✓	✓	✓
23	Ferchau <sup>3</sup>	0.80	21%	Pure-play		✓	✓		✓
24	Belcan <sup>3,4</sup>	0.80	30%	Pure-play	✓	✓	✓		✓
25	Persistent Systems <sup>3,4</sup>	0.60	30%	Broad-based		✓		✓	✓

Note: 1) Revenues and growth rates are based on public disclosures; growth rate is measured in the same currency as reported by the company. 2) Revenue and growth rates are estimated and validated by the service provider. 3) Revenue and growth rates are based on information collected through Everest group's annual RFI process, Transaction Intelligence (TI) database and on-going coverage/tracking of service provider activity; figures validated by the service provider. Revenue and growth rates are based on Everest group's comprehensive re-evaluation of service providers CY2021 REVENUE and growth rate metrics, as extracted from ES Top 50 2022 report. Source: Everest Group, JM Financial

## Exhibit 85. Top 50 Engineering Service Providers- 2022 by Everest Group (Continued)

Rank	Service provider	Revenue (CY 2022) US\$ billion	Growth rate (YoY)	Category	Key ES offerings by horizontal				
					Embedded engineering	Embedded engineering	Embedded engineering	Embedded engineering	Embedded engineering
26	Encora <sup>2,4</sup>	0.33	47%	Broad-based	✓			✓	✓
27	EDAG <sup>1</sup>	0.84	16%	Pure-play			✓		✓
28	IBM <sup>3</sup>	1.01	8%	Broad-based	✓	✓		✓	✓
29	HARMAN Digital Transformation Solutions <sup>3</sup>	1.01	4%	Broad-based	✓	✓	✓	✓	✓
30	Sii Group <sup>1,4</sup>	0.52	26%	Broad-based	✓		✓		✓
31	Cyient <sup>1,2</sup>	0.69	15%	Pure-play	✓	✓	✓	✓	✓
32	Tata Elxsi <sup>1,2</sup>	0.38	30%	Pure-play	✓	✓	✓	✓	✓
33	Safran Engineering Services <sup>3</sup>	0.47	22%	Broad-based	✓		✓		✓
34	Segula Technologies <sup>2,4</sup>	0.68	11%	Pure-play		✓	✓		
35	Quest Global <sup>2</sup>	0.68	10%	Pure-play	✓	✓	✓		✓
36	Tata Technologies <sup>1</sup>	0.50	17%	Pure-play	✓	✓			✓
37	NTT Data <sup>3,4</sup>	0.77	4%	Broad-based		✓		✓	✓
38	KPIT <sup>1</sup>	0.38	21%	Pure-play	✓		✓		✓
39	Infogain <sup>2</sup>	0.34	23%	Broad-based					✓
40	LTIMindtree <sup>2,4</sup>	0.52	13%	Broad-based	✓	✓			✓
41	IAV <sup>3</sup>	0.88	-3%	Pure-play	✓		✓		✓
42	Etteplan <sup>1</sup>	0.37	17%	Pure-play	✓	✓	✓		✓
43	Pactera <sup>3</sup>	0.52	6%	Broad-based					✓
44	Virtusa <sup>3</sup>	0.55	4%	Broad-based		✓			✓
45	Softtek <sup>3</sup>	0.30	15%	Broad-based		✓			✓
46	Formel D <sup>3,4</sup>	0.37	11%	Pure-play					✓
47	Xoriant <sup>2</sup>	0.21	19%	Broad-based	✓				✓
48	Mphasis <sup>3</sup>	0.23	15%	Broad-based		✓	✓		✓
49	Ricardo <sup>3,4</sup>	0.30	11%	Pure-play	✓		✓		
50	Magna International <sup>3</sup>	0.44	-7%	Broad-based		✓	✓		

Note: 1) Revenues and growth rates are based on public disclosures; growth rate is measured in the same currency as reported by the company. 2) Revenue and growth rates are estimated and validated by the service provider. 3) Revenue and growth rates are based on information collected through Everest group's annual RFI process, Transaction Intelligence (TI) database and on-going coverage/tracking of service provider activity; figures validated by the service provider. Revenue and growth rates are based on Everest group's comprehensive re-evaluation of service providers CY2021 REVENUE and growth rate metrics, as extracted from ES Top 50 2022 report. Source: Everest Group, JM Financial

## Exhibit 86. Key Business Metrics - LTTS

Vertical Split	FY21	FY22	1QFY23	2QFY23	3QFY23	4QFY23	1QFY24	2QFY24
Transportation	31.1%	31.9%	33.2%	34.5%	35.9%	34.5%	32.7%	33.2%
Industrial Products	19.3%	19.5%	18.9%	16.3%	15.5%	17.0%	17.6%	17.3%
Telecom & Hi tech	22.2%	21.4%	20.3%	18.9%	19.0%	19.0%	25.5%	25.4%
Plant engineering	14.6%	15.4%	16.0%	19.4%	18.8%	18.8%	13.9%	14.0%
Medical Devices	12.7%	11.8%	11.5%	10.9%	10.7%	10.7%	10.3%	10.1%
<b>Geo</b>								
North America	61.0%	62.5%	62.9%	63.4%	62.7%	60.2%	56.5%	55.3%
Europe	16.2%	16.5%	16.4%	15.9%	16.1%	16.4%	15.4%	15.8%
India	13.4%	13.5%	13.2%	12.8%	13.6%	15.2%	20.7%	21.6%
ROW	9.4%	7.4%	7.4%	7.9%	7.6%	8.2%	7.4%	7.3%
<b>Clients</b>								
Active clients	306	324	337	343	343	356	357	362
30 mn +	0	2	2	3	2	1	3	4
20 mn +	3	6	7	8	8	11	12	12
10 mn +	20	22	23	24	25	28	32	31
5 mn +	39	48	51	49	50	57	56	55
1 mn +	122	136	142	150	158	178	181	177
<b>Employee stat</b>								
Headcount	16,452	20,861	21,433	21,474	21,649	22,233	23,392	23,880
Attrition	12.2%	20.4%	23.2%	24.1%	23.3%	22.2%	18.9%	16.7%
<b>No. of Million \$ Clients</b>								
USD 1mn+ Clients	122	136	142	150	158	169	181	177
USD 5mn+ Clients	39	48	51	49	50	52	56	55
USD 10mn+ Clients	20	22	23	24	25	24	32	31
USD 20mn+ Clients	3	6	7	8	8	9	12	12
USD 30mn+ Clients	0	2	2	3	2	1	3	4
<b>Client Concentration</b>								
Top 5 Clients	16.8%	17.0%	16.7%	16.4%	16.0%	15.9%	14.7%	14.9%
Top 10 Clients	28.0%	28.1%	27.6%	26.9%	26.6%	26.6%	25.9%	26.1%
Top 20 Clients	44.8%	44.5%	43.2%	42.4%	42.1%	42.0%	41.4%	41.7%
<b>Revenue mix</b>								
Onsite	44.6%	42.4%	43.8%	45.1%	43.0%	43.0%	40.7%	40.4%
offshore	55.4%	57.7%	56.2%	54.9%	57.0%	57.0%	59.3%	59.6%
<b>Revenue mix</b>								
Fixed Price	38.2%	30.4%	26.9%	27.0%	28.6%	29.1%	35.6%	35.8%
Time and Material	61.8%	69.7%	73.1%	73.0%	71.4%	70.9%	64.4%	64.2%

Source: Company, JM Financial

## Exhibit 87. Key Business Metrics - Cyient

	1QFY23	2QFY23	4QFY23	1QFY24	2QFY24
Order intake USD mn			212.7	193.2	183.9
<b>Geographical split</b>					
Americas	53.0%	50.7%	46.0%	43.2%	43.0%
Europe ME Africa	21.8%	28.0%	34.4%	34.4%	33.4%
APAC	25.2%	21.3%	19.6%	22.4%	23.6%
<b>Onshore/Offshore mix</b>					
Onsite	50.0%	52.0%	55.6%	55.6%	55.8%
Offshore	50.0%	48.0%	44.4%	44.4%	44.2%
<b>Clients mix</b>					
USD 20 mn +	4	4	7	7	6
USD 10 mn +	11	12	13	13	13
USD 5 mn +	25	30	31	31	31
USD 1 mn +	81	85	84	90	103
<b>Employee stat</b>					
Headcount	13,581	15,004	15,172	15,306	15,441
Attrition	28.6%	29.1%	25.7%	23.0%	20.4%

Source: Company, JM Financial

**Exhibit 88. Key Business Metrics – Tata Technologies**

	FY20	FY21	FY22	FY23	1H FY24
<b>Revenue - Geographic distribution</b>					
Total Revenue (INR mn)	28,521	23,809	35,296	44,142	25,267
India	30%	29%	32%	30%	35%
Europe	34%	31%	24%	23%	27%
North America	30%	32%	22%	21%	19%
Rest of World	6%	8%	21%	26%	19%
<b>Revenue split Onshore/Offshore mix*</b>					
Onshore	48%	46%	50%	50%	49%
Offshore	52%	54%	50%	50%	51%
<b>Revenue split by contract type</b>					
Fixed bid contracts	45%	40%	53%	60%	58%
Time and materials contracts	55%	60%	47%	40%	42%
<b>Client Concentration - Revenue Contribution (%)</b>					
Anchor Clients (TML + JLR)	54.4%	51.4%	40.3%	40.2%	46.0%
Top 5 Clients (including Anchor Clients)	66.6%	64.5%	65.8%	73.2%	70.9%
Top 10 Clients	75.4%	76.5%	77.7%	80.8%	80.1%
Top 20 Clients	83.7%	84.9%	87.0%	88.4%	88.0%
<b>Client distribution engagement size</b>					
\$ 50 mn +	2.0	2.0	3.0	3.0	3.0
\$ 20 mn +	2.0	2.0	3.0	3.0	3.0
\$ 10 mn +	5.0	6.0	6.0	6.0	6.0
\$ 5 mn +	8.0	8.0	11.0	7.0	10.0
\$ 1 mn +	33.0	27.0	31.0	34.0	38.0
<b>Manpower Metrics</b>					
No of employees	8,620	7,954	9,338	11,616	12,451
Onshore	18.3%	17.0%	17.8%	15.1%	13.8%
Offshore	81.7%	83.0%	82.2%	84.9%	86.2%
Global Attrition rate	15.8%	11.5%	25.1%	21.7%	17.2%
Global Utilization rate	86.2%	75.8%	86.8%	87.1%	87.6%

Source: Company, JM Financial

## Exhibit 89. Key Business Metrics - KPIT

	FY20	FY21	FY22	FY23	1HFY24
<b>Cons. revenues (USD mn)</b>	<b>303.8</b>	<b>274.8</b>	<b>328.4</b>	<b>418.4</b>	<b>279.1</b>
<b>Change</b>	<b>12.1%</b>	<b>-9.5%</b>	<b>19.5%</b>	<b>27.4%</b>	<b>51.6%</b>
EBITDA margin	13.7%	15.0%	18.0%	18.4%	20%
EPS (INR)	5.4	5.4	10.0	14.0	10.1
Revenue per development employee	<b>46,069</b>	<b>46,104</b>	<b>48,809</b>	<b>43,941</b>	<b>51,773*</b>
Development employee	6,594	5,848	7,628	10,297	11,219
Active Clients	58	55	60	60	60
Strategic Clients - Revenue Contribution	81.60%	85.70%	83.70%	82.50%	84.00%
<b>Revenue by geography</b>					
USA	41.3%	41.7%	38.9%	35.8%	30.4%
Europe	38.8%	41.0%	40.2%	46.7%	52.6%
Rest of World	19.8%	17.3%	20.9%	17.5%	17.0%
<b>Revenue by contract type</b>					
Time and Material Basis	49.3%	47.8%	44.8%	52.6%	51.4%
Fixed Price/Time basis	50.7%	52.2%	55.2%	47.4%	48.6%
<b>Revenue by Verticals</b>					
Passenger cars	75.1%	76.8%	73.8%	75.1%	75.8%
Commerical vehicles	22.7%	21.9%	24.4%	24.0%	20.0%
New mobility	2.2%	1.3%	1.8%	0.8%	4.2%
<b>By practices</b>					
Feature Development & Integration			70.4%	65.6%	61.8%
Architecture & Middleware Consulting			11.7%	16.0%	20.2%
Cloud Based connected services			17.9%	18.5%	18.0%

Note: As reported in 2QFY24. Source: Company, JM Financial

# Tata Technologies | BUY



## Wind in the sails

Tata Technologies is a pure-play engineering services company, focussed primarily on the automotive vertical. Its full vehicle proposition, specialised skills such as lightweight structures and capabilities in new EV programs position it strongly to ride the electrification theme. Growth triggers are aplenty. Anchor clients' (TML + JLR) electrification drive is a strong tailwind. Airbus empanelment is an added impetus for the non-auto services portfolio. Engagements with new age EV players have created strong references to win new clients/mine existing ones. Focus on scaling its embedded and SDV capabilities will expand addressable TAM. 29% YoY cc growth in 1HFY24, despite likely ramp-down in the Vinfast account, underscores the broad-based nature of demand. That should allay concerns around client concentration. We believe the electrification-led outsourcing cycle has just inflected, leaving a long growth runway ahead. Our TP implied ask rate of 18% USD revenue CAGR over FY23-33E appears achievable. Valuations should, therefore, sustain. We initiate coverage with TP of INR 1,360, valuing the stock at 60x (vs current FY25E PER of 58x).

- A play on the electrification theme:** We estimate that electrification could drive USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E. Tata Technologies is well placed to benefit from this. It has developed specialised and full vehicle development solutions for both BEV and PhEV. It was responsible for full vehicle development of Vinfast's EV models VF 6 and VF 7. It worked on ICE to EV conversion of Tata Tigor and Tata Tiago. It has developed lightweight structure expertise, a key requirement for EVs, through its deep engagements with JLR. These are strong reference points for OEMs to engage with Tata Technologies in their EV programs.
- Growth triggers – wind in the sails:** We see three near-term tailwinds. One, anchor clients' growth momentum. Anchor clients' revenue grew by 35% YoY in 1HFY24. Tata Motors' slew of new EV model launches suggests momentum will sustain. JLR's planned investment of USD 3.5bn/annum in EV programs should also help. Two, Airbus empanelment. Tata Technologies could leverage on its existing Aerospace capabilities around design and MRO to scale Airbus, driving its non-auto services growth. Three, Education business. Currently only 2,000 of the 14,000+ Industrial Training Institutes are upgraded. State governments' focus on upgrading these presents a significant opportunity. With agreements from six state governments and INR 22.9bn of contracted revenue in hand already, Tata Technologies is well placed to tap this opportunity.
- Structural demand prospects underpin earning visibility; Initiate with BUY:** We estimate 13% USD revenue CAGR over FY23-26E. A relatively lower near-term growth reflects likely ramp-down in Vinfast account. We believe growth could bounce back to mid-to-high teens once drag from Vinfast abates. We estimate 15% EPS CAGR over the same period, aided by c.100bps EBITDA margin expansion. Return to normalised growth and further scope of margin expansion (to 21-22%) mean earning trajectory should accelerate over the medium term. These should help sustain current multiples. We value the stock at 60x (vs. current 58x FY25E PER). Our DCF analysis to back-test our target price implies a CAGR of 18% over FY23-33E, achievable in our view. We initiate with BUY. Any correction in the stock should be bought into, in our view.

### Recommendation and Price Target

Current Reco.	BUY
Previous Reco.	NA
Current Price Target (12M)	1,360
Upside/(Downside)	16.1%
Previous Price Target	NA
Change	NA

### Key Data – TATATECH IN

Current Market Price	INR1,172
Market cap (bn)	INR475.2/US\$5.7
Free Float	33%
Shares in issue (mn)	405.7
Diluted share (mn)	405.7
3-mon avg daily val (mn)	INR0.0/US\$0.0
52-week range	1,400/1,151
Sensex/Nifty	71,355/21,513
INR/US\$	83.1

### Price Performance

%	1M	6M	12M
Absolute	-1.8	NA	NA
Relative*	-3.9	NA	NA

\* To the BSE Sensex

JM Financial Research is also available on:  
Bloomberg - JMFR <GO>,  
Thomson Publisher & Reuters,  
S&P Capital IQ, FactSet and Visible Alpha

Please see Appendix I at the end of this report for Important Disclosures and Disclaimers and Research Analyst Certification.

Financial Summary					(INR mn)
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Net Sales	35,296	44,142	50,857	57,837	66,367
Sales Growth (%)	48.2	25.1	15.2	13.7	14.7
EBITDA	6,457	8,208	9,454	11,091	12,957
EBITDA Margin (%)	18.3	18.6	18.6	19.2	19.5
Adjusted Net Profit	4,370	6,054	7,206	8,141	9,486
Diluted EPS (INR)	10.8	14.9	17.8	20.1	23.4
Diluted EPS Growth (%)	78.5	38.7	19.0	13.0	16.5
ROIC (%)	30.1	32.7	31.1	34.0	35.4
ROE (%)	19.8	23.0	24.2	25.1	24.7
P/E (x)	108.9	78.5	66.0	58.4	50.1
P/B (x)	20.9	15.9	16.0	13.5	11.4
EV/EBITDA (x)	72.4	56.7	49.4	41.8	35.6
Dividend Yield (%)	0.0	0.0	1.6	0.6	0.6

Source: Company data, JM Financial. Note: Valuations as of 08/Jan/2024

## Investment rationale

The on-going ICE to EV transition has opened up a multi-year growth opportunity for ESPs. Tata Technologies, with over two decades of experience in the automotive vertical, relationship with seven of the top-10 automotive ER&D spenders and five of the top-10 new age EV start-ups, ticks most boxes to capture this opportunity. Demand tailwind in Anchor clients and empanelment by Airbus provide additional impetus to its growth momentum, in our view. The structural nature of auto ER&D demand, typical stickiness of client relationships in ER&D engagements and healthy scope for margin expansion offer strong earning visibility over the medium term. That should help sustain the seemingly elevated multiples.

### A play on the emerging electrification theme

As we elaborated in the industry section, electrification in the automotive vertical is likely to drive an incremental USD 35bn of outsourced ER&D spend over the next five years. Tata Technologies, we believe, is best placed among listed Indian ER&D Services space to benefit from this opportunity. The company has leveraged its full vehicle mechanical engineering capabilities for ICE vehicles to develop end-to-end solutions for EV. Its deep engagements with Anchor clients in their electrification journey has helped it build differentiated capabilities in the EV space; for e.g., design of lightweight body structure, and IPs such as electric vehicle modular platform (eVMP) to name a few. Besides, its partnership with new age vehicle companies has allowed it to build expertise outside of its traditional strength in body engineering. Tata Technologies' engagement with Vinfast, a new age energy company, across the full vehicle turnkey program for its BEV models VF 6 and VF 7 underscores its end-to-end EV capabilities. Tata Technologies is also engaged with leading Chinese and US EV players. Faster time-to-market, global best practices and cost efficiency requirements of these new age players mean Tata Technologies has the capability and domain know-how to deliver on those parameters. These can serve as important reference points for it to acquire new clients/win new projects from existing ones, in our view.

#### Exhibit 90. We estimate USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E due to Electrification

	2023E	2024E	2025E	2026E	2027E	Cumulative (2022-27E)
<b>EV</b>						
Number of EV models	575	661	760	875	1,006	506
Growth rate	15%	15%	15%	15%	15%	
Incremental models	75	86	99	114	131	
Outsourced ER&D deal size/EV model - Body Engineering (USD mn)	27	26	24	23	22	
Growth rate	-5.0%	-5.0%	-5.0%	-5.0%	-5.0%	
Outsourced ER&D deal size/EV model - Hybrid and Electric (USD mn)	36	37	38	39	40	
Growth rate	2.5%	2.5%	2.5%	2.5%	2.5%	
Total Outsourced ER&D deal size/EV model - Mechanical	63.0	62.6	62.2	61.9	61.7	
Growth rate	-0.9%	-0.7%	-0.6%	-0.5%	-0.3%	
<b>Total incremental outsourced ER&amp;D size, EV (USD mn)</b>	<b>4,726</b>	<b>5,396</b>	<b>6,168</b>	<b>7,061</b>	<b>8,094</b>	<b>31,446</b>
<b>ICE</b>						
Number of ICE models	1,235	1,173	1,115	1,059	1,006	-294
Growth rate	-5%	-5%	-5%	-5%	-5%	
No. of models undergoing mid-cycle refresh	309	293	279	265	251	
% of existing models undergoing mid-cycle refresh	25%	25%	25%	25%	25%	
Current Outsourced ER&D deal size/model in mid-cycle refresh (USD mn)	14	14	13	12	12	
Growth rate	-5%	-5%	-5%	-5%	-5%	
Incremental outsourcing of ICE's mid-cycle refresh ER&D work	10%	15.0%	20.0%	25.0%	30.0%	
Future Outsourced ER&D deal size/model in mid-cycle refresh (USD mn)	16	16	15	15	15	
<b>Total incremental outsourced ER&amp;D size, ICE (USD mn)</b>	<b>441</b>	<b>597</b>	<b>719</b>	<b>811</b>	<b>878</b>	<b>3,445</b>
<b>Total incremental addressable demand due to Electrification</b>	<b>5,167</b>	<b>5,993</b>	<b>6,887</b>	<b>7,872</b>	<b>8,972</b>	<b>34,891</b>

Source: JM Financial estimates

**Exhibit 91. Tata Technologies: Select case studies demonstrating EV capabilities**

Case Study 1 Swedish Global Premium Car OEM	Case Study 2 South East Asian EV player
<ul style="list-style-type: none"> <li>Involved in the development of a <b>hybrid vehicle</b> in 2016</li> </ul>	<ul style="list-style-type: none"> <li><b>System integration</b> for SOTA/FOTA implementation</li> </ul>
<ul style="list-style-type: none"> <li><b>Full ownership</b> of vehicle engineering, design and development, developing the execution model for turnkey program delivery</li> </ul>	<ul style="list-style-type: none"> <li>Development of features for <b>connected cars</b></li> </ul>
<ul style="list-style-type: none"> <li>System integration, Network validation</li> </ul>	<ul style="list-style-type: none"> <li>End to end <b>system architecture for SOTA/FOTA</b> for future vehicle programs</li> </ul>
Case Study 3 North American EV start-up	Case Study 4 Tata Motors
<ul style="list-style-type: none"> <li>Built a <b>complete enterprise architecture</b> for the OEM with integration between PLM and ERP</li> </ul>	<ul style="list-style-type: none"> <li>Engaged to convert TAMO's existing <b>ICE vehicles to EVs</b></li> </ul>
<ul style="list-style-type: none"> <li>Reflection of TTL's expertise in manufacturing sectors' <b>core enterprise software</b> e.g PLM and ERP</li> </ul>	<ul style="list-style-type: none"> <li>Complete ownership for <b>design, packaging and integration of EV components</b> like battery, motor etc. in the base car</li> </ul>
<ul style="list-style-type: none"> <li>Helped the client <b>build product development process</b> through these implantation using domain knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Successfully completed and <b>launched two ICE to EV</b> conversion vehicles – Tata Tigor EV (2021) and Tata Tiago EV (2023)</li> </ul>

Source: Company RHP, JM Financial

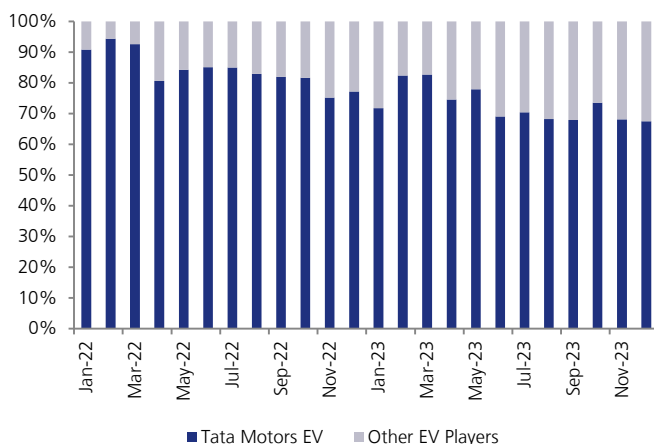
**Benefitting from Anchor clients' EV leadership**

With 80% volume market share, Tata Motors is a market leader in the EV space in India. Tata Technologies' engagement with Tata Motors to launch ICE to EV converted vehicles is one of the reasons that helped Tata Motors take a lead over competition. With USD 1.8bn of committed spend towards EV projects over 2022-27 and a slew of new EV model launches lined up, Tata Motors intends to maintain its market leadership. Besides, even JLR plans to annually invest USD 3.5bn (INR 287 bn) in order to take all Jaguars and 60% of Land Rovers electric by 2030. Tata Technologies will be a clear beneficiary. c.36% YoY growth in its Anchor clients' revenues in 1HFY24 is a reflection of the execution of these EV plans, in our view.

Tata Motors has announced USD 1.8bn of investment in EV while JLR has committed USD 3.5bn spend/year towards electrification

**Exhibit 92. Tata Motors is a market leader in EV by volume with c.70% market share**

Tata Motors EV market share, By volume



Source: Vahaan Portal, JM Financial

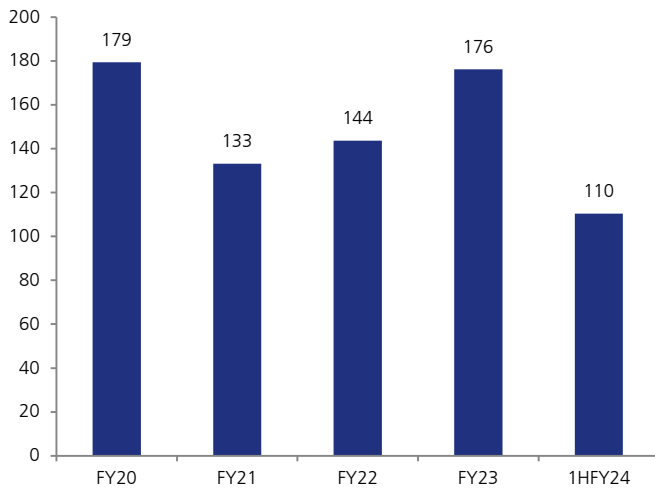
**Exhibit 93. Tata Motors has lined up a slew of new EV model launches to maintain its market leadership**

Tata Motors' upcoming EV models

EV Models	Expected Launch
Punch	Feb'24
Harrier	Jun'24
Safari	Jun'24
Curvv	Jul'24
Altroz Racer	Sep'24
Altroz	Jan'25
Avinya	Feb'25
Sierra	May'25

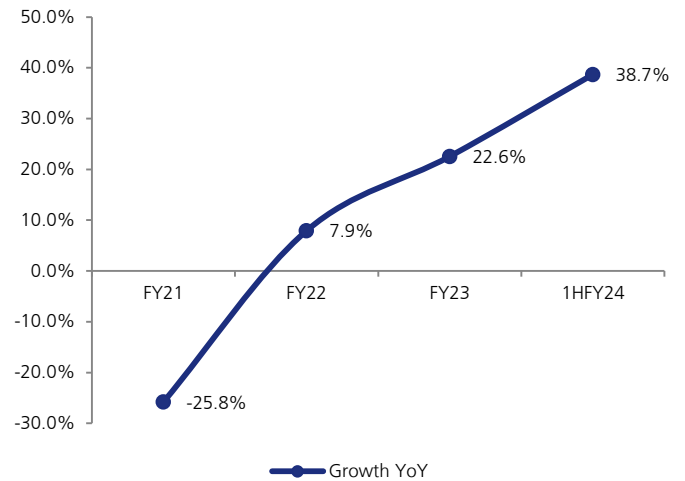
Source: Tata Motors Investor Presentation, News Articles, JM Financial

**Exhibit 94. Anchor clients' EV ambition is reflecting in a strong rebound in Tata Technologies revenues from Anchor Clients**  
Revenue from Anchor Clients (USD mn)



Source: Company, JM Financial

**Exhibit 95. Post Covid, Anchor clients growth has inflected from under-par to above company growth rate**  
Anchor Clients' growth, YoY

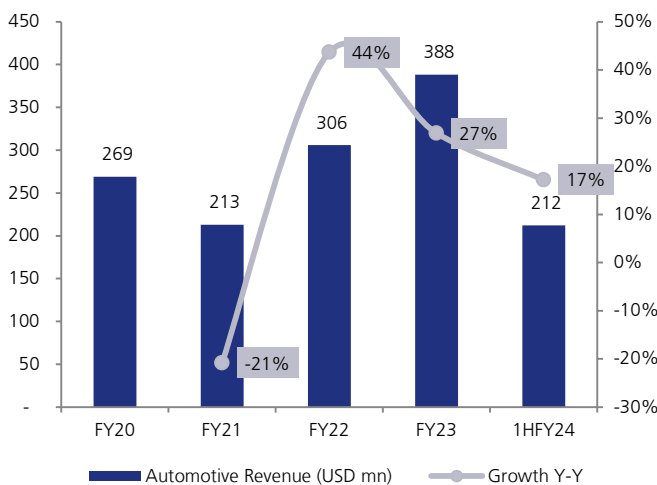


Source: Company, JM Financial

**Aerospace: Ready to take off**

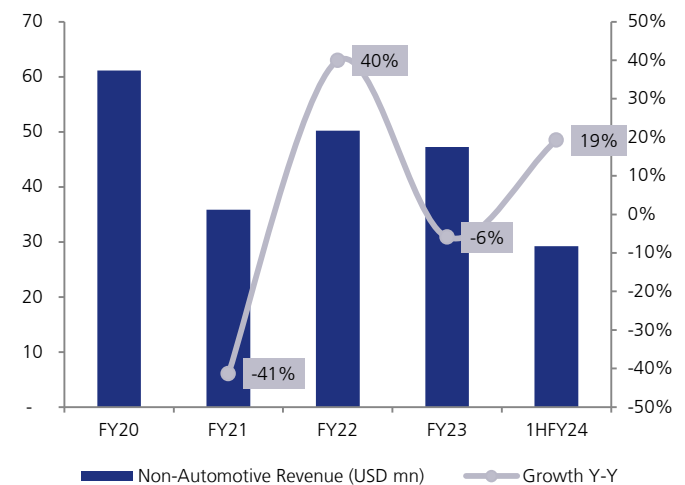
Aerospace and Defence is another large vertical with total ER&D spend of USD 52bn (Source: Zinnov). After a lull over the past decade, new aircraft programs are now likely to commence over the next two years. That should provide significant opportunities for ESPs in the Aerospace domain. Tata Technologies has existing capabilities in the Aerospace vertical – design, virtual validation, manufacturing/tooling etc. Importantly, Tata Technologies has been selected as an Engineering, Manufacturing Engineering, and Client Services Strategic Supplier (“EMES3”) by the global aerospace company Airbus. We believe the Airbus account alone could be a significant growth driver for Tata Technologies’ non-Auto services revenue. Besides, Tata Technologies can leverage on the group synergies – Air India, Tata Advanced Systems, Tata A&D – to gain exposure and further build capabilities in Aerospace and Defence.

**Exhibit 96. Tata Technologies' Services growth over FY21-23 was driven by Automotive vertical ....**  
Revenue growth, Automotive vertical



Source: Company, JM Financial

**Exhibit 97. ...while Non-Auto underperformed; Airbus project could, however, push up non-Auto vertical growth**  
Revenue growth, Non-Automotive vertical



Source: Company, JM Financial

**EV skill development: A unique opportunity**

Growing need for an EV-skilled workforce – from design engineers to shop-floor technicians – is driving educational institutions and industrial training centres to adapt curricula emphasizing electric vehicle (EV) skills. The Ministry of Skill Development estimates that the EV sector will employ 10mn people in India by 2030. Currently, 2,000 out of 14,758 ITIs (Industrial Training Institute) are upgraded, with states investing significantly for infrastructure and industry partnerships. Upgrading one ITI costs around INR 300mn-400mn (USD 3.6mn-4.8mn) covering technology, courseware, and training for better employment prospects. Upgrade of all the remaining ITIs will entail additional spend of USD 46bn-61bn.

Tata Technologies' eLearning platform, rich catalogue of training content and track record of upgrading multiple ITIs make it a strong candidate to address this opportunity. Between the state government engagement in Nov'20 and 30<sup>th</sup> Sep'23, Tata Technologies has entered into memoranda of agreement to upgrade five state government-owned ITIs, with INR 22.9bn (USD 275mn) in contracted revenue to be earned in connection with the projects. With engagements with just six state governments till date, the revenue growth in this segment is likely to sustain over the foreseeable future.

**Strong earning visibility to help sustain multiples**

Tata Technologies currently trades at 58x FY25E PER vs. peer valuation of 57x-58x. Notwithstanding these seemingly elevated multiples, we believe strong multi-year earning visibility ahead should help sustain the multiples. Our conviction on long-term earning visibility for Tata Technologies is based not only on the current strong investment cycle in EV and SDV. The new EV model launches and upfront OEM investment towards software defined vehicle will normalise by 2030. But the offshoring wave that this is likely to trigger would outlast the investment cycle, in our view. Cost advantage, access to global talent, scalability and ability to deliver turn-key projects should help Tata Technologies not only to gain higher wallet share of OEMs but also win market share from current incumbent European providers.

We value the stock at 60x 24-M forward EPS, in line with current multiples. Our DCF analysis to back-test our target price implies a CAGR of 18% over FY23-33E, achievable in our view. Further, there are structural margin levers in place; for e.g., increasing share from EU/US geographies, higher offshoring and operating leverage. We estimate c.100bps margin expansion over FY26E. Margins can gradually improve to 21-22% over the medium term, in our view. This could push up EBITDA/EPS CAGR over the next 10 years to 20%+, supporting multiples.

That said, we acknowledge that current multiples leave little scope of disappointment. Higher-than-expected impact of Vinfast slowdown, lower-than-expected contribution from Airbus, etc. could impact near-term growth trajectory. That could reflect in multiples as well. We would, however, recommend that investors use any correction in the stock to buy.

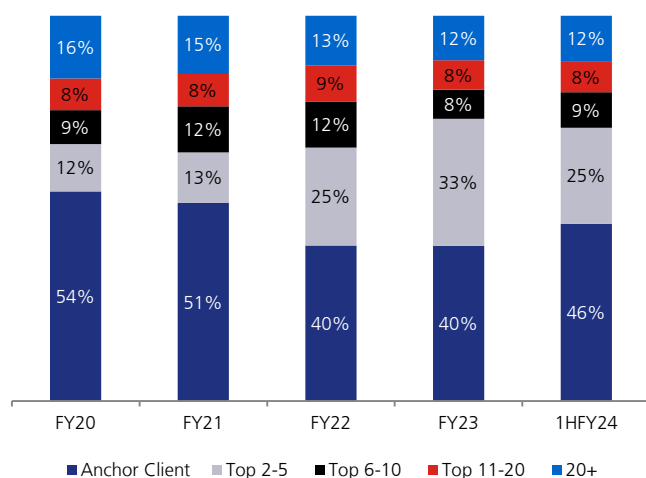
## Addressing key investor concerns

We believe Tata Technologies is well positioned to ride the multi-year outsourced Auto ER&D opportunity. However, we sense some investor concerns around client concentration, portfolio mix, etc. which might hinder its ability to realise the full potential. We try to address these concerns below:

### Concern 1: Higher dependency on anchor clients

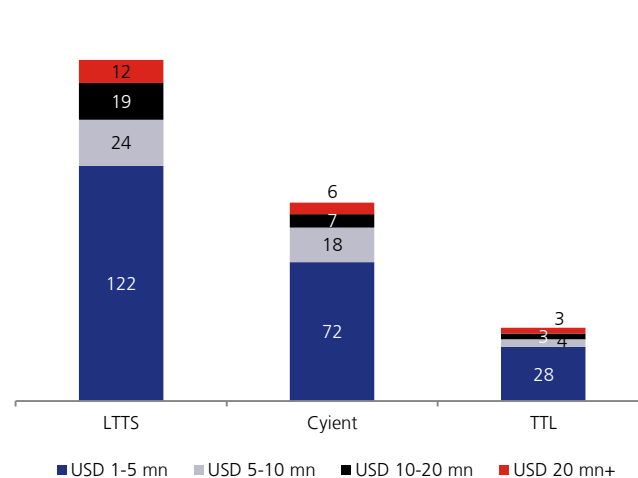
Tata Technologies gets c.46% of its services revenue from its anchor clients (Tata Motors + JLR). This makes Tata Technologies' client concentration one of the highest across listed peers. That said, we don't see this necessarily as a hindrance. On the contrary, it's a source of strength. Being a subsidiary of its anchor clients has allowed Tata Technologies to get unparalleled access to the entire vehicle development lifecycle. Tata Technologies' key moat – a full vehicle proposition – owes largely to this exposure. It also allows Tata Technologies to incubate new capabilities that it can then cross-sell to other clients. Its engagement with Tata Motors to convert existing ICE vehicles to EVs is a case in point. Tata Technologies helped Tata Motors to launch two ICE to EV converted vehicles – Tata Tigor EV (2021) and Tata Tiago EV (2023). This not only gave Tata Motors a head-start in India's EV market, but also helped it save on a new platform capex. At a time when global OEMs are trying to balance their EV and ICE production through a flexible drivetrain platform that can support both ICE and EV vehicles, Tata Technologies' work with Tata Motors can be a good reference to get more such projects. Similarly, its longstanding partnership with JLR – one of the earliest adopters of aluminium and lightweight steel – has helped Tata Technologies build expertise around lightweight body structure. Its growing reputation in light weight structure has helped the company in new client acquisitions on the EV side.

**Exhibit 98. Anchor clients' share has gradually come down, even though it is not really a weakness, in our view**  
Client concentration, Tata Technologies



Source: Company, JM Financial

**Exhibit 99. Importantly, the concentrated nature of ER&D spend on client side reflects in ESPs having few large clients across players**  
Client Concentration, Indian ESP



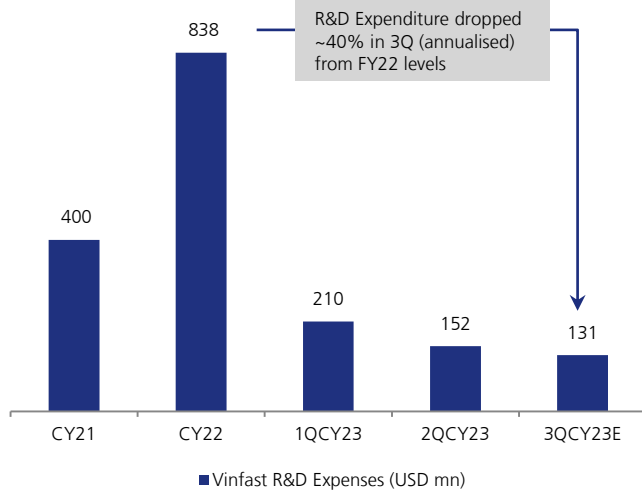
Note: As of 2QFY24. Source: Respective Company PPT, JM Financial

### Concern 2: Vinfast's sharp stock decline could have a material impact on Tata Technologies

Vinfast is a top-5 client of Tata Technologies. Vinfast's [VFS US; NOT RATED] stock price has dropped c.90% from its peak. This has raised concerns over Vinfast as a going concern. However, with USD 1.25bn of proceeds remaining from Chairman/Vingroup's grants, the concerns appear overstated. That said, Tata Technologies' revenue from Vinfast could still decline in FY24/25. That would be because the EV models of Vinfast that Tata Technologies was working on – VF 6, VF 7, VF 8 and VF 9 – are now into production. Hence, there is a natural moderation in Vinfast's R&D expense towards new model development. This is not unique to Vinfast or Tata Technologies but reflects a typical R&D cycle of any OEM. Vinfast's R&D expense has declined from USD 828mn in FY22 to USD 131mn in 3QFY23 (annual run-rate of USD 520mn). This reduced R&D expense will likely reflect in Tata Technologies'

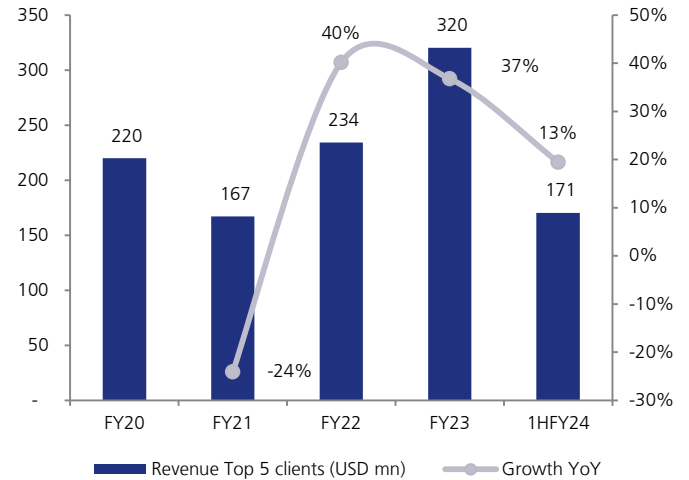
revenue from Vinfast as well, in our view. The encouraging sign, however, is that despite this likely ongoing ramp-down, Tata Technologies’ top-5 revenue grew by c.13% YoY in 1HFY24 in USD terms. It demonstrates Tata Technologies’ ability to repurpose the resources on to other on-going projects. That should give comfort to investors.

**Exhibit 100. Concerns around Vinfast appears overstated as decline in its R&D expense is following natural product development cadence**  
 Vinfast R&D Expenses, USD mn



Source: Vinfast, JM Financial

**Exhibit 101. Moreover, Tata Technologies’ top-5 clients’ growth even in 1HFY24 indicates it has been able to absorb the likely decline**  
 Tata Technologies’ Top-5 clients revenues

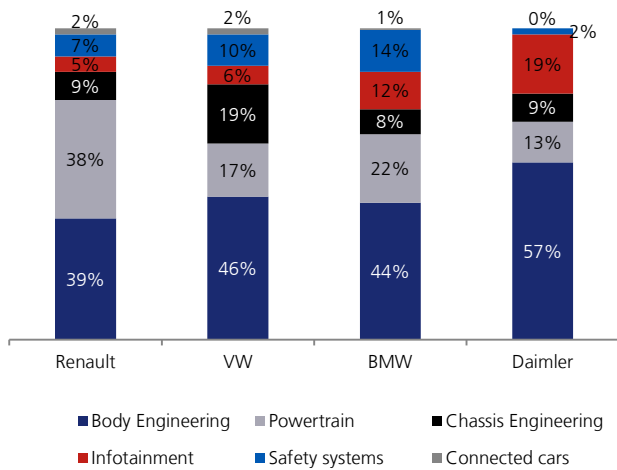


Source: Company, JM Financial

**Concern 3: Tata Technologies’ capabilities are predominantly mechanical ER&D**

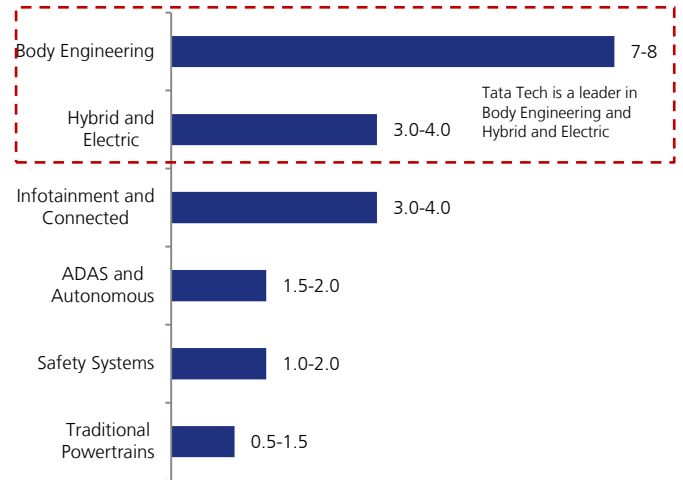
Tata Technologies’ capabilities across vehicle development lifecycle do mean that its portfolio of services is tilted towards mechanical ER&D. It is also a reflection of the outsourced ER&D spend on an OEM. Mechanical ER&D such as Body, Chassis, and Interiors (BCI) are one of the largest outsourced areas by OEMs. As we discussed in our industry section, we don’t see that as necessarily a headwind. We believe higher outsourcing in Auto ER&D will be led by traditional areas such as BCI where similar capabilities and significant cost advantage will play into Indian ESPs hands, at the expense of their European counterparts. In fact, as OEMs shift their core focus from physical/mechanical aspects of a vehicle to new technologies such as software, battery/fuel cell technologies, they are likely to give out mechanical design/engineering work to service providers as turn-key projects. Tata Technologies’ full vehicle proposition places it well to pick up those projects.

**Exhibit 102. OEMs tend to outsource mechanical ER&D tasks more, which might only accelerate as cost pressure mounts**  
 Top-4 ER&D outsourcer, by segment (2017)



Source: Company, JM Financial

**Exhibit 103. Tata Technologies' leadership in Body Engineering and EV related services positions it strongly to gain higher market share**  
 Outsourced Automotive ER&A market, by sub-segments (USD bn)



Source: Company, JM Financial

Also, Tata Technologies has been augmenting its mechanical ER&D capabilities with embedded, E/E capabilities. The company has built capabilities in new age programs including EV Architecture, over-the-air connected services (OTA), level 2 and level 3 ADAS, embedded electronics, and EV system design. The company also intends to add embedded digital capabilities through tuck-in acquisitions.

**Concern 4: Traditional OEMs might be reluctant to outsource to a subsidiary of a competitor**

Our checks with one of the global OEMs indicate that this is not at all a consideration in an ESP's selection. On the contrary, a referenceable project delivered by the ESP is a pre-requisite for selection. Tata Technologies' work for JLR and other global OEMs, therefore, enables it to onboard new clients. Also, Tata Technologies' roster of global OEMs, such as Honda, McLaren, Ford, etc., is strong evidence that being a subsidiary of an OEM's competitor has not come in the way of getting new business from it.

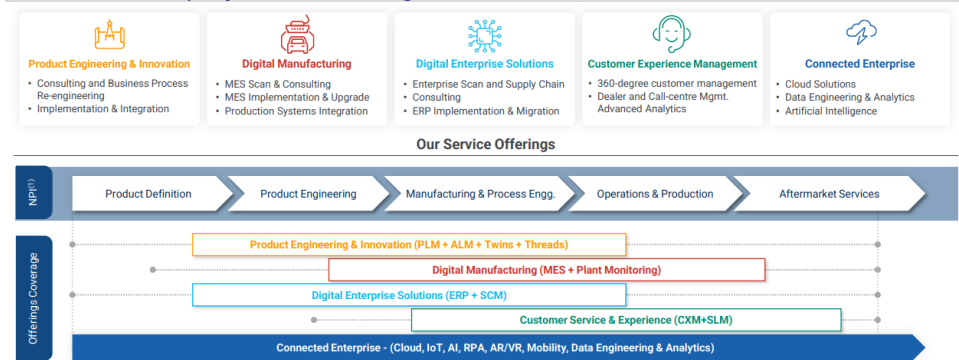
## Tata Technologies: A one-stop platform for Auto ER&D

Tata Technologies offers product development and digital solutions, including turnkey solutions, to OEMs and Tier 1 suppliers. Tata Tech's primary business line is Services, which includes providing outsourced ER&D and digital services to global manufacturing clients. Apart from Services, the company's other line of business is Technology Solutions, which includes product reselling and education businesses. These offerings are detailed below.

### Services

Tata Technologies' services offerings cover the entire spectrum of a product development to manufacturing to aftermarket services. These services can be classified as ER&D services – for product development – and Digital Services – for digitising factories, manufacturing processes and providing customer experience management.

#### Exhibit 104. Company's service offerings



Source: Company RHP, JM Financial

The company's product engineering offerings span the entire product development lifecycle of an automotive vehicle development – from concept to design to launch. Its digital engineering offerings include implementation and integration of PLM-ERP-MES software, analytics and customer experience management for post-sales support. Besides, the company has also built capabilities in new age programs including EV Architecture, over-the-air connected services (OTA), level 2 and level 3 ADAS, embedded electronics, EV system design. It has also built multiple IPs in both product development as well as digital engineering space to accelerate clients' time-to-market.

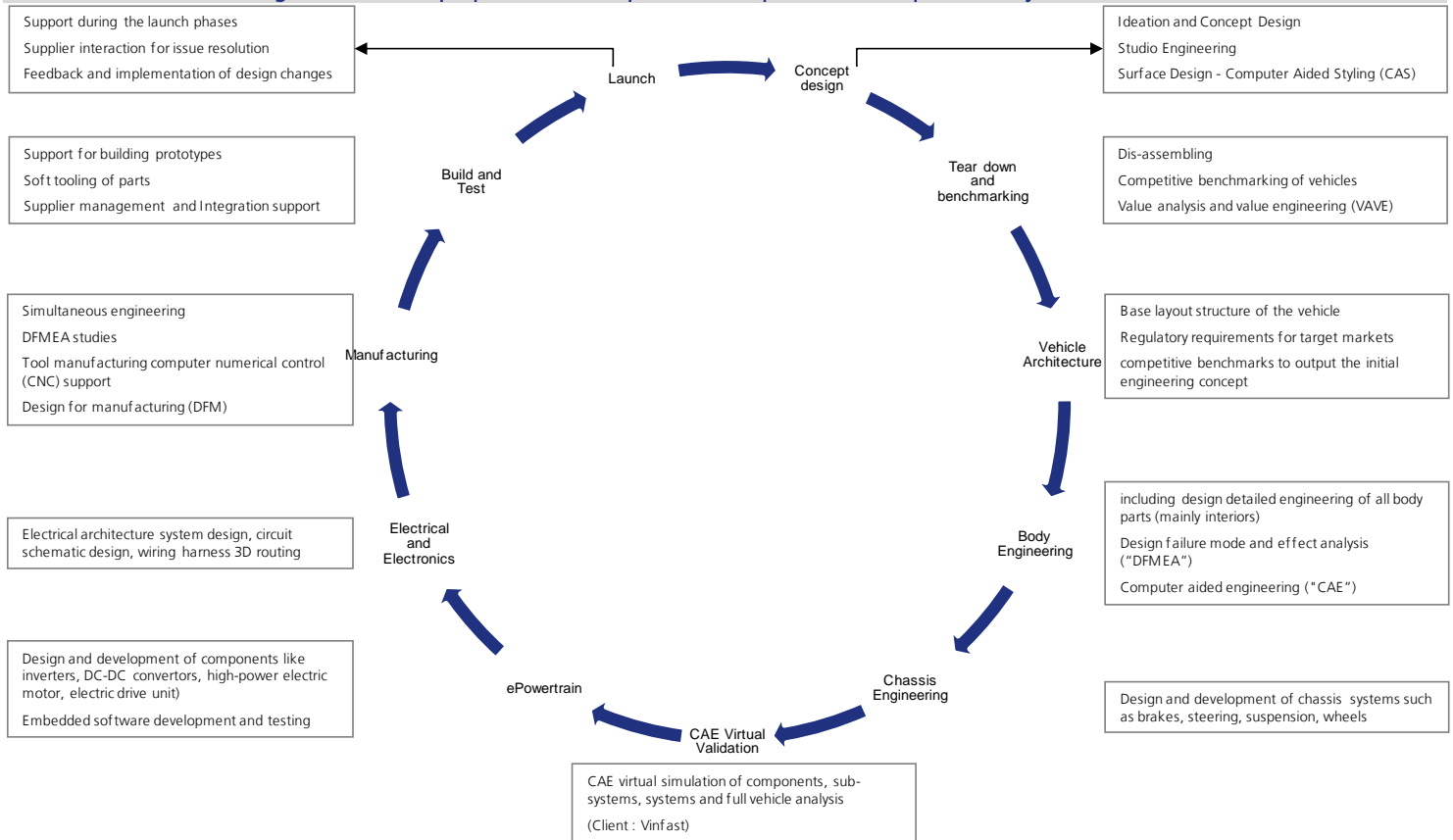
The eVMP platform, a key IP developed by Tata Technologies, helps OEMs in faster compatibility checks to support multiple system selections, achieves a higher degree of uniformity, scalability and de-risking through virtual validation. These help OEMs in rapid configuration changes as per their dimensions, thus reducing time-to-market. This platform helped reduce product development time for Vinfast to one of the fastest in the industry.

#### Exhibit 105. Key services offerings and IPs across ER&D/Digital services

ER&D Services	Digital Engineering	New Age Services
Tear Down and benchmarking	Process planning	EV Architecture
Computer Aided Engineering/Design	PLM/ERP implementation	ADAS
Vehicle Architecture	PLM-ERP-MES integration	SOTA/FOTA
Body/Chassis engineering	Application Management	ePowertrain
Virtual simulation/validation	Analytics using AI/ML	Battery Management/Swapping
Electrical Architecture/System design	CRM/post sales support	Embedded Electronics
Manufacturing – Soft tooling etc	Customer experience management	Factory 4.0
IP developed to reduce time-to-market/improve efficiency		
eVMP	Modular/configurable/scalable platform to reduce vehicle development timelines for EVs	
FactoryMagix	Real time data visualisation of manufacturing execution system	
TRACE	Tata Rapid Connected Environment – IoT-led connected vehicle platform	
Power of 8	Digital customer experience offerings covering 8 intelligent digital services	

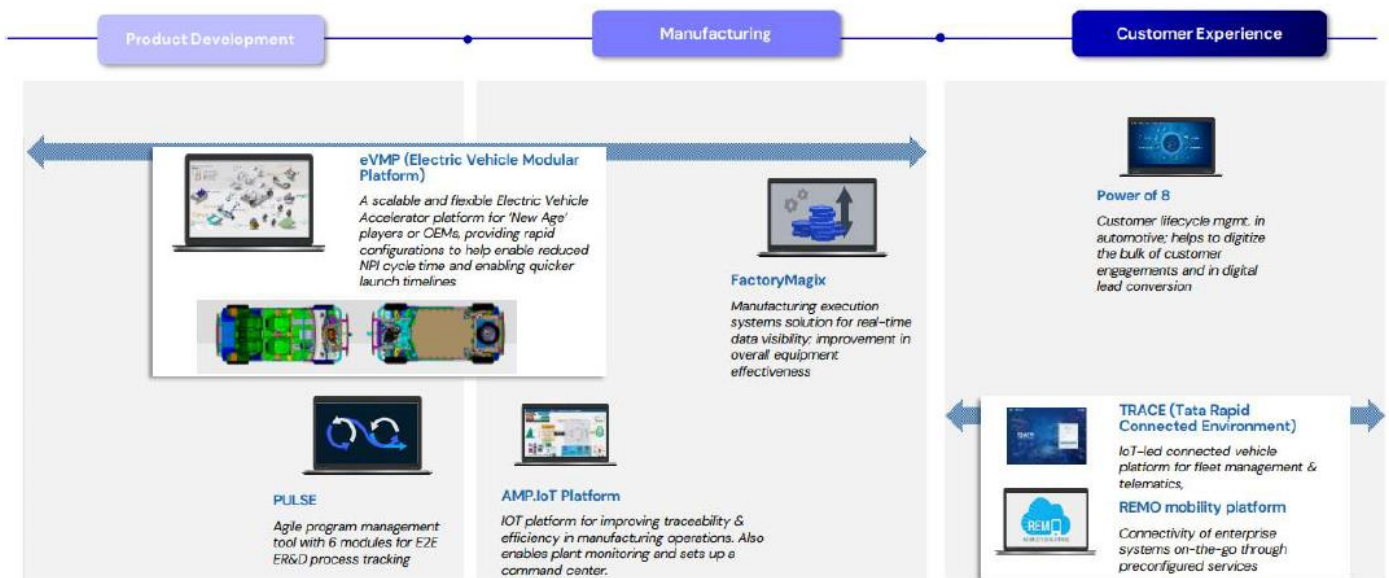
Source: Company RHP, JM Financial

**Exhibit 106. Tata Technologies' full vehicle proposition encompasses entire product development lifecycle**



Source: Company RHP, JM Financial

**Exhibit 107. Tata Technologies has developed proprietary IPs and accelerators to facilitate faster time-to-market, digital transformation among others**



Source: Company RHP, JM Financial

Though the company's primary focus is on automotive vertical, it also leverages its automotive capability to serve clients in adjacent verticals such as aerospace and transportation and construction heavy machinery (TCHM). We highlight the company's offerings and strengths in detail below:

## Automotive

Automotive is Tata Technologies' largest industry vertical constituting 87.9% of services revenue (1HFY24). The company is currently engaged with seven out of the top 10 automotive R&D spenders and five out of the top 10 new energy spenders as measured in 2022 (Source: Zinnov). The company benefits from its longstanding partnerships with Anchor Clients, particularly with JLR since 2010. This has helped the company in incubating and developing offerings like the full vehicle proposition and lightweight structures in collaboration with TML and JLR. In addition to the traditional ICE vehicles, it also offers turnkey full vehicle development solutions for plug-in hybrids (PHEV) and BEV that have been developed over past 10 years.

## Aerospace, TCHM and Others

Tata Technologies has cross-pollinated its expertise in the automotive vertical to build capabilities in the Aerospace and TCHM verticals. Its turnkey machine development capabilities for TCHM have been derived from its full vehicle proposition in automotive. Similarly, its automotive tooling design expertise has underpinned its capabilities in the aerospace maintenance, repair and overhaul (MRO) sector.

**Aerospace:** Tata Technologies' offerings in Aerospace reflect its capabilities in the automotive vertical. The company has traditionally offered product and tooling design, interiors and seating layouts and enterprise optimisation through PLM and ERP deployment services to Aerospace clients. It has recently added MRO capabilities using its knowledge in automotive manufacturing tooling. ST Engineering Aerospace is one of the clients for Tata Technologies in this vertical. It has recently been empanelled by Airbus as a strategic supplier. This could boost Tata Technologies' aerospace vertical growth over the medium term.

**TCHM:** The global TCHM ER&D spend is estimated to grow from USD 43bn in 2022 to USD 49 bn by 2026. Innovation in the TCHM industry typically lags behind the automotive sector innovation by three to five years. Trends like electrification, connected equipment and carbon footprint reduction should drive the TCHM industry in the coming years. Tata Technologies' full product development services suite of automotive is largely available in TCHM as well – from styling to engineering design to manufacturing support.

**Other:** The company is also developing additional offerings to expand their operations across other relevant industries, such as industrial and medical equipment sectors.

### Exhibit 108. Automotive and Non-Automotive Revenue share

(INR mn)	FY20	FY21	FY22	FY23	1HFY24
<b>Automotive Revenue</b>	19,091	15,734	22,769	31,315	17,458
% Share of Services	81.47%	82.19%	85.88%	88.68%	87.89%
<b>Growth Y-Y</b>		<b>-18%</b>	<b>45%</b>	<b>38%</b>	<b>21%</b>
<b>Non-Automotive Revenue</b>	4,342	2,651	3,737	3,812	2,406
% Share of Services	18.53%	17.81%	14.12%	11.32%	12.11%
<b>Growth Y-Y</b>		<b>-39%</b>	<b>41%</b>	<b>2%</b>	<b>23%</b>

Source: Company, JM Financial

## Technology Solutions

Technology Solutions comprises two main segments: Products and Education businesses.

### Products

In the Products business, the company resells third-party software, primarily product lifecycle management (PLM) software and solutions. It also provides value-added services such as consulting, implementation, systems integration and support for such software. The company has longstanding relationships with third party software vendors like Dassault Systems and Siemens Industry.

### Education

Tata Technologies caters to the skilling requirements of corporate and academia in the manufacturing domain through its iGetIT eLearning platform. iGetIT platform has courses on more than 2,000 mechanical computer aided design (MCAD), PLM and niche skill sets. The company has signed agreement with six state governments to upgrade ITIs to enhance skill development and improve youth employability.

#### Exhibit 109. Technology Solutions – Key Financials

INR mn	FY20	FY21	FY22	FY23	1HFY24
<b>Products</b>	<b>4,861</b>	<b>4,239</b>	<b>4,319</b>	<b>4,917</b>	<b>2,349</b>
Growth Y-Y		-13%	2%	14%	27%
<b>Education</b>	<b>229</b>	<b>427</b>	<b>4,463</b>	<b>3,914</b>	<b>3,054</b>
Growth Y-Y		87%	946%	-12%	396%
<b>Technology Solutions</b>	<b>5,089</b>	<b>4,665</b>	<b>8,782</b>	<b>8,830</b>	<b>5,403</b>
<b>Gross Margin</b>	<b>23.6%</b>	<b>22.0%</b>	<b>19.0%</b>	<b>19.9%</b>	<b>17.5%</b>

Source: Company, JM Financial

## Financial analysis (Consolidated)

**Revenue from operations** – Consol. revenue from operations increased by 15.7% CAGR from INR 28.5 bn in FY20 to INR 44.1 bn in FY23, led by 10.8% USD revenue growth in services and 20.2% INR revenue growth in Technology solutions during the period. Services revenue saw growth in FY22 and FY23 after a dip in FY21 driven by the execution of multiple full vehicle programs. Growth in the technology solutions business in FY22 and FY23 was on the back of multiple project wins from various state governments in the education segment.

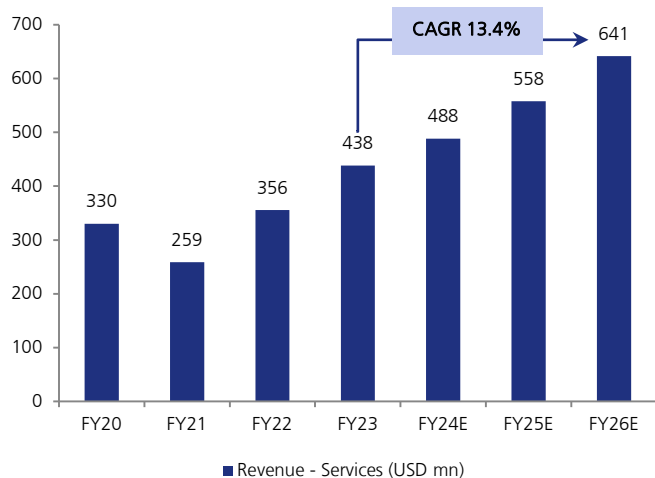
We expect consolidated USD revenue to grow at 13.4% CAGR during FY23-FY26 led by 13.5% CAGR USD revenue growth in services and 13.8% INR revenue growth in technology solutions. The services segment is likely to be impacted in FY24 due to ramp-down in the Vinfast account, as the vehicle programs that TTL was working on have come to an end. However, we believe the company should be able to absorb this impact as multiple new projects in Anchor and other automotive clients are expected to start. Healthy headcount addition in 1HFY24 (+7% from FY23-end) lends support. Tata Technologies has also recently been empanelled by Airbus, which could be a strong growth driver. We expect revenues from Airbus to start flowing in from FY25. Similarly, ramp-up in various recently signed state government deals for education business should support growth in Technology solutions vertical.

Even though FY24/25E USD revenue growth of the Services segment might be impacted by slowdown in Vinfast account, the underlying demand is likely to stay robust. We therefore believe that once the Vinfast drag peters out by FY25, the reported Services growth could bounce back to mid to high teen. Further, we believe the EBITDA margins can gradually improve to 21-22% over the medium term. This should further support earning growth.

**Margin** – The company reported a sharp ~300bps improvement in margins over FY20-23. This was aided by higher offshoring, better realizations and operating leverage. We see further scope of margin expansion, albeit more gradual, and build c.100bps expansion over FY23-26E. FY24E EBITDA margin could however remain flat due to higher revenue share (+100bps) of relatively lower margin technology solution, in our view.

**Exhibit 110. We expect Services revenue growth to pick up from FY25 as Vinfast stabilizes and Airbus ramps up**

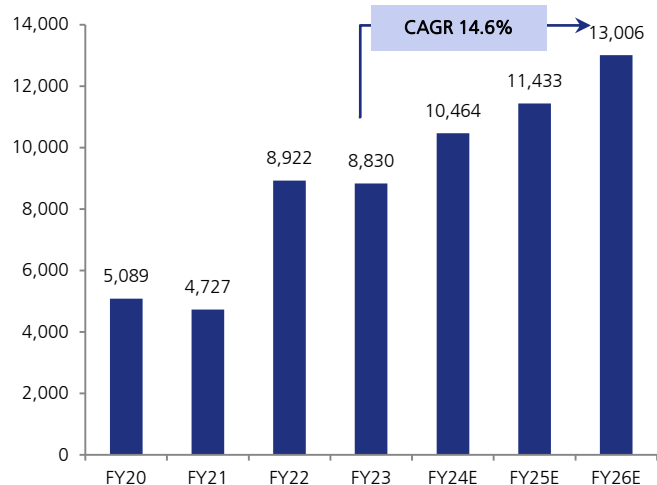
Services revenues and growth, USD mn



Source: Company, JM Financial estimates

**Exhibit 111. We are building in some moderation in Technology solution growth after an up-tick in FY24E**

Technology Solutions revenue and growth, INR mn



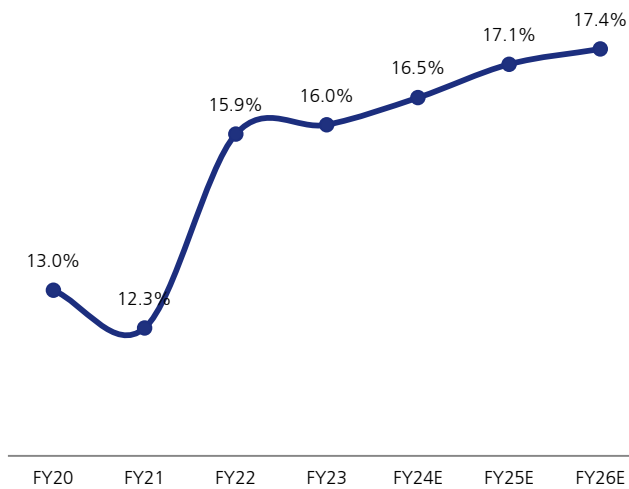
Source: Company, JM Financial estimates

**Exhibit 112. Consol. Revenue and CC growth**

	FY20	FY21	FY22	FY23	FY24E	FY25E	FY26E
Consol. Revenue (USD mn)	402	322	474	547	614	695	798
CC growth (YoY)	-	-19.7%	45.2%	24.0%	11.4%	12.6%	14.7%

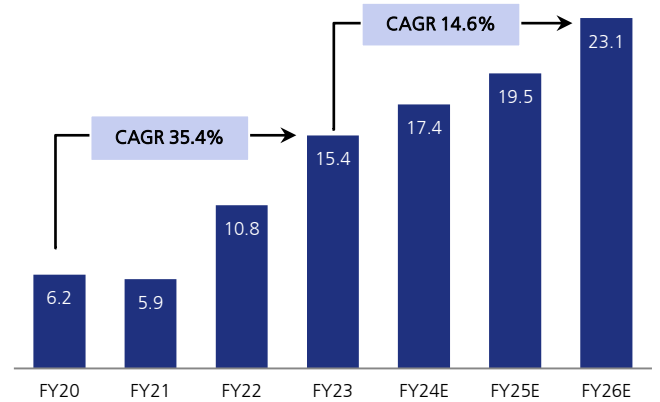
Source: Company, JM Financial estimates

**Exhibit 113. We expect higher offshoring, better realisation and operating leverage to drive 100bps margin expansion EBIT margin**



Source: Company, JM Financial estimates

**Exhibit 114. We estimate 15% EPS CAGR, tad lower than 16% EBITDA CAGR due to moderate other income estimates Earning per share, INR**

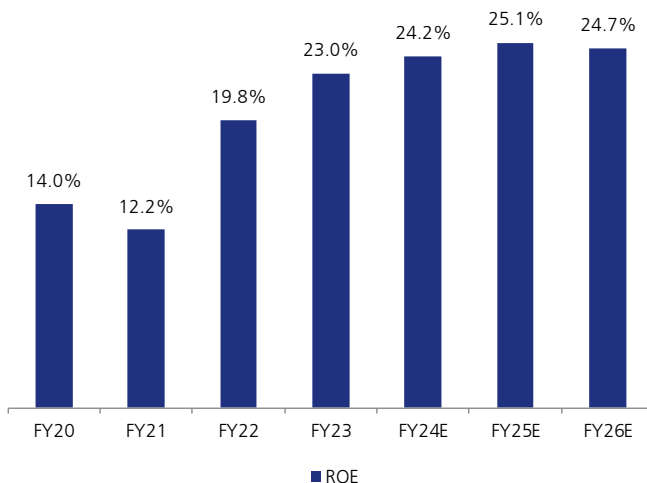


Source: Company, JM Financial estimates

**Profitability and return ratios:** TTL delivered a 35.4% EPS CAGR over FY20-23 aided by robust revenue growth and c.200bps margin expansion. We forecast 14.6% EPS CAGR over FY23-26E, lower than 16.4% EBITDA CAGR estimate, as we build moderate other income growth going forward. We expect improvement in margin to reflect in better return ratios as well.

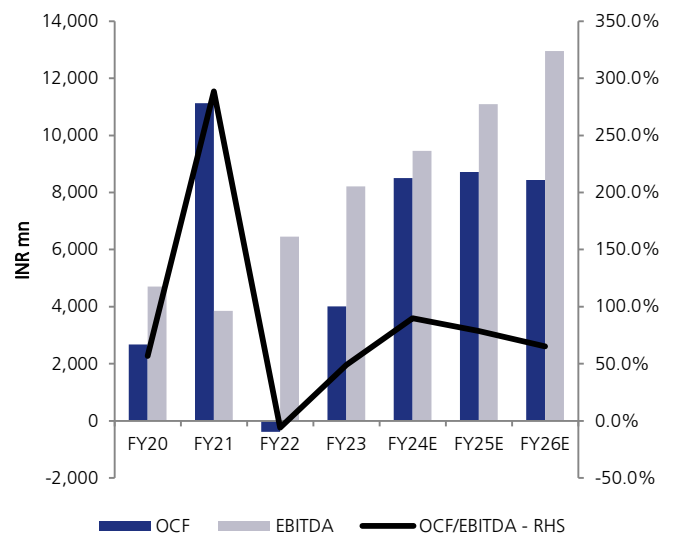
**Cashflow** – The company had a negative cashflow from operations of INR 386.79mn in FY22. That was essentially due to normalization of unusually higher cash conversion in the prior year. The advance received from clients in FY21 was used to make payments to vendors in FY22, resulting in negative operating cashflow. Going forward, we expect DSOs (including unbilled) to improve gradually to 80 days. Further, moderate growth assumption in the Education business should result in stable cash conversion ratios.

**Exhibit 115. We expect return ratios to track margin expansion**



Source: Company, JM Financial estimates

**Exhibit 116. We expect healthy cash conversion to continue**



Source: Company, JM Financial estimates

## Initiate with BUY and TP of INR 1,360

We initiate coverage on Tata Technologies with a BUY rating and PER-based TP of INR 1,360. Our target multiple is in line with the stock's current multiples (58 x FY25E EPS). KPIT and Tata Elxsi, the other two closest peers with significant exposure to Auto ER&D, also trade at 57-58x FY25E PER. These seemingly elevated multiples across the peer-set reflect the long term and structural nature of the outsourced Auto ER&D demand prospects ahead.

Our DCF analysis indicates that target price of INR 1,360 is implying a USD revenue/INR EBITDA growth of 18%/20% over FY23-33E before the growth normalises. A structural step-up in Auto ER&D -> likely higher outsourcing -> India's rising share of the outsourced pie -> Tata Technologies' vantage position to gain market share indicate there are enough growth levers in the environment for Tata Technologies to achieve the implied growth, in our view. We, therefore, expect multiples to sustain. That said, at 60x, the stock performance will likely track earnings growth trajectory.

### Exhibit 117. DCF: Our reverse DCF analysis implies 18% USD revenue CAGR over FY23-33E, achievable given industry tailwinds

DCF PRICE TARGET - 1360	EXPLICIT PROJECTIONS PERIOD				VALUE DRIVER PERIOD		FADE PERIOD		CAGR	CAGR	CAGR
Mar YE (INR mn)	FY23A	FY24F	FY25F	FY26F	FY27F	FY33F	FY34F	FY43F	23-26	27-33	34-43
<b>Net revenues (USD m)</b>	<b>547</b>	<b>614</b>	<b>695</b>	<b>798</b>	<b>966</b>	<b>2,960</b>	<b>3,511</b>	<b>8,975</b>	<b>13.4%</b>	<b>20.5%</b>	<b>9.8%</b>
Change	15.4%	12.3%	13.1%	14.7%	21.1%	20.2%	<b>18.6%</b>	5.0%			
<b>Incremental revenues (USD mn)</b>	<b>73</b>	<b>67</b>	<b>81</b>	<b>103</b>	<b>168</b>	<b>496</b>	<b>552</b>	<b>427</b>			
<b>Net revenues (INR mn)</b>	<b>44,142</b>	<b>50,857</b>	<b>57,837</b>	<b>66,367</b>	<b>80,337</b>	<b>2,46,248</b>	<b>2,92,136</b>	<b>7,46,754</b>	<b>14.6%</b>	<b>20.5%</b>	<b>9.8%</b>
Change	25.1%	15.2%	13.7%	14.7%	21.1%	20.2%	18.6%	5.0%			
Operating expenses	35,934	41,404	46,746	53,410	64,251	1,94,357	2,30,305	5,82,468	<b>14.1%</b>	<b>20.3%</b>	<b>9.7%</b>
<b>EBITDA</b>	<b>8,208</b>	<b>9,454</b>	<b>11,091</b>	<b>12,957</b>	<b>16,086</b>	<b>51,891</b>	<b>61,832</b>	<b>1,64,286</b>	<b>16.4%</b>	<b>21.6%</b>	<b>10.3%</b>
<b>EBITDA margin</b>	<b>18.6%</b>	<b>18.6%</b>	<b>19.2%</b>	<b>19.5%</b>	<b>20.0%</b>	<b>21.1%</b>	<b>21.2%</b>	<b>22.0%</b>			
Depreciation and amortization	1,130	1,046	1,178	1,397	1,379	1,507	1,538	1,677			
As a percentage of net fixed assets (period end)	10.3%	9.1%	9.9%	11.3%	11.2%	10.3%	10.3%	10.3%			
<b>EBIT</b>	<b>7,079</b>	<b>8,407</b>	<b>9,913</b>	<b>11,559</b>	<b>14,707</b>	<b>50,384</b>	<b>60,294</b>	<b>1,62,609</b>	<b>17.8%</b>	<b>22.8%</b>	<b>10.4%</b>
<b>EBIT margin</b>	<b>16.0%</b>	<b>16.5%</b>	<b>17.1%</b>	<b>17.4%</b>	<b>18.3%</b>	<b>20.5%</b>	<b>20.6%</b>	<b>21.8%</b>			
Effective tax rate	22.1%	24.5%	24.5%	24.5%	24.5%	24.5%	24.5%	24.5%			
<b>EV/EBITDA</b>	<b>65.9x</b>	<b>57.2x</b>	<b>48.8x</b>	<b>41.8x</b>	<b>33.6x</b>	<b>10.4x</b>	<b>8.8x</b>	<b>3.3x</b>			
Capital employed - period end	18,931	19,344	20,511	23,570	26,295	54,966	62,693	1,37,749			
NOPLAT	5,512	6,348	7,484	8,727	11,104	38,040	45,522	1,22,770	<b>16.6%</b>	<b>22.8%</b>	<b>10.4%</b>
ROIC	37.2%	33.5%	38.7%	42.5%	47.1%	79.0%	82.8%	93.1%			
<b>Cash flow analysis</b>											
EBIT - post tax	5,512	6,348	7,484	8,727	11,104	38,040	45,522	1,22,770			
Depreciation & amortization	1,130	1,046	1,178	1,397	1,379	1,507	1,538	1,677			
Capital expenditure	-722	-1,505	-1,575	-1,848	-1,816	-1,808	-1,807	-1,767			
Change in working capital	-3,800	78	-770	-2,607	-2,288	-6,507	-7,458	-5,779			
<b>Free cash flow to firm</b>	<b>2,119</b>	<b>5,966</b>	<b>6,317</b>	<b>5,669</b>	<b>8,378</b>	<b>31,233</b>	<b>37,795</b>	<b>1,16,901</b>	<b>38.8%</b>	<b>24.5%</b>	<b>12.0%</b>

Source: JM Financial estimates

### Exhibit 118. DCF Calculations

<b>WACC</b>	<b>10.75%</b>
NPV of cash flow (2023-2042F)	2,41,568
Perpetual growth (%)	5.0%
<b>Implied Exit FCF multiple (X)</b>	<b>17.4x</b>
Terminal value	2,99,558
<b>Enterprise Value</b>	<b>5,41,126</b>
Terminal value as % of Enterprise Value	55%
<b>Enterprise value (USD bn)</b>	<b>6.5</b>
Net debt	-10,284
<b>Equity value (INR mn)</b>	<b>5,51,410</b>
<b>Equity value (USD bn)</b>	<b>6.6</b>
<b>Equity value per share (INR)</b>	<b>1,360</b>

Source: JM Financial estimates

### Exhibit 119. Sensitivity Analysis

	4.0%	4.5%	5.0%	5.5%	6.0%
<b>9.25%</b>	1,768	1,883	2,025	2,205	2,441
<b>9.75%</b>	1,559	1,647	1,753	1,884	2,049
<b>10.25%</b>	1,388	1,455	1,536	1,633	1,754
<b>10.75%</b>	1,244	1,297	<b>1,360</b>	1,433	1,523
<b>11.25%</b>	1,122	1,164	1,213	1,270	1,339
<b>11.75%</b>	1,018	1,052	1,090	1,135	1,188
<b>12.25%</b>	928	955	987	1,022	1,064

Source: JM Financial estimates

## Valuation Table

## Exhibit 120. ER&amp;D Services – Global valuation comp

Company	CMP (LC)	Mcap (USD m)	P/E			PEG	EV/EBITDA			EV/Sales		
			FY24	FY25	FY26		FY24	FY25	FY26	FY24	FY25	FY26
<b>India</b>												
Tata Tech*	1,172	5,716	66.0x	58.4x	50.1x	4.0x	49.5x	42.2x	36.1x	9.2x	8.1x	7.0x
KPIT*	1,506	4,966	70.6x	57.3x	47.5x	2.6x	43.3x	35.6x	30.1x	8.5x	7.2x	6.1x
Tata Elxsi	8,584	6,430	66.4x	56.0x	46.7x	2.9x	48.2x	40.7x	34.4x	14.6x	12.3x	10.4x
L&T TS	5,159	6,561	42.0x	36.4x	31.2x	2.3x	27.7x	24.2x	21.0x	5.5x	4.9x	4.3x
Cyient	2,240	2,986	32.7x	27.8x	23.7x	1.6x	18.8x	16.5x	14.6x	3.5x	3.0x	2.8x
<b>Average</b>			<b>55.5x</b>	<b>47.2x</b>	<b>39.8x</b>		<b>37.5x</b>	<b>31.8x</b>	<b>27.2x</b>	<b>8.3x</b>	<b>7.1x</b>	<b>6.1x</b>
<b>Global</b>												
Alten	128	54	15.9x	13.9x	12.6x	1.1x	9.7x	8.7x	8.0x	1.1x	1.0x	1.0x
Bertrandt	52	6	12.1x	9.0x	7.8x	0.4x	5.7x	4.9x	4.4x	0.6x	0.6x	0.5x
EDAG	13	4	10.5x	9.4x	8.5x	0.8x	6.1x	5.6x	5.2x	0.7x	0.7x	0.6x
Desay SV	112	747	41.3x	29.7x	22.3x	0.8x	35.6x	25.3x	19.3x	3.1x	2.4x	1.9x
Etteplan	14	4	19.9x	14.7x	13.6x	0.7x	9.2x	8.6x	8.1x	1.2x	1.1x	1.1x
Assytem	49	9	18.0x	15.7x	13.9x	1.2x	13.9x	12.4x	11.3x	1.2x	1.1x	1.1x
Ricardo	490	4	14.0x	12.1x	10.3x	0.7x	7.1x	6.6x	5.9x	0.8x	0.8x	0.7x
Thundersoft	70	386	40.0x	30.8x	22.9x	1.0x	30.9x	23.7x	18.1x	4.7x	3.7x	2.9x
Arcsoft	36	174	100.9x	61.3x	40.5x	1.1x	73.3x	40.1x	25.8x	18.1x	13.6x	9.9x
<b>Average</b>			<b>28.5x</b>	<b>20.8x</b>	<b>16.2x</b>		<b>19.9x</b>	<b>14.3x</b>	<b>11.3x</b>	<b>3.2x</b>	<b>2.6x</b>	<b>2.0x</b>

Note: \* - JM Estimates for Tata Tech Ltd and KPIT Tech rest Bloomberg estimates. Source: Bloomberg, JM Financial. Valuation as of 8 Jan 2024.

**Exhibit 121. Key Business Metrics**

	FY20	FY21	FY22	FY23	1H FY24
<b>Revenue - Geographic distribution</b>					
Total Revenue (INR mn)	28,521	23,809	35,296	44,142	25,267
India	30%	29%	32%	30%	35%
Europe	34%	31%	24%	23%	27%
North America	30%	32%	22%	21%	19%
Rest of World	6%	8%	21%	26%	19%
<b>Revenue split Onshore/Offshore mix*</b>					
Onshore	48%	46%	50%	50%	49%
Offshore	52%	54%	50%	50%	51%
<b>Revenue split by contract type</b>					
Fixed bid contracts	45%	40%	53%	60%	58%
Time and materials contracts	55%	60%	47%	40%	42%
<b>Client Concentration - Revenue Contribution (%)</b>					
Anchor Clients (TML + JLR)	54.4%	51.4%	40.3%	40.2%	46.0%
Top 5 Clients (including Anchor Clients)	66.6%	64.5%	65.8%	73.2%	70.9%
Top 10 Clients	75.4%	76.5%	77.7%	80.8%	80.1%
Top 20 Clients	83.7%	84.9%	87.0%	88.4%	88.0%
<b>Client distribution engagement size</b>					
\$ 50 mn +	2.0	2.0	3.0	3.0	3.0
\$ 20 mn +	2.0	2.0	3.0	3.0	3.0
\$ 10 mn +	5.0	6.0	6.0	6.0	6.0
\$ 5 mn +	8.0	8.0	11.0	7.0	10.0
\$ 1 mn +	33.0	27.0	31.0	34.0	38.0
<b>Manpower Metrics</b>					
No of employees	8,620	7,954	9,338	11,616	12,451
Onshore	18.3%	17.0%	17.8%	15.1%	13.8%
Offshore	81.7%	83.0%	82.2%	84.9%	86.2%
Global Attrition rate	15.8%	11.5%	25.1%	21.7%	17.2%
Global Utilization rate	86.2%	75.8%	86.8%	87.1%	87.6%

Source: Company, JM Financial

## Key Risks

### Dependence on top 5 clients

Tata Technologies get c.71% of its revenues from top-5 clients (1HFY24). The company has higher dependence on its anchor clients which contribute c.46% to its revenues. Any termination of contract or less favourable renewal terms with any of them could result in a decline in the company's revenue and profit and have an adverse impact on its business.

### High dependence on automotive segment

The company's clients are concentrated in the automotive industry, which contributes more than 88% of its services revenue. The automotive industry in particular is influenced by several macroeconomic and geopolitical factors and events specific to corporate demand. Any softness in demand in the automotive industry due to negative economic growth in key markets will affect the company's business. Ongoing UAW (United Auto Workers) strike in the US, weakening EV demand and delays in regulatory deadline to phase out ICE vehicles could impact near to medium term prospects for Tata Tech.

### Limited expertise in Embedded ER&D

Tata Tech's has strength in traditional mechanical/mechatronics ER&D areas, e.g., Body Engineering, Chassis, Interiors, etc. Incremental ER&D budgets/spend of OEMs is shifting towards embedded systems, e.g., ADAS, safety systems, connected cars where other competitors have a head-start. Inability of Tata Tech to develop these capabilities could impact its market share in the Auto ER&D segment. Additionally, OEMs could exert pricing pressure in traditional areas such as Body engineering in order to channelise resulting savings towards newer technologies. That could impact Tata Tech's realisation and revenue growth.

### Higher exposure to new age EV players

Tata Tech gets a significant share of its services revenue from some of the new-age EV start-ups such as Vinfast, etc. While these companies are well funded currently, they are still unprofitable. Increased competition in the EV space from both market leader (Tesla) or traditional OEMs could impact these new age companies' profitability further and impede their ability to maintain ER&D spend.

### Dependence on vendors and partners for software

The company is dependent on third party vendors and partners for software solutions, many of which are single sources or limited sourced. A delay in the supply of a critical single-source or limited-source software may prevent the timely delivery of the related software as per desired specifications. Moreover these relationships with vendors are non-exclusive, hence there is a risk of them competing with the company by directly aligning with clients or through a competitor. Moreover, any change in the prices of software or disruptions in customer experience can affect the company's business adversely.

## Financial Tables (Consolidated)

Income Statement		(INR mn)			
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Net Sales	35,296	44,142	50,857	57,837	66,367
Sales Growth	48.2%	25.1%	15.2%	13.7%	14.7%
Other Operating Income	0	0	0	0	0
<b>Total Revenue</b>	<b>35,296</b>	<b>44,142</b>	<b>50,857</b>	<b>57,837</b>	<b>66,367</b>
Cost of Goods Sold/Op. Exp	26,010	31,523	36,216	40,846	46,641
Personnel Cost	0	0	0	0	0
Other Expenses	2,829	4,411	5,187	5,899	6,769
<b>EBITDA</b>	<b>6,457</b>	<b>8,208</b>	<b>9,454</b>	<b>11,091</b>	<b>12,957</b>
EBITDA Margin	18.3%	18.6%	18.6%	19.2%	19.5%
EBITDA Growth	67.4%	27.1%	15.2%	17.3%	16.8%
Depn. & Amort.	857	1,130	1,046	1,178	1,397
EBIT	5,599	7,079	8,407	9,913	11,559
Other Income	269	697	1,137	869	1,004
Finance Cost	0	0	0	0	0
PBT before Excep. & Forex	5,869	7,776	9,544	10,782	12,564
Excep. & Forex Inc./Loss(-)	0	0	0	0	0
PBT	5,869	7,776	9,544	10,782	12,564
Taxes	1,499	1,721	2,338	2,642	3,078
Extraordinary Inc./Loss(-)	0	0	0	0	0
Assoc. Profit/Min. Int.(-)	0	0	0	0	0
Reported Net Profit	4,370	6,054	7,206	8,141	9,486
<b>Adjusted Net Profit</b>	<b>4,370</b>	<b>6,054</b>	<b>7,206</b>	<b>8,141</b>	<b>9,486</b>
Net Margin	12.4%	13.7%	14.2%	14.1%	14.3%
Diluted Share Cap. (mn)	406.1	405.7	405.7	405.7	405.7
<b>Diluted EPS (INR)</b>	<b>10.8</b>	<b>14.9</b>	<b>17.8</b>	<b>20.1</b>	<b>23.4</b>
Diluted EPS Growth	78.5%	38.7%	19.0%	13.0%	16.5%
Total Dividend + Tax	0	0	8,937	3,174	3,663
Dividend Per Share (INR)	0.0	0.0	18.3	6.5	7.5

Source: Company, JM Financial

Cash Flow Statement		(INR mn)			
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Profit before Tax	4,370	6,240	9,544	10,782	12,564
Depn. & Amort.	857	946	1,046	1,178	1,397
Net Interest Exp. / Inc. (-)	219	180	175	171	160
Inc (-) / Dec in WCap.	-5,802	-2,191	78	-770	-2,607
Others	1,247	1,269	0	0	0
Taxes Paid	-1,278	-2,429	-2,338	-2,642	-3,078
<b>Operating Cash Flow</b>	<b>-387</b>	<b>4,014</b>	<b>8,505</b>	<b>8,719</b>	<b>8,436</b>
Capex	-634	-657	-2,699	-2,098	-2,488
Free Cash Flow	-1,021	3,357	5,806	6,621	5,948
Inc (-) / Dec in Investments	1,315	-4,298	0	0	0
Others	61	80	0	0	0
<b>Investing Cash Flow</b>	<b>742</b>	<b>-4,874</b>	<b>-2,699</b>	<b>-2,098</b>	<b>-2,488</b>
Inc / Dec (-) in Capital	0	0	0	0	0
Dividend + Tax thereon	0	0	-7,425	-2,637	-3,043
Inc / Dec (-) in Loans	-439	-509	41	0	0
Others	-4	-1	-175	-171	-160
<b>Financing Cash Flow</b>	<b>-443</b>	<b>-510</b>	<b>-7,560</b>	<b>-2,808</b>	<b>-3,203</b>
<b>Inc / Dec (-) in Cash</b>	<b>-88</b>	<b>-1,370</b>	<b>-1,754</b>	<b>3,813</b>	<b>2,744</b>
Opening Cash Balance	7,834	8,694	10,290	8,536	12,349
Closing Cash Balance	7,746	7,324	8,536	12,349	15,093

Source: Company, JM Financial

Balance Sheet		(INR mn)			
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Shareholders' Fund	22,802	29,895	29,675	35,178	41,621
Share Capital	418	811	811	811	811
Reserves & Surplus	22,384	29,083	28,864	34,367	40,809
Preference Share Capital	0	0	0	0	0
Minority Interest	0	0	0	0	0
Total Loans	4	5	7	7	7
Def. Tax Liab. / Assets (-)	0	0	0	0	0
<b>Total - Equity &amp; Liab.</b>	<b>22,805</b>	<b>29,900</b>	<b>29,682</b>	<b>35,186</b>	<b>41,628</b>
Net Fixed Assets	10,682	10,980	11,879	12,276	12,727
Gross Fixed Assets	3,389	3,351	3,810	4,206	4,657
Intangible Assets	7,293	7,629	8,069	8,069	8,069
Less: Depn. & Amort.	0	0	0	0	0
Capital WIP	0	0	0	0	0
Investments	0	0	0	0	0
Current Assets	31,498	41,035	39,590	47,031	54,527
Inventories	0	0	0	0	0
Sundry Debtors	7,682	11,062	11,983	12,993	14,546
Cash & Bank Balances	8,694	10,290	8,536	12,349	15,093
Loans & Advances	5,277	0	0	0	0
Other Current Assets	9,846	19,683	19,072	21,689	24,888
Current Liab. & Prov.	19,375	22,115	21,787	24,121	25,626
Current Liabilities	19,375	22,115	21,787	24,121	25,626
Provisions & Others	0	0	0	0	0
Net Current Assets	12,124	18,920	17,803	22,910	28,901
<b>Total - Assets</b>	<b>22,805</b>	<b>29,900</b>	<b>29,682</b>	<b>35,186</b>	<b>41,628</b>

Source: Company, JM Financial

Dupont Analysis					
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Net Margin	12.4%	13.7%	14.2%	14.1%	14.3%
Asset Turnover (x)	1.4	1.5	1.6	1.7	1.6
Leverage Factor (x)	1.1	1.1	1.1	1.1	1.1
RoE	19.8%	23.0%	24.2%	25.1%	24.7%

Key Ratios					
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
BV/Share (INR)	56.2	73.7	73.1	86.7	102.6
ROIC	30.1%	32.7%	31.1%	34.0%	35.4%
ROE	19.8%	23.0%	24.2%	25.1%	24.7%
Net Debt/Equity (x)	-0.4	-0.3	-0.3	-0.4	-0.4
P/E (x)	108.9	78.5	66.0	58.4	50.1
P/B (x)	20.9	15.9	16.0	13.5	11.4
EV/EBITDA (x)	72.4	56.7	49.4	41.8	35.6
EV/Sales (x)	13.2	10.5	9.2	8.0	6.9
Debtor days	79	91	86	82	80
Inventory days	0	0	0	0	0
Creditor days	215	200	171	169	159

Source: Company, JM Financial

# KPIT Technologies Ltd | BUY

## Walking the talk

KPIT, a pure-play ER&D services player, has put all its eggs in the automotive embedded software basket. Post a business restructuring in 2019, it moved away from traditional IT Services to focus only on Automotive Engineering and Mobility solutions. That speaks of its conviction on the emerging opportunity in this space and its own ability to address that. The company is using its expertise in middleware, a core component of the SDV architecture, to land in an SDV program and then expand. Its JV with ZF, a global Tier 1, to build middleware solutions, further underlines its focus. The bet seems to be paying off. The company has won USD 1bn+ TCv (TTM), including strategic partnership in Renault and Honda's SDV programs. Middleware-led recent growth (16% CQGR over 3Q22-2Q24) suggests the follow-through growth is still ahead. KPIT's existing relationships with leading global OEMs and its referenceable work in select SDV programs should facilitate client mining. We estimate 24%/31% USD rev/EPs CAGR over FY23-26E. Such a strong earning visibility merits premium valuation. We initiate coverage with BUY and TP of INR 1,830, valuing it at 60x PER.

- A play on Softwarisation theme:** OEMs' automotive software spend is estimated to grow by 70% till 2030 to USD 43bn annually. We estimate that outsourcing of downstream services such as integrations, testing and maintenance of the software itself could drive USD 47bn of cumulative opportunity for ESPs over the next five years. KPIT, with capabilities across the automotive embedded software space, longstanding client relationships with leading OEMs/Tier 1s and early wins in their middleware/SDV programs, has a head-start over competition. That places it favourably to capture the opportunity.
- Middleware – tip of KPIT's spear:** Middleware constitutes 20% of KPIT's revenue. But it has been the fastest-growing segment (16% CQGR over 3Q22-2Q24). That is because KPIT is using middleware, its traditional strength area, to enter into OEMs' SDV programs. KPIT has 15-year long association with AUTOSAR – a foundation of automotive middleware. Its 900+ AUTOSAR experienced engineers and 20+ co-development partnerships with major OEMs and Tier 1s reflect its strong credentials in middleware. Middleware, though important, constitutes less than 10% of automotive software spend. But it gives KPIT accessibility to the other larger-spend areas. We, therefore, believe KPIT's recent strong growth in middleware is just a precursor to a long growth runway ahead.
- Growth visibility merits premium valuation; initiate with BUY:** We expect KPIT to report c.40% YoY cc growth in FY24E (34% organic), fastest among peers. Strong deal wins (TTM TCv of USD 1bn+) and cross-sell/up-sell opportunity in its current 25 strategic clients should support the growth trajectory. We estimate 24% USD revenue/31% EPS CAGR over FY23-26E. While the upfront step-up in OEMs' software spend will likely normalise, the outsourcing trend it is likely to trigger should outlast the investment cycle, in our view. That should underpin multi-year growth trajectory for KPIT. Current multiple (57x FY25E) should, therefore, sustain. We value the stock at 60x 24-M fwd EPS. Our TP implies a USD revenue/INR EBITDA CAGR of 22%/24% over FY23-33E, achievable in our view. We initiate coverage with BUY and TP of INR 1,830.



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### Recommendation and Price Target

Current Reco.	BUY
Previous Reco.	NA
Current Price Target (12M)	1,830
Upside/(Downside)	21.5%
Previous Price Target	NA
Change	NA

### Key Data – KPITTECH IN

Current Market Price	INR1,507
Market cap (bn)	INR413.0/US\$5.0
Free Float	57%
Shares in issue (mn)	270.8
Diluted share (mn)	270.9
3-mon avg daily val (mn)	INR2,040.9/US\$24.5
52-week range	1,640/677
Sensex/Nifty	72,026/21,711
INR/US\$	83.2

### Price Performance

%	1M	6M	12M
Absolute	1.9	42.7	120.7
Relative*	-1.9	29.7	84.9

\* To the BSE Sensex

%%JM Financial Research is also available on: Bloomberg - JMFR <GO>, Thomson Publisher & Reuters, S&P Capital IQ, FactSet and Visible Alpha

Please see Appendix I at the end of this report for Important Disclosures and Disclaimers and Research Analyst Certification

Financial Summary					(INR mn)
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E
Net Sales	24,324	33,650	47,891	56,952	66,673
Sales Growth (%)	19.5	38.3	42.3	18.9	17.1
EBITDA	4,385	6,204	9,432	11,454	13,572
EBITDA Margin (%)	18.0	18.4	19.7	20.1	20.4
Adjusted Net Profit	2,742	3,810	5,775	7,122	8,583
Diluted EPS (INR)	10.2	14.1	21.3	26.3	31.7
Diluted EPS Growth (%)	85.6	38.9	51.2	23.3	20.5
ROIC (%)	54.0	48.6	45.2	44.6	46.0
ROE (%)	21.8	25.7	31.4	31.3	30.4
P/E (x)	148.4	106.9	70.7	57.3	47.6
P/B (x)	31.4	24.9	20.3	16.2	13.2
EV/EBITDA (x)	91.1	64.9	42.7	34.9	29.2
Dividend Yield (%)	0.0	0.3	0.3	0.5	0.7

Source: Company data, JM Financial. Note: Valuations as of 08/Jan/2024

## Investment rationale

### Play on the “Softwarization” theme

As we elaborated in the industry section, Softwarization in the automotive vertical is likely to drive USD 47bn of cumulative outsourced ER&D spend over the next five years. We believe KPIT, with its sole focus on the automotive embedded software space, long-standing client relationships with some of the leading OEMs/Tier-1s and early wins in their middleware/SDV programs is well positioned to benefit from this opportunity. While the software development spend by OEMs will naturally normalise after the initial step-up, we believe the higher offshoring trend that it is likely to trigger should outlast that. Besides, downstream software services - integration, testing, etc. – which service providers such as KPIT are likely to cater – should continue to grow as more applications are built on top of the vehicle OS for specific services. We, therefore, expect a much longer growth runway for KPIT.

**Exhibit 122. We estimate USD 35bn of incremental outsourced Auto ER&D spend over 2023-27E due to Softwarisation**

USD bn	2023	2024	2025	2026	2027	Cumulative 2023-27E
<b>Upstream</b>						
Development	15.3	16.8	17.5	17.5	18.4	
<b>Downstream</b>						
Integration	8.8	9.7	10.6	10.6	10.5	
Maintenance	2.4	3.0	3.7	4.5	5.0	
Testing	7.1	7.8	8.5	8.2	7.9	
<b>Sub-total, Downstream</b>	<b>18.4</b>	<b>20.5</b>	<b>22.7</b>	<b>23.3</b>	<b>23.4</b>	<b>108.3</b>
<b>Total</b>	<b>34.0</b>	<b>37.3</b>	<b>40.6</b>	<b>40.8</b>	<b>41.8</b>	<b>194.5</b>
% of downstream services outsourced	42.0%	42.5%	43.0%	43.5%	44.0%	43.1%
<b>Outsourced Auto ER&amp;D software market</b>	<b>7.7</b>	<b>8.7</b>	<b>9.8</b>	<b>10.1</b>	<b>10.3</b>	<b>46.7</b>

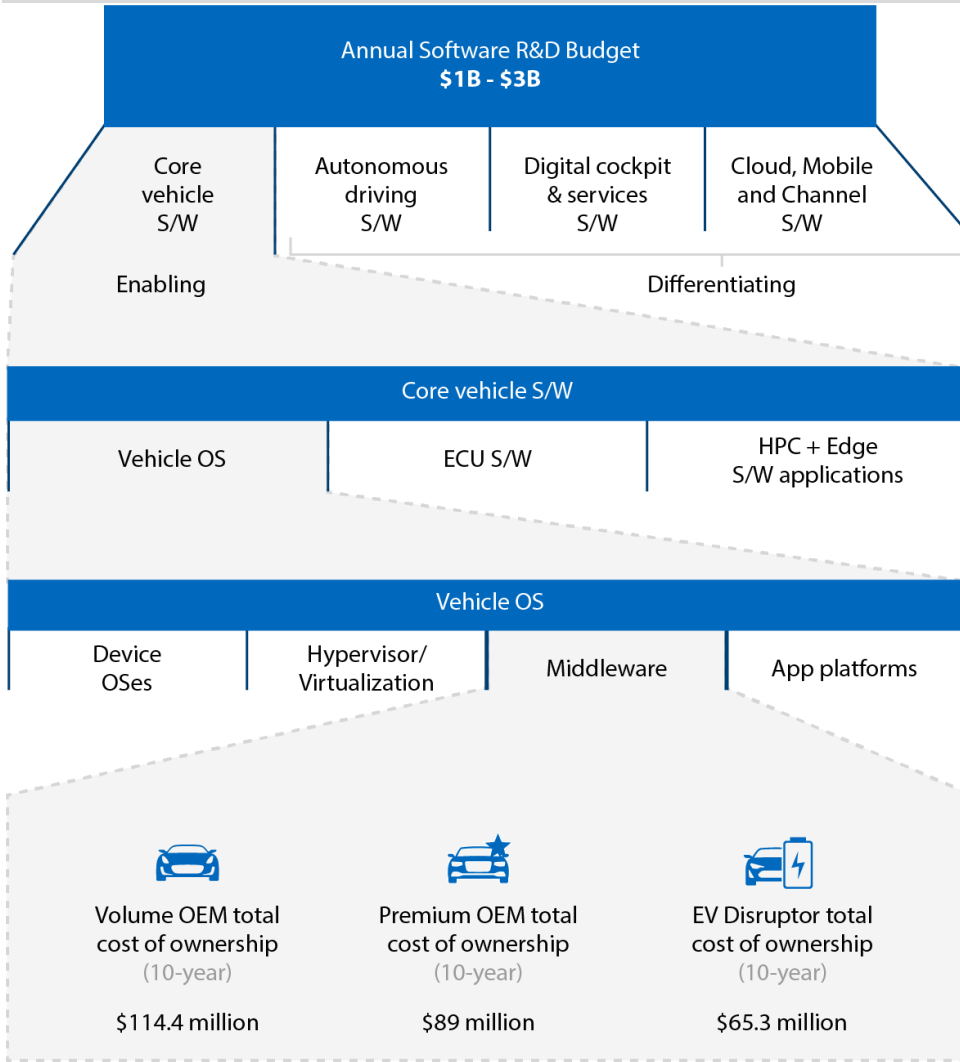
Source: Zinnov, Roland Berger, JM Financial estimates

### Middleware: Tip of the spear to land at larger opportunity

KPIT uses middleware, a key component of SDV architecture, as a tip-of-the-spear strategy to enter into an OEM’s SDV program. KPIT’s long-standing association with the AUTOSAR consortium, an industry body for open and common standards for ECUs in a vehicle, has equipped it with deep understanding of the middleware layer. KPIT has worked closely with Tier 1s (e.g., Cummin) who used to provide AUTOSAR-compliant ECUs to OEMs in the era of distributed E/E architecture. That has not only helped KPIT establish its credentials in the middleware development space, but has also familiarised OEMs with KPIT’s capabilities. Now, as the OEMs shift towards a zonal/central E/E architecture and take control over the development of middleware themselves, KPIT’s credentials and familiarity is making it an obvious port of call for OEMs looking for an integration partner.

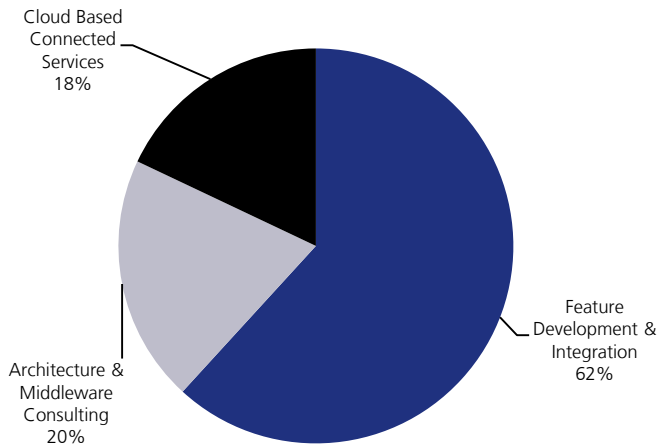
Importantly, middleware, though important, is a smaller part of the overall SDV development budget. But it does allow KPIT to get a visibility into both the upstream (OS, MCAL, Cloud) and downstream (ADAS, In-vehicle Infotainment) development plans of the OEM. We, therefore, believe that KPIT’s recent growth trajectory is just the beginning of a long runway ahead as it expands its relationship beyond middleware and mines the clients further.

**Exhibit 123. Middleware on its own represents less than 10% of an OEM’s software budget, but it is central to a Vehicle OS and core vehicle S/W**



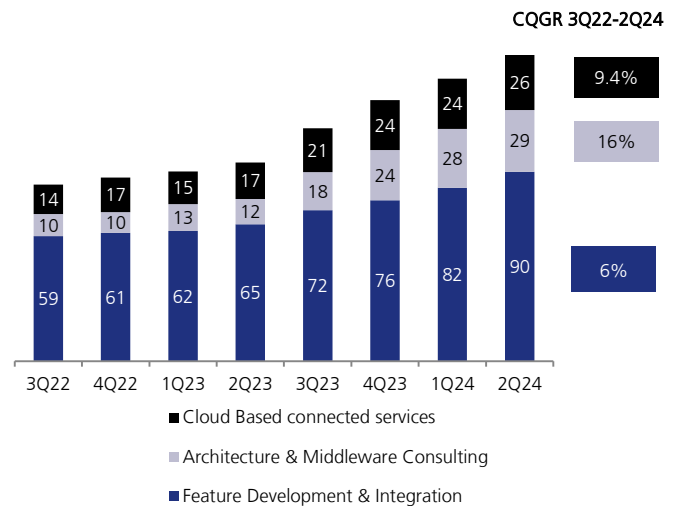
Source: SDB, JM Financial

**Exhibit 124. Middleware (c.20% of rev.) allows KPIT to expand its offerings to multiple other connected modules of an SDV**  
Revenue share, by practice (2QFY24)



Source: Company, JM Financial

**Exhibit 125. Fast growth in the middleware segment should, therefore, be a lead indicator for the other segments’ revenues**  
Revenue, by practice (USD mn)



Source: Company, JM Financial

**Niche acquisitions to close offering gaps/accelerate wallet share gains**

KPIT has accelerated bridging its offering gaps in the embedded software domain through tuck-in acquisitions. Its acquisition of Technica, for example, adds network architecture and associated capabilities to its existing capabilities. With the E/E architecture undergoing a significant shift, network architecture becomes a critical component for the re-configuration/re-architecture of various ECUs. Further, Technica strengthens KPIT’s relationship with some of the leading European OEMs. We believe KPIT is fast emerging as a full-range system integrator in the automotive embedded software domain. This bodes well for KPIT’s continued wallet share gain and, hence, growth.

**Exhibit 126. KPIT has done tuck-in acquisitions to add skills and entrench itself further in OEMs’ SDV programs**

Date	Target Company	Area of Operations	Rationale	Current Stake	Total consideration
Jun-21	Pathpartners	Product engineering and R&D specialist helping clients with advanced technology products	PathPartner strengthens software integration capabilities and help deliver complex software solutions for new-age vehicle architectures.	80%	INR 1,910mn
Sep-21	Future Mobility Solutions	Software and feature development in autonomous driving, ADAS and vehicle safety, integration and validation	FMS group strengthens KPITs offering in the AD domain as well as in the areas of Mobility as a service, Digitization, & Sustainable Mobility	100%	EUR 15.6 mn
May-22	SOMIT	SOMIT enables after-sales operations of high tech luxury and new age OEMs through a cloud-based vehicle diagnostics platform & expert consulting services.	SOMIT Solutions’ cloud-based platform complements KPITs existing after-sales platform to offer a more integrated solution for the benefit of our T25 clients.	100%	GBP 7.68 mn
Sep-22	Technica	System prototyping (network system architecture, hardware prototyping, integration), automotive ethernet products, and tools for validation	KPIT’s extensive software expertise gets vertically integrated with Technica Engineering’s production-ready system prototyping specialization making it a game changer for the industry	100%	EUR 110mn
Nov-23	N-Dream AG	N-Dream is an early mover into the Incar gaming space offering a proven Cloud based Game Aggregation Platform including data, to Automotive OEMs.	Strategic investment in N-Dream is part of KPIT’s roadmap to enable Automotive OEMs enhance the driver & passenger experience in the Cockpit of the Future. KPIT will offer complementary software integration & validation services to N-Dream’s Automotive clients.	13%	EUR 3 mn

Source: Company, JM Financial

**Engagements as strategic SDV program partner a beachhead for broader client-set**

KPIT has been engaged with some of the leading global OEMs as a strategic partner in their SDV programs. At a time when there are select few SIs with prior experience in SDV, these early wins should help KPIT build a strong reference client base. We, therefore, believe KPIT has entered into a virtuous cycle of converting these early wins into new project wins, which will enable it to gain new clients/new engagements with existing ones.

**Exhibit 127. Key Strategic Partnerships/ Large Deals**

Date	Client	Deal/ Partnership details
Mar’23	Honda	Announced a <b>strategic partnership with Honda to advance its Software-Defined Mobility (SDM)</b> . KPIT Technologies has been working with Honda for the past eight years. <b>Over 2,000 professionals from KPIT will contribute to Honda’s SDM roadmap beyond 2030.</b>
May’23	ZF	<b>KPIT Technologies and ZF Group have collaboratively established QORIX, an independent company focused on developing and distributing open and scalable middleware products and solutions for the mobility ecosystem.</b> ZF will invest 50% in QORIX, utilizing the expertise and IPs of both KPIT and ZF to create automotive middleware platforms.
Nov’22	Renault	<b>Renault has selected KPIT as a strategic partner for Software-Defined Vehicle (SDV) programs.</b> KPIT will deploy <b>600+ engineers</b> , contributing expertise in ADAS, Chassis, Body Electronics, Platforms, Systems Engineering, and Vehicle validation. The collaboration anticipates driving value in Renault’s vehicle production programs from 2026, marking a milestone in reimagining mobility and transforming the automotive industry.
Dec’20	Triumph	KPIT has partnered with <b>Triumph Motorcycles to provide a 'Distraction-Free Digital Connected Experience' for bikers.</b> Developing technology solutions for Turn-by-Turn navigation using Google Maps, KPIT’s software platform enables a safe and distraction-free digital connected experience for over 15 models of Triumph motorcycles worldwide through the 'My Triumph Connectivity System' application. KPIT’s end-to-end capabilities, including UX, app development, embedded software development, integration, hosting, and automated testing, played a pivotal role in this collaboration.
Nov’20	BMW	KPIT secured a significant, multi-year order from BMW Group for software development, integration, and maintenance of a combined powertrain coordination unit for the next-gen power electronics of BMW Battery Electric Vehicles. MicroFuzzy, a KPIT group company specializing in vehicle electrification engineering, and KPIT’s electric powertrain team play a key role in BMW Group’s strategic software program. <b>KPIT is nominated as the sole software integration partner for BMW’s 11KW combined charging electronics program, responsible for complete development, integration, validation, and series software maintenance for upcoming BMW electric vehicles.</b>

Source: Company, JM Financial

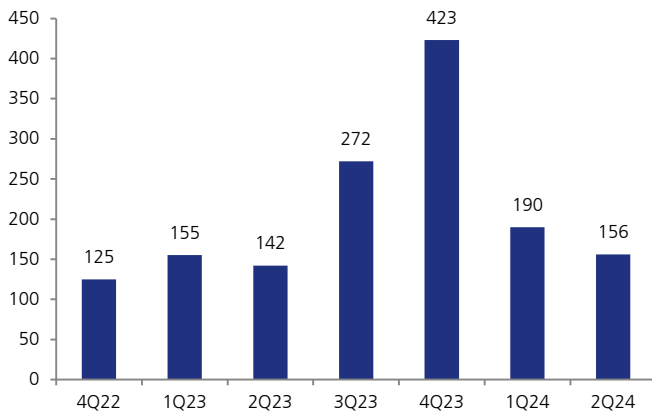
## Financial Analysis

KPIT's recent performance has been balanced across various financial and operating parameters. Its past 10 quarter revenue CQGR of 7.3% has been broad-based across geographies and strategic/non-strategic clients. Development headcount over this period grew by 7.1% CQGR as the company built upfront capacity. However, revenue/employee, after dipping initially, has now started to inch up as the company has started deploying resources, driving up utilisation. The Tecnica acquisition (consolidated in Sep'23) would have also helped rev/employee (rev/emp). Rev/Employee is up 8% even from 3QFY23, assuming impact of Tecnica would have already been in the base quarter. Importantly, EBITDA margin has expanded by 270bps over this period (1QFY22-2QFY24) implying that improvement in rev/emp is not just due to higher onsite billing. We believe consistent improvement in rev/emp reflects better pricing and improved utilisation. We expect this trend to continue.

A strong 1HFY24 should help KPIT exceed its FY24 revenue guidance, in our view. We estimate KPIT to deliver 40% YoY cc revenue growth in FY24, ahead of its guidance of 37%+. Even organic growth is likely to be 34%, well ahead of its peer set. Continued ramp-up of recent deal wins (TTM TCV of USD 1bn+) and strong industry tailwinds lend visibility to growth beyond FY24. We are building 24% CAGR over FY23-26E. Better realisation and operating leverage should drive 220bps+ EBITDA margin expansion over FY23-FY26E. That should support our 31% EPS CAGR forecast over FY23-26E.

**Exhibit 128. KPIT's TTM TCV has been USD 1bn+, at c.2x book-to-bill...**

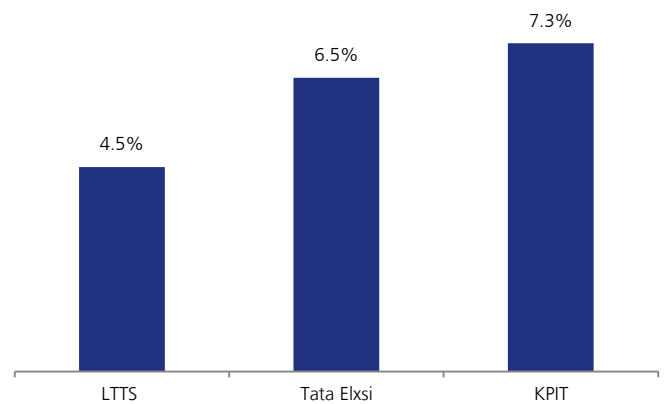
Total Contract Value, KPIT (USD mn)



Source: Company, JM Financial

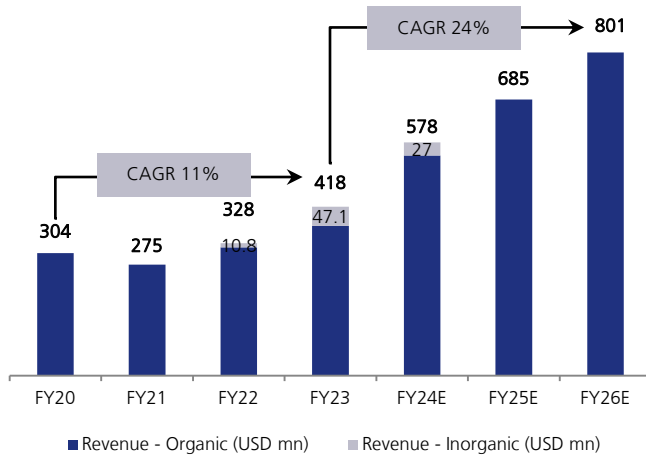
**Exhibit 129. ...that has helped it outpace peers in the automotive space**

Auto Revenue CQGR, 1Q22-2Q24, Select Indian ESPs



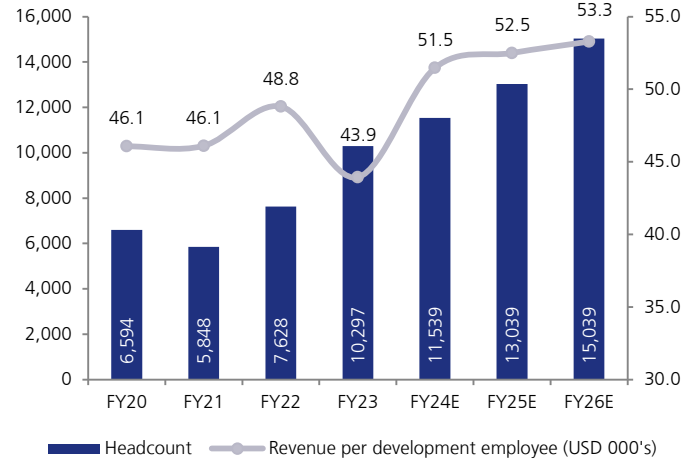
Note: Transportation revenue growth for LTTS and ELXSI; Source: Respective Company filings, JM Financial

**Exhibit 130. We expect revenue growth momentum to sustain...**  
Consolidated Revenues - KPIT, USD mn



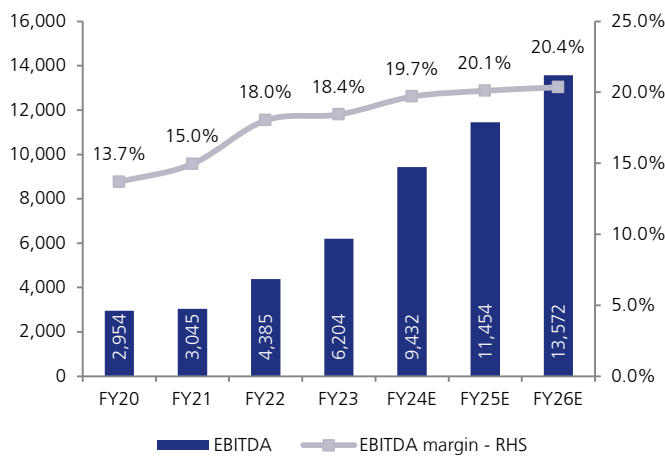
Source: Company, JM Financial estimates

**Exhibit 131. ...aided by both volume and realisation growth**  
Revenue per development employee and headcount growth



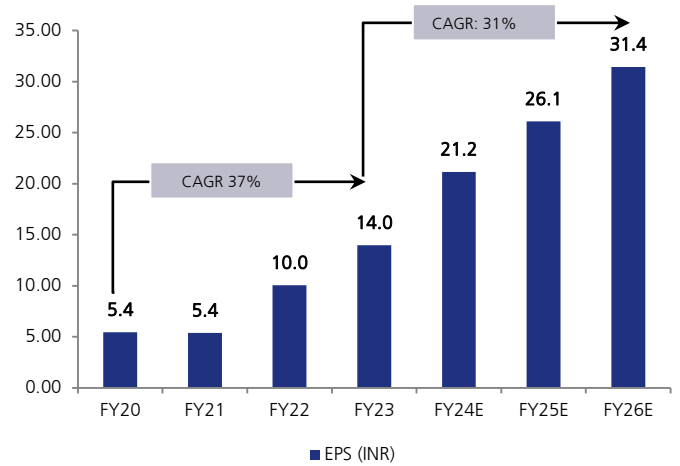
Source: Company, JM Financial estimates

**Exhibit 132. Operating leverage and revenue productivity should drive margin expansion...**  
EBITDA and EBITDA margin



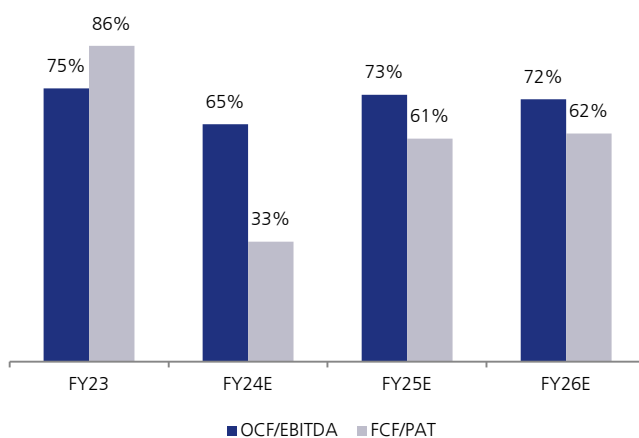
Source: Company, JM Financial estimates

**Exhibit 133. ...resulting in 31% EPS CAGR over FY23-26E**  
Earnings per share, INR



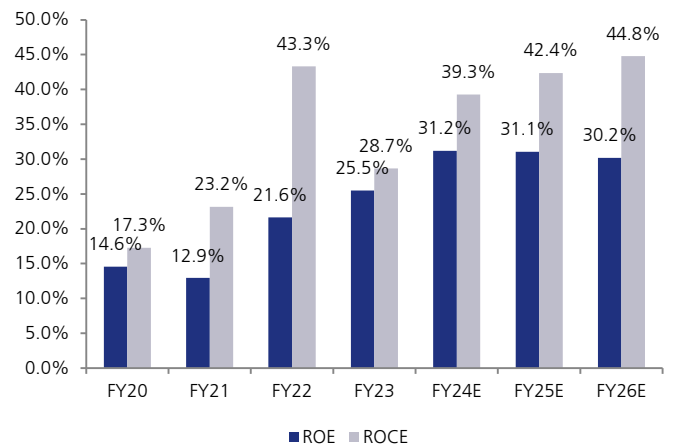
Source: Company, JM Financial estimates

**Exhibit 134. We expect cash conversion to stay healthy**  
OCF/EBITDA and FCF/PAT



Source: Company, JM Financial estimates

**Exhibit 135. RoE/RoCE should continue to improve**  
Return Ratios



Source: Company, JM Financial estimates

**Exhibit 136. Key Business Metrics**

	FY20	FY21	FY22	FY23	1HFY24
Cons. revenues (USD mn)	303.8	274.8	328.4	418.4	279.1
<b>Change</b>	12.1%	-9.5%	19.5%	27.4%	51.6%
EBITDA margin	13.7%	15.0%	18.0%	18.4%	20%
EPS (INR)	5.4	5.4	10.0	14.0	10.1
Revenue per development employee	46,069	46,104	48,809	43,941	51,773*
Development employee	6,594	5,848	7,628	10,297	11,219
Active Clients	58	55	60	60	60
Strategic Clients - Revenue Contribution	81.60%	85.70%	83.70%	82.50%	84.00%
<b>Revenue by geography</b>					
USA	41.3%	41.7%	38.9%	35.8%	30.4%
Europe	38.8%	41.0%	40.2%	46.7%	52.6%
Rest of World	19.8%	17.3%	20.9%	17.5%	17.0%
<b>Revenue by contract type</b>					
Time and Material Basis	49.3%	47.8%	44.8%	52.6%	51.4%
Fixed Price/Time basis	50.7%	52.2%	55.2%	47.4%	48.6%
<b>Revenue by Verticals</b>					
Passenger cars	75.1%	76.8%	73.8%	75.1%	75.8%
Commerical vehicles	22.7%	21.9%	24.4%	24.0%	20.0%
New mobility	2.2%	1.3%	1.8%	0.8%	4.2%
<b>By practices</b>					
Feature Development & Integration			70.4%	65.6%	61.8%
Architecture & Middleware Consulting			11.7%	16.0%	20.2%
Cloud Based connected services			17.9%	18.5%	18.0%

Note; As reported in 2QFY24. Source: Company, JM Financial

**Exhibit 137. KPIT has been consistently winning deals in embedded software domain**

	Client	Domain of work
2QFY24	European OEM	Autonomous driving
	American OEM	Electric powertrain
	European OEM	Electric powertrain, Autonomous driving and connected domains
	American OEM	Powertrain
	Asian OEM	Vehicle Engineering
1QFY24	European OEM	Autonomous driving, Body electronics and diagnostic
	American OEM	Powertrain
	American OEM	Middleware Architecture and electric powertrain
	European OEM	Autonomous driving and Body electronics
	American OEM	Vehicle engineering and connected domain for CV manufacturer
4QFY23	American OEM	Middleware development and integration
	European OEM	Electric powertrain
	American OEM	Vehicle Engineering design and connected domains with CV manufacturer
	Asian OEM	Connected Vehicle
	European OEM	Electric Powertrain
3QFY23	European OEM	Powertrain
	European OEM	Connected Vehicle
	American OEM	Vehicle Engineering design and connected domains with CV manufacturer
	Asian OEM	AD and connected Vehicle
	American OEM	Middleware, Electric Powertrain and Connected vehicle
2QFY23	American OEM	Powertrain
	European OEM	Electric powertrain
	American OEM	Powertrain for CV manufacturer
	Asian OEM	Connected Vehicle
	American OEM	Middleware and Electric powertrain
1QFY23	European OEM	Electric powertrain
	Asian OEM	Connected Vehicle and Middleware
	American OEM	Vehicle Engineering and design for CV manufacturer
	European OEM	Middleware
	American Tier 1 supplier	Powertrain
4QFY22	American OEM	Powertrain virtualization
	European OEM	AUTOSAR and Vehicle diagnostic
	American OEM	Vehicle engineering for CV manufacturer
	Asian OEM	Connected Vehicles and Autonomous driving
	American Tier 1 supplier	Autonomous Driving
3QFY22	American OEM	Powertrain virtualization for Truck manufacturer
	American OEM	Vehicle engineering
	Asian OEM	AUTOSAR
	American Tier 1 supplier	Autonomous Driving
	European Tier 1 supplier	Body electronics
2QFY22	European OEM	Electric powertrain, Next gen Invertor, On board Charger and Battery Management System <b>Total deal of USD 52 mn over 5 years</b>
	American OEM	Electric and Conventional powertrain
	Asian OEM	Autonomous driving
	Asian cab aggregator	Digital connected solution
1QFY22	European OEM	Autonomous Driving
	Asian OEM	In Vehicle Architecture
	European OEM	Vehicle Diagnostic
	European Tier 1 supplier	Autonomous Driving
	American Tier 1 supplier	Powertrain

Source: Company, JM Financial

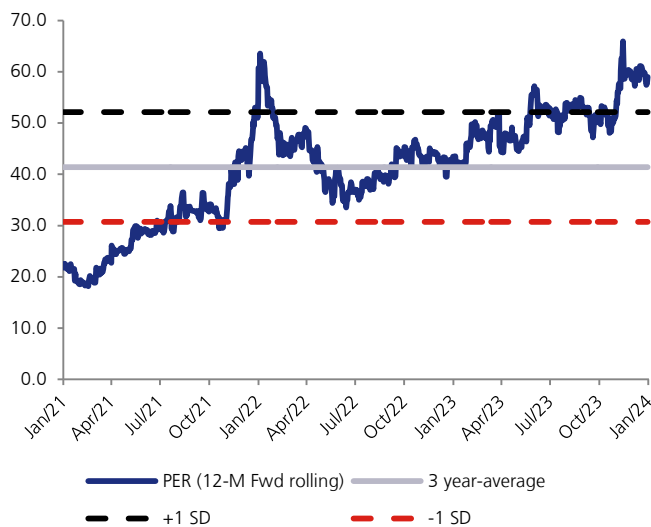
## Initiate with BUY and TP of INR 1,830

We initiate coverage on KPIT with a BUY rating and PER-based TP of INR 1,830. Our target multiple compares with the current multiple of 57x FY25E PER. At our estimated 31% EPS CAGR over FY23-26E, our target multiple implies a PEG ratio of 2x, in-line with current PEG ratio.

Our DCF analysis indicates that target price of INR 1,830 is implying a USD revenue/INR EBITDA growth of 22%/24% over FY23-33E before growth normalises. KPIT's deep expertise in the middleware domain and head-start in the OEMs' SDV programs position it well to further entrench itself in the OEMs' embedded software ecosystem. That should help it achieve the required revenue growth, in our view. We, therefore, expect current multiples to sustain. Hence, any correction should be bought into.

**Exhibit 138. We expect re-rating in the stock over past one year to sustain...**

KPIT – 12M forward rolling PER



Source: Bloomberg, JM Financial Estimates

**Exhibit 139. ...as it has come on the back of consistent earning upgrades, reflected in stable PEG ratio**

KPIT - PEG



Note: PEG is calculated by dividing 12-M forward PER with two year rolling EPS CAGR; Source: Bloomberg, JM Financial Estimates

**Exhibit 140. ERD – Valuation Comp**

Company	CMP (LC)	Mcap (LC m)	P/E			PEG	EV/EBITDA			EV/Sales		
			FY24	FY25	FY26		FY24	FY25	FY26	FY24	FY25	FY26
<b>India</b>												
Tata Tech*	1,172	5,716	66.0x	58.4x	50.1x	4.0x	49.5x	42.2x	36.1x	9.2x	8.1x	7.0x
KPIT*	1,506	4,966	70.6x	57.3x	47.5x	2.6x	43.3x	35.6x	30.1x	8.5x	7.2x	6.1x
L&T TS	8,584	6,430	66.4x	56.0x	46.7x	2.9x	48.2x	40.7x	34.4x	14.6x	12.3x	10.4x
Cyient	5,159	6,561	42.0x	36.4x	31.2x	2.3x	27.7x	24.2x	21.0x	5.5x	4.9x	4.3x
Tata Elxsi	2,240	2,986	32.7x	27.8x	23.7x	1.6x	18.8x	16.5x	14.6x	3.5x	3.0x	2.8x
<b>Average</b>			<b>55.5x</b>	<b>47.2x</b>	<b>39.8x</b>		<b>37.5x</b>	<b>31.8x</b>	<b>27.2x</b>	<b>8.3x</b>	<b>7.1x</b>	<b>6.1x</b>
<b>Global</b>												
Alten	128	54	15.9x	13.9x	12.6x	1.1x	9.7x	8.7x	8.0x	1.1x	1.0x	1.0x
Bertrandt	52	6	12.1x	9.0x	7.8x	0.4x	5.7x	4.9x	4.4x	0.6x	0.6x	0.5x
EDAG	13	4	10.5x	9.4x	8.5x	0.8x	6.1x	5.6x	5.2x	0.7x	0.7x	0.6x
Desay SV	112	747	41.3x	29.7x	22.3x	0.8x	35.6x	25.3x	19.3x	3.1x	2.4x	1.9x
Etteplan	14	4	19.9x	14.7x	13.6x	0.7x	9.2x	8.6x	8.1x	1.2x	1.1x	1.1x
Assytem	49	9	18.0x	15.7x	13.9x	1.2x	13.9x	12.4x	11.3x	1.2x	1.1x	1.1x
Ricardo	490	4	14.0x	12.1x	10.3x	0.7x	7.1x	6.6x	5.9x	0.8x	0.8x	0.7x
Thundersoft	70	386	40.0x	30.8x	22.9x	1.0x	30.9x	23.7x	18.1x	4.7x	3.7x	2.9x
Arcsoft	36	174	100.9x	61.3x	40.5x	1.1x	73.3x	40.1x	25.8x	18.1x	13.6x	9.9x
<b>Average</b>			<b>28.5x</b>	<b>20.8x</b>	<b>16.2x</b>		<b>19.9x</b>	<b>14.3x</b>	<b>11.3x</b>	<b>3.2x</b>	<b>2.6x</b>	<b>2.0x</b>

Note: JM Estimates for Tata Tech Ltd and KPIT Tech other Bloomberg estimates. Valuation as of 8 Jan 2024 . Source: Bloomberg, JM Financial

**Exhibit 141. DCF analysis: Our TP implies a USD revenue CAGR of 22% over FY23-33E, achievable given industry tailwinds**

DCF PRICE TARGET	EXPLICIT PERIOD			VALUE DRIVER PERIOD		FADE PERIOD		CAGR		
	FY23A	FY24F	FY26F	FY27F	FY33F	FY34F	FY43F	23-26	27-33	33-43
Mar YE (INR mn)										
Net revenues (US\$ m)	418	578	801	969	2,948	3,493	8,886	24.2%	20.4%	9.8%
Change	27.4%	38.3%	17.1%	20.9%	20.0%	18.5%	5.0%			
Incremental revenues (USD mn)	90	160	117	167	491	545	423			
Net revenues	33,650	47,891	66,673	80,607	2,45,237	2,90,606	7,39,316	25.6%	20.4%	9.8%
Change	38.3%	42.3%	17.1%	20.9%	20.0%	18.5%	5.0%			
Operating expenses	27,447	38,458	53,101	63,796	1,91,515	2,26,918	5,76,666	24.6%	20.1%	9.8%
EBITDA	6,204	9,432	13,572	16,812	53,723	63,688	1,62,649	29.8%	21.4%	9.8%
EBITDA margin	18.4%	19.7%	20.4%	20.9%	21.9%	21.9%	22.0%			
Depreciation and amortization	1,464	1,852	2,534	2,529	4,581	5,028	10,617			
As a percentage of net fixed assets (period end)	68.3%	75.4%	79.8%	79.7%	78.8%	78.8%	78.8%			
EBIT	4,740	7,580	11,038	14,283	49,141	58,661	1,52,033	32.5%	22.9%	10.0%
EBIT margin	14.1%	15.8%	16.6%	17.7%	20.0%	20.2%	20.6%			
Effective tax rate	22.1%	24.7%	25.0%	25.0%	25.0%	25.0%	25.0%			
EV/EBITDA	79.5x	52.3x	36.3x	29.3x	9.2x	7.7x	3.0x			
Capital expenditure	1,671	2,164	2,861	2,886	5,148	5,634	11,728			
Working capital - period end	4,249	5,445	12,369	14,874	43,780	51,879	1,31,982			
Capital employed - period end	6,393	7,901	15,544	18,405	50,163	58,868	1,46,573			
NOPLAT	3,691	5,710	8,279	10,712	36,856	43,996	1,14,025	30.9%	22.9%	10.0%
ROIC	36.9%	89.3%	72.7%	68.9%	86.7%	87.7%	81.9%			
<b>Cash flow analysis</b>										
EBIT - post tax	3,691	5,710	8,279	10,712	36,856	43,996	1,14,025			
Depreciation & amortization	1,464	1,852	2,534	2,529	4,581	5,028	10,617			
Capital expenditure	-1,671	-2,164	-2,861	-2,886	-5,148	-5,634	-11,728			
Change in working capital	3,824	-1,196	-3,826	-2,505	-7,092	-8,099	-6,285			
<b>Free cash flow to firm</b>	<b>7,307</b>	<b>4,202</b>	<b>4,125</b>	<b>7,850</b>	<b>29,197</b>	<b>35,290</b>	<b>1,06,628</b>	<b>-17.4%</b>	<b>24.5%</b>	<b>11.7%</b>

Source: Company, JM Financial estimates

**Exhibit 142. DCF Assumptions**

WACC	10.75%
NPV of cash flow (2023-2042F)	219,696
Perpetual growth (%)	5.0%
Implied Exit FCF multiple (X)	17.4x
Terminal value	2,73,312
Enterprise Value	493,008
Terminal value as % of Enterprise Value	55%
Enterprise value (USD bn)	5.9
Net debt	-5,802
Equity value (INR mn)	4,98,809
Equity value (USD bn)	6.0
Enterprise value per share (INR)	1,807
Equity value per share (INR)	1,830

Source: Company, JM Financial estimates

**Exhibit 143. Sensitivity Analysis**

	Sensitivity of Equity Value to WACC and Terminal growth rate				
	4.0%	4.5%	5.0%	5.5%	6.0%
9.25%	2,384	2,540	2,733	2,978	3,297
9.75%	2,101	2,220	2,364	2,541	2,766
10.25%	1,867	1,959	2,068	2,201	2,364
10.75%	1,672	1,744	1,830	1,929	2,051
11.25%	1,506	1,563	1,629	1,707	1,800
11.75%	1,364	1,410	1,463	1,524	1,596
12.25%	1,242	1,279	1,321	1,370	1,426

Source: Company, JM Financial estimates

## About Company





KPIT Technologies is a global service provider with expertise in automotive and mobility solutions. The company, post its merger and de-merger with Birlasoft (BSOFT IN; Not Rated), pivoted to be a 100% auto-focussed ESP. Leveraging on its middleware capabilities built through its over 15-year long association with AUTOSAR, KPIT has positioned itself as an independent software development and integration partner to global OEMs and their Tier 1 suppliers. The company has longstanding relationships with major auto OEMs – 17+ years with 6 OEMs, 12+ years with 4 OEMs, and 7+ years with 7 OEMs). Around 25 OEMs/Tier 1s consider KPIT as their strategic partner. As of 1HFY24, the company has 60 active clients and 83% of revenue came from strategic 25 clients.

### KPIT’s offerings across embedded software domain

#### AUTOSAR

With over 15 years of AUTOSAR expertise, KPIT provides comprehensive AUTOSAR base software solutions. Offering Production-ready Platforms, Tools, Accelerators, Software Integration Services, and Cross-Domain Integration, KPIT adds unique value for OEMs and Tier 1 clients. The company holds 20+ co-development partnerships with major OEMs and Tier 1s, and 8+ OEMs have approved the KSAR stack. With 900+ engineers experienced in AUTOSAR, KPIT delivers solutions globally and is a premium member of the AUTOSAR consortium.

Exhibit 144. KPIT’s Autosar Offering





















AUTOSAR			
Platform & Tools			
			
<p><b>KSAR Classic</b></p> <p>KPIT’s AUTOSAR Classic Platform- KSAR Classic provides a robust Base Software Stack Solution for Safety-Critical ECUs. KSAR Classic is ASIL-D certified and its solutions include Configuration and Code generation tools required for development of AUTOSAR Classic applications.</p>	<p><b>KSAR Adaptive</b></p> <p>KPIT’s AUTOSAR Adaptive Platform- KSAR Adaptive provides a sophisticated Service Oriented Architecture based solution for High Compute Platforms. KSAR Adaptive solutions includes Configuration and Code generation tools required for development of AUTOSAR Adaptive applications.</p>	<p><b>KSAR Bootloader</b></p> <p>KSAR Bootloader is a secure Bootloader based on ISO specifications. It supports CAN, CAN FD, FR, Ethernet, LIN, Dual Boot as well as integrates with KPIT’s Over-The-Air (OTA) updates solution.</p>	<p><b>KSAR OS</b></p> <p>A Robust Operating System for in-vehicle networking needs</p>
<p><b>C4K Tool</b></p> <p>Compose for KSAR (C4K) is a tool used for KSAR Configuration, with versions applicable to both KSAR Adaptive and KSAR Classic.</p>	<p><b>BaSIK</b></p> <p>Base Software Integration Kit (BaSIK) is a tool used for automated integration and test script generation.</p>	<p><b>KITE</b></p> <p>K-Integrated Test Environment (KITE) for KSAR Stack</p>	

Source: Company, JM Financial

#### Autonomous driving & ADAS

KPIT has the largest independent ADAS/AD engineering team, with 2,000 members in India, USA, Germany, Japan, Korea, Vietnam, and China. Collaborating with over 25 OEMs and Tier 1s, KPIT brings over a decade of experience in Autonomous Driving and ADAS. The company excels in virtual simulation, generating 3 million scenarios per ISO, NHTSA, NCAP, SAE standards, specifically tailored for Level 2 & L3+ Autonomous Driving.

Exhibit 145. Autonomous Driving & ADAS Offerings

System Engineering and dependability			
			
<p><b>Functional Safety (ISO 26262)</b> Implementation of stringent processes for Safety Concept right from the beginning of development Ready assets to help accelerate the FuSa implementation.</p>	<p><b>Cyber Security</b> End-to-end implementation of Vehicle System Cyber security in compliance with SAE J3061 Automotive Cyber security Guideline document</p>	<p><b>Architecture Development &amp; MBSE</b> System engineering process derived from the aerospace industry. Robust architectures for a safe software at function, feature or stack level.</p>	<p><b>Requirement Authoring and Validation</b> System Engineering Methodology to develop Architecture &amp; Requirements</p>
Feature, Algorithm and Software development			
			
<p>AI, Machine Learning, Computer Vision Expertise in developing vision-based algorithms, LIDAR applications, Sensor Fusion algorithms, Localization and Situation Assessment etc</p>	<p>Algorithms, Clean Code In house process for 'Clean Code' algorithm development. assets and algorithms that are up to 70% ready and can be customized per requirements</p>	<p>Model Based Dev. for control functions Expertise in MBD development and architectures for control functions</p>	<p>SW Industrialization Unique 13 step process for Software industrialization - Req. Engineering, Algorithm to Software, Safety Eng. &amp; Embedded Optimization</p>
Platform and Software Integration			
			
<p>Porting &amp; Optimization of Algorithm to embedded Platform Feature / Algorithm Porting &amp; Optimization System Architecture &amp; Partitioning Migration of Code Board Bring up</p>	<p>Release Management Vendor coordination, feature planning, release dates, milestones, acceptance criteria, code integration Validation and artefact generation</p>	<p>Autosar, Adaptive Autosar Integration AD/ADAS specific middleware development Customization &amp; Configuration of AUTOSAR Integration with Classic AUTOSAR and Adaptive AUTOSAR</p>	<p>Integration Testing Requirement / KPI Based Testing, Safety Testing Qualification &amp; Acceptance Testing</p>
Verification and Validation			
			
<p><b>Requirement Driven Verification (UT, FT, MIL, SIL)</b> Unit and component Test - Clean Code, TDD, Test Coverage Requirement base Functional Test (SIL, MIL) System Testing (HIL)</p>	<p><b>Data Driven Validation (Closed loop and Open Loop), Sensor Validation</b> Feature Validation through Closed Loop Simulation Sensor Validation through Open Loop Simulation Mileage Coverage and Digital Homologation</p>	<p><b>Safety Validation, SOTIF</b> Validation against Safety and Security Scenarios and Validation against SOTIF Scenes</p>	<p><b>ECU Testing</b> Safety Verification against Technical &amp; Software Requirements, Fault Injection Test and Safety Validation Through Analysis</p>
Simulation for Homologation			
			
<p><b>SIL framework</b> A ready cloud based SIL framework to execute millions of tests</p>	<p><b>Reprocessing virtual ECU</b> Automation to convert Virtual ECU with Adaptive AUTOSAR &amp; AD Application to execute testing</p>	<p><b>Automated conversion of road data to virtual scenarios</b> An Automated tool to create scenarios and digital twins from real road data</p>	<p><b>Cloud managed services</b> Expertise on cloud based virtual simulation with millions of scenarios executed across Azure and AWS platforms</p>





Source: Company, JM Financial

**Electric & Conventional Powertrain**





KPIT offers global expertise and ready-to-use software platforms for electric vehicle components. This helps OEMs and Tier 1s reduce time to market, addressing embedded system challenges from prototype to production. With over 30 production programs across 12 OEMs and Tier1s, KPIT provides production-ready software components for various EV standards. Additionally, KPIT serves as an end-to-end validation partner for electric vehicles, offering testing solutions including SIL, MIL, and HIL, along with an automation strategy.

**Exhibit 146. Electric & Conventional Powertrain**





**Battery Management Systems**

			
Safety and security compliant BMS accelerator.	Proven AI/ML based hybrid algorithm for SOC, SOH	Ready to use test repository for BMS Verification and Validation	Ownership of Software Integration for production readiness




**Inverter**

			
Modular and scalable inverter accelerator	Production hardened platform	Multicore Architecture, Application Software and CDDs for motor controller	AUTOSAR and functional safety compliant ready software components and artefacts

**Smart Charger**

			
Integrated Power electronics for OBC, DC-DC software	Comprehensive testing suite to overcome the interoperability challenges and conformance to all the standards	Customizable and Scalable EVCC platform to help accelerate OEM's and Tier1's Time to Market	AUTOSAR compliant Charging Communication Stack

**VCU**

			
Production expertise VCU development 48V to 600V system	Simulated and Validated Electrical and Software Architecture	Scalable and Configurable Supervisory VCU	

Source: Company, JM Financial







**Connected Vehicles**

KPIT is positioned as the preferred partner for automakers in cockpit, connectivity, and cloud programs. The company excels in software development & integration, including feature development and middleware solutions. Other key offerings include UI/UX development, digital Cockpit platform and components, validation & testing. KPIT also offers OTA – a Next-Generation Over-the-Air update solution for Automotive Applications and provides Audio Solutions like Audio Certification & Test Infrastructure.

Exhibit 147. Connected Vehicle

Connected Vehicle

Production Sourced Solutions & Tools

			
<b>UI/UX Development</b> KRUX- HMI and App Framework	<b>Digital Cockpit Platform and Components</b> Konfluence- Digital Cockpit/ Cockpit Domain Controller platform KIVI- Infotainment platform KONNECT- Infotainment Connectivity framework	<b>Software Development &amp; Integration</b> Feature development, Middleware Solutions	<b>Validation &amp; Testing</b> KITE- Integrated Test Automated Solution Virtualization
			
<b>Cloud integrated Solutions</b> OTA – Next Generation Over-the-Air (OTA) update solution for Automotive Application	<b>Audio Solutions</b> Audio Certification & Test Infrastructure		

Source: Company, JM Financial

Vehicle Engineering & Design

KPIT's solutions cover the entire development cycle of a vehicle engineering & design production program, focusing on accelerated product design & development through Integrated Electrification Solutions, Knowledge-Based Engineering (KBE), AI-Driven CAE, Digital Twin, and Smart Harness.





Exhibit 148. Vehicle Engineering

Vehicle Engineering & Design




New Age Solutions

			
Integrated Electrification Solutions	Knowledge Based Engineering (KBE)	AI Driven CAE	Digital Twin

Classical Mechanical Services

			
New Product Design & Development	Value Engineering	Virtual Validation	ECU Packaging

Mechatronics

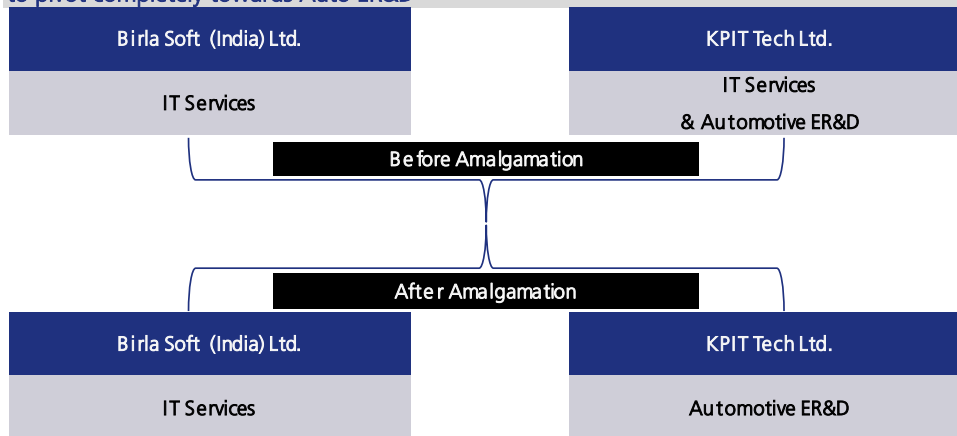
			
Industrial Process Automation	Robotics	RADAR/LIDAR/Sensor Packaging for Autonomous Driving	

Source: Company, JM Financial

## Merger and Demerger with Birlasoft

In 2019, KPIT took a strategic decision to move away from the traditional IT Services business and focus exclusively on Automotive Engineering and Mobility solutions. The company executed a restructuring plan, involving the amalgamation of Birlasoft (India) Ltd into KPIT Technologies Ltd, and the subsequent demerger of the engineering business into KPIT Technologies Ltd. Prior to the merger, KPIT operated in two key divisions: 1) Digital Technology SBU: enterprise resource planning business of Oracle and SAP, along with a digital business encompassing digital technology. This digital business also included infrastructure management systems and extended product lifecycle management. 2) Engineering Business: specialised in providing solutions for electronic or mechanical engineering, utilising data for diagnostics, maintenance, and asset tracking.

**Exhibit 149. KPIT rejigged its portfolio through a merger and demerger exercise with Birlasoft to pivot completely towards Auto ER&D**



Source: Company, JM Financial

## Exhibit 150. Timeline

Year	Event	Description
1990s	Incorporation	Mr. Ravi Pandit and Mr. Kishor Patil, partners in the CA firm Kirtane and Pandit Chartered Accountants, established KPIT. Initially incubated as part of the CA firm, KPIT later became an independent company. Co-founders Shirish Patwardhan and Sachin Tikekar joined the venture shortly thereafter.
1999	Listing	KPIT Infosystems initially concentrated on specific industries and the development of technology solutions. The company went public on stock exchanges in 1999.
2002	Collaboration with Cummins	Cummins Engineering & IT collaborated with KPIT to create KPIT Cummins Infosystems. This entity specialized in embedded software and digital transformation within the automotive and manufacturing sectors.
2006	Acquisition	Acquired 100% equity of CG Smith Software, a Bangalore-based SEI CMM Level 5 company specializing in embedded systems for automotive electronics. The all-cash deal, valued at Rs 38 Cr.
2008	Acquisition	KPIT Cummins strengthened its position in Mechanical Engineering Design Services by acquiring the segment from Harita TVS. Harita TVS offers design services in automotive and construction, and industrial machinery segments.
2010	Acquisition	Acquired German vehicle diagnostics and telematics company In2Soft for approximately 4 million Euros to enhance the company's presence in Germany.
2013	Product launch	In 2013, KPIT Cummins Infosystems rebranded as KPIT Technologies. The company expanded its portfolio into mobility software products, including REVOLLO (hybrid electric vehicle tech), Intelligent Transportation Systems (for smart cities and fleet operators), and Maximus Pro (for adventure enthusiasts using two-wheelers).
2013	Acquisition	KPIT Infosystems GmbH acquired IKV Technologies AG, a provider of Functional Safety practices.
2016	Acquisition	Acquired a strategic stake in the German engineering services company, MicroFuzzy. MicroFuzzy, had over 20 years of engineering expertise, focused on powertrain systems and drivetrain electronics. The company excelled in software development for e-mobility, E/E architecture, and end-to-end test and validation solutions for powertrain components.
2018	Merger and Demerge	KPIT announced a significant move to enhance its focus on automotive and mobility. The merger and demerger with Birlasoft resulted in the creation of two entities. During this process, KPIT divested over 70% of its business, illustrating its ambition to emerge as a global leader in automotive software.
2020	Large Deal for BMW	Secured a significant deal from BMW Group. KPIT was nominated as a single source software integration partner for the next-gen 11KW combined charging electronics program for BMW Group's BEVs.
2021	Acquisition	Acquired an initial 25% stake in Germany-based company, Future Mobility Solutions GmbH. Autonomous driving software and ADAS were key focus domain for FMS. Balance 75% stake was acquired in September 2023.
2022	Acquisition	Acquired cloud-based vehicle diagnostics specialist SOMIT Solutions
2022	Acquisition	Acquired Technica Engineering, a specialist in production-ready system prototyping, automotive ethernet products, and validation tools. This move enhanced KPIT's expertise across the stack for SDV transformation. Technica Engineering, headquartered in Munich, with a global presence, had a team of 600+ engineers.
2022	Partnership with Renault	Renault selected KPIT as a key partner for SDV programs, deploying 600+ engineers globally. This collaboration, spanning ADAS, Chassis, Body Electronics, Platforms, Systems Engineering, and Vehicle validation, aims to drive value in Renault's vehicle production programs starting in 2026
2023	Partnership with ZF	KPIT Tech and ZF Group joined forces to create QORIX, an independent company developing open and scalable middleware for the mobility ecosystem. ZF invested 50%, leveraging the combined expertise of KPIT and ZF to build automotive middleware platforms.
2023	Partnership with Honda	Announced a strategic partnership with Honda for Software-Defined Mobility (SDM). With an eight-year collaboration history, over 2,000 professionals from KPIT will contribute to Honda's SDM roadmap beyond 2030.

Source: Company, JM Financial

## Key Management Personnel

### Exhibit 151. Details of key management personnel

Name	Designation	Education	Experience
S. B. (Ravi) Pandit	Co-founder & Group Chairman	CA (Gold Medallist) and MBA (Sloan School of Management, MIT)	As the co-founder of KPIT, Ravi's vision has guided the company since its inception to attain the current global leadership position in the field of automotive engineering. He is also Chairman at K&P Group and a Board Member at Thermax Ltd
Kishor Patil	Co-founder, MD & CEO	CA and MBA (MIT)	Kishor has been instrumental in the 2018 merger and demerger scheme at KPIT and creation of an Automotive-focus company. He is currently a Nasscom EC Member & Chairman of ER&D Council
Sachin Tikekar	President & Joint MD	MBA (Temple University)	Earlier Chief People and Operating Officer and Executive Sponsor (Europe) at KPIT
Anup Sable	Whole time Director and CTO	BTech (Pune Institute of Computer Technology)	Anup has been with KPIT since 1994 and has led global teams at KPIT which include Electrification of Vehicles, Digital Cockpit, Autonomous Driving, AUTOSAR and Diagnostics. He was instrumental in starting the automotive business unit and developing the Cummins relationship for engineering services. Prior to KPIT he has worked with Automotive Research Association of India (ARAI) as a research assistant in the Powertrain domain. Currently responsible for incubating the Middleware and Virtualization Practices and is also Board Member at Path Partners India.
Priyamvada Hardikar	CFO	Cost Accountant, B.Com (Pune University)	She has been with KPIT in leadership position in Corporate Accounting and Finance (CF&G) for more than 12 years
Pankaj Sathe	Head - Strategy & Growth	MBA (IIM Lucknow)	Pankaj was earlier President for Europe region and was responsible for executive connect with key customers, sales, onsite operations, people development and the branding and positioning of the organization as a key technology expert within KPIT's focused industry verticals. Pankaj has over 25 years of in-depth experience in establishing sales, marketing and operations in new geographies, integrating acquired companies, partnering with customers and developing value-generating propositions for them. He has participated in the growth of the company globally and been instrumental in KPIT's growth in Europe.
<b>Executive</b>			
Chinmay Pandit	Geo Head - America and Vertical Head - Commercial Vehicle	CA and MBA (J. L. Kellogg School of Business at the Northwestern University)	Mr. Chinmay has been with KPIT for last 15 years. Before heading Americas Geography, he led the Vehicle Engineering & Design practice/business line of the Company. Previously, he has worked with KPMG and Infosys.
Dr Gabriel Seiberth	President & Geography Head - Europe		Gabriel has over 25 years of experience in technology, consulting, and engineering within the automotive and discrete manufacturing industries. He has previously worked with Siemens and Accenture.
Rajeeb Nath	Member of Executive Board	MS (Engineering Management, Stanford University) and BS (Electrical Engineering, University of Illinois)	Rajeeb is currently responsible for P&L management, strategy, sales and delivery of KPIT's products and services to automotive clients. Prior to joining KPIT, Rajeeb was Global Vice President, ADAS, Magna Electronics, Visteon Corporation and Ford Motor Company
Rohan Sohoni	Geo Head - Asia	BE (Pune Institute of Computer Technology)	Rohan has been instrumental in establishing KPIT's presence in Asia across JKC (Japan, Korea and China) and SEANZ (South East Asia, Australia and New Zealand) since 2005.
Tony Gu	Country Head - China	MS (Shanghai Jiao Tong University)	Tony has been with KPIT for over 8+ years, since the inception of KPIT China office. In his previous career, he served international companies like IBM, Mitsubishi, NEC etc.
<b>Business Units</b>			
Rajesh Janwadkar	President - Global Delivery	B.E. (VNIT Nagpur)	With over 24 years of experience at KPIT, Rajesh has played various leadership roles, including Head of Marketing & Strategy for the Automotive Business, Business Leader for Powertrain Practice, and Head of Delivery & Practices for Automotive Product Engineering. Prior to joining KPIT Rajesh was leading the Product Business and Sales at other IT organizations.
Pushpahas Joshi	Business Leader - New Mobility and Industry Vertical lead for products and solutions	B.E. (VNIT Nagpur)	He has been working with KPIT since last 16 years across various corporate functions like Strategy, Marketing, Acquisitions & Divestitures as well business leadership roles in Infotainment, Digital Connected Solutions, Vehicle Diagnostics & Telematics and in markets like China and Germany.
<b>Function</b>			
Rajesh Singh	Global Head - HR	Post-Graduation from National University of Singapore on Lee Kuan Yew, MBA (IIM Calcutta)	Rajesh has explored a variety of roles in a professional life of more than 20 years spanning Public sector, Government, Private Sector and Startup. He has earlier worked with Government of India, SBI, Infosys, Novartis and Alkem in leadership roles.
Mohit Kochar	Global Head - Marketing & Communications	MBA (Pune University)	Mohit holds 17+ years of experience in Automotive, Engineering, Information Technology industries, across key functions like Strategy, Product Development and Management, Marketing, Branding and Corporate Communication, Business Development and Corporate Affairs.

Source: Company, JM Financial

## Financial Tables (Consolidated)

Income Statement		(INR mn)				
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E	
Net Sales	24,324	33,650	47,891	56,952	66,673	
Sales Growth	19.5%	38.3%	42.3%	18.9%	17.1%	
Other Operating Income	0	0	0	0	0	
<b>Total Revenue</b>	<b>24,324</b>	<b>33,650</b>	<b>47,891</b>	<b>56,952</b>	<b>66,673</b>	
Cost of Goods Sold/Op. Exp	0	404	621	854	1,000	
Personnel Cost	16,106	21,553	31,054	36,329	42,766	
Other Expenses	3,832	5,489	6,783	8,315	9,334	
<b>EBITDA</b>	<b>4,385</b>	<b>6,204</b>	<b>9,432</b>	<b>11,454</b>	<b>13,572</b>	
EBITDA Margin	18.0%	18.4%	19.7%	20.1%	20.4%	
EBITDA Growth	44.0%	41.5%	52.0%	21.4%	18.5%	
Depn. & Amort.	1,196	1,464	1,852	2,201	2,534	
EBIT	3,189	4,740	7,580	9,253	11,038	
Other Income	450	551	501	462	584	
Finance Cost	194	323	388	190	150	
PBT before Excep. & Forex	3,445	4,968	7,693	9,524	11,472	
Excep. & Forex Inc./Loss(-)	0	0	0	0	0	
PBT	3,445	4,968	7,693	9,524	11,472	
Taxes	683	1,099	1,898	2,381	2,868	
Extraordinary Inc./Loss(-)	0	0	0	0	0	
Assoc. Profit/Min. Int.(-)	20	59	21	21	21	
Reported Net Profit	2,742	3,810	5,775	7,122	8,583	
<b>Adjusted Net Profit</b>	<b>2,742</b>	<b>3,810</b>	<b>5,775</b>	<b>7,122</b>	<b>8,583</b>	
Net Margin	11.3%	11.3%	12.1%	12.5%	12.9%	
Diluted Share Cap. (mn)	270.1	270.2	270.9	270.9	270.9	
<b>Diluted EPS (INR)</b>	<b>10.2</b>	<b>14.1</b>	<b>21.3</b>	<b>26.3</b>	<b>31.7</b>	
Diluted EPS Growth	85.6%	38.9%	51.2%	23.3%	20.5%	
Total Dividend + Tax	0	1,333	1,630	2,445	3,260	
Dividend Per Share (INR)	0.0	4.1	5.0	7.4	9.9	

Source: Company, JM Financial

Cash Flow Statement		(INR mn)				
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E	
Profit before Tax	2,762	3,869	5,796	7,143	8,604	
Depn. & Amort.	1,196	1,464	1,852	2,201	2,534	
Net Interest Exp. / Inc. (-)	0	183	-113	-271	-434	
Inc (-) / Dec in WCap.	875	-1,769	-1,426	-738	-990	
Others	122	768	0	0	0	
Taxes Paid	-888	-989	-1,898	-2,381	-2,868	
<b>Operating Cash Flow</b>	<b>4,067</b>	<b>3,525</b>	<b>4,211</b>	<b>5,954</b>	<b>6,846</b>	
Capex	-685	-1,276	-4,210	-3,993	-4,361	
Free Cash Flow	3,382	2,249	1	1,961	2,485	
Inc (-) / Dec in Investments	240	712	0	0	0	
Others	-2,579	-1,459	501	462	584	
<b>Investing Cash Flow</b>	<b>-3,024</b>	<b>-2,023</b>	<b>-3,709</b>	<b>-3,531</b>	<b>-3,777</b>	
Inc / Dec (-) in Capital	0	0	31	21	21	
Dividend + Tax thereon	-741	-892	-666	-2,032	-2,709	
Inc / Dec (-) in Loans	-5	-19	665	-200	-200	
Others	-520	-921	-197	60	100	
<b>Financing Cash Flow</b>	<b>-1,267</b>	<b>-1,831</b>	<b>-167</b>	<b>-2,151</b>	<b>-2,788</b>	
<b>Inc / Dec (-) in Cash</b>	<b>-224</b>	<b>-329</b>	<b>335</b>	<b>272</b>	<b>281</b>	
Opening Cash Balance	2,009	2,009	2,009	2,009	2,009	
Closing Cash Balance	1,785	1,679	2,343	2,281	2,290	

Source: Company, JM Financial

Balance Sheet		(INR mn)				
Y/E March	FY22A	FY23A	FY24E	FY25E	FY26E	
Shareholders' Fund	13,096	16,515	20,234	25,324	31,199	
Share Capital	2,700	2,703	2,710	2,710	2,710	
Reserves & Surplus	10,396	13,812	17,524	22,614	28,489	
Preference Share Capital	0	0	0	0	0	
Minority Interest	155	118	142	163	184	
Total Loans	26	486	1,151	951	751	
Def. Tax Liab. / Assets (-)	0	0	0	0	0	
<b>Total - Equity &amp; Liab.</b>	<b>13,277</b>	<b>17,119</b>	<b>21,527</b>	<b>26,439</b>	<b>32,134</b>	
Net Fixed Assets	6,629	17,170	19,528	21,319	23,147	
Gross Fixed Assets	1,937	2,144	2,456	2,848	3,175	
Intangible Assets	4,692	15,026	17,072	18,472	19,972	
Less: Depn. & Amort.	0	0	0	0	0	
Capital WIP	0	0	0	0	0	
Investments	0	0	0	0	0	
Current Assets	16,733	16,836	20,722	25,932	31,824	
Inventories	0	588	958	1,139	1,333	
Sundry Debtors	4,410	5,924	7,872	9,362	10,960	
Cash & Bank Balances	8,928	6,288	7,103	9,735	12,864	
Loans & Advances	0	0	0	0	0	
Other Current Assets	3,395	4,036	4,789	5,695	6,667	
Current Liab. & Prov.	10,085	16,887	18,723	20,812	22,837	
Current Liabilities	7,069	11,195	13,841	15,680	17,455	
Provisions & Others	3,015	5,692	4,882	5,132	5,382	
Net Current Assets	6,648	-51	1,999	5,119	8,987	
<b>Total - Assets</b>	<b>13,277</b>	<b>17,119</b>	<b>21,527</b>	<b>26,439</b>	<b>32,134</b>	

Source: Company, JM Financial

Dupont Analysis		FY22A	FY23A	FY24E	FY25E	FY26E
Net Margin		11.3%	11.3%	12.1%	12.5%	12.9%
Asset Turnover (x)		1.3	1.3	1.5	1.5	1.5
Leverage Factor (x)		1.5	1.7	1.8	1.7	1.6
RoE		21.8%	25.7%	31.4%	31.3%	30.4%

Key Ratios		FY22A	FY23A	FY24E	FY25E	FY26E
BV/Share (INR)		48.0	60.5	74.1	92.8	114.3
ROIC		54.0%	48.6%	45.2%	44.6%	46.0%
ROE		21.8%	25.7%	31.4%	31.3%	30.4%
Net Debt/Equity (x)		-0.7	-0.4	-0.3	-0.3	-0.4
P/E (x)		148.4	106.9	70.7	57.3	47.6
P/B (x)		31.4	24.9	20.3	16.2	13.2
EV/EBITDA (x)		91.1	64.9	42.7	34.9	29.2
EV/Sales (x)		16.4	12.0	8.4	7.0	5.9
Debtor days		66	64	60	60	60
Inventory days		0	6	7	7	7
Creditor days		25	22	26	25	24

Source: Company, JM Financial

## APPENDIX I

## JM Financial Institutional Securities Limited

Corporate Identity Number: U67100MH2017PLC296081

Member of BSE Ltd. and National Stock Exchange of India Ltd.

SEBI Registration Nos.: Stock Broker - INZ000163434, Research Analyst - INH000000610

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Rating	Meaning
Buy	Total expected returns of more than 10% for stocks with market capitalisation in excess of INR 200 billion and REITs* and more than 15% for all other stocks, over the next twelve months. Total expected return includes dividend yields.
Hold	Price expected to move in the range of 10% downside to 10% upside from the current market price for stocks with market capitalisation in excess of INR 200 billion and REITs* and in the range of 10% downside to 15% upside from the current market price for all other stocks, over the next twelve months.
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\* REITs refers to Real Estate Investment Trusts.

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