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COVER STORY

The Robotics Revolution: From Automated Arms to Thinking Machines Reshaping Manufacturing

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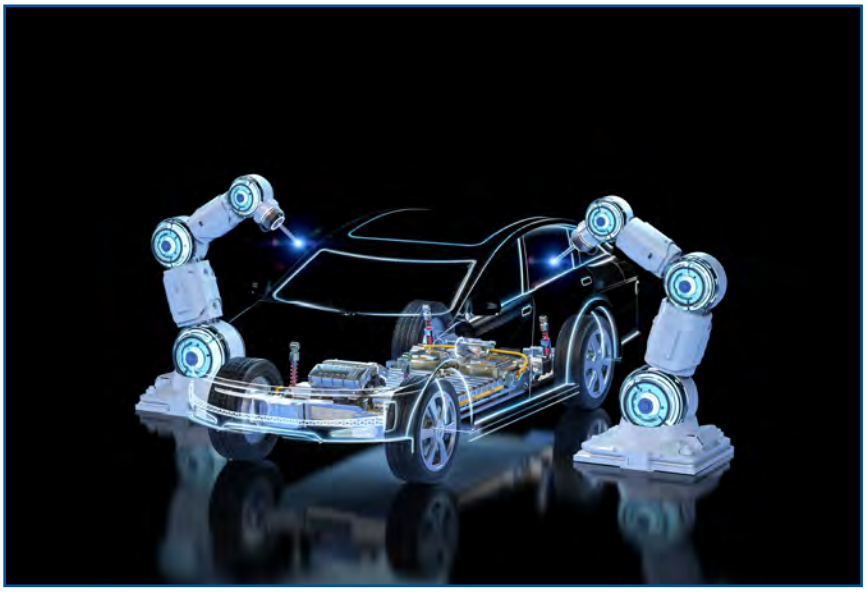

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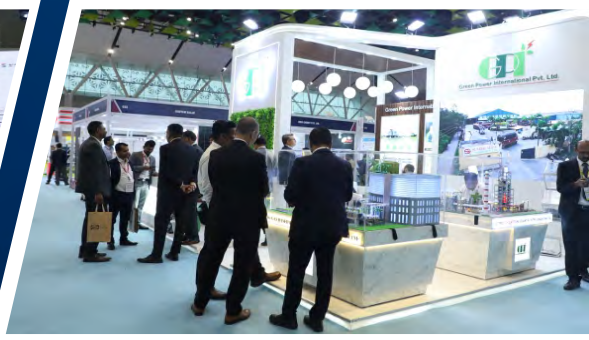

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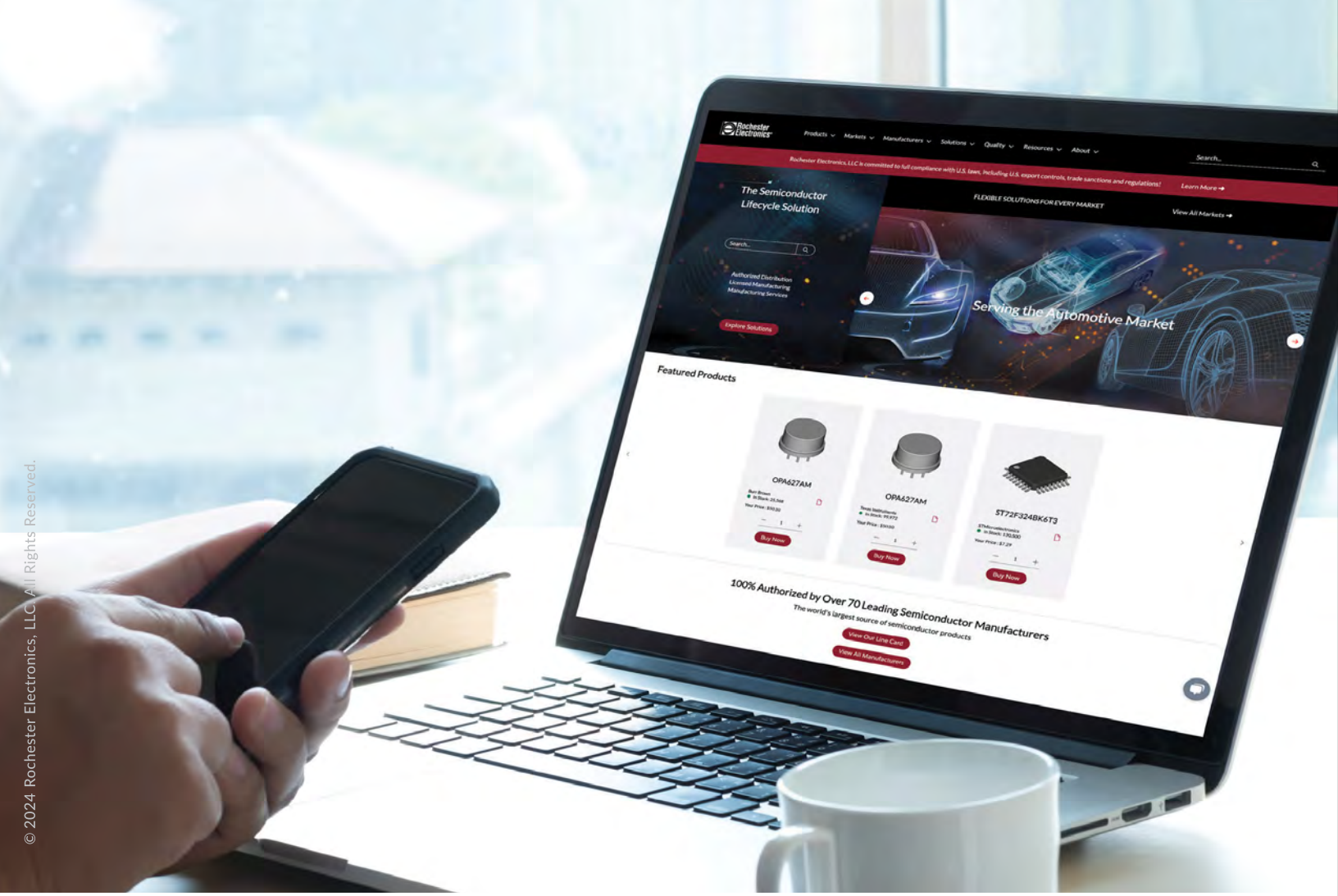

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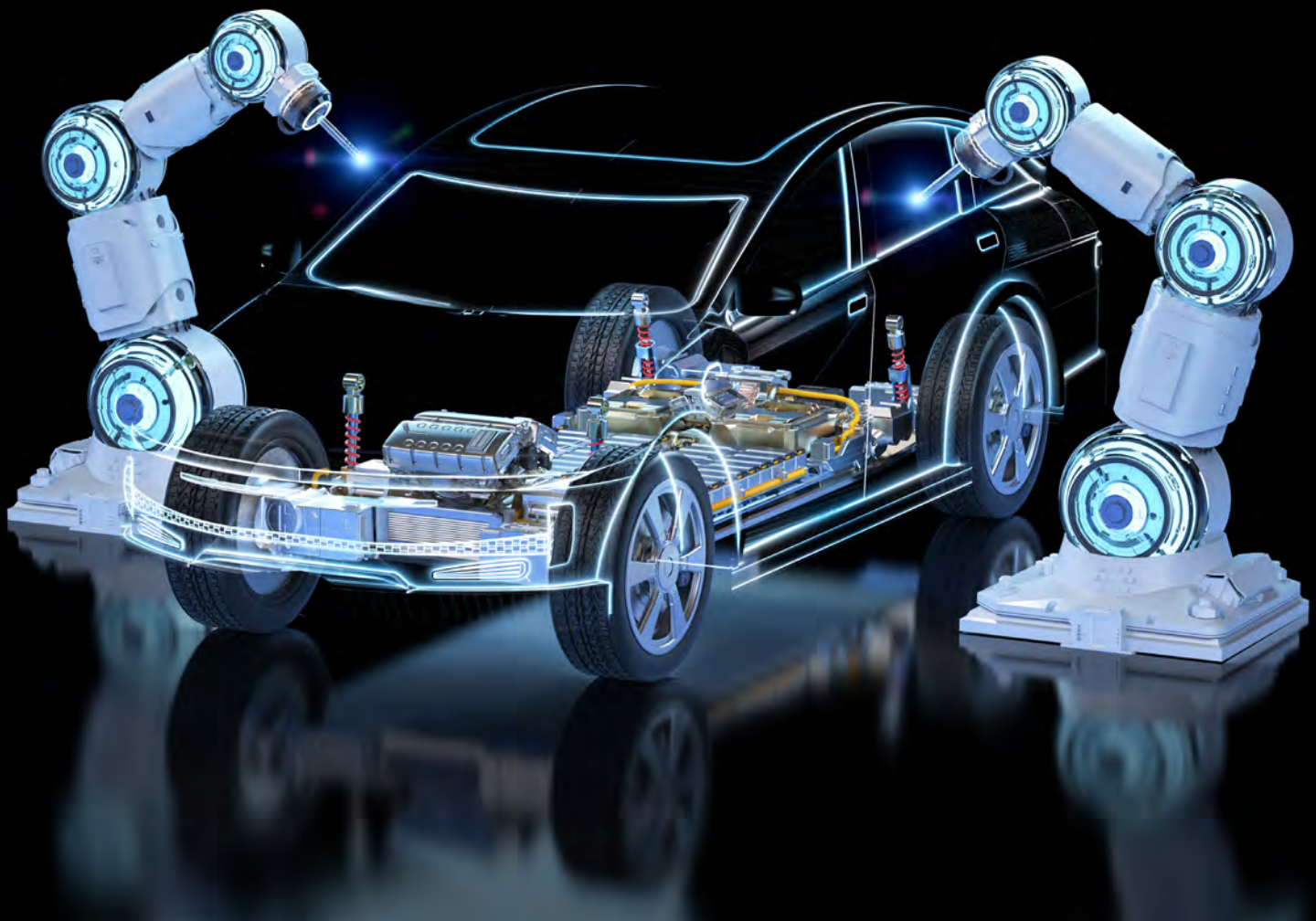
The Robotics Revolution: From Automated Arms to Thinking Machines Reshaping Manufacturing

Once limited to repetitive tasks, robotics in manufacturing has undergone a radical evolution—from mechanical arms to intelligent, AI-driven machines that think, adapt, and optimize. Today's factories are no longer just automated—they're becoming smart ecosystems where robots enhance precision, productivity, and safety. As the line between human and machine collaboration blurs, manufacturers are reimagining workflows, investments, and ethics. This revolution is reshaping global industry, pushing us closer to the era of self-optimizing, autonomous factories.

To explore the transformative rise of robotics in manufacturing, Nikita Kumari spoke with some of the industry's most influential voices driving this shift. The conversation brought together sharp insights from **Mr. Lajpat Yadav, COO at Ador Welding Ltd.** and **Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India.** Together, these trailblazers offered a powerful perspective on how intelligent automation is redefining production, workforce dynamics, and the future of industry.



1) Robotics in manufacturing has advanced from performing simple automated tasks to making intelligent, real-time decisions on the production floor.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said "In India, the journey of robotics in manufacturing has seen a course from simple automation to smart automation. Robotics deployed in the automotive sector for welding and material handling enabled safety and consistency. The integration of sensors and interfacing with CNC systems led to more flexible manufacturing. Today, with Industry 4.0, Make in India, and Atmanirbhar Bharat, Indian industries are adopting intelligent robotics in electronics and electricals, pharma, and consumer durables. The robots used can analyse real time and maximize throughput, facilitate predictive maintenance, and make adaptive choices.

Collaborative robots are in high demand among small and medium-sized enterprises because they are affordable and are user-friendly. Considerable improvement in technologies and lower costs mean robots are becoming more accessible. Robots have an essential function in manufacturing today as cheap and fast productivity, mitigating process delays, and flexible manufacturing. With the development of a digital ecosystem and growing skilled professionals, India is evolving to be a hub for technology-led manufacturing."

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India "At Delta Electronics India, we've witnessed the evolution of robotics from basic automation tools to intelligent systems that integrate seamlessly into smart manufacturing environments. Earlier, robots were designed for repetitive, isolated tasks like welding or assembly. Today, they are integral to decision-making processes—leveraging AI, sensor fusion, and real-time data analytics to optimize operations, improve uptime, and reduce waste. Our industrial automation solutions now combine robotics with digital twin technology, allowing for virtual simulations and proactive system responses. This shift reflects a broader industry trend: from automation for efficiency to intelligent autonomy for strategic competitiveness."

2) Cutting-edge robotic technologies—like collaborative robots, machine vision, and autonomous mobile systems—are driving a new wave of innovation in manufacturing.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said "India's factories are evolving fast with robotics at the core. Collaborative robots (cobots) are helping SMEs boost productivity by working safely alongside humans. AI and machine learning allow for smarter decision-making and predictive maintenance, while autonomous mobile robots (AMRs) streamline material movement.

Computer vision and sensors enable robots to perform precise, complex tasks, and digital twins paired with edge computing provide real-time performance insights. User-friendly interfaces like voice and touch controls are making robotics more accessible on the shop floor. Supported by programs like 'Make in India,' these innovations are pushing Indian manufacturing toward a more intelligent and agile future."

3) AI-powered robots are significantly improving precision, boosting productivity, and enhancing workplace safety across modern manufacturing settings.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said AI-assisted robots are revolutionizing manufacturing, making it faster, more precise, safer, and subsequently more productive. For manufacturing, AI-powered robots with advanced vision systems and neural networks can perform basic tasks - defect detection, alignment, and assembly—with precision levels that are important in the automotive, electronics, and other sectors. Unlike static robots, AI-powered robots can adjust on the fly, relying on the learned data for intelligent performance to continually improve.

AI-powered robots can increase productivity in the following ways: they can operate continuously (3 shifts, 7 days, etc.), adapt to changing production needs along the way, and influence predictive maintenance by alerting workers when equipment isn't performing at the expected level in order to reduce unplanned outages. AI-enabled systems can be quickly reconfigured by the producer, which helps define the pace of change.

AI-powered systems can also improve safety. Many AI-powered systems can sense if a person enters the working space, which prevents collusion through speed control systems as well as pausing operations automatically. There

Lajpat Yadav,
COO at Ador Welding Ltd.

"India's factories are evolving fast with robotics at the core. Collaborative robots (cobots) are helping SMEs boost productivity by working safely alongside humans."

Dr. Sanjeev Srivastava
Head of Industrial Automation
Delta Electronics India

"Cybersecurity and operational integrity are top priorities at Delta. Our robotic and automation platforms follow secure-by-design principles, with encryption, network segmentation."

are applications to ensure that fewer people are working in dangerous environments, thus improving safety and ergonomics as well. For India, these advantages are particularly valuable for SMEs that need to upgrade and streamline their production.

4) As robots become more prevalent, workers are adapting through reskilling, while companies implement transition strategies to foster human-machine collaboration.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said "As robots are more readily found in Indian manufacturing, employees must also adapt. While employees may be losing manual repetitive roles, many are gaining skills that involve decision-making, analysis, and supervision. Companies are involved in this transition as well. Some companies are collaborating with ITIs and implementing skill-development initiatives like Skill India to engage, support, and train teams around modern production systems.

The emergence of collaborative robots (or cobots)—small robots that can work safely alongside a person—has also lessened the fear associated with job loss. The negative perception of automation and robots can subside when automation is phased in gradually and there is transparency and proper workplace norms in advance. Ultimately it is found that many employees prefer that machines replace monotonous functions and reduce physical demands, with more autonomy for them to do higher-value work. More and more collaborative approaches to the workplace are unfolding and are becoming a part of the foundation for a more capable and foresightful future of manufacturing in India."

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India" Delta Electronics India places a strong emphasis on workforce development as we scale up our automation efforts. Our strategy includes ongoing skilling programs, partnerships with engineering institutes, programming, and troubleshooting. Employees are also directly involved in the implementation of robotics projects, fostering ownership and acceptance. By positioning robotics as a co-pilot—rather than a replacement—we've successfully created an empowered, technology-enabled workforce that thrives in the age of smart manufacturing."

5) Industries such as automotive, electronics, and pharmaceuticals are rapidly adopting intelligent robotics due to their high demand for speed, accuracy, and scalability.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said India's fabrication sector is moving towards future technology, integrating newer robots for superior quality, safety, and productivity. The common operational processes of cutting, welding, and material handling have allowed for the innovation to provide repeatable and reliable work on the manufacturing floor, allowing companies to minimize and reduce hazards for workers. In many of these processes, automation is incorporated into skilled laborers' workflows, allowing for the operations to be completed rapidly without eliminating the craftsmanship of the operations. The innovative evolution has no shortage of pressures, such as quality, competition, and the forever increasingly rapid demand.

Along with fabrication, other industries such as automotive, electronics, and pharmacy are all investing significant proportions to robotically improve production rates. Collectively these sectors will force an even more tech-obsessed manufacturing future.

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India "In our experience, the sectors experiencing the fastest adoption of intelligent robotics are **electronics, automotive, and EV component manufacturing.** These industries demand high levels of accuracy, traceability, and consistency—making them ideal candidates for robotic systems. At Delta's own facilities, we've deployed collaborative robots for electronics assembly and EV charger production lines. These sectors also benefit from the scalability and modularity of robotics, allowing them to respond to evolving customer and compliance demands efficiently."

6) With robotics becoming more autonomous, manufacturers are proactively tackling ethical concerns, cybersecurity threats, and operational risks.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said Many Indian manufacturers are beginning to see robotics as a smart long-term investment rather than a cost. The cost of machines, integration, and worker training is a big upfront investment, but investors begin to see the returns in terms of higher output, fewer delays, and better-quality products.

Since robots can work around the clock, they increase production speed and decrease the cost per unit.

Furthermore, automation reduces errors and material waste, resulting in less rework and more uniform quality. Automation helps companies limit the number of workers performing hazardous or physically demanding jobs, resulting in improved worker safety and working conditions. Many companies would rather retrain their workers and reallocate them into higher-value roles than reduce jobs.

Ultimately, these changes don't just cut costs, they make Indian manufacturers better, more agile and more competent against global competition. Robotics for many, is no longer an option, but is becoming an integral part of how they remain competitive.

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India "Cybersecurity and operational integrity are top priorities at Delta. Our robotic and automation platforms follow secure-by-design principles, with encryption, network segmentation. We are also investing in redundant systems and robust failsafe protocols to mitigate any risk from increased autonomy. On the ethical front, we are committed to fair labor practices and ensure that automation augments human capabilities rather than displaces them. We also adhere to international safety standards like ISO 10218 and IEC guidelines to ensure our robotic solutions are deployed responsibly."

7) Companies are weighing the high initial costs of robotics against long-term returns in efficiency, quality, and global competitiveness.

Mr. Lajpat Yadav, COO at Ador Welding Ltd. said With the availability of AI and real-time data, the future of manufacturing is quickly becoming one where factories can operate themselves and dynamically adapt to the data they receive. Smart factories are no longer simply a concept that we hear about happening elsewhere in the world; it is happening, and India is slowly getting on the same page. Imagine a manufacturing environment where the robots not only do the work but also analyse the data, adapt their performance, and handle scheduled maintenance with as little human input as necessary.

Although completely automated factories may not be feasible for all Indian manufacturers at this time, many manufacturers are beginning to see the benefits of using semi-automated systems. In some cases, robots are used for cyclical, repetitive work or precision tasks, while workers focus on troubleshooting, monitoring, and creativity. India's progress in this regard is being supported by government initiatives like Digital India and Make in India. Future smart manufacturing processes will also force improvements on the infrastructure which supports manufacturing. Additionally, the workforce will have to be upgraded, and it may need new skills entirely. A smart, adaptive, intelligent factory is no longer a fantasy; it is well underway, if not already happening.

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India "At Delta Electronics India, we view robotics as a long-term enabler of business transformation rather than a cost center. The ROI is realized through higher productivity, reduced rework, better asset utilization, and faster time-to-market. We also benefit from energy savings and process optimization—critical in sectors like EV and renewable infrastructure. With smart financing models, partnerships with tech providers, and in-house R&D, we are able to mitigate upfront costs while maintaining agility. The gains in quality, consistency, and compliance have made automation a cornerstone of our growth strategy."

8) The future of manufacturing is moving toward fully autonomous, self-optimizing factories powered by robotics and artificial intelligence.

Dr. Sanjeev Srivastava, Head of Industrial Automation, Delta Electronics India " The future is indeed moving toward **self-optimizing, AI-driven factories,** and Delta is at the forefront of this transition. With the convergence of 5G, IoT, robotics, and edge computing, we foresee manufacturing facilities where systems communicate autonomously to make real-time decisions—adjusting workflows, predicting equipment failures, and reallocating resources dynamically. Delta's investments in digital twin technology, AI, and connected automation are designed to support this evolution. While human oversight will remain crucial, the factory of the future will be characterized by **cyber-physical integration,** rapid reconfiguration, and zero downtime operations—enabled by smart robotics."

The Silent Force Behind Smart Cars: 3M India's Innovation Journey

Dhritisunder Bhattacharya
Asia Area Technical Leader
TEBG, 3M India

3M India, a subsidiary of the global science and innovation leader 3M, partners with automotive OEMs to develop advanced solutions for autonomous, connected, and electric vehicles. Leveraging its expertise in material science, 3M supports innovations in NVH control, sensor integration, thermal management, digital cockpit design, and lightweighting. With a focus on safety, comfort, and regulatory readiness, 3M India plays a critical role in shaping the next generation of intelligent and sustainable mobility.

In an exclusive conversation with BISinfotech, Nikita Kumari sat down with Dhritisunder Bhattacharya, Asia Area Technical Leader, TEBG, 3M India, to dive into how 3M is quietly transforming the future of mobility. From smart NVH solutions and sensor-friendly films to lightweight, sustainable materials and interactive cockpit designs, Bhattacharya shares how 3M is partnering with OEMs to make autonomous, connected, and electric vehicles smarter, safer, and more comfortable than ever.

1) How is 3M India working with automotive OEMs to understand their technology roadmaps for autonomous and connected vehicles?

Globally we have a great process in place to assess the technology roadmaps for the Auto OEMs along with their technology suppliers, and in line with that, bench to bench engagements / interactions are done and reviewed regularly. Primarily as part of the processes, 3Mers engage with the top-level decision makers at local levels and at HQs and dynamically follow / interpret the narrations from OEMs.

3M also looks at how each OEM is framing their strategies aligned to global and area based mega trends. As far as Autonomous and connected vehicles are concerned, we are classifying it under a plethora of technologies around SDVs and Electronics.

2) How is 3M adapting its NVH (Noise, Vibration, Harshness) solutions to enhance cabin comfort and acoustic control in driverless or semi-autonomous vehicles?

3M aspires to enhance the comfort indices in the vehicular cabins and its associated subsystems; While the PBN (power-based noise) & ANC (active noise cancellation) are evolving concepts and with BEVs gaining traction globally, 3M's primary focus remains to continuously build solution designs by combining various materials & product combinations. There is a significant amount of work being done on Meta-materials and Augmented Intelligence fronts to provide the best levels of experience across all power trains.

We are yet to build elements of needs as far as NVH in Driverless vehicles are concerned as it is still in evolving stages at various parts of the globe. As models are getting rolled out with ADAS L1/L2 loaded, naturally the overall expectations on cabin comfort are higher. By and large we see that the demand for a much quieter cabin is gaining more seriousness along with lightweighting.

This is leading to interesting technology challenges and opportunities for all players in this field, and we see that suppliers will have to up their game not only into light-weighting but not compromising on recycled materials usage. It also remains to be seen as to how the body structures are being re-designed to enable far more modularization of Noise Control treatments and its relative interaction with the transfer paths.

3) What materials or technologies is 3M offering to ensure long-term reliability, safety, and thermal stability of systems essential for autonomous operations?

3M materials and products / solutions as they go out of the R&D Gate into full scale production materials, are evaluated through knock-out specs unless the specific solution is designed for a particular OEM. So, the knock-out standards encompass most of the

top OEM requirements ensuring reliability, MTBF etc meeting and/or exceeding wider OEM needs.

4) How is 3M balancing aesthetics, durability, and sensor transparency in exterior materials designed for smart vehicles?

That's an interesting area, with larger landscapes in glazing needed for seamless connectivity, Tri indices are very important in glazing zones. At the same time different aesthetic demands come along with that. 3M is fully ready with solutions that enhance sensor transmission with wide spectrum of aesthetic enhancements along with superior EMI/EMC controls. While more ideas can and are being explored but a lot depends on the OEMs also to recognize the metal to sensor interactions in the modern vehicles. So, I guess everyone is looking for what next beyond what is possible today.

5) How do 3M's films, adhesives, and protective materials support the integration and durability of key autonomous vehicle sensors such as LiDAR, radar, and cameras?

3M products have the full potential to be rendered in use - as far as assembly and design simplifications in the area of Sensors, LiDARs etc. OEMs use our films, adhesives etc. to simplify the assembly and performance. Performance in this case also includes signal and visual transmission parameters.

These small devices or device assemblies seldom get assembled by conventional mechanical methods, and thus 3M provides a ready to reckon solution. Also, there are screens that visually transmit outputs, which demand easier readability under different outdoor lighting conditions.

At the same time there is another aspect that is coming up quite rapidly is demand for repairability / replaceability. 3M is very active in this area as well and this initiative is coined as Debonding on Demand (DoD) with our OEMs and partners.

6) How does 3M enable predictive maintenance or diagnostics through material-level data, sensing, or condition-monitoring technologies?

Well, 3M despite being a pure material science company, has been actively working on material data card packages that OEMs can interact with on their computers at the design in stage. With digital designs using Machine Learning becoming more and more popular in practice, 3M is happier to be meeting the OEM expectations in this area. We still are scratching the surface when it comes to condition monitoring technologies for ON-Road vehicles using diagnostics, however, it is obvious that 3M will not be in passive state when those practices are mandated in service for on-road vehicles.

Nevertheless, 3M has pioneered collision repair practices with evolution of precise digital diagnostics when it comes to collision repair recopies and effective turn-around time for body-repairs. We have active agreements where 3M diagnostic systems are installed at Body-shops to build optimal assessments in the repair processes covering dent repair, paint finishing etc.

7) With vehicle interiors becoming more interactive and digital, how is 3M innovating cockpit materials to support user-friendly connected interfaces?

We have plans evolving around those where the phase 1 focus is to make changes in our products for interior aesthetics to facilitate interactive use / features. The phase 2 focus under evaluation is to deal with smart and interactive surfaces and I am sure in the near term we will have much more to talk about in this space.

8) How is 3M preparing its automotive product line for regulatory changes or global safety standards related to autonomy and connectivity?

3M has always emphasized on putting the best of the standards in practice, in various councils of regulatory bodies 3M advocates such strengths facilitating the need to build wider awarenesses. So, it's a continuous process, be it in the area of eliminating substances of conflict, putting science for circular economy at SCOPE 1 to meaningfully impact SCOPE 2 scores for the OEMs. As a material science company, we are working in a highly responsible manner to enable quantum benefits for effective signal transmission in its deterrence paths. 3M is actively working on solutions that compliments the needs in Gigacast BIWs.

"3M is fully ready with solutions that enhance sensor transmission with wide spectrum of aesthetic enhancements along with superior EMI/EMC controls. While more ideas can and are being explored but a lot depends on the OEMs also to recognize the metal to sensor interactions in the modern vehicles."

Why Semiconductor Jobs Are the Next Big Thing for Indian Engineers

Mr. Saleem Ahmed
Officiating Head, ESSCI

In the next ten years, India will witness a tectonic shift in its technological landscape, one that will decisively shape the nation's economic destiny and global standing. At the heart of this transformation lies the **semiconductor industry,** often referred to as the "new oil" in the global economy. For Indian engineers, the semiconductor revolution isn't just a story of factories and chips—it's a gateway to **high-value, future-ready careers** that promise innovation, growth, and national impact.

With multiple large-scale semiconductor fabrication and assembly projects underway, and policy support at an all-time high, **semiconductor jobs are rapidly becoming the next big thing** for engineering talent in India. And at the forefront of this workforce transformation stands the **Electronics Sector Skills Council of India (ESSCI)**—tasked with equipping the Indian workforce for this high-tech future.

A Nation on the Verge of a Chip Revolution

India's dependence on imported chips—used in everything from mobile phones to fighter jets—has long been a strategic vulnerability. But that reality is now changing. Recently Union Cabinet's approved approved a new semiconductor plant in Uttar Pradesh's Jewar to be jointly set up by HCL Group and Foxconn. The newly approved facility will come up at an investment of Rs 3,700 crore.

This is the sixth unit approved under the India Semiconductor Mission, with five semiconductor facilities in advanced stages of construction. Three of these units—by Micron Technologies, Kaynes Technologies and a combination of CG Power-Renesas Electronics and Star Microelectronics—are based in Sanand, Gujarat. The Tata Group is building one semiconductor facility in Dholera, Gujarat and another in Assam.

These developments are backed by the Government of India's **India Semiconductor Mission (ISM),** a Rs. 76,000 crore policy initiative that provides incentives for design, manufacturing, and packaging of semiconductor chips.

This growing ecosystem will need a **massive talent pool**—and that's where India's engineers come in.

Why Semiconductors Are a Game-Changer for Engineers

Semiconductors power almost every modern device—from smartphones and laptops to electric vehicles, smart appliances, 5G infrastructure, defense systems, and even satellites. As the world shifts toward AI, IoT, and smart mobility, the demand for chips is set to explode. According to recent estimates, India's semiconductor market will **triple** in size—from **US$22.7 billion in 2019 to over US$80 billion by 2028.**

This explosion is not just about demand—it's about **job creation.**

According to ESSCI's analysis, the semiconductor industry is set to witness a dramatic rise in employment demand. The sector, which is projected to employ 1.70 lakh individuals by 2025, is expected to rise to 1.87 lakh in 2026, and add a total of 1.03 lakh new jobs by 2030. This includes roles in chip design, fabrication, testing, quality control, equipment maintenance, and advanced manufacturing processes.

The rapid expansion of this sector has created an urgent need for a highly skilled workforce. ESSCI is committed to bridging the skill gap through targeted training programs, collaborating with industry and academia to equip young professionals with expertise in chip design, fabrication, and advanced packaging. These initiatives will empower the next generation to drive India's semiconductor revolution.

Such roles are not only high-paying but also **globally portable,** offering Indian engineers access to both domestic and international job markets.

The Many Doors Semiconductor Jobs Open

The semiconductor industry is uniquely interdisciplinary, requiring expertise in electronics, mechanical, chemical, computer science, materials engineering, and more. Here's a breakdown of the **top career tracks** Indian engineers can pursue:

1. Design Engineers

Design engineers work on creating the architecture and layout of chips. They use Electronic Design Automation (EDA) tools to ensure chips are efficient, reliable, and ready for fabrication.

2. Process Engineers

These engineers fine-tune the manufacturing process, often working in cleanroom environments. They handle wafer processing, lithography, etching, doping, and deposition.

3. Packaging and Testing Experts

Once chips are fabricated, they need to be tested, assembled, and packaged. Engineers in this field ensure performance and durability under various operating conditions.

4. R&D Scientists

Research roles offer cutting-edge work in developing new semiconductor materials like gallium nitride or silicon carbide, and technologies like FinFET or EUV lithography.

5. Equipment and Maintenance Technicians

Fabrication units run on precision equipment that needs constant monitoring and maintenance—critical work for mechanical and electronics engineers.

6. Quality and Safety Officers

Given the strict standards in chip manufacturing, QA engineers ensure compliance, while safety experts handle protocols in chemical and electrical hazards.

Enter ESSCI: Building the Backbone of India's Semiconductor Workforce

With this exponential growth comes the challenge of creating a **skilled and job-ready workforce.** The **Electronics Sector Skills Council of India (ESSCI)**, under the aegis of the Ministry of Skill Development and Entrepreneurship, plays a crucial role in bridging this gap.

ESSCI has already developed **25 NSQF-aligned qualifications** for semiconductor design, packaging, and manufacturing. These qualifications are designed to cater to:

- **Engineering graduates** seeking specialization
- **Diploma and ITI students** entering the job market
- **Working professionals** seeking upskilling or domain switch

ESSCI offers focused a range of qualifications covering the complete value chain of the semiconductor industry. Short Term courses such as VLSI Design Engineer, concentrating on designing SOC-module functions using software, Embedded Full Stack Engineer, IoT Hardware Analyst are some of the top courses offered for pursuing engineering graduates to gain the knowledge of EDA Tools and system design. ESSCI also provides qualifications for Wafer Back Grinding Engineer and Wafer Dicing Engineer, specialising in wafer manufacturing tasks which can be taught to ITI / Diploma students. ESSCI also has foundation / upskilling courses in the field of Nano Science & Advance Nano Science which is also in great demand. Also, there are some basic courses on the Industrial Safety – Electrical & Hazchem which are very crucial & important for the industrial safety requirements. The complete list of our qualifications along with their model curriculum are all uploaded on our website - https://essc-india.org/qualification-packs.php

Career Opportunities in Semiconductor Technology:

As the semiconductor industry evolves in response to these mega trends, it creates exciting career opportunities for professionals across the value chain – designing, fabrication and packaging. From semiconductor design and manufacturing to research and development, there is a growing demand for skilled professionals who can innovate and drive technological advancements in the industry. The sector is expected to see more than 800,000 to 1 million job openings over the next five years, says staffing company Randstad. The government recently approved $15 billion worth of investments into the sector including from the Tata group. India's burgeoning semiconductor sector is facing a surge in demand for talent, fuelled by new

"As the semiconductor industry evolves in response to these mega trends, it creates exciting career opportunities for professionals across the value chain – designing, fabrication and packaging."

investments and the government's ambitious plan to transform the country into a chip manufacturing hub.

1. Semiconductor Design Engineer: Semiconductor design engineers play a crucial role in developing the architecture and circuitry of semiconductor chips. They utilize tools like Electronic Design Automation (EDA) software and simulation tools to design and optimize chip layouts for performance, power efficiency, and manufacturability.

2. Process Engineer: Process engineers are responsible for developing and optimizing semiconductor manufacturing processes. They work closely with equipment vendors and manufacturing teams to ensure the smooth operation of semiconductor fabrication facilities, improve yield rates, and reduce production costs.

3. Research Scientist: Research scientists in the semiconductor industry focus on exploring new materials, devices, and technologies to push the boundaries of semiconductor innovation. They conduct experiments, analyze data, and collaborate with cross-functional teams to develop next-generation semiconductor solutions.

4. Material Engineers: Material engineers in the semiconductor industry are pivotal in researching, selecting, and optimizing the materials used in semiconductor device fabrication. Their expertise spans a wide range of materials, including silicon, gallium arsenide, and various compound semiconductors. Material engineers work closely with semiconductor design teams to ensure that the chosen materials meet the performance requirements of the intended applications while also considering factors such as cost, scalability, and reliability. Additionally, they play a crucial role in developing new materials and processes to push the boundaries of semiconductor technology, enabling advancements in areas such as miniaturization, power efficiency, and functionality.

5. Product Marketing Manager: Product marketing managers play a vital role in bringing semiconductor products to market. They conduct market research, develop marketing strategies, and collaborate with sales teams to promote semiconductor products and drive revenue growth.

6. Quality Assurance Engineer: Quality assurance engineers ensure that semiconductor products meet the highest standards of quality and reliability. They develop and implement test plans, conduct performance testing, and analyze data to identify and address any issues or defects in semiconductor products.

7. Packaging experts: Packaging experts in the semiconductor industry are instrumental in developing and implementing packaging solutions that safeguard semiconductor chips. Their role entails meticulous selection of packaging materials, designing efficient packaging structures to ensure protection against environmental factors and mechanical stresses, and optimizing designs for thermal management and electrical performance. They collaborate closely with design and manufacturing teams to ensure that packaging solutions meet stringent industry standards while balancing factors such as cost-effectiveness and manufacturability.

8. Clean room specialists: They play a pivotal role in maintaining the pristine conditions necessary for semiconductor fabrication processes. They are responsible for meticulously managing and monitoring cleanroom environments to prevent contamination that could compromise the quality and reliability of semiconductor devices. Clean room specialists enforce strict cleanliness protocols, perform regular inspections, and oversee cleaning procedures to ensure compliance with industry standards and regulations. Their expertise ensures that semiconductor manufacturing facilities operate in controlled environments conducive to high-quality production.

9. Machine maintenance technicians: They are essential for sustaining the operational efficiency and reliability of semiconductor manufacturing equipment. Their responsibilities include conducting routine maintenance tasks, performing diagnostics, troubleshooting equipment issues, and executing repairs as needed to minimize downtime and optimize production throughput. Machine maintenance technicians also play a crucial role in implementing preventive maintenance schedules, identifying opportunities for equipment upgrades or optimizations, and ensuring compliance with safety regulations and operational standards. Their expertise contributes to the overall

efficiency and longevity of semiconductor manufacturing operations.

10. Safety protocol checkers: These people are integral to maintaining a safe and secure work environment within semiconductor manufacturing facilities. They are responsible for enforcing safety regulations, conducting regular inspections to identify potential hazards, and implementing corrective measures to mitigate risks and prevent accidents. Safety protocol checkers also play a vital role in developing and implementing safety training programs, conducting safety audits, and promoting a culture of safety awareness among employees. Their diligence and vigilance help to safeguard the well-being of personnel, protect semiconductor manufacturing equipment, and maintain the integrity of semiconductor processes.

Career Opportunities Across the Ecosystem

- **Global Semiconductor Giants:** Intel, Micron, AMD, Qualcomm, NXP
- **Indian Startups & Design Houses:** Saankhya Labs, Steradian Semiconductors, Signalchip
- **Manufacturing Units:** Tata Group, Vedanta-Foxconn, ISMC
- **Government & Defense:** DRDO, ISRO, SCL (Semiconductor Lab)
- **Academia & R&D:** IITs, IIITs, National Labs

India's Policy Ecosystem: Creating the Right Conditions

India's semiconductor journey isn't just market-driven—it's backed by **clear, consistent policy action:**

- **Production Linked Incentive (PLI) Scheme** to support manufacturers.
- **Design Linked Incentive (DLI) Scheme** for fabless startups and institutions.
- **Modernization of the Semiconductor Laboratory (SCL)** in Mohali into a full-fledged fab.
- **State-level incentives,** like Odisha's offer of **25% subsidy on capex** for fabs and **20% for fabless companies.**

Moreover, global giants like **Applied Materials, Lam Research,** and **Samsung Semiconductor India Research (SSIR)** are expanding operations in India—indicating long-term confidence in India's talent and policy framework.

A Strategic Moment for Indian Youth

The rise of India's semiconductor sector presents a rare, perhaps once-in-a-generation, opportunity. Engineers who upskill today can become:

- The **designers of India's next chip**
- The **technicians behind India's first fab line**
- The **entrepreneurs launching fabless startups**
- The **leaders driving India's tech sovereignty**

At a time when countries are scrambling to secure chip supply chains, India is carving a unique place for itself—not just as a consumer but as a creator. But this vision hinges on talent. That's why engineers—especially young graduates and final-year students—must look seriously at semiconductors. With government support, ESSCI's training programs, and private sector momentum, the time to act is now.

Conclusion: From Potential to Powerhouse

India is no longer at the sidelines of the global chip race. With strong policy, infrastructure investment, and a strategic location, it is emerging as a serious contender. But no chip factory can run without engineers. The success of India's semiconductor mission will ultimately depend on its people—**its skilled, driven, and future-ready engineers.**

Redefining Vehicle Intelligence: Quest Global's Role in Autonomous Mobility

Kamal Deep Sethi
Global ADAS/Autonomous Mobility CoE Leader at Quest Global

> *"Our mechanical product engineering and PLM services are designed to address critical performance, cost, and reliability challenges in electric vehicle development. On the mechanical side, we assist with everything from cost optimization and non-conformance monitoring to design and detailed engineering."*

Quest Global is a trusted global engineering services firm that partners with OEMs and Tier-1s to accelerate innovation across industries, including automotive, aerospace, and hi-tech. With expertise in mechanical, digital, software, and electronics engineering, the company delivers end-to-end solutions across the product lifecycle. In the automotive space, Quest Global leads in Software Defined Vehicles, ADAS, digital cockpits, and AI-powered test automation—enabling the future of connected, autonomous, and electric mobility.

In an exclusive interaction with BISinfotech, **Nikita Kumari** sat down with **Kamal Deep Sethi, Global ADAS/Autonomous Mobility CoE Leader at Quest Global,** to delve into the company's cutting-edge contributions to the evolving automotive landscape. From Software Defined Vehicles (SDVs) and advanced ADAS platforms to digital cockpits and AI-driven test automation, Sethi shares how Quest Global is enabling OEMs and Tier-1s to redefine the future of connected, autonomous, and electric mobility through innovation, collaboration, and engineering excellence.

1) How is Quest Global contributing to the development of Software Defined Vehicles (SDVs)?

At Quest Global, we believe the focus is on Software Defined Vehicles (SDVs) for the next big transformation in the automotive industry. Quest Global's role in this journey will be to enable OEMs and Tier-1 suppliers to reimagine and redefine the driver experience through an integrated approach – combining deep automotive domain knowledge with robust engineering capabilities across software, electronics, mechanical systems, and digital technologies.

We support customers through the entire SDV lifecycle, starting from conceptualization, benchmarking, system design, implementation to after market challenges. We focus on the development and deployment of on-board and off-board SDV stacks, covering platforms, middleware, applications, and services. The teams here help evaluate technology choices across EEA (electrical/electronic architecture), cloud, SoC, and virtualization – these steps ensure our clients adopt the most efficient, reliable, and scalable solutions.

Additionally, we offer strategic consulting and system integration services to streamline SDV adoption, improve performance, and drive down development costs.

The ability to bring together system-level thinking, UI/UX design, and next-gen process efficiencies makes us a trusted engineering partner in building the software-defined vehicles for the future.

2) Can you explain the core features of the QuAD ADAS platform co-developed with Renesas?

The QuAD ADAS platform is a compelling showcase of Quest Global's hardware-software co-design capabilities, developed in collaboration with Renesas. It is a fully integrated autonomous driving system built on a Renesas SoC, highlighting the robust engineering and scalable architecture convergence to support L2 to L4 autonomous functionalities.

This platform integrates a comprehensive sensor framework – including 8 cameras, 5 radars, and GNSS for high-precision localization and Drive By Wire system to control the vehicle via software. . The perception layer assists sensor fusion capabilities enabling critical functions like Stop & Go, Emergency Brake Assist, and broader 360-degree awareness, including detection of pedestrians, two-wheelers, and four-wheelers, specifically for Indian Road Conditions.

What makes the QuAD platform truly scalable is its flexible architecture, which includes sensors, ECUs, and data loggers that are adaptable to different levels of autonomy. It serves as a testbed for data acquisition, on-road validation, and real-time data processing. For OEMs and Tier-1s, this provides a ready-to-deploy framework that shortens development cycles and accelerates innovation in autonomous driving for now and the future.

3) What sets your ADAS solutions apart in supporting L2 to L4 autonomy?

Our ADAS capabilities stand out because of a combination of engineering depth, system-level thinking, and powerful industry partnerships. We provide end-to-end solutions, from design and development of production-ready middleware to rigorous testing across all levels of the system. This ensures seamless integration and optimal performance of L2 to L4 ADAS features. Our features are thoughtfully designed to cater the Indian Driving Conditions.

Our shift-left methodology allows for early testing and validation, which assists in the early detection and resolution of problems in the development cycle. Our skills in hardware-software co-design and domain controller development complement this, which improves the dependability and safety of our solutions.

The key difference between Level 3 and Level 4 autonomy lies in the complexity and responsibility of safety systems. In Level 3, the vehicle allows hands-free driving, but the driver must remain alert and ready to take control at any moment. In contrast, Level 4 enables the vehicle to handle all driving tasks in specific conditions, allowing the driver to disengage completely – potentially resting or even sleeping in some cases.

Additionally, our collaborations with technology leaders such as Renesas, NVIDIA and AWS add a strategic edge. These partnerships allow us to leverage the latest advancements in SoC, AI processing, and cloud infrastructure, further boosting the capability and scalability of our ADAS platforms. Whether it's perception, decision-making, or actuation—our solutions are built to evolve with the demands of the autonomous mobility landscape.

4) How does your Digital Cockpit solution enhance the EV driver experience?

The Digital Cockpit solution we have developed is a forward-looking platform designed for next-generation Software Defined Vehicles, especially electric vehicles (EVs) that demand smarter and more immersive driver experiences. Quest Global's Integrated Digital Cockpit (IDC) brings together multiple display systems, including a fully digital instrument cluster, infotainment head unit, passenger display, and e-Mirrors.

One of the key differentiators of our solution is the Service-Oriented Gateway, which uses Ethernet as the primary vehicle network. This enables real-time communication between the cockpit and other vehicle systems, creating a seamless, responsive system. This allows features to be dynamically subscribed through a Companion App, providing user personalization and control.

Moreover, vehicle data is exposed through standardized signals that feed into cloud-based analytics services like Driver Score Estimation. These analytics are accessible via the infotainment system or the app, allowing drivers to make data-informed decisions to improve safety and efficiency. The solution also supports OTA updates using the standardized eSync platform, ensuring that services remain up to date without any disruption to vehicle operations.

5) What role does cloud analytics and digital twin simulation play in your cockpit architecture?

Cloud analytics and digital twin simulation are central to the evolution of cockpit architecture, enabling smarter, more adaptive in-vehicle experiences. Digital Twins, the virtual replicas of physical systems allow us to model and monitor cockpit performance in real time, helping simulate driver interactions, test UI changes, and predict system behaviour before deployment. This approach, rooted in technologies originally pioneered by NASA, has evolved significantly with advances in IoT and cloud computing.

Cloud-based analytics enhances these capabilities by processing the extensive data flows from cockpit sensors and digital simulations, which provides meaningful insights on a large scale. This facilitates proactive maintenance scheduling, live system performance tuning, and evidence-based improvements to both driver protection and user experience. Although obstacles such as unified communication standards, data security, and capital requirements for infrastructure persist, the advantages in operational efficiency, system dependability, and environmental responsibility establish these technologies as fundamental components of our integrated smart cockpit platforms.

Various areas we are actively using the Digital twin technology are Factory Automation, Autonomous Driving Features Testing (on real time simulated road conditions), Embedded Electronic etc.

6) How is Quest Global using AI for infotainment and cluster test automation?

Our cutting-edge AI-powered test automation framework revolutionizes infotainment and cluster display testing by dramatically increasing speed, accuracy, and coverage. It is compatible with all screen sizes that effortlessly manages thousands of unique UI screens across various components and languages. Unlike traditional test automation frameworks that often falter when faced with complex and diverse user interfaces, our AI-driven solution thrives.

7) What are the advantages of your OS-agnostic testing framework?

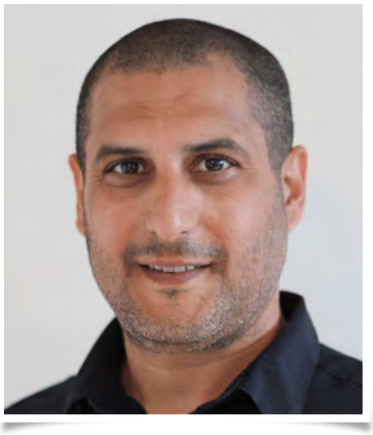
One of the fundamental approaches used by Quest Global in building SDV framework by keeping the Software agnostic with the Hardware. Additionally, Our Software architecture is Modular and we have designed Abstraction layers which makes Application layer agnostic from the Middleware Layer.

8) How do your mechanical and PLM services help optimize EV product performance?

Our mechanical product engineering and PLM services are designed to address critical performance, cost, and reliability challenges in electric vehicle development. On the mechanical side, we assist with everything from cost optimization and non-conformance monitoring to design and detailed engineering. We directly contribute to improved performance and cost-efficiency by assisting OEMs in using better materials, streamlining manufacturing procedures, and fixing product faults.

From a PLM standpoint, we facilitate digital transformation by streamlining portfolio management and integrating development processes. We provide scalable, customized PLM solutions that satisfy client demands not met by off-the-shelf software by utilizing technologies like Mendix, TeamCenter, and DevOps tools. Higher product quality, quicker time to market, and improved cooperation are all guaranteed by these capabilities.

Unlocking Asset Visibility in a Connected World



Ohad Peled
Product Marketing Manager at Sony Semiconductor Israel

> *"Battery issues are one of the biggest reasons asset tracking systems may not deliver on their promise at scale. Frequent recharging adds labor costs, creates downtime, and disrupts operations—especially for companies managing thousands of devices."*

Over the last few years, asset tracking has emerged as a critical business function, and is estimated to grow to a $34.5B market by 2032, according to Custom Market Insights. Whether businesses are monitoring a global supply chain or keeping tabs on expensive equipment, knowing where assets are at all times is essential. It enables businesses to optimize supply chains, prevent theft, and reduce operational downtime.

There are several technical and commercial challenges in deploying such a solution, which could result in failure to deliver the promised value. Some solutions struggle to maintain accurate tracking as assets move within or across different facilities, especially if they go through an indoor environment. Others suffer from excessive power consumption, which requires relatively high maintenance. And many are marketed as one-size-fits-all platforms, but they lack the robustness needed to handle complex, real-world scenarios.

This article will take a closer look at these challenges and explore the solutions that can help companies effectively scale their asset tracking capabilities.

The Business Impact of Asset Tracking

In today's economy, the ability to know where your high-value assets are at any given time has become a competitive advantage. From manufacturing plants to logistics providers, companies are under pressure to run lean, efficient operations while meeting rising customer expectations for transparency and speed. Asset tracking makes that possible. Businesses with effective tracking solutions benefit from:

- Reduced loss and theft: Real-time visibility significantly cuts asset misplacement and shrinkage.
- Faster operations: When assets are easy to locate, workflows accelerate, reducing downtime and increasing throughput.
- Better decisions: Location and usage data feed into analytics and forecasting models, improving planning across supply chain and operations teams.

These aren't just operational wins—they translate into better margins, improved customer service, and reduced risk.

When Tracking Breaks Down – The Challenge of Asset Tracking

Despite the promise, many tracking deployments fall short. The problems are often not technical—they're business issues in disguise.

Connectivity Black Holes

Whether it's a factory floor, a warehouse basement, or a shipping container, assets often move in and out of areas where connectivity and coverage are spotty. If your tracking solution goes dark during those transitions, you're not tracking—you're guessing.

Battery Drain

When trackers go offline due to dead batteries, the system fails. And if you're scaling to hundreds or thousands of assets, manual battery maintenance becomes a non-starter. Solutions that require frequent charging or swapping become too expensive and labor-intensive to manage.

Scalability Bottlenecks

Some systems work great in a pilot program with 10 devices, but collapse when rolled out across an enterprise. Deploying a solution for tens or even hundreds of devices is fundamentally different than deploying 100 thousand devices. Common issues include:

- Difficulty managing large fleets of devices.
- Lack of integration with existing operational systems.
- Limited configurability for different asset types or environments.

These issues don't just frustrate IT teams—they block the very outcomes tracking is supposed to deliver.

Look for a Solution that Ties Technology to Outcomes

Choosing the right asset tracking solution means looking beyond buzzwords and focusing on what will be the best fit for your business, to gain the most value from the solution.

Connectivity – LTE-M and NB-IoT for Reliable, Wide-Area Coverage

Asset trackers often fail where coverage gets tricky—in urban canyons, or on the move across facilities. That's where traditional or legacy cellular falls short.

Enter LTE-M, a low-power wide-area (LPWA) technology built for IoT. It offers better RF sensitivity, and stronger, more stable connections than older networks like Cat-1bis. That means fewer dropped signals and more consistent location data—even in RF-challenged environments.

Unlike LoRa, which depends on private networks, LTE-M works over public cellular infrastructure and supports seamless mobility and roaming. It's a smarter choice for enterprises that need real-time visibility across complex operations without the hassle of managing private towers or gateways. Better coverage and fewer outages translate into on-time deliveries, fewer delays, and more accurate data—no matter where your assets go.

Battery lifetime: Low Power Modes = Longer Device Life

Battery issues are one of the biggest reasons asset tracking systems may not deliver on their promise at scale. Frequent recharging adds labor costs, creates downtime, and disrupts operations—especially for companies managing thousands of devices.

Modern trackers solve this with sleep modes and event-based transmissions that reduce power use when assets are idle. Paired with LTE-M connectivity, which offers better signal strength and lower energy demands, tailored to IoT use cases, such as PSM and eDRX, compared to older options like Cat-1bis, these systems can deliver battery life of 3–5 years or more.

Some devices even use solar panels to stay powered in outdoor settings. Fewer dead batteries means fewer service calls, less downtime, and lower operating costs—making

it much easier to scale tracking without scaling complexity.

Mass Deployment – Solving Scalability Bottlenecks

Scalable asset tracking starts with a foundation that can grow. Solutions built on cloud-native platforms with global cellular support eliminate the need for region-specific hardware and make it easier to manage large, distributed fleets.

Integrating with existing operational systems is just as critical. Trackers with open APIs and modular firmware enable seamless communication with logistics platforms, ERP systems, and analytics tools—reducing friction and IT overhead.

Configurability is what ties it all together. A flexible tracking platform allows businesses to tailor update intervals, sensor integrations, and power profiles to fit the unique needs of each asset type, from high-value equipment to stationary inventory.

With the right architecture, scaling isn't a risk—it's a feature. By investing in modular hardware, robust connectivity, and adaptable software, businesses can confidently roll out asset tracking across thousands of devices without compromising performance or control.

Think Long-Term, Act Smart

Asset tracking isn't a plug-and-play solution—it's a strategic investment. When done right, it delivers real business outcomes: cost savings, operational agility, and better service delivery. The key is finding technology that works not just in the lab, but in the real world—at scale, with minimal maintenance, and in the environments your assets actually move through.

So, when evaluating tracking platforms, don't ask: Does this device have a cool feature? Ask: Will this system still be working for us when we have 50,000 devices in the field and we are able to meet the required service level we commit to?

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From Chip to Cloud: How Silicon Labs is Enabling India's IoT Future

Manish Kothari
Senior Vice President
at Silicon Labs

Silicon Labs is a global leader in secure, energy-efficient wireless technology for a smarter, more connected world. Specializing in IoT innovation, the company delivers advanced system-on-chip (SoC) solutions that power everything from smart homes and cities to industrial automation and healthcare. With a strong focus on security, scalability, and low power consumption, Silicon Labs combines cutting-edge R&D with deep industry expertise to enable seamless wireless connectivity and trusted IoT ecosystems across the globe.

In an exclusive interaction with BISinfotech, Nikita Kumari sat down with Manish Kothari, Senior Vice President at Silicon Labs, to unpack India's pivotal role in shaping the next wave of secure IoT innovation. From empowering local startups and scaling R&D in Hyderabad to championing chip-to-cloud security and contributing to national data sovereignty, Kothari shares how Silicon Labs is partnering with India to future-proof global IoT infrastructure—securely, sustainably, and at scale.

1) What opportunities do you see for India to position itself as a secure, resilient node in global IoT supply chains?

India is uniquely positioned to become a key pillar in the global IoT supply chain for several reasons. First, India's vast talent pool in engineering and software is unmatched — over 1.5 million engineers graduate every year. This creates a strong foundation for building world-class IoT design, software, and cybersecurity capabilities.

Second, the Indian government's focus on programs like Make in India and Digital India has created a strong policy tailwind for local manufacturing, research, and innovation. India is already becoming an attractive destination for global companies looking to diversify their supply chains beyond traditional hubs. As geopolitical shifts drive companies to look for secure and trusted partners, India can offer a stable, democratic, and rapidly developing ecosystem for both design and manufacturing.

For Silicon Labs, this is a huge opportunity to deepen our engagement in India, not only as a market but also as an innovation partner contributing to secure, resilient global IoT infrastructure.

2.) What are your key partnerships or initiatives in India that support local design, R&D, or skill development?

For Silicon Labs, India is one of our fastest-growing innovation centers. Our R&D center in Hyderabad is one of our largest globally and plays a crucial role in developing cutting-edge wireless and IoT solutions. We have a significant presence in India, and we plan to expand our workforce to 1,500 employees by the end of 2025, making it our largest global research and development hub across Bluetooth, Zigbee, Matter, Wi-Fi, and Sub-GHz technologies.

We also work closely with Indian universities, engineering colleges, and developer communities to nurture IoT skills at the grassroots level. Our Works With Developers Conference attracts strong participation from India, helping create a robust developer ecosystem that understands secure IoT design principles from day one.

Furthermore, through partnerships with Indian startups and MSMEs, we are enabling local design houses to build highly secure, energy-efficient IoT products for both Indian and global markets.

3) Why is locally driven, secure IoT innovation crucial to India's national security and data sovereignty?

IoT devices are rapidly becoming part of critical infrastructure—smart cities, power grids, healthcare, transportation, and industrial automation. If these devices are not secure, they can become entry points for cyberattacks, data theft, or even infrastructure sabotage. Therefore, it's not just a technology issue—it's a national security priority.

Locally-driven IoT innovation ensures that Indian engineers, companies, and policymakers have full visibility and control over the design, security protocols, data management, and

privacy standards that govern these systems. It supports India's goals of data sovereignty, where sensitive personal and national data remain within Indian jurisdiction.
At Silicon Labs, security is at the heart of our products. Our Secure Vault technology offers hardware-level protection against sophisticated attacks — something we believe is essential for national security and trusted digital transformation.

4) How can India balance cost-efficiency with security and innovation as it scales its domestic IoT infrastructure?

The common misconception is that security and cost-efficiency are at odds. In reality, investing in secure design from the start is far more cost-effective than dealing with breaches and recalls later. For example, according to IBM's 2023 Cost of a Data Breach report, the global average cost of a breach now exceeds $4.45 million. (Source)

By adopting secure-by-design principles — embedding security into hardware, firmware, and software from day one — India can build robust IoT systems that avoid expensive retrofits or security failures down the road.

At Silicon Labs, we deliver highly integrated System-on-Chips (SoCs) that combine low power, wireless connectivity, and built-in security, allowing companies to design secure products without significant additional cost or complexity.

5) How can global companies like Silicon Labs collaborate with Indian startups, MSMEs, and policymakers to future-proof the IoT ecosystem?

We see startups and MSMEs as the engines of innovation. Their agility and domain expertise, combined with Silicon Labs' scalable technology, can create transformative solutions tailored for India and global markets.

We actively engage with Indian startups through developer programs, technical training, reference designs, and silicon access. Our India design center often collaborates with local companies to co-develop or optimize solutions in sectors like smart metering, electric mobility, healthcare, and home automation.

On the policy front, collaboration with regulators to set strong security and interoperability standards — such as India's participation in the Matter standard — will ensure that the IoT ecosystem remains future-proof, secure, and globally interoperable.

6) How can Indian companies and regulators ensure that devices deployed across sectors—smart cities, utilities, transport—are secure from chip to cloud?

Security needs to be a full-stack priority: from silicon-level protection (chip) to network security, cloud services, and user data privacy.

This means adopting security at multiple levels: Hardware security: Secure key storage, tamper protection, and cryptographic engines built into the chip. (Silicon Labs' Secure Vault is an example.)

Firmware security: Secure boot, firmware signing, and over-the-air (OTA) update integrity.

Network and cloud security: End-to-end encrypted data transmission, strong authentication, and compliance with global security protocols.

For regulators, establishing mandatory certification frameworks like IoT Security Trust Mark or India-specific standards can raise the baseline across industries. Companies like Silicon Labs can support these efforts with pre-certified secure platforms that help Indian companies meet global benchmarks.

7) What role can India's emerging Semiconductor Mission play in supporting companies like Silicon Labs in long-term ecosystem building?

The India Semiconductor Mission (ISM) is a landmark initiative that can unlock massive opportunities for companies like Silicon Labs to deepen their presence across the entire semiconductor value chain — from design to packaging to fabrication.

While Silicon Labs primarily focuses on design and R&D, a stronger domestic supply chain — including trusted foundries, OSAT (Outsourced Semiconductor Assembly and Testing), and packaging facilities — can create a more resilient ecosystem that benefits both Indian companies and global players.

Moreover, ISM's focus on workforce development, academic partnerships, and design incubation can ensure that India builds a talent pipeline capable of handling complex IC design and security-focused innovation.

8) If India succeeds in building a secure and resilient IoT supply chain, what global impact could it have on cybersecurity, innovation, and economic sovereignty?

A secure, resilient IoT supply chain in India could serve as a model for responsible technology leadership globally. It would help diversify global supply chains, reducing overdependence on any one region while promoting healthy competition and innovation.

In cybersecurity, India could contribute significantly to global standards development, ethical AI integration, and best practices for critical infrastructure protection.

Economically, it would enhance India's digital sovereignty, allow greater control over its data assets, create millions of high-value jobs, and position India as not just a consumer of advanced technology but a global creator and exporter of secure IoT solutions.

At Silicon Labs, we are excited to be part of this journey, helping build an IoT future that is open, secure, scalable, and truly global, with India playing a leading role.

"A secure, resilient IoT supply chain in India could serve as a model for responsible technology leadership globally. It would help diversify global supply chains, reducing overdependence on any one region while promoting healthy competition and innovation."

Exploring Robotics: Divulging India's Role in the Upcoming Decade

Arun Prakash M. Founder & CEO of GUVI Geek Network

The tremendous emphasis on technological developments in the world is picking a specific direction. Automation via intelligent robotics is gaining interest across various sectors. While this remains an age-old interest for large tech stakeholders, including governments and private enterprises, significant existing gaps worldwide offer a unique opportunity for India, positioning it as a probable industry leader in the upcoming decade.

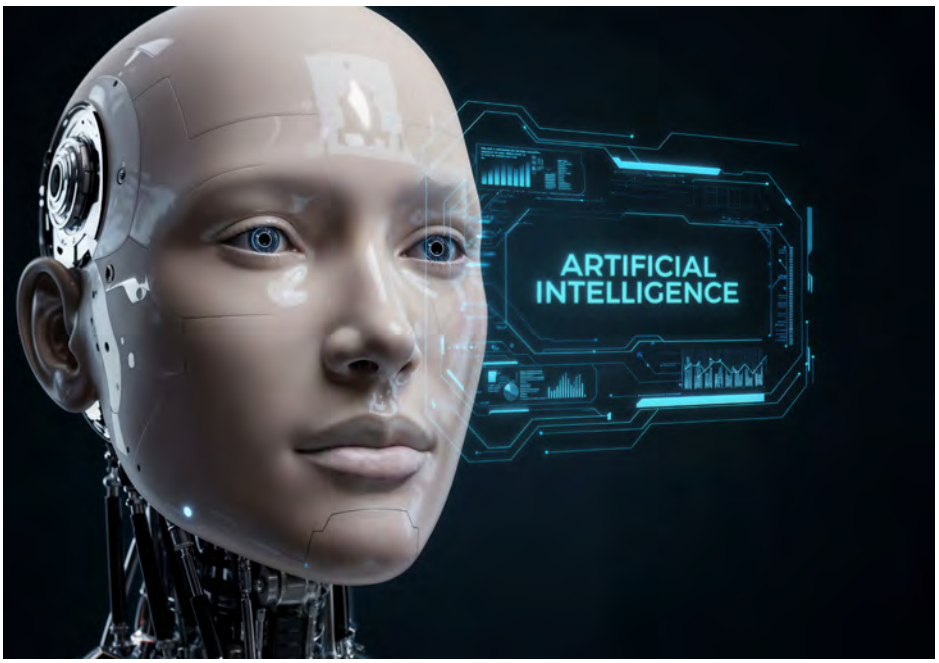
Despite all the developments happening in robotics, the gap in the sector is primarily because of lack of localization. This means that the inventions are strictly restricted to the western geographies, leaving the Global South where India is the leader, with limited accessibility. As an emerging technological powerhouse for the next decade, the onus falls on India to come up with indigenous technologies and frameworks in relation to robotics, and create a model that simultaneously prioritizes every nationality irrespective of international standing.

Developments in Robotics Education in India

India has the potential to reshape the education industry and embed robotics. Robotics is not a niche-based discipline anymore; it is a powerful tool for becoming a future tech leader. When robotics takes part in the education framework, India will learn digital fluency. After all, we need to build an ecosystem by seeing growing momentum.

It is required to rethink how we can develop AI into the next stage. In that case, the Government and private bodies need to come together to introduce robotics as part of the education structure in India. However, India has multiple schemes like AIM(Atal Innovation Mission) and different types of AI-focused learning programs under Digital India, which help learners get exposure to step into the tech world. At the same time, individual corporations are offering professionals and graduate students platforms and free resources to experiment with the tech field and grow as well.

> *"India can build a world-class robotics development ecosystem and a supplementary education system that can compete with the rest of the world. Transforming education policy will open many doors for future endeavors."*



The world is moving forward to automation and adding robotics across sectors. From complex automobile manufacturing and architectural building to simplifying daily chores, Artificial Intelligence can boost work instantly. Robotics plays a significant role as a bridge between the gap between practical application and AI development. What India needs now is scale. These promising initiatives must reach learners in every region—urban, semi-urban, and rural. By embedding robotics into mainstream learning pathways and skill development programs, India has the potential to set a global benchmark for preparing its workforce for the AI-driven future.

Establishing a Global Model

The West has significant exposure towards sustaining technological supremacy into robotics developments, or AI, for the fact. It has taken these countries decades to make inroads, owing to which they have now established advanced infrastructure and equivalent yearly budgets to build a robust ecosystem that acts as a supplementary capacity. Nations like Japan, the US, and Germany have already integrated robotics into their industrial and academic infrastructure, whereas the Global South is falling behind the track. However, India, positioned as the leader of the Global South, is a rapidly developing country that has high-impact technological advancements to achieve a high benchmark at a lower cost than many Hollywood movies, like Gravity. For example, ISRO's Chandrayaan-2 mission had a lower budget than the award-winning Hollywood flicks Gravity and Interstellar, which highlights that our nation has the power and the means to set an example to the world in relation to cost effectiveness. If similar approaches apply to robotics, you may think about how national education frameworks reach global standards and break the barriers of accessibility.

In that way, India can build a world-class robotics development ecosystem and a supplementary education system that can compete with the rest of the world. Transforming education policy will open many doors for future endeavors. Through Public-Private Partnerships and CSR initiatives, many corporations have already started funding in Tier 2 and Tier 3 cities for robotics education. The challenge lies in making these efforts cohesive, standardized, and outcome-driven.

A 2023 report stated that India still lacks exposure to digital tools, with less than 10% incorporating practical tech education such as robotics or AI. Bridging this digital divide must be a national priority, and robotics offers a high-impact entry point.

Looking Ahead

In the next decade, we can expect India will come up with strategic methods. By focusing on decreasing the gap between robotics and its practical application, the projections call for a robust development ecosystem and a structured education system in space. It will eventually create a bridge between Western countries and the rest of the world in terms of robotics development and usher in a new era for more innovation. However, this vision demands Government-Private collaboration for driving innovation, localization of technologies to ensure robotics scalability.

Furthermore, we can also hope that robotics will become a fundamental aspect of India's bid to become a technologically adept country in the world. With the right ecosystem, India won't just adopt robotics; it will define the future of learning through it.

Global Electronics Association: A New Era of Standards, Training, and Global Alignment

Gaurab Majumdar
Vice President (ASEAN, India, Middle East & Africa) for Global Electronics Association

The transition from IPC to the Global Electronics Association marks a bold step toward aligning with the evolving needs of a rapidly transforming global electronics industry. With India emerging as a key player in manufacturing, design, and semiconductor innovation, the Association is deepening its engagement through localized training, global standards, and strategic partnerships. In this exclusive interaction, leaders from the Association outline their renewed commitment to helping Indian electronics companies become globally competitive and future-ready.

In an exclusive conversation with BISinfotech, Nikita Kumari sat down with Mr. Gaurab Majumdar, Vice President (ASEAN, India, Middle East & Africa) for Global Electronics Association, to explore how the Global Electronics Association (formerly IPC) is redefining its role in India's fast-evolving electronics landscape. From strengthening standards and upskilling talent to integrating Indian manufacturers into global supply chains, Majumdar sheds light on how the rebranded association is equipping India's electronics industry for a smarter, more connected, and competitive future.

1) Could you elaborate on the transition from IPC to the Global Electronics Association? What prompted this rebranding?

The transition from IPC to the Global Electronics Association was a strategic and necessary step to reflect the scale, diversity, and global relevance of today's electronics industry. For over 70 years, IPC was widely recognized for its leadership in standards and certifications, particularly in printed circuit boards and electronics manufacturing. However, the industry has evolved significantly, now playing a central role in enabling technologies like artificial intelligence, autonomous vehicles, and next-generation communications. This rebranding allows us to better represent the global electronics ecosystem and positions us to strengthen advocacy efforts, enhance supply chain resilience, and build deeper partnerships with governments, industry stakeholders, and international organizations. While our name has changed to reflect our broader mission and vision, our commitment to delivering globally recognized IPC standards, certifications, and educational programs remains stronger than ever. Ultimately, this transformation is about ensuring we continue to lead and support the industry as it evolves in scale, complexity, and global impact.

2.) How does the Global Electronics Association plan to build on IPC's decades-long legacy in standards and training?

Under the Global Electronics Association, all IPC standards, certifications, and training frameworks continue unchanged, to ensure product quality, reliability, and manufacturing excellence.

We're also continuing our focus on workforce development, which will help address the growing talent needs across the global electronics industry. Beyond that, we're expanding our efforts in areas like supply chain harmonization, industry intelligence, and stakeholder engagement to ensure our standards and training programs have an even greater impact as industry grows and becomes more interconnected worldwide.

3) How is the Association working specifically to support Indian manufacturers across the electronics spectrum?

India is one of the most dynamic electronics markets today, and our support is built around the real-world needs of manufacturers, from design and assembly to testing and workforce skilling.

Since inception in 2010, we have certified more than 17000 professionals in the Indian electronics industry. Our globally recognized **certification programs,** continue to help Indian companies meet export and OEM compliance requirements. We're actively conducting **regional technical sessions** in key manufacturing clusters, focusing on practical topics such as **quality improvement, standards implementation, and process optimization.**

Additionally, the newly rebranded Electronics Foundation is focusing on localized workforce development and training initiatives to help address India's growing talent needs across

the electronics sector. Global electronics association is also working to integrate Indian companies more deeply into global supply chains by facilitating knowledge sharing, providing industry intelligence, and supporting policy advocacy efforts that promote supply chain harmonization and manufacturing competitiveness.

4) Can you share examples of initiatives or programs that bring global standards and best practices to India?

In India, we've launched several focused initiatives to ensure global standards and best practices are not just introduced but meaningfully implemented across the electronics manufacturing landscape.

A key initiative is EVOLVE—our sustainability enablement program designed for local companies. It helps manufacturers strengthen ESG practices and align with global standards, supporting their growth in high-demand sectors like EVs, consumer electronics, aerospace, and defense.

We are also actively expanding India's role in global standards creation through the **India Standards Development Initiative.** More than 100 Indian experts are now directly contributing to IPC standards working groups on automotive electronics, Design, EMS and Wire Harness. This positions India not just as a follower but a co-creator of international best practices.

Our globally recognized **IPC certification programs,** including **IPC-A-610** and **WHMA/IPC-A-620**, are widely delivered across Indian EMS and OEM companies to meet international quality benchmarks.

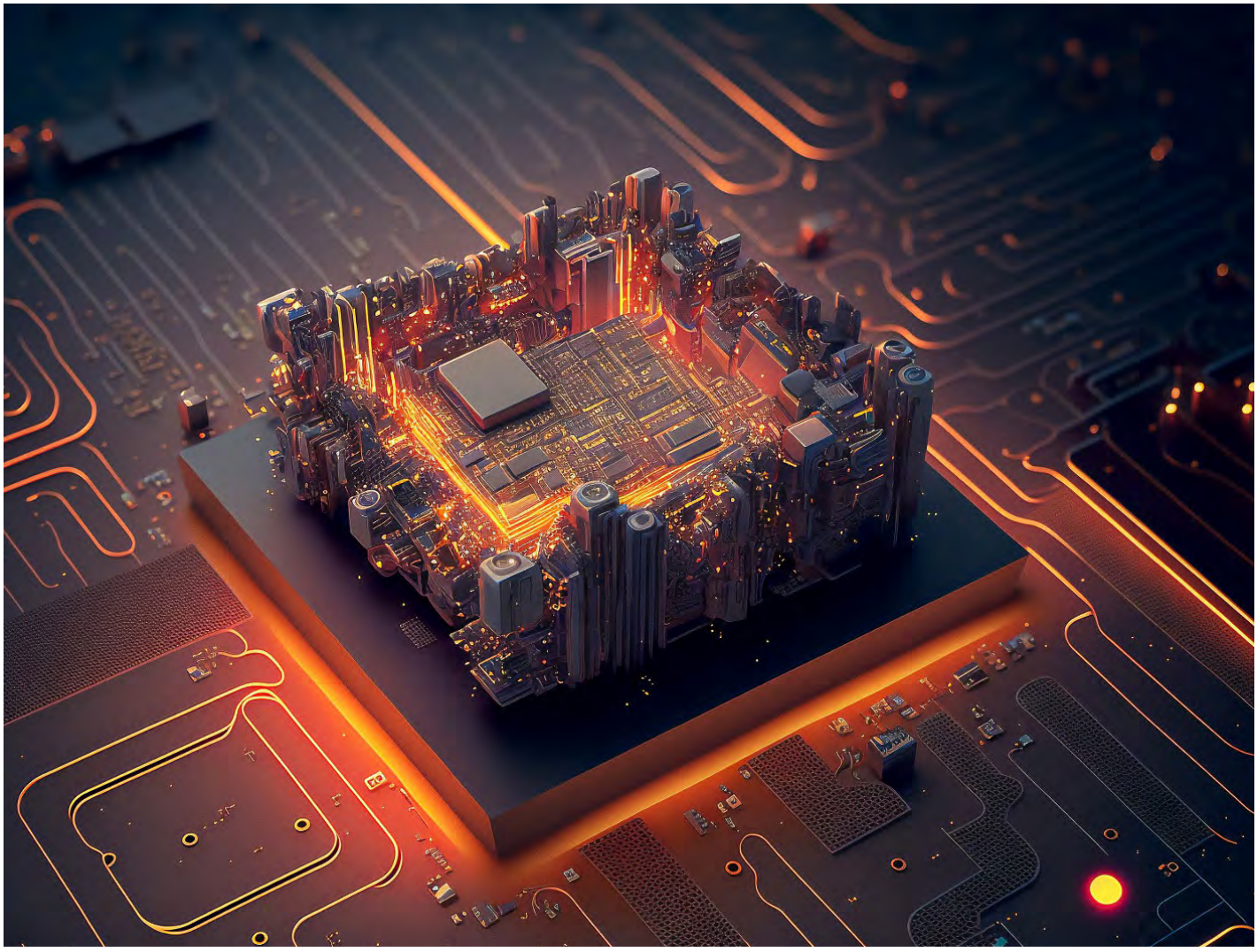
To support adoption, we conduct regional technical sessions in clusters like Noida, Pune, Chennai and more, to focus on applying standards in real production environments. These sessions are practical and address the specific challenges faced by Indian manufacturers.

Lastly, through our **Workforce Development Projects,** we're collaborating with Indian colleges and skill development bodies to embed IPC-based training into engineering and diploma programs ensuring students graduate with industry-relevant, standards-aligned skills.

All these programs reflect our long-term commitment to making India a globally competitive, standards-driven electronics hub.

5) In what ways does the Association help Indian companies become globally competitive in areas like quality, compliance, and export-readiness?

Our training & skill development program plays a vital role in helping Indian companies become truly globally competitive. It's not



just about certification, it's about building the mindset and capability needed to meet the world's most demanding quality, compliance, and traceability expectations.

Through our globally recognized IPC training and certification programs, we help companies align with international customer requirements, something that directly impacts export eligibility and supplier preference. But beyond the certifications, we invest heavily in hands-on, practical training, often conducted on-site, so that standards aren't just understood, they're embedded.

We also help companies develop internal quality systems, build audit resilience, and adopt process-driven manufacturing practices. This is especially critical in sectors like defense, automotive, EV, and medical electronics, where reliability and traceability are expected.

In addition, initiatives like EVOLVE provide a structured path for companies to strengthen areas ranging from supply chain sustainability documentation to resource-efficient production practices- tailored to their scale and sector.
Ultimately, our training is about more than compliance, it's about confidence. Confidence to bid globally, deliver consistently, and grow sustainably.

6) With India's growing role in global manufacturing and semiconductor ambition, how are you strengthening your engagement here?

As India rapidly advances its position in global electronics manufacturing and semiconductor development, the Global Electronics Association is committed to deepening its engagement by providing tailored support that addresses the country's unique industry needs.

We have steadily expanded our on-ground presence in India, working closely with manufacturers, government bodies, and industry partners to offer timely and relevant support.

Understanding that India is a diverse and multi-layered market, we customize our global programs to suit local requirements, adapting content by region and language. Through regional technical sessions and targeted training programs, we ensure that companies across India receive practical guidance that meets their specific production and workforce needs.

Additionally, we actively collaborate with both public and private stakeholders to align our initiatives with national priorities like Make in India and Skill India.

To help Indian manufacturers compete globally, we promote the adoption of internationally recognized standards and offer certification programs that enhance product quality, reliability, and process consistency—building trust and confidence among international customers and partners.

7) What are the biggest challenges you see for Indian OEMs and EMS companies trying to meet global expectations?

Indian OEMs and EMS companies are making strong strides in the global electronics space, but several critical challenges continue to impact their growth and competitiveness:

One major challenge for Indian OEMs and EMS companies is managing the complexity of the global supply chain. Electronics manufacturing today is highly interconnected across countries, and Indian firms depend on many international suppliers for critical components like semiconductors and connectors. This creates difficulties in ensuring timely deliveries and controlling costs.

Frequent disruptions caused by global trade policies, tariffs, export restrictions, and material shortages further add to the challenge. To remain resilient, Indian OEMs and EMS companies need to become more flexible and develop strategies to keep production running even during global supply chain interruptions.

Meeting international quality standards is another critical requirement. Product quality and reliability are top expectations from global customers. Indian companies must comply with these standards to stay competitive in the international market. This is where globally recognized IPC standards and certification programs play an important role in helping Indian manufacturers achieve the required benchmarks.

Additionally, the industry faces a persistent skills gap. There is a shortage of workers trained in advanced electronics manufacturing processes. As the sector moves towards emerging technologies like AI and next-generation communication systems, Indian companies will need to invest more in upskilling their workforce.
Addressing these challenges proactively will be key to strengthening India's position in the global electronics manufacturing value chain.

8) What message would you like to convey to Indian manufacturers and stakeholders in light of this rebranding?

The new name is about a broader mission and a deeper commitment. As the Global Electronics Association, we are reaffirming our belief that India is a strategic driver in the future of electronics manufacturing.

To Indian manufacturers, my message is simple: the world is watching and it's time to lead. Whether you're in a tier-1 city or a tier-3 industrial cluster, we're here to support your journey with globally recognized standards, practical training, digital tools, and a platform for your voice in global forums.

This new identity brings with it greater access, more localized engagement, and stronger alignment with your ambitions from quality and compliance to sustainability and next-gen manufacturing. Let's not just aim to catch up with global benchmarks let's set them. And we at the Global Electronics Association are committed to walking that journey with you, every step of the way.

> *"India is one of the most dynamic electronics markets today, and our support is built around the real-world needs of manufacturers, from design and assembly to testing and workforce skilling."*

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How to Overcome the Camera Challenges of Robotic Arm-Based Systems

Prabu Kumar
Chief Technology Officer,
e-con Systems

> *"A robotic arm depends on the size and position data to complete a grip. Even a small error in evaluating object boundaries can result in dropped parts or incorrect placements."*

Robotic arm-based systems are built to keep moving. They reach, lift, and place objects across the same route, hour after hour. In many factories, these movements run without pause, tied to fixed positions and expected timings.

But the objects they handle do not stay constant. A part might be rotated slightly. A surface might reflect overhead light. Items may arrive closer together or be misaligned by a few millimeters. Small changes like these affect how the robot performs.

Cameras help the system notice those changes. With the right imaging setup, the robot can adjust to what's there instead of following instructions that no longer apply. Every image carries information that keeps the movement steady, even when the environment shifts.

That consistency makes a difference on high-volume lines, enabling the robot to keep pace without manual correction.

Why Robotic Arm-Based Systems Go Through Imaging Problems

Robotic arm-based systems face several imaging issues that may sound minor. However, the reality is that these seemingly small issues end up creating big risks for imaging systems that depend on stability. These include:

- Real-world conditions are rarely stable
- Lighting shifts throughout the day
- Objects reflect light at odd angles
- Items move slightly on belts, rest unevenly in bins, or show up damaged

Furthermore, some cameras are built for controlled settings, where objects are spaced evenly, and lighting never changes. But on the floor, things are different. Low contrast objects, transparent materials, or reflective packaging can disrupt clean image capture.

As one can imagine, incomplete visuals lead to false readings, leading to confusion that carries forward to the robot's grip, motion, and placement.

Speed adds another problem. Robots working on fast lines need to make decisions without delay. If the imaging system hesitates, the robot follows late. That lag breaks alignment. Items can be dropped, crushed, or misrouted. Therefore, a vision system must move as fast as the robot itself without losing accuracy under pressure.

https://www.youtube.com/watch?v=MJ8ls50wQN4

How to Overcome the Imaging Challenges of Robotic Arm-Based Systems

Challenge 1: Measurement errors

A robotic arm depends on the size and position data to complete a grip. Even a small error in evaluating object boundaries can result in dropped parts or incorrect placement. These mistakes come from camera systems that fail to detect slight shifts in object pose or alignment.

For example, a small misread can interrupt an entire handling sequence, especially in tightly timed operations.

Solution:

A camera with effective measurement algorithms for consistent calibration and fine spatial resolution helps the system read the object at the moment of action. The robot then applies force and timing based on what it sees, not on stored assumptions.

When this input stays reliable, the system handles high-speed cycles without slowdowns or rework.

Challenge 2: Difficulty in grasping

Gripping becomes unpredictable when objects vary in shape, texture, or orientation. Without accurate input, the robot can't plan a steady

approach or choose a trustworthy contact point. Missed edges or irregular angles increase the risk of collision, especially in bins with uneven stacking.

Solution:
Cameras help execute tasks like edge detection, contrast stability, and surface mapping to provide the clarity needed for grip planning. So, the robot can adjust its hold before committing to movement. As a result, it performs streamlined pickups, even when the object is partly hidden or poorly lit.

Challenge 3: No depth perception
Flat images lack distance data. The robot cannot position its gripper with accuracy without knowing how far away an item is or how high it sits above the base surface. It can lead to sudden movements that affect the flow or require manual correction.

Solution:
Cameras equipped for depth sensing, whether through stereo imaging, structured light, or time-based techniques, supply spatial detail that helps the robot move with more context. So, this reduces guesswork and enhances timing.

It means the system can plan around obstacles and reach into more complex spaces with consistent depth frames,

Challenge 4: Inaccurate object dimensions
Many items change shape slightly during handling or transit. Conveyor movement, compression, or packaging flaws all affect real-world dimensions. Such shifts cause a mismatch between what the robot expects and what it faces, expanding the odds of misalignment.

Solution:
A vision system that measures size in real time empowers the robot to change its response. Imaging capabilities such as region-based measurement and consistent scale tracking prevent mismatches between expected and actual dimensions. The robotic arm can use current readings to fine-tune grip width, approach angle, and drop zone.

Challenge 5: Lack of human-like vision
In cluttered environments, fixed logic fails. The robot needs a way to separate objects, interpret outlines, and decide what can be moved. It can't rely on static models when items overlap or shift position between cycles.

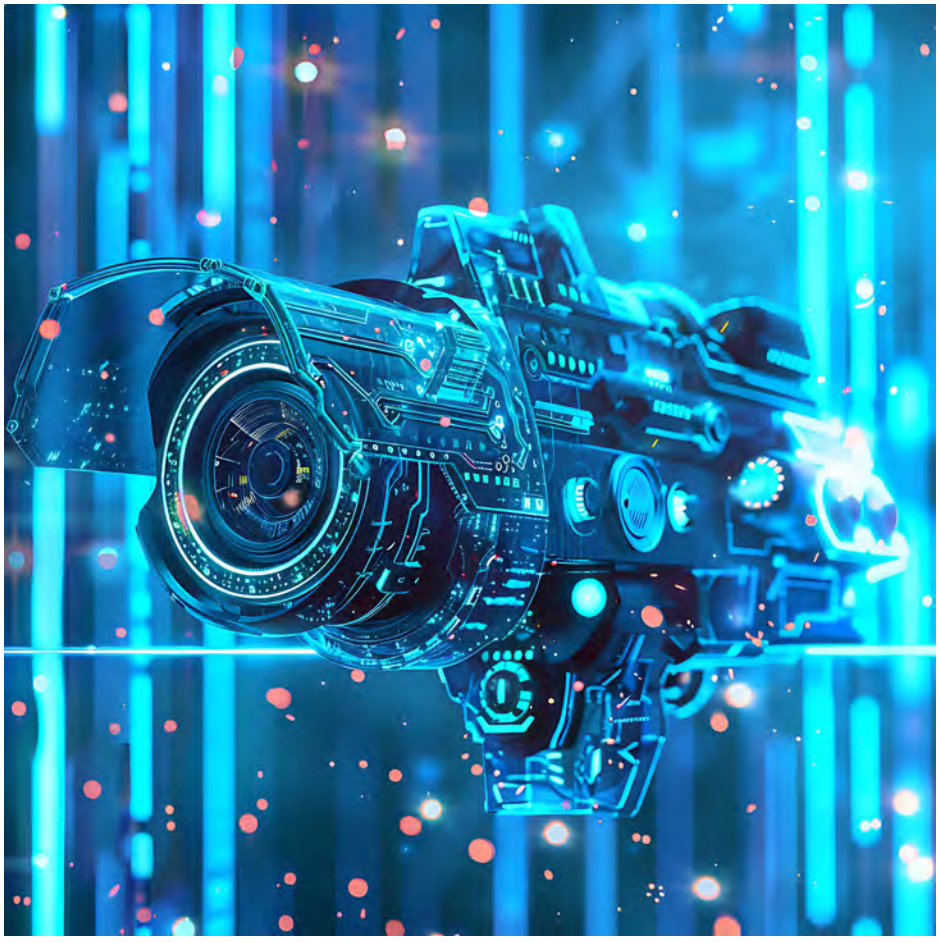
Solution:
Camera systems that support pose estimation, wide field coverage, and high frame rate provide enough data to locate individual items within a group. This gives the robot a path through visual complexity, one decision at a time. With that capability, the robot can respond to change without disrupting the task at hand.

To Conclude
A camera influences every movement in a robotic arm-based system. The image it captures drives the grip, the path, and the result. When that image is built from the right features, the robot works without delay, without repeat handling and missed objects.

The selection must match the task. Lighting, surface detail, movement speed, and frame rate all matter. They define how the robot sees and how that sight turns into action.

It's important to remember that superior imaging performance does not come from hasty camera setups. It comes from decisions made with a full understanding of the process, the object, and the space around it. Basically, a camera that meets those needs gives the robot fewer chances to fail. And more chances to keep working without interruption.

e-con Systems has worked closely with many clients to integrate high-performance camera modules into their AMRs including pick and place applications. These cameras come with features like HDR, LFM, multi-camera synchronization, global shutter mode, and more.



How Unmanaged IoT Devices are Becoming Enterprise Time Bombs

Apu Pavithran
Founder and CEO, Hexnode

> *"With IoT weaving itself into nearly every industry, governments worldwide have been coming online to lessen the likelihood of hackability."*

The Internet of Things (IoT) market is growing at breakneck speed. With 18.8 billion connected devices already active and projections soaring to nearly 40 billion by 2030, the scale is staggering. Notably, Enterprise IoT accounts for around three-quarter of this massive ecosystem.

From powering smart cities and revolutionizing healthcare to optimizing energy grids, IoT devices are now at the heart of mission-critical operations across industries. But as we embrace this hyperconnected world, a pressing question emerges: Are we prepared for the risks that come with it?

As billions of devices exchange data across diverse networks, every connection is a potential gateway for hackers. Security researchers have reported a 400% increase in malware attacks targeting IoT devices – a clear sign that attackers are exploiting these devices at scale.

It's no surprise that half of all IT leaders now view IoT devices as the weakest link in their cybersecurity defences. The message is clear: while IoT promises incredible opportunities, it also demands a new level of vigilance and strategic oversight.

The State of Things: Botnets and Backdoors

It's no coincidence that the explosive growth of connected devices is being mirrored by a surge in botnet activity. Many IoT devices, often deployed with weak security and default credentials, are easy prey for attackers. Once compromised, they're swiftly recruited into botnets – vast armies of infected devices remotely controlled to launch cyberattacks. Take the recent case of Eleven11bot, a massive botnet composed of over 86,000 security cameras and network video recorders. It was used to orchestrate devastating DDoS attacks against telecom providers and gaming platforms, exploiting weak and default passwords. In a matter of weeks, it became one of the largest botnets seen in recent years.

According to Nokia, IoT- driven botnet activity has surged 500% in just the past 18 months and now accounts for 40% of all DDoS traffic, raising big red flags.

IoT device investors need to realize that connectivity in the IoT landscape is both a powerful asset and a potential liability. While data exchange across various spheres is no longer considered impossible, a single vulnerability can cascade across an entire network – crippling operations, exposing data, and damaging reputations.

Default Isn't Safe: Building a Secure IoT Ecosystem

In 2016, the world witnessed one of the most notorious password-based attack on IoT devices – Mirai botnet. It still holds the record for the largest DDoS attack ever launched. Mirai's strategy was alarmingly simple: it scanned the internet for IoT devices with easily guessable or default passwords, like "123456" or "password," affecting major titans like Twitter, Reddit, CNN, and Netflix.

Today, IoT devices are generating zettabytes of data. Yet, fundamental cybersecurity habits are dangerously ignored. Shockingly, one in five IoT devices still continues to use default passwords and nearly 60% of IoT breaches stem from unpatched firmware and outdated software. Users need to understand that finding default credentials isn't a mundane job. Entire databases of factory-set credentials are freely accessible online, and hackers are well-equipped with tools to exploit them.

To counter this, organizations must go beyond setting up random, complex passwords. Adopting Identity and Access (IAM) management tools introduces a stringent authentication mechanism. Techniques like public key infrastructure and blockchain can help ensure that only trusted personnel can access and manage these machines, effectively thwarting any attempt at unauthorized device

access. Pairing this with a Zero Trust Network Access (ZTNA) model adds another layer of defence. Rooted in the principle of "never trust, always verify," ZTNA continuously evaluates each device's access level and segments the network accordingly.

Many organizations rely exclusively on IP scanning or API-based integrations for asset inventory, which does not suffice for tracking devices in real-time. Above all, these devices are distributed in remote environments, far beyond traditional network perimeters, making visibility and control even more difficult. Deploying a Unified Endpoint Management (UEM) solution allows administrators to monitor and manage IoT devices, ensuring they remain compliant with security policies. Some UEM vendors even offer automated patch management, keeping devices up to date and out of botnet crosshairs.

Finally, no security stack is complete without a solid incident response plan (IRP). Many organizations discover botnet infections too late simply because they lack clear detection and response protocols. By integrating AI-powered monitoring tools, businesses can proactively identify vulnerabilities and seal off threats before they spiral into full-blown breaches.

IoT under the Law: Fragmented Standards, Unified Approach

With IoT weaving itself into nearly every industry, governments worldwide have been coming online to lessen the likelihood of hackability.

Europe has been leading the change with its landmark Cyber Resilience Act (CRA) – a bold move to set baseline cybersecurity standards for connected devices. Soon, manufacturers will be required to provide free, automatic security updates and proactively alert users about potential vulnerabilities. The CRA aims to ensure that devices abide by cybersecurity standards throughout their entire lifecycle while also forbidding the sale of products with known security flaws across continents. This regulation creates a thorough framework for hardware and software makers, enhancing transparency and ensuring safer digital products.

Across the Atlantic, the United States (U.S) has ushered in its own cybersecurity rules. The National Cybersecurity Strategy (NCS) emphasizes the importance of integrating security into devices from the ground up, what it calls a "secure by design" philosophy. One standout initiative is the Cyber Trust Mark, a labeling system that helps consumers identify devices with stronger security features.

Meanwhile, defence alliances are recognizing the strategic importance of IoT as well. NATO's Defence Innovation Accelerator for the North Atlantic (DIANA) supports innovation in dual-use technologies, including autonomous systems that rely heavily on IoT infrastructure. This signals a growing recognition of IoT's role in both civilian and defence applications. However, the road to compliance isn't without its challenges. Nearly 48% of industry professionals cite the fragmentation of standards and regulations across regions as the biggest hurdle in IoT security. Designing and deploying connected products that meet a patchwork of global requirements is no small feat.

Moreover, these regulations come with even greater costs. Under the EU's CRA, non-compliance could result in fines up to €15 million or 2.5% of global annual turnover (whichever is higher). In an already complex market, overlooking cybersecurity is now not only risky, but also expensive.

Still, the silver lining is that these regulations have been pushing security to the forefront. Cybersecurity for IoT devices is no longer an afterthought but a core design principle. For some companies, these laws are a wake-up call. For others, they are a validation of long-standing best practices. Either way, it's far more efficient and cost-effective to build security in from the start than to retrofit it later.

Inside Tamil Nadu's High-Tech Auto Boom: From Engines to Electronics

In the ever-evolving landscape of India's automotive industry, Tamilnadu has carved out a unique and strategic niche for itself. Widely known as the "Detroit of India," the city has long been recognized for its prowess in automobile manufacturing. However, beyond the roar of assembly lines and the hum of combustion engines, a quieter, transformative revolution is taking place—one that could define the future of global mobility. That revolution is automotive electronics.

From advanced driver-assistance systems (ADAS) and electronic control units (ECUs) to the power electronics enabling electric vehicles (EVs), Tamilnadu is fast becoming a nerve center for innovation, production, and R&D in vehicle electronics. As cars evolve into smart, connected, and electrified machines, Tamilnadu is leading India's journey toward high-tech mobility.

This in-depth article explores the factors fueling Tamilnadu's rise, the major players involved, policy initiatives accelerating growth, and the challenges that must be addressed for the region to realize its full potential as a global automotive electronics hub.

The Evolution of Tamilnadu as an Automotive Powerhouse

Tamilnadu's industrial ascent is rooted in its geographic and infrastructural advantages. With strategic access to ports, a skilled talent base, and a robust transport network, the city became a magnet for global automakers. Over the past three decades, Tamil Nadu has reinforced this foundation with industry-friendly policies, creating a fertile environment for auto manufacturing.

Global OEMs like Hyundai, BMW, Daimler, Renault-Nissan, and Ford (now Mahindra Ford), alongside Indian stalwarts such as Ashok Leyland and TVS Motors, have established major production facilities in and around Tamilnadu . This dense concentration of automotive giants led to the natural formation of an expansive supplier ecosystem.

Today, Tamilnadu and nearby industrial zones—Oragadam, Sriperumbudur, Tiruvallur—host over 350 Tier-1 and Tier-2 component manufacturers. As the industry transitions to electric and intelligent vehicles, many of these players are diversifying into electronics to stay competitive. Tamilnadu now contributes over 30% of India's total vehicle production and 35% of automotive component exports.

Electronics have become indispensable to modern vehicles—accounting for 40% of total vehicle cost today and are expected to reach 50% or more in EVs and autonomous vehicles. Tamilnadu's ability to pivot toward electronics presents a vital opportunity not just for the city but for India's aspirations of becoming a self-reliant automotive technology leader.

What Are Automotive Electronics—and Why They Matter

Automotive electronics refer to the electronic systems and subsystems embedded in vehicles that manage everything from safety and energy efficiency to comfort and connectivity. As vehicles become software-defined machines, electronics play a mission-critical role.

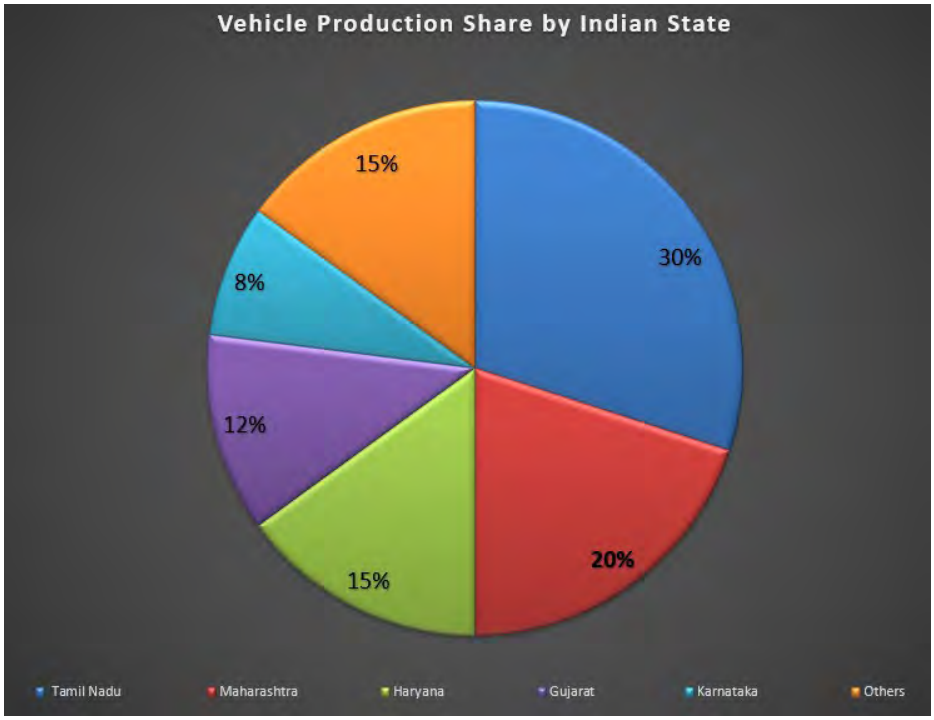
Core Categories of Automotive Electronics:

- Power Electronics: Vital for electric vehicles, managing battery charging, motor control, inverters, and converters.
- Sensor Technologies: Include radar, lidar, ultrasonic, and vision sensors essential for ADAS and autonomous features.
- Electronic Control Units (ECUs): Mini-computers managing engine function, braking, steering, and more.
- Infotainment and Telematics: Enabling navigation, driver alerts, and real-time data connectivity.
- Connectivity Modules: Facilitating V2X communication using Bluetooth, Wi-Fi, 4G/5G, and GPS.

India's drive for Atmanirbhar Bharat (self-reliance) emphasizes localizing the electronics value chain—from semiconductors to embedded firmware. Tamilnadu , with its R&D capacity and manufacturing strength, is perfectly positioned to lead this push.

The Role of Policy and State-Led Incentives

The Tamil Nadu government has been proactive in supporting electronics manufacturing through policy, infrastructure, and ease of doing business. Two landmark frameworks stand out:



Tamil Nadu Electronics Hardware Manufacturing Policy 2020

- Targets Rs. 1 lakh crore in electronics output by 2025.
- Offers capital subsidies, stamp duty waivers and power tariff incentives.
- Facilitates the development of Electronics Manufacturing Clusters (EMCs) in Tamilnadu, Oragadam, and Hosur.

Tamil Nadu EV Policy 2023

- Incentivizes the production of electronics used in EVs such as BMS, controllers, and charging modules.
- Encourages the development of full-stack EV component hubs.
- Promotes R&D and testing facilities to boost product validation.

In addition, the state's single-window clearance system, large land banks, and plug-and-play industrial parks enhance its appeal for investors and startups alike. Tamil Nadu ranks among India's top three states for ease of doing business—especially important for a fast-moving sector like automotive electronics.

Tamilnadu's Leading Companies in Automotive Electronics

The Tamilnadu region is home to a growing ecosystem of global and domestic companies that are investing heavily in the design, development, and manufacturing of automotive electronics. These firms are not only contributing to exports and employment but are also collaborating with local startups, engineering colleges, and R&D institutions—strengthening the innovation pipeline across the region.

1. Valeo India

Valeo's Tamilnadu technical center houses over 3,000 engineers focused on software and hardware development for next-gen mobility. The company is actively developing advanced driver-assistance systems (ADAS), power electronics for EVs, and thermal management solutions. Its manufacturing facility produces key components such as radar sensors, battery cooling modules, and ultrasonic parking systems—critical to both safety and efficiency in modern vehicles.

2. Continental Automotive India

Continental's factory in Oragadam is a cornerstone of its India operations, manufacturing electronic stability control (ESC) modules, infotainment units, and electronic control units (ECUs). The company's R&D team in Tamilnadu is working on cutting-edge human-machine interface (HMI) systems, ADAS software, and radar technologies tailored for Indian and global markets.

3. Renault Nissan Technology & Business Centre India (RNTBCI)

Situated in Mahindra World City, RNTBCI plays a pivotal role in designing future-ready cockpit electronics, connected mobility platforms, and embedded systems. The center supports Renault and Nissan's global programs and also serves as a testbed for localized innovations suited to Indian driving conditions and infrastructure.

4. TVS Group & Sundaram Clayton

The TVS Group, through subsidiaries like Lucas TVS, is rapidly expanding into the electronics segment. Their portfolio now includes engine and body control units, intelligent lighting electronics, and integrated EV modules. These developments reflect the group's commitment to transitioning from mechanical components to smart and electrified systems.

5. Bosch and ZF Group

Bosch operates a major R&D and aftermarket center in Tamilnadu focused on vehicle diagnostics, sensors, and control systems. ZF, on the other hand, has built capabilities in steering electronics, safety modules, and electric drive unit controls through its Tamilnadu -based operations. Both companies are contributing to the local ecosystem by training engineers, fostering innovation, and sourcing components from regional suppliers.

These industry leaders are not only helping transform Tamilnadu into a global automotive electronics hub but are also shaping India's journey toward intelligent, connected, and electrified mobility.

Tamilnadu 's Growing Influence in Electric Vehicle Electronics

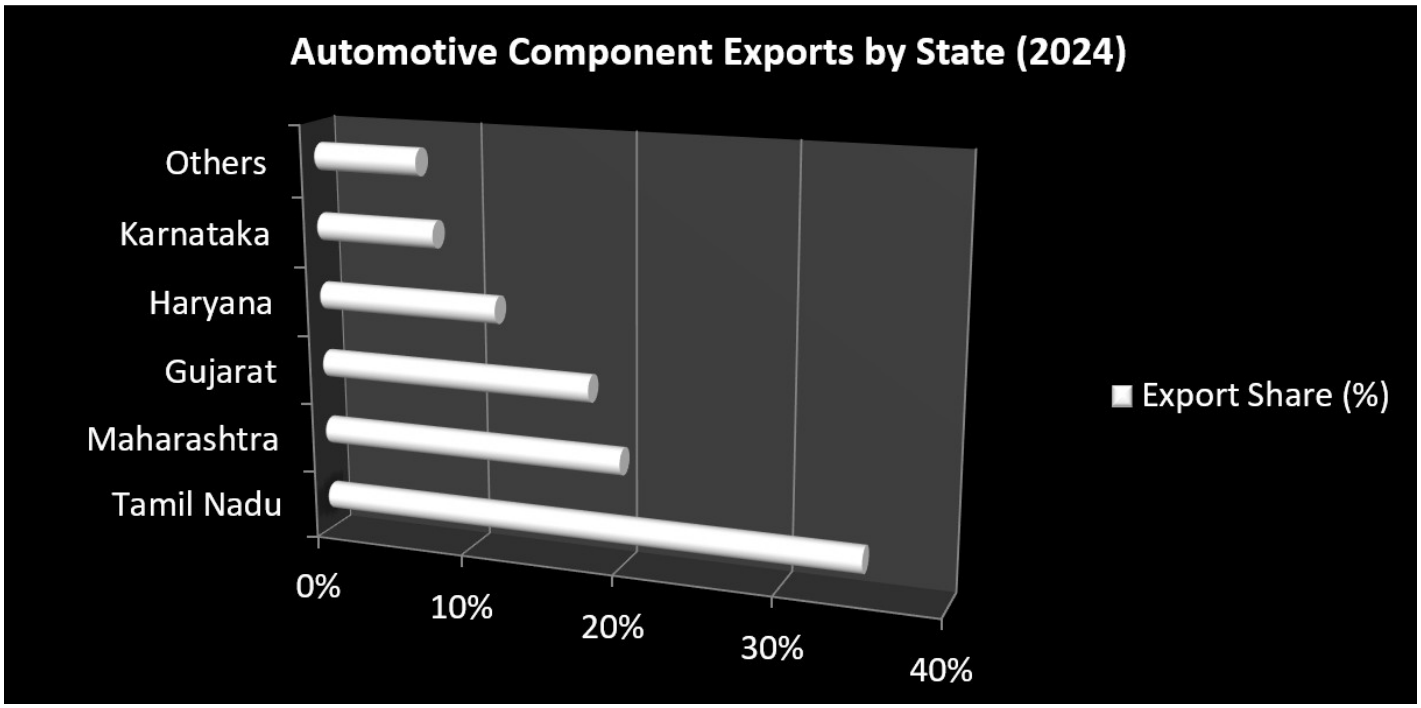
The global pivot toward EVs has magnified the importance of electronic components like inverters, onboard chargers, and energy management systems. Tamilnadu is at the forefront of this shift.

- **Ashok Leyland** (via Switch Mobility) is developing electric buses and powertrain electronics locally.
- **Ather Energy** sources power electronics components from Tamilnadu -based vendors.
- **Sungrow** and **Simyog** have set up facilities in Tamil Nadu for EV power modules and EMC testing, respectively.

Startups Driving Innovation:

Tamilnadu 's vibrant startup ecosystem is adding fresh momentum to its automotive electronics growth story. These young companies are focusing on high-impact areas like EV power systems, battery management, and simulation technologies—playing a vital role in localization and tech innovation.

- **ePropelled India**
  Develops compact inverters and motor controllers for EVs, optimizing performance and range—especially for two- and three-wheelers.
- **Simyog**
  Specializes in EMI/EMC simulation tools that help auto manufacturers validate and certify complex electronic systems.



- **M2P Labs**
  Designs Battery Management Systems (BMS) and Vehicle Control Units (VCUs) for light electric vehicles, aiding in rapid electrification.
- **Maxwell Energy**
  Manufactures lithium battery packs with integrated control boards for two-wheelers and small EVs, supporting domestic sourcing.

These startups are enhancing Tamilnadu 's automotive electronics landscape while aligning closely with the **Make-in-India** vision—reducing import dependency and driving tech-driven growth.

R&D, Talent Development, and Testing Infrastructure

A sustainable electronics ecosystem needs strong foundations in education, research, and certification.

Key Enablers:

- **IIT Madras Research Park:** A hub for innovation in battery engineering, mobility software, and autonomous systems. Many auto-electronic startups operate from this campus.
- **Anna University:** Trains engineers in mechatronics, vehicle diagnostics, and embedded systems.
- **Electronics Sector Skills Council of India (ESSCI):** Operates a regional office in Tamilnadu for certified workforce training.
- **Global Automotive Research Centre (GARC):** Offers testing, homologation, and EMC compliance services.

These institutions are crucial in developing a pipeline of skilled engineers and validating safety-critical automotive electronics for global markets.

Challenges and the Path to Localization

Despite its momentum, Tamilnadu faces several challenges that need strategic intervention:

- High-end **semiconductors** used in ECUs and radar systems are still imported.
- **PCB fabrication** and advanced **packaging units** are limited in number.
- **Testing labs** for complex automotive software and ADAS systems need more capacity and coverage.

To bridge these gaps, the Indian government's Semicon India initiative and Tamil Nadu's interest in attracting ATMP (Assembly, Testing, Marking, Packaging) units offer timely solutions. Companies like **Sahasra Semiconductors** and **Polymatech** are already evaluating Tamil Nadu for expansion, which could create end-to-end electronics supply chains locally.

What Lies Ahead: Tamilnadu 's Strategic Future

Tamilnadu 's next phase in automotive electronics is being shaped by a combination of technological readiness, policy backing, and industry ambition. The city is well-placed to lead in several high-growth areas:

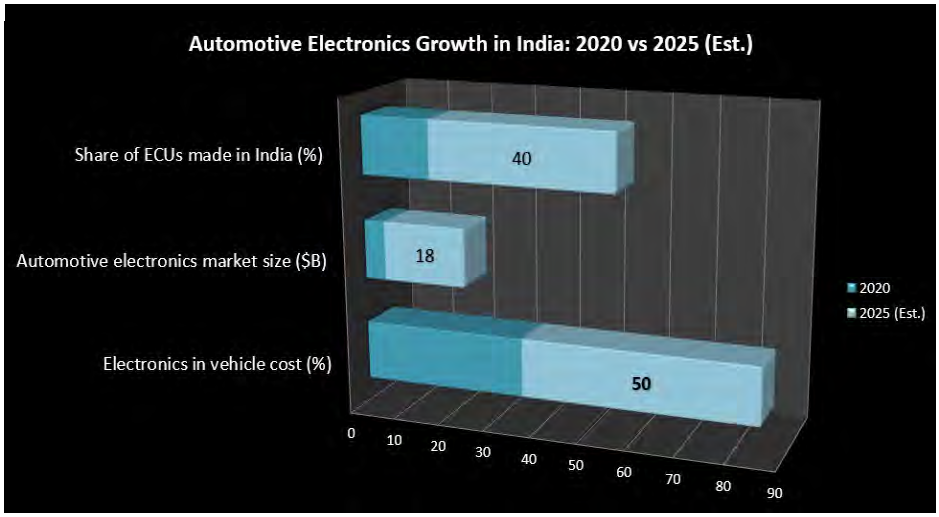
- **Integrated Clusters:**
  Tamilnadu is developing co-located automotive and electronics hubs that support faster prototyping, shared R&D, and end-to-end manufacturing. This integration will help startups and OEMs accelerate innovation and reduce go-to-market timelines.
- **Chip Design and Firmware Startups:**
  With strong talent in embedded systems and VLSI design, Tamilnadu is seeing the rise of startups working on automotive-specific SoCs, microcontrollers, and control firmware—paving the way for more local IP in mobility electronics.
- **AI and Vision Systems:**
  As India moves toward mandatory ADAS features, the demand for radar, lidar, and vision systems is growing. Companies in Tamilnadu are already developing perception software and sensor modules tailored for Indian road conditions.
- **Green and Hybrid Mobility:**
  Beyond EVs, Tamilnadu is preparing for the next wave—hydrogen fuel cell vehicles and hybrids. R&D is underway on high-voltage controllers, BMS, and electronics for cleaner, next-gen powertrains.

With deeper integration into global supply chains and a rising footprint in indigenous innovation, Tamilnadu is not just following trends—it's helping define the future of automotive electronics.

Conclusion: Tamilnadu at the Intersection of Mobility and Silicon

Tamilnadu 's transformation from a manufacturing stronghold to a high-tech mobility innovation center reflects the broader industrial shift toward digital, connected, and sustainable transportation. The convergence of public policy, private enterprise, talent, and technology in this region offers a blueprint for other states aiming to build next-gen industrial ecosystems.

As India pushes to be a global player in EVs and semiconductors, Tamilnadu stands as a testament to what's possible when strategy meets execution. In this age of intelligent mobility, it is not just steel and rubber—but silicon and software—that will drive the road ahead. And Tamilnadu is steering right at the front.



The Role of RPA (Robotic Process Automation) in Enhancing Efficiency Across Industries

Shashi Bhushan
Chairman of the Board
Stellar Innovations

> *"Companies that want to grow without losing their edge are starting to lean hard on automation tools. The sweet spot right now is tech that pairs robotic process automation with sharp data smarts and easy plug-and-play connections."*

Speed and precision matter more than ever in the modern marketplace. Companies are turning to **intelligent automation** to tidy up their back offices and keep customers happy, and plenty of that momentum comes from using **Robotic Process Automation (RPA)**. A single software bot can zap through rule-based tasks in finance, HR, and help desks, so humans can focus on the projects that make a real difference.

Because those bots never need coffee breaks, they push bigger workloads through the pipeline while keeping quality steady. In short, organizations speed up their digital makeovers, tighten up their margins, and still look professional to the outside world.

What is RPA?

Think of RPA as the digital understudy that never complains. The software imitates routine human clicks and keystrokes, taking care of everything from copying invoices to logging into multiple systems. Once someone builds the playbook, the virtual worker runs it many times faster and with way fewer typos than a person ever could.

Why Businesses are Choosing RPA

Many businesses across sectors are embedding RPA into their workflows to achieve:

- **Operational Efficiency:** A single bot can churn through thousands of entries in the time it takes one worker to grab a snack.
- **Cost Optimization:** Shaving those mundane tasks off payroll not only frees salary dollars but also trims the extras-like training and benefits-that pile up over months.
- **Error Reduction:** Boring as data entry can be, one wrong keystroke turns a neat report into a headache. RPA handles numbers with robot-like precision, so the headaches stay away.
- **Improved Employee Productivity:** When pesky chores disappear, people suddenly have room to tinker, invent, serve customers, or at least breathe a little easier. That tiny switch can spark big ideas at a desk.
- **Speed to Execution:** Markets dont wait for paperwork to clear. Plugging in a bot can shave days off a process, letting companies say yes before the competition even blinks.

Applications of RPA Across Industries

- **Financial Services:** Banks lean on software to sift through KYC forms, speed up loans, and file regulatory documents. Auditors love it, because every move is logged and traceable.
- **Healthcare:** Insurance claims, appointment tweaks, and prescription lists now tick along in the background while nurses focus on patients. A few clicks today prevent a mountain of paper tomorrow.
- **Retail & E-commerce:** Shelves never accidentally show out-of-stock when a bot double-checks them every hour. Refunds and promos also tend to get sorted faster than a customer can grumble.
- **Manufacturing:** Orders, payments, quality checks-anything that hops between suppliers and factory floors is fair game for automation. That keeps the assembly lines humming and the spreadsheets calmer.
- **HR & Recruitment:** Resumes pour in, but a script sorts the wheat from the chaff before a recruiter even sips coffee. Onboarding docs zip through e-signatures, and payroll stays accurate because the math never slips up.
- IT & TelecomMany help desks now lean on bots to clear simple tickets, watch for system glitches, and keep everything running smoothly. That pushes service

uptime higher and lets human teams tackle trickier problems.

Key Benefits of Intelligent Automation with RPA

- **Scalable and Flexible:** RPA can jump from one department to the next almost overnight. It flexes as business plans change.
- **Secure and Compliant:** Each bot logs its moves and sticks to the rules, so audits stay tidy and risk remains low.
- **Consistency in Output:** Because bots replicate each step perfectly, surprises in output drop sharply.
- **Faster Digital Adoption:** RPA runs between old software and shiny new clouds, making digital upgrades feel seamless instead of brutal.

Points to Consider

While RPA delivers significant value, successful implementation requires thoughtful planning:

- **Strategic Integration:** Pick low-hanging fruit first. Processes that are dull, rule-based, and high-volume usually pay off fastest.
- **Change Management:** People need training, not just the machines. Team members have to see the bots as partners, not replacements.
- **Continuous Improvement:** Pair the automation with dashboards and basic AI so the system learns over time. A smart bot can make smarter decisions tomorrow than it does today.

Robotic Process Automation isn-t just a cool buzzword; it-rs becoming the backbone of nimble businesses. With RPA woven into daily workflows, firms are cutting cycle times, boosting accuracy, and responding to customers faster than ever. Whether it-s processing invoices, handling support tickets, or crunching data for strategy calls, these digital workers make modern enterprise agility possible.

Companies that want to grow without losing their edge are starting to lean hard on automation tools. The sweet spot right now is tech that pairs robotic process automation with sharp data smarts and easy plug-and-play connections. Skip that mix and staying competitive in a crazy-fast market gets a lot harder.

People keep saying hyper-automation, and they mean it-ramp up RPA, then layer in AI, machine learning, and beefy analytics. That combo doesn t just shave minutes off a to-do list; it spills fresh business insights, flags trends before they hit, and turns routine operations into something that finally feels intelligent.

The Silent Force Behind Smart Cars: 3M India's Innovation Journey

Anil Radhakrishnan
Chief Product Officer
Tata Elxsi

> *"The battery will play an integral role as the connected and autonomous electric vehicles (EVs) of the future redefine mobility. With regard to the adoption of EVs, we have made considerable investments."*

The green mobility revolution in India is no longer a far-fetched dream, it is a pressing need The battery will play an integral role as the connected and autonomous electric vehicles (EVs) of the future redefine mobility. With regard to the adoption of EVs, we have made considerable investments. However, the robust supporting framework for tracking active and inactive batteries, or "Battery Aadhaar," still needs attention.

In addition to enabling greener transport, this mobility framework strives towards more intelligent, safer, and responsible systems — especially regarding Connected and Autonomous Vehicles (CAVs). While India aims to aggressively promote clean mobility, the concept of Battery Aadhaar could work silently and assist seamlessly towards that vision.

The Need for a Battery Identity System

The foundational component of every electric vehicle (EV) is their batteries. Unlike traditional engines, batteries are intricate, sensitive, and prone to degradation over time. The EV industry continues to grapple with persistent challenges spanning from safety concerns and inconsistent performance to complications withsecond-life applications, inefficient recycling workflows, and archaic methods. To make matters worse, the lack of traceability has opened the door to grey markets, counterfeit parts, and hazardous reuses.

Battery Aadhaar addresses these challenges by aiding each battery with a digital identity — biometrics-based. It captures critical information like the battery's origination, chemistry, usage patterns, charging history, and maintenance logs. This data follows the battery throughout its lifecycle from assembly lines to roadways, midlife repurposing centers, and final recycling stages. All stakeholders benefit from such transparency: compliance and quality can be assured by manufacturers, informed ownership decisions can be made by users, and predictive maintenance can be provided by service providers. Regulatory bodies can enforce safety and sustainability norms. In essence, Battery Aadhaar becomes the 'truth layer' of India's battery ecosystem.

Accelerating Connected and Autonomous Vehicles (CAVs)

CAVs are no longer a part of science fiction With the new smart city projects in India and growth of mobility tech start-ups, connected and autonomous vehicles are being tested and deployed in limited scenarios. But their success hinges on one critical element: trust in data.

Battery Aadhaar supports this trust. By integrating with vehicle telematics, cloud systems, and sensors, it provides real-time diagnostics on battery health, charge cycles, thermal performance, and possible future risks In driverless scenarios — where cars make decisions on their own — such information is crucial.

In addition, a standardized battery identity system furnishes vehicles and infrastructure with the requisite "language" to communicate effectively. This range extends from a vehicle warning another over a disgracing battery to traffic management systems servicing route optimization for low-charge electric vehicles. Because of these capabilities, Battery Aadhaar brings seamless reframing which bolsters efficient and safe proliferation of CAVs across India.

Enabling Circular Economy Strategies for Green Mobility

A green mobility future isn't just about transitioning from petrol to electricity. It's about how responsibly we use, reuse, and recycle our resources — especially batteries, which contain finite and often non-renewable materials like lithium, cobalt, and nickel.

Battery Aadhaar plays a pivotal role in enabling circular economy practices. With unique IDs, batteries that have served their vehicle life can be easily identified and assessed for secondlife applications — such as stationary storage or grid stabilization. Once they are no longer viable, recyclers can use Battery Aadhaar data to safely extract valuable materials, reducing waste and environmental damage.

OEMs, recyclers, and policy enforcers can work from a common database, making the recycling process more efficient and less hazardous. Ultimately, this promotes responsible production and consumption — a cornerstone of sustainable development.

The Role of Policy and Innovation India's EV momentum has been largely policy-driven — from FAME incentives and battery swapping policies to energy storage guidelines. Battery Aadhaar, too, will require robust regulatory scaffolding to thrive.

Policy frameworks need to define clear standards for battery data, interoperability protocols, ownership rights over battery information, and digital infrastructure mandates. Simultaneously, innovation must power the implementation — using blockchain for tamper-proof records, AI for performance analytics, and IoT for real-time updates.

Public-private partnerships will be key Whether it's startups developing tracking tools or auto OEMs piloting integrated platforms, collaboration between industry and government will unlock Battery Aadhaar's true potential. This fusion of policy and innovation can turn compliance into a competitive advantage.

Challenges in Implementing Battery Aadhaar

Of course, the road ahead isn't without speed bumps. First is the complexity of standardization. India's EV ecosystem includes a wide variety of battery chemistries, formats, and manufacturers. Designing a one-size-fits-all digital identity framework will require consensus, customization, and continuous updates.

Another challenge is data security. Battery Aadhaar will handle sensitive data — including performance stats, proprietary chemistry, and geo-location — which must be protected against misuse. Stringent data privacy laws, cybersecurity protocols, and transparent user consent frameworks are essential.

Then comes the question of stakeholder alignment. Without clear incentives and use-cases, many players — especially in the informal recycling sector — may resist adoption. Awareness, affordability, and access to tech platforms will determine how inclusive the Battery Aadhaar system can be.

Lastly, digital infrastructure needs investment. Cloud storage, high-speed connectivity, and integration with vehicle systems will all require capacity building and policy support.

A Digital Leap Toward Greener Roads

Battery Aadhaar isn't just a technical upgrade — it's a systemic change. As India races toward a green mobility future driven by electric, connected, and autonomous vehicles, the battery — often overlooked — could become our greatest asset or our weakest link.

By giving batteries a digital identity, India can build a mobility ecosystem that is smart, safe, and circular. With the right mix of regulation, technology, and collaboration, Battery Aadhaar could become the cornerstone of our clean mobility ambitions — one ID at a time.

Aerospace and Defence Systems: Advanced Testing Solutions

Modern aerospace and defence systems are enhancing military aircraft and tactical radio communication through advanced technologies driven by government self-reliance and modernization efforts. Digital innovations like digital twins, AI cybersecurity, and machine learning accelerate R&D, enable preventive maintenance, and optimize operations. Precise testing of avionics systems—including fuel quantity, communication, navigation, and surveillance—is critical for reliability, especially in military contexts where inflight time is vital.

Solutions such as antenna couplers, radio altimeter test kits, and fuel quantity test sets improve fault diagnosis without costly part replacements. Handheld test sets enable quick, repeatable checks of TCAS, ADS-B, and transponders, while high-resolution OTDR systems test fibre harnesses in radar and weapons control. The AVX-10K offers a comprehensive flight line test solution with guided and automated tests.

For tactical radio communication, multifunctional land mobile radio test systems and devices like the CX300 support analogue, digital, and LTE networks, ensuring secure, efficient, and repeatable testing. These advanced test solutions boost operational readiness and mission-critical reliability.

Akalkot Group Captive Project Energizing Industry

The 176 MWp DC Akalkot solar project, with an annual output of 245 million units, supplies green energy to prominent clients like TP Solar Kirnali, Netmagic, TP Saurya, CEAT, Tata Communications, Endurance, and Parag Dairy. Aligned with India's energy transition goals, the project operates under scalable and profitable group captive models, making it a leading example of industrial decarbonisation.

What makes Akalkot distinctive is its strong focus on community-centric sustainability, underscoring TPREL's commitment to inclusive growth. Initiatives include pond desilting in four villages to boost groundwater and irrigation, and the formation of Village Natural Resource Management Committees (VNRMCs) for sustainable water stewardship. The 'Lab on Bike' program brings hands-on STEM education to over 700 students across eight schools. Additionally, over 100 farmers receive training in dryland farming for better productivity and soil health, while 100+ students benefit from remedial education programs designed to improve learning outcomes and foster classroom inclusion.

Amazon trials humanoid robots with Rivian delivery electric vans

Amazon is preparing to test humanoid robots for package delivery, aiming to have them deployed from Rivian electric vans directly to customers' doorsteps. Currently, Amazon operates over 20,000 Rivian EVs, with plans to expand to 100,000 by decade's end. These robots could eventually replace human drivers and delivery personnel.

According to The Information, Amazon has built a "humanoid park" — an indoor obstacle course at its San Francisco office — to simulate real-world delivery scenarios. The site includes a Rivian van to test how robots enter, exit, and deliver packages.

While Amazon has experience using autonomous robots in its warehouses, this marks a shift toward testing humanoid robots in open, unpredictable environments. The company has previously worked with Agility Robotics' humanoids, though only in controlled warehouse settings. Now, Amazon plans to test various humanoid models, including some from Unitree, powered by proprietary software built on Alibaba's Qwen and DeepSeek-VL2. Real-world testing is already being considered.

AMD advances India GPU plans, $400M investment

Advanced Micro Devices (AMD) is in talks with the Indian government to support domestic GPU development and is open to joining the India Semiconductor Mission's (ISM) revamped Design-Linked Incentive (DLI) scheme for multinational firms. AMD aims to bridge India's chip talent gap and strengthen its AI and semiconductor ecosystem. The company has played a key role in India's AI mission, contributing to the country's compute capacity of over 34,000 GPUs. AMD's $400 million investment in India remains on track, with its Bengaluru R&D center contributing to global 2nm and 3nm chip designs. AMD India, employing around 8,000 engineers, supports nearly every global product line. The company is working closely with the government to upskill talent and expand India's chip capabilities. AMD sees India as vital for its global portfolio, driven by rising AI adoption in telecom, healthcare, and defence, and is committed to nurturing local startups and IP development to fuel sustainable growth.

Anritsu Unveils EcoSyn Lite MG36021A Microwave Synthesizer

Anritsu's new EcoSyn™ Lite Microwave Synthesiser Module delivers exceptional phase noise performance, ultra-fast switching, and a compact design, enhancing its Rubidium™ benchtop signal generator lineup. Operating from 10 MHz to 20 GHz with +18 dBm output power, this 4x4x0.8-inch module fits perfectly in space-constrained applications requiring instrumentation-grade CW signal sources.

EcoSyn Lite offers industry-leading phase noise of -126 dBc/Hz at 10 GHz and 10 kHz offset,

ideal as a local oscillator for RF/microwave transceivers using complex modulation. Its low jitter and non-harmonic spurious levels of -60 dBc make it suitable for high-speed optical systems and Gbit ADC/DAC clocking.

The synthesiser's frequency switching speed is under 50 µs in triggered list mode, significantly improving test throughput in Automatic Test Equipment and radar cross section measurements. Powered by +12 VDC, EcoSyn Lite supports USB and SPI remote control with easy automation via QuickSyn and SCPI commands, combining efficiency and compactness for versatile, high-performance applications.

Boson Cell Leads India's Sustainable Energy Storage Revolution

Boson Cell, a pioneer in indigenous lithium cell manufacturing, has launched two high-performance and cost-effective variants—18350 B-30A and 21700 B-50A—nationwide. These launches align with India's push toward energy self-reliance under the Atmanirbhar Bharat initiative. Positioned at the forefront of India's lithium ecosystem, Boson Cell supports key sectors like clean mobility, consumer electronics, renewable energy, and drones. Backed by government programs such as FAME II, PLI, and Drone Shakti, the demand for affordable, locally manufactured battery solutions is surging. Boson's cells, available in Economy, Advanced, and Extreme variants, are rigorously tested for safety and performance. With a lifecycle of 1000 recharge cycles—nearly triple that of Chinese alternatives—Boson offers higher energy density, low MOQs, and no inventory costs for buyers. The company is addressing India's $13 billion drone sector with lightweight, durable lithium solutions. Distributed via retailers and major online platforms, Boson plans a pan-India retail expansion by 2025, redefining India's clean energy future.

Continental launches fabless semiconductor business unit for chips

Continental has announced the formation of its Advanced Electronics & Semiconductor Solutions (AESS) unit to design and develop application-specific semiconductor circuits. As part of this strategic move, GlobalFoundries (GF) has been onboarded as a dedicated manufacturing partner. The initiative supports Continental's aim to strengthen its technological independence and reduce geopolitical risks. With the automotive semiconductor market projected to reach €110 billion by 2032—driven by increasing demand for Software-Defined Vehicles—this fabless model will allow Continental to design and verify chips in-house while GF handles production. GF's global footprint in the U.S., Europe, and Asia and its expertise in automotive-grade technologies make it a strong collaborator. According to Continental leaders, this partnership enhances supply chain resilience, boosts innovation, and accelerates time-to-market for next-gen connected, autonomous, and safe mobility solutions. The AESS unit reflects Continental's long-term commitment to investing in core technologies to remain competitive in the evolving automotive landscape.

Decimal Point Analytics, Braincube Expand Manufacturing

DECiMAL POiNT
Innovative Data & Research Solutions

Decimal Point Analytics, a leading provider of AI-driven enterprise data solutions, has partnered with Braincube, a specialist in productivity management systems for manufacturers. This collaboration aims to help industrial companies in India and the Middle East unlock hidden efficiencies, reduce costs, and boost operational performance. By combining Decimal Point's scalable data technologies with Braincube's manufacturing expertise, the alliance will introduce Braincube's Productivity Management System (PMS) to these markets. The PMS allows manufacturers to harness existing industrial data for rapid adaptation, identify root causes of inefficiencies through AI and multivariate analysis, and deploy AI across operations without needing a full data science team. Shailesh Dhuri, CEO of Decimal Point, noted the partnership's alignment with their vision of tech-driven value creation. Braincube CEO Laurent Laporte added that Decimal Point's innovative approach makes them the ideal partner to expand their proven platform. Together, they aim to empower regional manufacturers with advanced, scalable productivity solutions.

Delta Electronics India Wins ESG Company of 2025

DELTA ESG100 2024

Delta Electronics India has been honored with the "ESG Company of the Year" award at the National Conclave on Environmental Services 2025, organized by the Services Export Promotion Council (SEPC) under the Ministry of Commerce & Industry. Recognized for its strong ESG practices—from energy-efficient operations at its Krishnagiri plant to green energy initiatives and sustainable supply chains—Delta has embedded sustainability into every facet of its business. President Benjamin Lin expressed gratitude for the recognition and emphasized Delta's commitment to climate action. The company recently signed a PPA for 9.6 million kWh of green electricity. Senior Director Rachna Kango highlighted the firm's alignment with national and global ESG goals. Delta also uses a $300/ton internal carbon pricing model and is achieving Science-Based Targets. Its sustainability efforts span renewable energy, water management, biodiversity, and waste recycling. The conclave, held in New Delhi, brought together industry leaders and policymakers to promote India's environmental services and green export readiness.

Delta Forms Renewable Energy Alliance to Speed Net-Zero

Delta Electronics India has signed a forward-looking Power Purchase Agreement (PPA) to boost its renewable energy use, aiming to cut its carbon footprint by about 6,979 metric tons annually. Facilitated by Ventus Energy Consultancy, Delta will source 9.6 million units of wind power yearly from farms in Tamil Nadu, reducing reliance on fossil fuels under a 12-year deal through TANGEDCO's grid.

Benjamin Lin, Delta India's President, emphasized that this move supports India's climate goals and Delta's net-zero vision. The company's ESG efforts include energy-efficient products that saved 45.5 billion kWh globally since 2010 and a 39% cut in Scope 1 and 2 emissions in 2023.

Delta's Managing Director, Niranjan Nayak, highlighted that these PPAs align with global commitments like RE100 and SBTi. The collaboration with Ventus promotes India's green energy targets and sustainable industrial growth, reflecting Delta's dedication to innovation, smart grids, and real-time energy monitoring.

EPC launches compact 180W GaN buck converter board

Efficient Power Conversion Corp (EPC) of El Segundo, CA, has launched the EPC91109, a high-performance evaluation board showcasing the capabilities of enhancement-mode GaN-on-silicon (eGaN) FETs in compact, thermally efficient, two-phase synchronous buck converters. Tailored for USB Power Delivery (USB-PD 3.1) applications up to 180W, it suits space- and power-constrained systems like laptops, portable electronics, and battery-powered devices. The EPC91109 integrates Analog Devices' LTC7890 dual-phase buck controller with four 50V-rated EPC2057 GaN FETs, delivering 12V, 16V, or 20V outputs from 20V–36V input and up to 14.3A in two-phase interleaved mode. Key features include a 24mm x 24mm ultra-compact footprint, low-profile 3mm inductor, operation without heatsinks or forced air, configurable modes, and over 98% peak efficiency. CEO Alex Lidow notes the board's ability to achieve high power density and efficiency without cooling aids. It demonstrates how GaN FETs and advanced controllers enable smaller, faster, and cooler designs compared to silicon-based solutions.

Ericsson expands India R&D, starts Bengaluru ASIC development

Ericsson is expanding its Research and Development (R&D) team in Bengaluru to strengthen its capabilities in Application-Specific Integrated Circuit (ASIC) development. This move highlights Ericsson's strategic commitment to advancing India's role in cutting-edge communication technologies. The company plans to add over 150 R&D positions, tapping into Bengaluru's rich talent pool and vibrant tech ecosystem. According to Nitin Bansal, Managing Director of Ericsson India, the expansion will enhance semiconductor design expertise and support the broader Indian semiconductor ecosystem. Anna Dicander, VP of Radio & Transport Engineering, emphasized that investments in the Ericsson Silicon platform will accelerate innovation and product development. Ericsson Silicon is key to building energy-efficient, high-performance SoCs integrated across its Radio System portfolio, enabling advanced 5G capabilities. With a legacy of over 120 years in India's telecom sector and an active 6G research team in Chennai, Ericsson continues to invest approximately $5 billion annually in global R&D, reinforcing its leadership in next-gen network solutions.

Ericsson, Google Cloud Partner on AI-Powered 5G Core

Ericsson has unveiled Ericsson On-Demand, a new software-as-a-service (SaaS) platform designed to help communications service providers (CSPs) quickly deploy and scale core network services. Built on Google Cloud and leveraging AI infrastructure and Google Kubernetes Engine (GKE), the fully managed, cloud-native platform reduces operational complexity, lowers costs, and offers elastic scalability. CSPs benefit from rapid provisioning, usage-based pricing, and built-in security features like geo-restricted deployments and IAM policies. Managed end-to-end by Ericsson's 24/7 Site Reliability Engineering (SRE) teams, the platform ensures resilience, availability, and compliance across 42 global cloud regions. With zero infrastructure management required, CSPs can innovate faster, explore new markets, accelerate fixed wireless access (FWA) rollouts, and enhance wide-area enterprise networks. Ericsson On-Demand empowers CSPs to move at cloud speed without upfront capital expenditure, offering a future-ready solution that supports continuous integration with existing systems. It represents a significant leap toward AI-powered, agile telecom infrastructure, as emphasized by leaders at Ericsson and Google Cloud.

Gujarat plans 1,500 homes for Tata's Dholera semiconductor fab

To support the upcoming ₹91,000 crore semiconductor fabrication facility by the Tata Group, the Gujarat government is rapidly developing residential infrastructure in Dholera. Around 1,500 serviced apartments are being constructed to accommodate Tata employees, expatriates, and workforce from partner companies and suppliers. Of the 275 initial units, nearly 250 are already occupied, with another 225 nearing completion near the under-construction fab site. Additionally, 1,000 new units have broken ground and are expected to be ready by early 2026. The Tata Group has also been allotted 10 acres to build 530 residential units by mid-2027. The Tata Fab in the Dholera Special Investment Region (DSIR) is central to India's semiconductor ambitions, projected to create over 20,000 skilled jobs. Once operational, the plant will produce up to 50,000 wafers monthly, manufacturing chips for power management,

microcontrollers, display drivers, and high-performance computing—serving sectors such as AI, data storage, wireless communication, and automotive.

Gujarat Targets ₹35,000 Crore via 2025 Electronics Policy

Gujarat Chief Minister Bhupendra Patel has launched the 'Gujarat Electronics Component Manufacturing Policy 2025' to position the state as a global hub for electronics manufacturing. Aimed at attracting over ₹35,000 crore in new investments, the policy offers attractive incentives to industries producing electronic components and related equipment. Approved projects, especially those backed by MeitY, will be eligible for dual benefits—support from both Central and State Governments. The policy also supports the creation of research labs, finishing schools, and centres of excellence with aid up to ₹12.5 crore. Target sectors include lithium-ion cells, SMD passive components, HDI PCBs, camera modules, and more. Incentives will be disbursed within 30 days of central fund release. However, units already benefiting under Gujarat's 2022–2028 electronics policy won't qualify. Overseen by the Gujarat State Electronics Mission, this initiative seeks to strengthen upstream industries, reduce import dependency, and boost high-skilled employment. Applications are open until July 31, 2025.

Heltec Automation partners with Morse Micro for Wi-Fi HaLow

Morse Micro, a leading supplier of Wi-Fi HaLow chips, has partnered with Heltec Automation to accelerate the development of IoT devices powered by Wi-Fi HaLow technology. This collaboration combines Morse Micro's MM6108 Wi-Fi HaLow SoC with Heltec's advanced hardware to deliver long-range, high-speed, and energy-efficient connectivity for industrial and commercial IoT. Together, they've introduced five innovative products, including a compact Wi-Fi HaLow module (HT-HC01), a long-range ESP32-based camera board (HT-HC32), a dual-band router/gateway (HT-H7608), a Raspberry Pi-compatible camera HAT (Pi-CamLow), and a USB dongle for long-range wireless bridging. These devices are designed to meet the growing demand for reliable and scalable wireless communication in applications like smart cities, remote surveillance, and industrial automation. Allen Ma of Heltec Automation emphasized the importance of the partnership in expanding IoT capabilities, while Morse Micro's CEO Michael De Nil highlighted its role in delivering secure, long-range wireless connectivity for next-generation IoT infrastructure.

Honeywell, NTPC Green Partner to Boost India's SAF Goals

Honeywell has signed an MoU with NTPC Green to explore sustainable aviation fuel (SAF) production in India using Honeywell's eFining™ technology. This process will convert carbon dioxide captured from NTPC's power plants and green hydrogen into SAF, supporting airlines' carbon reduction targets and India's energy security goals.

DMR Panda, Executive Director at NTPC, highlighted SAF's crucial role in NTPC Green's ambitious Green Hydrogen Hub in Pudimadaka, Andhra Pradesh, noting the aviation sector's mandate for SAF blending will drive early green hydrogen projects.

The collaboration combines Honeywell UOP's SAF expertise with NTPC's leadership in green hydrogen development, aiming to decarbonize aviation. Ranjit Kulkarni of Honeywell India emphasized the partnership's role in advancing cleaner aviation fuels, promoting green hydrogen adoption, and helping India meet its environmental targets.

The study, expected by mid-2025, will pave the way for India to become a SAF production and export hub, advancing its emissions reduction mission.

InCore Launches SoC Generator, Demos Auto-Generated Silicon

InCore Semiconductors has successfully validated a test chip built using its proprietary SoC Generator platform, marking a major leap in automated chip design. This innovation drastically cuts design cycles—from months to minutes—by automating interconnect creation, IP integration, and FPGA-ready collateral generation. InCore's CTO Neel Gala explains that architects can now test multiple SoC configurations in minutes, enabling rapid prototyping and easier design-space exploration. CEO G.S. Madhusudan emphasizes the platform's democratizing potential, empowering small teams to create application-specific chips once limited to major players. The validated test chip, fabricated on TSMC's 40nm node, features a custom NoC, multiple IPs, and six heterogeneous RISC-V cores—all auto-generated and optimized by the platform. Unlike AI-based design tools, InCore's platform ensures deterministic precision, avoiding costly hardware errors. InCore now aims to license this tool globally, helping fabless firms accelerate innovation, reduce risk, and bring high-performance RISC-V-based SoCs to market faster and more affordably.

India Set to Become Global Hub for Electronics Manufacturing

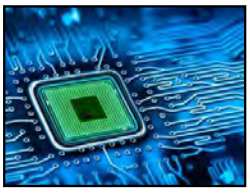
India is rapidly advancing its electronics manufacturing sector with the aim of becoming a global leader. Key developments include Tamil Nadu's electronics component programs, the creation of India's first indigenous semiconductor chip in Gujarat, and several Production Linked Incentive (PLI) schemes to boost domestic

production. The government is also promoting sustainability through e-waste initiatives like a repairability index and encouraging innovation in chip design and advanced manufacturing.

Major initiatives such as the "Make in India" campaign and the Phased Manufacturing Programme (PMP) aim to enhance infrastructure, drive skill development, and increase local value addition, particularly in mobile phone and component manufacturing. The PLI scheme offers 3%–6% incentives for domestic electronics production, while a ₹229.19 billion budget supports passive component manufacturing.

Additionally, the ₹76,000 crore Semicon India Program focuses on building a robust semiconductor ecosystem. Through strategic policies, infrastructure investments, and global partnerships, India is solidifying its position as a key player in global electronics manufacturing.

India-Made Semiconductor Chips Launching in 2025



By the end of 2025, India will produce its first domestic semiconductor chip using 28-90nm technology, marking a key milestone in the country's technological progress, announced by Union Minister Ashwini Vaishnaw. This chip, made at Tata Electronics' Jagiroad facility in Assam with a ₹27,000 crore investment, aims to boost India's semiconductor production and reduce import dependence. The initiative is part of the India Semiconductor Mission and will create numerous jobs in the northeast. Additionally, a sixth semiconductor factory is planned in Uttar Pradesh through a joint venture between HCL and Foxconn.

The 28-90nm chips will serve industries like railways, telecom, power, and automotive, covering around 60% of the global semiconductor market. The government is also fostering domestic IP and chip design, with 25 chips under development to enhance cybersecurity via projects led by C-DAC Bengaluru. This push aligns with the "Digital India" vision, positioning India as a global electronics manufacturing hub amid global supply chain challenges.

India's Data Center Capacity to Exceed 4,500 MW by 2030

India's data centre (DC) market has surged over the past six to seven years, with capacity quadrupling to 1,263 MW by April 2025, driven by rising digital demand, AI, IoT, and supportive policies. Mumbai leads with 41% of DC capacity, followed by Chennai (23%) and Delhi NCR (14%). The real estate footprint in the top seven cities has tripled to 16 million sq ft. By 2030, capacity is expected to exceed 4,500 MW, expanding the footprint to 55 million sq ft, fueled by low land and power costs, strong connectivity, and government incentives.

Since 2020, Mumbai accounted for 44% of new supply, with Chennai and Delhi NCR adding 42%. Upcoming supply will be dominated by Mumbai and Hyderabad, expected to grow significantly. Larger DCs (>50 MW) will form two-thirds of capacity by 2030. The sector has attracted $14.7 billion since 2020, with investments forecasted at $20–25 billion through 2030. Green and energy-efficient DCs are also gaining momentum, with sustainability rates expected to rise to 30–40%.

Indian companies eye global assets to boost semiconductor goals

foreign acquisitions by Indian semiconductor firms are expected to significantly accelerate the country's chip manufacturing ambitions, providing access to critical intellectual property, precision equipment, and skilled talent. Companies like Tata Electronics and L&T Semiconductor Technologies (LTSCT) are acquiring global assets to enhance domestic capabilities. For instance, Polymatech acquired US-based Nisene Technology, while LTSCT and Kaynes Semicon are jointly acquiring Fujitsu General's power modules division. Tata is also exploring OSAT and fabrication acquisitions in Malaysia. Experts say these moves support advanced packaging, improve talent pipelines, and fast-track access to next-gen technologies like wafer-level packaging and chiplet integration. While India has strength in chip design, entry into high-margin OSAT and mature-node manufacturing is seen as the next leap. However, experts caution that beyond acquisition, the real challenge lies in effectively transferring expertise and building long-term, high-quality local capabilities. These global partnerships are critical to reducing import reliance and supporting global OEMs from within India.

Indian drone company Raphe mPhibr raises 100M USD Series B

Indian drone manufacturer Raphe mPhibr has secured $100 million in an all-equity Series B funding round led by General Catalyst, with participation from Think Investments, Amal Parikh, and various high-net-worth family offices. This brings the Noida-based company's total funding to $145 million—the largest private capital raise in India's drone sector to date. Founded in 2016, Raphe mPhibr has developed nine drones capable of carrying payloads between 4.4 and 441 pounds and covering distances from 12 to 124 miles. The company has also built India's first indigenously developed military-grade autopilot and lightweight

internal combustion engine. With in-house capabilities across electronics, composites, and software, it supplies drones exclusively to Indian government agencies, including the Army, Navy, and Air Force. Investors highlighted Raphe mPhibr's advanced engineering, mission-driven approach, and strategic role in India's aerospace landscape. CEO Vivek Mishra emphasized the company's decade-long focus on full-stack innovation and manufacturing at both system and subsystem levels.

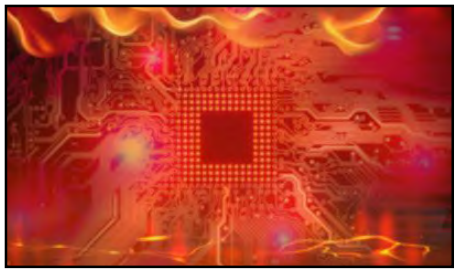
LG Innotek Launches First Automotive 5G Satellite Module

LG Innotek has unveiled the world's first third-generation automotive 5G communication module with satellite connectivity, enabling high-speed data transfer anytime, anywhere. Unlike earlier narrowband satellite modules limited to low data rates, this new module supports 5G broadband satellite communication (NR-NTN) with around 30MHz bandwidth, allowing seamless connection even outside terrestrial networks. This breakthrough is vital for autonomous driving and software-defined vehicles, enabling rapid transmission of large data volumes like audio, video, and real-time position updates. The module drastically reduces latency from several seconds to just a few hundred milliseconds, ensuring continuous communication in remote or disaster-affected areas, enhancing safety and emergency response. Incorporating the latest 3GPP Release 17 standard, it promises global compatibility. LG Innotek plans mass production by early 2026, targeting Japanese and North American automakers. With vehicle communication modules and lighting as key growth drivers, LG Innotek aims to build an $800 million business in this sector amid a forecasted surge to 75 million connected cars by 2032.

Marvell Unveils First 2nm Custom SRAM for AI Chips

Marvell Technology, Inc. has unveiled the industry's first 2nm custom Static Random Access Memory (SRAM), designed to boost performance in custom XPUs and devices powering cloud data centers and AI infrastructure. This cutting-edge SRAM offers up to 6 gigabits of high-speed memory while reducing power consumption by up to 66% and reclaiming up to 15% of chip area in 2nm designs. Running at speeds up to 3.75 GHz, it enhances memory hierarchy performance and enables higher core integration, smaller device footprints, and reduced total cost of ownership. Part of Marvell's broader custom platform strategy, the SRAM complements prior innovations like custom HBM and CXL solutions, which expand memory and compute capabilities. Leveraging its expertise in advanced manufacturing and semiconductor IP—including SerDes, die-to-die interconnects, silicon photonics, and SoC fabrics—Marvell is redefining infrastructure performance in the post-Moore's Law era. This latest breakthrough supports the growing demand for custom silicon in AI and cloud applications.

MIT team creates low-cost GaN-on-CMOS integration process



Researchers at MIT and partner institutions have developed a novel, cost-effective method to integrate high-performance gallium nitride (GaN) transistors with traditional silicon CMOS chips. GaN is a key material for next-generation power electronics and high-speed communications but is typically expensive and difficult to implement. The team used a low-temperature process to fabricate and cut individual GaN transistors, then precisely bonded only the necessary units onto silicon chips using copper-to-copper bonding. This reduces material waste and improves thermal management. The resulting hybrid chips outperform silicon-based devices in power efficiency and signal strength, enabling improved wireless connectivity, bandwidth, and battery life. Demonstrating the method with a high-performance amplifier, researchers showed enhanced gain and bandwidth. This scalable approach, compatible with standard semiconductor manufacturing, could also support quantum computing applications. The work was presented at the 2025 IEEE RFIC Symposium and supported by DARPA, the Air Force Research Lab, and the CHIMES JUMP 2.0 program.

ROHM unveils gate driver IC for high-voltage GaN

ROHM Semiconductor has introduced the BM6GD11BFJ-LB, an isolated gate driver IC designed for 600V-class high-voltage GaN HEMTs, aimed at improving miniaturization and efficiency in high-current applications such as motors and server power supplies. This is ROHM's first GaN-specific gate driver, leveraging its expertise in isolated driver ICs for silicon and SiC devices. The BM6GD11BFJ-LB uses proprietary on-chip isolation technology to minimize parasitic capacitance, allowing high-frequency operation up to 2 MHz—maximizing GaN's switching performance while reducing peripheral component size. It also features enhanced noise immunity with a Common-Mode Transient Immunity (CMTI) of 150 V/ns, 1.5 times better than conventional models, and a reduced minimum pulse width of just 65 ns. These advancements support more stable, high-frequency operation and lower power loss. The IC supports gate voltages of 4.5 V to 6.0 V and provides 2500 Vrms isolation. Its ultra-low output-side current consumption of 0.5 mA (Max) further enhances energy efficiency, making it ideal for next-gen GaN-based power systems.

Arrow Electronics Joins Hedera Council for Supply Innovation

Arrow Electronics (NYSE: ARW), a leading global technology distributor, has joined the Hedera Council to support the decentralized governance of the Hedera Network and spearhead a new supply chain initiative. This project aims to improve global supply chain efficiency through distributed ledger technology (DLT), focusing on real-time visibility, automated compliance, and predictive logistics across complex, multi-party networks.

As part of the Hedera Council—a governing body of global organizations dedicated to ensuring trust, security, and innovation on the Hedera Network—Arrow will operate a network node and contribute to open-source development and governance. The company is exploring DLT-based solutions to enhance manufacturing and distribution systems for global customers and suppliers.

"Arrow is continually exploring emerging technologies like Hedera to strengthen our logistics capabilities," said Chuck Kostalnick, senior VP at Arrow. Hedera Council's Shuchi Rana welcomed Arrow, noting its industry expertise will help drive scalable, standards-based innovation in enterprise supply chain solutions.

Avnet Named Among Best Companies by U.S. News

Avnet has been named one of the 2025-2026 Best Companies to Work For by U.S. News & World Report, a leading authority on rankings and consumer guidance. The company earned a spot on both the Overall and West regional lists, recognizing its commitment to creating a supportive and empowering workplace.
"We are honored to be recognized by U.S. News & World Report," said Avnet CEO Phil Gallagher. "This award highlights our dedication to our employees, our values, and an environment where people can thrive."
The rankings reflect evolving employee preferences and evaluate companies based on factors such as pay and benefits, work-life balance, job stability, workplace environment, and career growth.

"Workplace quality directly impacts life quality," noted Carly Chase, Vice President of Careers at U.S. News.

To determine the rankings, U.S. News analyzed data from the largest 5,000 public companies, incorporating employee reviews and regulatory data across six key workplace metrics.

Broadcom solutions now available through TME product range

Broadcom, a well-respected name in the electronics industry, is recognized for its high-quality, reliable, and innovative products, particularly among engineers and technicians. A key part of Broadcom's extensive range, widely available through TME, includes optoelectronic components.

Their LED diode selection spans THT and SMD types, in sizes from 0402 to 3735, covering wavelengths from UV to infrared, including multi-color variants. This variety makes it easy to match specific design needs in color, beam angle, or power.
Broadcom also offers optocouplers with excellent galvanic isolation (up to 5000Vrms) and EMI resistance, suitable for both analog and digital outputs, including high-speed models for data transmission beyond 25Mbps—ideal for industrial automation and power systems.

Additional offerings include classic and matrix LED displays, PCB-mount LED indicators, and photoelements like photodiodes and phototransistors with varying wavelength sensitivity.

TME also stocks Broadcom's Toslink fiber optic transmitters and receivers, optimized for industrial data transmission across various distances and speeds.

DigiKey Earns Top Supplier Honors at 2025 EDS

At the 2025 EDS Leadership Summit in Las Vegas, DigiKey, a leading distributor of electronic components and automation products, received 16 awards from its valued supplier partners. Mike Slater, DigiKey's Vice President of Worldwide Business Development, expressed gratitude, highlighting the honors as a reflection of the company's global commitment to customer excellence and collaborative innovation.

Over the past year, DigiKey has significantly expanded its offerings, adding over 500 new suppliers to its core business, DigiKey Marketplace, and Fulfilled by DigiKey programs. The company introduced nearly one million new products and leads the industry in distributing new product introductions (NPIs).

At DigiKey's well-attended EDS Business Update Breakfast, Slater joined President Dave Doherty to discuss industry trends, market dynamics, and DigiKey's strategic initiatives. They also shared how DigiKey is using the same AI and automation technologies it supplies to customers to enhance internal operations, improve support, and boost productivity—further solidifying its role as an innovation leader.

DigiKey Provides Zephyr OS Virtual Workshop, Training Videos

DigiKey, a leading global distributor of electronic and automation components, is offering a free on-demand online workshop and video series focused on writing device drivers for the Zephyr real-time operating system (RTOS). Known for its complexity, Zephyr is a powerful RTOS and development framework that is essential for engineers and students to master.

Led by embedded systems and machine learning expert Shawn Hymel, the workshop guides participants through building an I2C temperature sensor device driver within the Zephyr ecosystem. This hands-on training introduces key development tools and concepts such as C programming, CMake, Kconfig, and Devicetree—essential skills for building applications in Zephyr.

"DigiKey is proud to support education in advanced engineering topics that are often overlooked," said David Sandys, Senior Director of Technical Marketing at DigiKey. "This workshop is a valuable resource for anyone looking to deepen their understanding of Zephyr and gain practical experience with real-world embedded development."

Element14 Marks 100th Bilibili Video with Pico Giveaway

Element14, a global electronics distributor and community platform for engineers and makers, has marked a major achievement by releasing its 100th video on Bilibili—China's leading video-sharing platform. To celebrate this milestone, the company has launched a giveaway featuring the Raspberry Pi Pico 2 development board, one of the most versatile microcontrollers for hobbyists and engineers alike.

Since its launch on Bilibili, Element14's channel has steadily grown in popularity by offering localized, in-depth technical content tailored for China's vibrant maker and tech education communities. The channel covers a wide range of topics including component reviews, step-by-step project builds, design tips, and tutorials on embedded systems, robotics, and IoT. This milestone highlights the company's dedication to nurturing talent and promoting practical electronics education across the region.

The giveaway campaign invites users to follow the channel, like the 100th video, and share their own ideas or project experiences in the comments section. Winners will receive a Raspberry Pi Pico 2, enabling them to experiment with microcontroller-based projects and contribute to the growing ecosystem of open-source innovation.

The Raspberry Pi Pico 2, built around the RP2040 chip, supports flexible programming environments including C/C++ and MicroPython, making it ideal for beginners and professionals alike. By gifting these boards, Element14 encourages hands-on learning and creative problem-solving.

Farnell unveils strategic growth plans for Krakow

Farnell has expanded its Krakow, Poland office to support the addition of new departments, reinforcing its operational capabilities and customer support across Eastern Europe. The strategic investment includes the creation of a dedicated credit control team to enhance financial processes and a new legal department focused on ensuring compliance with evolving legislation and improving risk management. The upgraded 1200 sqm facility at Tertium Business Park now houses over 160 employees and supports both in-office and hybrid work models.

Designed with sustainability and employee wellbeing in mind, the office features smart LED lighting, natural daylight access at every desk, eco-friendly furnishings, and low-emission paints. It also includes engaging communal areas like chill zones, indoor greenery, and recreational spaces with table tennis and foosball. This expansion aligns with Farnell's long-term strategy of responsible growth, combining business development with a strong focus on employee engagement, compliance, and customer service excellence in the region.

Mouser and Ampleon partner for global RF distribution

Ampleon, a leader in radio frequency (RF) technology, has entered a global distribution agreement with Mouser Electronics, a trusted distributor of the latest semiconductors and electronic components. Headquartered in Nijmegen, Netherlands, Ampleon brings nearly 60 years of expertise in RF power solutions, offering cutting-edge technologies based on GaN and LDMOS. Their portfolio supports applications in 5G infrastructure, broadcast, medical, industrial, navigation, and safety communications, with scalable solutions for various production needs. Mouser now stocks Ampleon's ART-series LDMOS transistors, including the 1600W ART1K6FH and 2000W ART2K0FE, ideal for HF to UHF frequencies. These robust transistors provide high efficiency, thermal stability, and reliability, and are housed in ceramic air-cavity packages. Also available are the BLF981 and BLF981S, designed for HF to 1400 MHz in digital and analog transmission systems. For CW applications from 2400–2500 MHz, the 30W CLP24H4S30P GaN-SiC HEMT delivers excellent thermal performance in a compact 7x7 mm DFN package.

Mouser Electronics launches smart home innovation resource hub

Mouser Electronics, a leading distributor of New Product Introductions (NPIs), offers the industry's largest selection of semiconductors and electronic components, including a robust smart home resource center. This platform provides engineers with the latest in home automation innovations powered by the Internet of Things (IoT). Devices like smart thermostats, refrigerators, and vacuums use real-time data to learn user preferences and optimize energy use, delivering convenience, cost savings, and control. Technologies such as tri-radio connectivity—combining IEEE 802.15.4, Bluetooth® Low Energy, and Wi-Fi® 6—support unified standards like Matter, enabling devices to respond intelligently to real-world triggers. Mouser's content hub features expert-curated resources, from articles to eBooks, to aid in smart system development. Highlighted products include Silicon Labs' MGM240S-enabled Arduino Nano Matter board, Qorvo's Wi-Fi 7 FEM QM45655, NXP's Tri-Radio i.MX 91 development board, and TE Connectivity's ISM 868/915MHz FPC antennas, all designed to enhance smart home and IoT applications.

Rochester Offers Broad Range of Obsolescence Solution Products

Most electronic designs rely on multiple semiconductor components, making it essential to address the availability of a broad range of mature devices—not just a single outdated chip. Rochester Electronics takes a comprehensive approach by offering solutions across various component types commonly found in legacy designs. For example, replacing a microprocessor is insufficient if compatible memory or interface devices are no longer available. This challenge extends across key areas such as power, timing, analog, and application-specific peripherals like RF, networking, and diverse interface standards.

To support long-lifecycle applications, Rochester works closely with suppliers and customers, continuously evaluating inventory and market trends. Their strategy includes investments in wafer and die stock, finished goods, die recreation when original sources are unavailable, and test capabilities for continued production.

With over 10 billion finished components covering 200,000 part numbers, Rochester organizes its inventory into five core groups: Analog and Mixed Signal, Processors and Peripherals, Logic, Memory, and Discrete—each presenting unique lifecycle and replacement challenges.

RS and Festo drive advancement in process automation

RS, a leading global industrial supplier, offers Festo's extensive range of process automation products for fluid process control across industries like food and beverage, pharmaceuticals, oil and gas, and chemicals. These solutions automate the handling of liquids, gases, and granular solids, reducing manual errors while boosting safety, efficiency, and productivity.

Festo's portfolio includes smart remote I/O systems, process valves, piloting valves, sensors, actuators, and control devices, all designed for reliable, precise automation from field to operation levels. Their automation systems support Industry 4.0 features like IIoT-enabled remote monitoring, ideal for hazardous or space-constrained environments.
Key RS offerings include VZBE stainless steel ball valve assemblies with Festo pneumatic actuators, VSNC versatile solenoid valves suited for hazardous locations, and the CPX-AP-I remote I/O system that consolidates multiple devices under a single IP address, simplifying installation and reducing costs. These products ensure streamlined procurement, enhanced process control, and scalable automation solutions for industrial fluid systems.

TE Connectivity honors TTI IP&E twelfth time globally

TTI IP&E, a leading distributor specializing in electronic components, proudly announces it has been named TE Connectivity's Global Broadline Distributor of the Year for 2024—an achievement that marks an impressive twelfth consecutive win. This long-standing recognition underscores TTI's consistent performance, commitment to excellence, and strong global partnership with TE Connectivity.

John Drabik, Global President of TTI IP&E, expressed his appreciation, stating, "We are truly honored to receive this award from TE Connectivity. It reflects the dedication, reliability, and hard work of our global team, as well as the strength of our ongoing collaboration with TE. At TTI, performance is everything, and this recognition reinforces our daily commitment to delivering quality and value."

The award celebrates TTI's unwavering focus on customer service, operational efficiency, and supply chain excellence. It also highlights the distributor's role in consistently supporting TE's broad product portfolio and driving mutual success across global markets.

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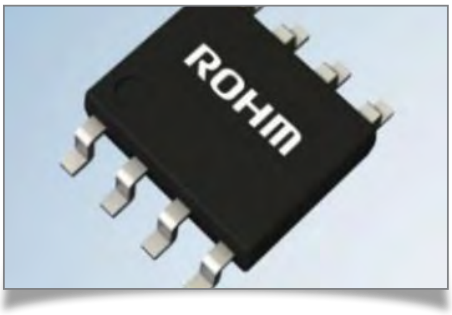
Infineon Launches SECORA ID V2 and eID-OS

Infineon's SECORA™ ID V2 and eID-OS are next-generation solutions designed to enhance electronic identification systems with speed, security, and versatility. SECORA™ ID V2 is a high-performance Java Card-based platform tailored for multi-application smart cards and supports biometric authentication, fast data transfers, and global payment standards. Complementing it, eID-OS is a lightweight, native operating system optimized for fast, cost-effective eID deployment. Built on the robust TEGRION™ security controller, it ensures fast transaction times and secure identity verification, making it ideal for national ID, health, and eGovernment applications.

Key Features :

- Ultra-fast data transfer speeds up to 6.8 Mbit/s
- Biometric match-on-card functionality for secure identity verification
- Certified to Common Criteria EAL6+ and EMVCo standards
- Supports multiple applications including Visa®, Mastercard®, Calypso®, and ePasslet applets
- Native code sandboxing enables integration of custom applications
- Sub-0.5 second transaction times for seamless user experience
- Built on Infineon's secure TEGRION™ controller architecture
- Automatic detection of data size for efficient processing
- Designed for EAL5+ certification to meet high security demands

ROHM Launches Compact Gate Driver for 600V GaN HEMTs



ROHM has launched the **BM6GD11BFJ LB,** a galvanically isolated gate driver IC built for 600 V class high-voltage GaN HEMTs. This compact driver enables stable, high-frequency switching—up to 2 MHz—while reducing parasitic capacitance through proprietary on-chip isolation. With an impressive CMTI of 150 V/ns and a minimum pulse width of 65 ns, it optimizes GaN performance while minimizing energy losses. The device supports gate voltages from 4.5 V to 6 V, offers 2,500 Vrms isolation, and features ultra-low standby current (0.5 mA). Ideal for efficient, compact power solutions in EV inverters, motor drives, data center supplies, and industrial systems.

Key Features :

- 150 V/ns Common-Mode Transient Immunity (CMTI) for high dv/dt resilience
- Supports switching frequencies up to 2 MHz
- Fast gate pulse width of 65 ns for precise GaN HEMT control
- 2.500 Vrms galvanic isolation for system safety
- Gate drive voltage range of 4.5 V to 6 V
- Ultra-low output-side consumption (0.5 mA standby current)
- Compact package enables power system miniaturization

Microchip Launches Compact DC-DC Converter for Space Applications

Microchip has introduced the SA15 28—a 15 W, radiation hardened, space grade DC DC converter—and its companion SF100 28 EMI filter to enhance power systems for satellites and space missions. Designed for use on a 28 V bus, the SA15 28 offers triple 5 V outputs ideal for powering FPGAs and microprocessors, in a compact 60 g, 1.68 cu in package. Both units comply with MIL STD 461 EMI standards and function across −55 °C to +125 °C with tolerance to 100 krad TID radiation. Fully compatible with Microchip's SA50/SF200 series, they support scalable, off the shelf power architectures that simplify design, improve reliability, and reduce time to market.

Key Features :

- Radiation hardened up to 100 krad TID
- Triple 5 V outputs for versatile load powering
- Compact size: 60 g, 1.68 cu in, ideal for SWaP constraints
- MIL STD 461 EMI compliance with SF100 28 filter
- Operates over −55 °C to +125 °C temperature range
- Non hybrid, discrete design for flexibility and reliability
- Compatible with SA50 series converters and SF200 filter
- Supports up to 100 W EMI filtering across power modules

Murata Redefines Automotive Capacitance with Breakthrough MLCC

Murata has introduced the GCM21BE71H106KE02, the world's first automotive-grade 10 µF/50 V MLCC in an 0805 (2.0 × 1.25 mm) package. Designed for high-density automotive PCBs—such as those supporting ADAS and EV systems—it delivers twice the capacitance of Murata's previous 4.7 µF/50 V part while occupying the same footprint. Compared to traditional 1206 devices, it uses ~53% less board space. Leveraging proprietary ceramic and thinning technologies, this capacitor supports 12 V power rails with high reliability and space efficiency. It's a milestone in downsizing passive components to meet evolving automotive performance and packaging demands.

Key Features :

- First-ever 10 µF/50 V MLCC in compact 0805 size
- 2.1× capacitance increase over previous 4.7 µF 0805 part
- Saves ~53% board area compared to 1206 equivalents
- Optimized for 12 V automotive power rails
- Engineered for high-density ADAS and EV systems
- Manufactured with Murata's proprietary ceramic thinning tech

Infineon's New Inductive Sensor Combines Safety, Accuracy, and Cybersecurity

Infineon's newly launched **XENSIV TLE4802SC16 S0000** is a high-precision inductive sensor designed for advanced automotive chassis systems. It delivers torque and steering-angle measurements with outstanding immunity to stray magnetic fields—eliminating the need for extra shielding. The sensor integrates a coil driver, signal conditioning, and DSP into a compact TSSOP-16 package. Built for safety-critical automotive applications, it is AEC-Q100 Grade 0 qualified, operates from −40 °C to +150 °C, and complies with ISO 26262 ASIL D standards. It also offers built-in over-voltage and reverse-polarity protection, along with embedded cybersecurity features for enhanced system reliability.

Key Features :

- Inductive sensing offers strong stray-field immunity without external shielding
- Dual digital output support via SENT and SPC protocols
- Compact TSSOP-16 package with integrated coil driver and DSP
- AEC-Q100 Grade 0 qualified for extended automotive temperature range
- ISO 26262 ASIL D compliance for functional safety
- Built-in over-voltage and reverse-polarity protection
- Embedded cybersecurity safeguards against

STMicroelectronics Unveils STGAP4S Gate Driver for Next-Gen EV Powertrains

STMicroelectronics has introduced the STGAP4S, an advanced automotive-grade gate driver optimized for high-voltage inverter applications in next-generation electric vehicle (EV) powertrains. With reinforced galvanic isolation, integrated system monitoring, and full compliance with ISO 26262 ASIL-D functional safety standards, it addresses the stringent requirements of modern automotive systems. Its compact design and programmable interface make it ideal for supporting compact, high-efficiency inverter architectures, while enabling robust protection, fast fault response, and seamless integration into safety-critical EV environments.

Key Features :

- 6.4 kV galvanic isolation for safe signal separation
- Configurable gate drive via external MOSFET buffers
- Integrated flyback controller for compact power supply
- On-chip ADC for real-time system diagnostics
- Comprehensive protection: UVLO, OVLO, Desat, OCP, OTP
- Dual fault signaling and SPI-configurable thresholds
- Active Miller clamp for enhanced switching safety
- AEC-Q100 and ISO 26262 ASIL D qualified

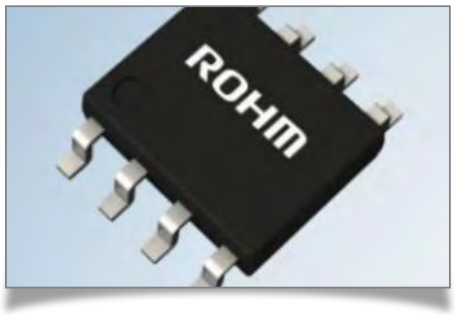
Viavi Unveils VINS to Combat UAV GPS Jamming

Viavi's subsidiary Inertial Labs has launched VINS (Visual-Aided Inertial Navigation System) to address the growing threat of GPS/GNSS jamming and spoofing—now occurring up to 700 times daily globally. VINS combines inertial sensors with advanced visual navigation, using Maxar's Raptor 3D software and satellite-derived maps to maintain reliable UAV navigation. In GPS-denied environments, it achieves ±35 m horizontal and ±5 m vertical accuracy; with GPS active, accuracy improves to ±1 m horizontally and ±2 m vertically. Designed for low-altitude missions, it integrates modular processing, sensors, GNSS/CRPA antennas, air-data, and optional radios or Iridium/SAASM receivers—ideal for military and

Key Features :

- Visual-aided inertial navigation ensures mission continuity without GPS
- Maxar Raptor 3D PnP positioning integrates day/IR camera imagery
- ±35 m horizontal & ±5 m vertical accuracy in GPS-denied zones
- ±1 m horizontal & <2 m vertical accuracy with GNSS available
- Heading accuracy within 1°; pitch/roll within ±0.1°
- Modular design suits fixed-wing and multirotor UAVs
- Optional COTS radio and Iridium/SAASM GNSS enable flexible deployment
- Demonstrated at the 2025 Joint Navigation Conference stand #430

Vishay Launches Precision Isolation Amplifiers



Vishay Intertechnology's new high-reliability isolation amplifiers—VIA0050DD, VIA0250DD, and VIA2000SD—are designed for precision in demanding environments like industrial automation, EV systems, and medical equipment. Featuring industry-leading 150 kV/µs CMTI and up to 400 kHz bandwidth, they ensure accurate signal isolation under high electrical noise. With low gain error, minimal temperature drift, reinforced isolation, and built-in diagnostics, these amplifiers offer dependable, calibration-free performance for high-voltage, safety-critical applications requiring exceptional accuracy and robustness.

Key Features :

- Industry-best CMTI of 150 kV/µs for enhanced noise immunity
- Wide 400 kHz bandwidth for fast, accurate signal tracking
- ±0.05% gain error with low 15 ppm/°C temperature drift
- Reinforced isolation ensures safety in high-voltage environments
- Built-in diagnostics enhance system reliability and fault detection
- Operates across –40°C to +125°C for harsh environments
- VIA0050DD supports ±50 mV input for compact designs
- VIA0250DD handles ±250 mV input for flexible sensing
- VIA2000SD offers linear 0.02 V to 2 V input for high SNR applications

Infineon Launches ID Key S USB – A Compact, High-Security Solution for USB Authentication Devices

Infineon Technologies has officially launched the ID Key S USB, a compact and integrated security solution designed to meet the growing demand for hardware-based authentication, encryption, and secure access. This latest addition to the ID Key product family is purpose-built for applications such as USB tokens, hardware authenticators, dongles, and cryptocurrency wallets. With a system-in-package architecture, advanced cryptographic capabilities, and globally recognized security certifications, the ID Key S USB empowers manufacturers to design robust and scalable security devices while minimizing development complexity and component costs. The device is now available to early-access customers and is expected to set a new benchmark in the secure authentication hardware market.

Key Features :

- Combines Infineon's high-performance SLC38 security controller and a USB bridge controller in a single package to reduce board complexity and design time
- Supports a wide range of security use cases, including certificate-based authentication, FIDO-based authentication with passkeys, digital signatures, file and data encryption, software tamper protection, access control systems, and secure hardware wallets for cryptocurrency
- Powered by a 32-bit Arm® SecureCore® SC300 CPU running at 100 MHz, ensuring fast and secure performance
- Offers 24 KB RAM and up to 800 KB non-volatile memory (Solid Flash) to store sensitive keys, credentials, and application firmware securely

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Arun Srinivas

Arun Srinivas appointed to head Meta India operations

Meta has appointed Arun Srinivas as Managing Director and Head of India Operations, marking a key leadership move in its largest user market. Srinivas, who joined Meta in 2020 and currently leads the Ads Business in India, will take on his new role from July 1, 2025, reporting to Sandhya Devanathan, who now oversees India and Southeast Asia. With over 30 years in sales and marketing—including senior roles at Ola Mobility, Reebok, Hindustan Unilever, and WestBridge Capital—Srinivas brings deep experience to this position. He will lead Meta's India strategy, operations, and partnerships with top advertisers and developers, aligning innovation and revenue goals. India plays a critical role in Meta's AI and digital advertising growth, being its largest market for Facebook, Instagram, WhatsApp, and Meta AI. In FY24, Meta India saw a 43% YoY rise in net profit and 24% growth in ad revenue, driven by increasing digital adoption across the country.

Monique Shivanandan

Iridium Appoints Monique Shivanandan to Board of Directors

Monique Shivanandan has joined the board of directors at Iridium Communications Inc., a global provider of satellite voice and data services. Currently Group Chief Data & Analytics Officer at HSBC Holdings plc since May 2023, she previously served as HSBC's Chief Information Security Officer starting in July 2020. Her earlier roles include Global CIO at Chubb Insurance (2017–2020), CTO at Capital One, and CIO at Aviva plc. She has also held positions at BellSouth and BT Group. Iridium CEO Matt Desch highlighted her broad experience across cybersecurity, finance, and telecommunications as a strong asset to the board. Shivanandan chairs the board of Sepio, a cybersecurity risk management firm, and previously served on the boards of Network International and J.P. Morgan Securities. At Iridium, she will join the Compensation Committee and is recognized as an independent director. Shivanandan holds a B.S. in Industrial Engineering from Lehigh University.

Manish Gupta

Manish Gupta named Dell India President and MD

Dell Technologies has appointed Manish Gupta as the new President and Managing Director for its India operations, succeeding Alok Ohrie, who led the company for over 12 years. Gupta brings more than 25 years of experience in the IT industry, including over a decade in executive roles at Dell. Most recently, he led strategy, channel engagement, and global alliances for the Asia Pacific Japan and Greater China (APJC) region. Based in Bengaluru, Gupta will report to Peter Marrs, President of the APJC region. Marrs expressed confidence in Gupta's leadership, citing his deep market knowledge and technical expertise as key to driving Dell's growth in India. Gupta previously served as VP of Dell's Infrastructure Solutions Group in India. He holds an engineering degree from Punjab University and an MBA from IIM Lucknow, and is also a Fulbright-Nehru Fellow from Carnegie Mellon's Tepper School. Gupta emphasized India's tech potential and Dell's role in an AI-powered future.

Napier AI names Noel King new Chief Technology Officer

Noel King

Napier AI, a London-based RegTech firm specializing in financial crime compliance, has appointed industry veteran Noel King as its Chief Technology Officer. With a strong background in IT strategy, cloud infrastructure, and cybersecurity, King previously served as CTO at Implement Technologies and Shipyard Technology Ventures, and has led tech initiatives for major firms like Goldman Sachs and Mastercard. At Napier AI, he will focus on advancing AI-powered solutions for client screening, transaction monitoring, and compliance operations, using API-first technology to enhance efficiency and detection capabilities. CEO Greg Watson praised King's expertise in scaling tech companies, calling him pivotal to Napier AI's global mission to combat financial crime. King will also head the company's new Belfast Centre of Excellence, supporting AI innovation and local tech talent development. Known for championing youth tech initiatives, King was named Irish Technology Person of the Year in 2018 and founded Coolest Projects to nurture future innovators.

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