

India's confluence of manufacturing and deep tech growth and changing geopolitics enables its pursuit of semiconductor independence

Differentiated, outward-looking commercialisation strategies necessary to harness opportunities, says 30-year industry veteran, investor

Singapore, 30 October, 2019 – IGSS Ventures Pte.Ltd (IGSSV), a technology investment holding firm offering “One-Stop semiconductor commercialisation services” and innovative hybrid business model delivered through an established portfolio of emerging niche technology companies, believes the unexpected confluence India is witnessing today necessitates a new investment and commercialisation approach in semiconductors. Taking advantage of the explosive growth in deep tech, founder and Group Chief Executive Officer Raj Kumar, opined that “there is no existing playbook” for this environment.

“India’s potential expansion in deep tech, demand for jobs, local consumption power and improved ranking in ease of doing business, provides an exciting premise to refocus on semiconductors. Combine that with government and business leaders’ willingness to integrate and scale and expand its geopolitical influence, India can certainly take its rightful place as a competitive nation in emerging (niche) solutions,” explains Raj.

Creating a differentiation strategy to leapfrog the nation’s growth in semiconductors on its own terms - establish niche fabs and build a selective but effective ecosystem, is what India needs to do,” offers Raj as IGSSV concludes an in-depth feasibility study on local market readiness for next-generation fabs.

India’s manufacturing goals under the “Make in India” initiative comes at a time of rapid transition into the emerging application of new technologies (deep tech) including Artificial Intelligence, Machine Learning, Internet of Things, 5G, Power Efficiencies, Electric and Autonomous Vehicles. The proliferation of domestic demand driven by both India’s largest youth population globally and growing middle class is an impetus to heavy chip, modules and whole system imports today. Providing a glimpse into the nation’s largely untapped opportunities, India can be the next global destination for semiconductors with established local manufacturing capabilities.

In this instance, India’s semiconductor players can focus on pushing investment and commercialisation opportunities in domestic *niche* semiconductor manufacturing (e.g Gallium Nitride on Silicon, Silicon Photonics, Analog Mixed Signal, MEMS and Power technologies) instead of the bleeding edge and mainstream logic silicon-based fab technology dominated by countries like US, Taiwan and South Korea. These niche technologies are instrumental in accelerating deep tech’s time-to-market, buoyed by demand for hardware to power a new generation of intelligent electronics, investments for deep-learning systems that extends into areas of research, education and training, and need for skills retraining.

”Long-term success in deep tech which already requires solid research capabilities depends on among others, an ecosystem that facilitates speed-to-market. Here, IGSSV’s expertise in commercialisation, leveraging a hybrid and flexible business model designed to reduce both investments and period of gestation-to-revenue enable go-to-market readiness. This is done in two areas. Firstly, building cost-effective and best-in-class operational fabs and secondly, bringing global collaborations into an ecosystem of partners that supports and accelerates commercialisation of B2B deep tech.”

India's improved 'Ease of Doing Business' ranking has certainly infused enthusiasm into the semiconductor sector as industry structural (framework) and public infrastructure challenges get addressed. Spurred by the reduced corporate tax of 15 per cent for manufacturing - one of the lowest rates of-its-kind globally, capitalises on the ongoing trade war and the increasing need for viable semiconductor alternatives by players looking to alleviate supply chain pressures. These parameters strengthen India's position as an influential global trade partner.

"For a country looking at economic diversification outside of its poster industry, the services of mainly BPO and IT, this confluence - demand for high-value manufacturing driven by deep tech and India's elevated role in geopolitics provides a 'network effect' between chip manufacturing and semiconductor design that had not previously ramped up in a big way," says Raj.

Giving semiconductors a second lease of life, a key imperative moving forward is to implement commercially-viable policies formulated by industry experts familiar with successes of current semiconductor nations. Developing National Investment Entities or the right investment and collaboration models that can kick start relevant funding schemes in the first 10-20 years of growth is just one initiative that can be emulated, ensuring semiconductor players can be effective partners to those in deep tech. Successful case studies show that up to 100 per cent support was given through the first few fabs, outsourced semiconductor and testing facilities (OSATs) and design houses. The end goal for India needs to be well-build partnerships including inter-government and public-private collaborations.

"Tapping into both India's large domestic electronics consumption and deep tech growth, across the value chain of fabs, OSATs and supporting industries is an attractive proposition. I believe the focus in building first fabs should be in the niche and emerging disruptive 200-300mm technologies where India has a higher chance to be successful. It can additionally meet the growing need for dual-source locations and alternatives - this should be a strategic component to India's new semiconductor playbook," adds the 30-year industry veteran.

Another imperative is realising win-win public-private partnerships anchored in innovative business models and an outward-looking mindset that is reflective of current manufacturing advancements, customised to India's socio-economic fabric. It must be said that India's path ahead is not one it should travel alone. Having a frontier mindset also means incentivising entities and nations to become partners and help start this pioneering industry in India. The government must leverage the value of its domestic markets and global opportunity, especially now.

The IGSSV team behind the feasibility study, are specialists from its subsidiary companies representing two core segments: Plant and fab/foundry Transformation services and Niche Technologies focusing on GaN-on-Si development and manufacturing; and SiPh co-design services, automated testing and commercialisation through a dedicated 8" CMOS foundry. Headquartered in Singapore, IGSSV's technology solutions find its end-applications in Advanced ICT, Advanced Manufacturing, Smart Mobility and Life Sciences.

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For media queries, please contact:
Ms. Suchithra Krishnan (suji@igssventures.com)