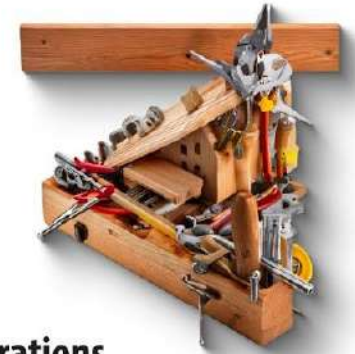




Welcome to Session By Technical Education and Skilling on Empowering Bengal: Nurturing Future Ready Skills For A High Precision Work Force

**BENGAL GLOBAL
BUSINESS SUMMIT**
5-6 February '25



Biswadeep Chatterjee

Biswadeep Chatterjee has 28+ years of industry experience in the domains of VLSI Structural Design, VLSI CAD, Distributed Computing Software development, HPC Architecture and Global Operations catering to semiconductor product lines. Currently, he is part of the semiconductor arm of HCLTech driving their foundry and SOC platforms engagement.

Prior to joining HCL, Biswadeep has worked with companies like Texas Instruments, Intel Corporation and Qualcomm. At Intel, Biswadeep was an Engineering Director and responsible for leading Physical Design activities in the Ethernet Product Group.

In his spare time, Biswadeep works with select NGOs on 'livelihood generation'. He is a passionate educator and is collaborating with multiple universities on enriching the VLSI ecosystem in India.



www.wbidc.com

Chamber Partners



Knowledge Partners



bengalglobalsummit.com



BENGAL means BUSINESS

BENGAL GLOBAL BUSINESS SUMMIT



Semiconductor Techade: Gearing up for a Trillion Dollar Opportunity

Biswadeep Chatterjee
Engineering R&D Services
HCLTech

February 2025

HCL

DWARKANATH TAGORE

THE FORGOTTEN HERO OF INDIAN CAPITALISM





GlobalFoundries

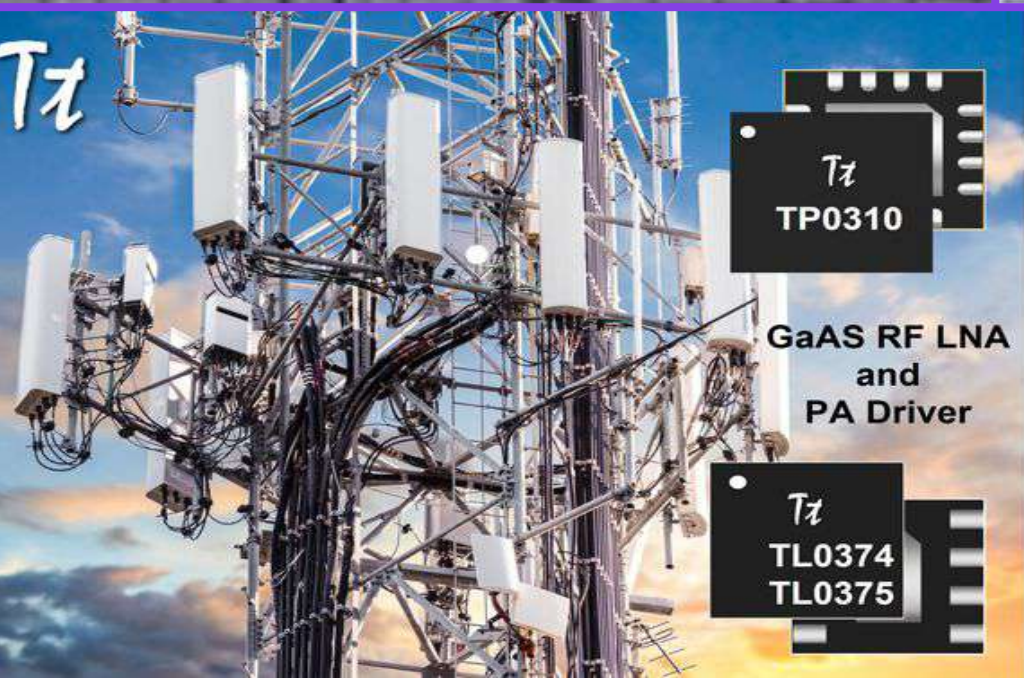
 **TagoreTech**
DISRUPTING SWaP



www.tagortech.com

 **TAGORE TECHNOLOGY, INC.**

Tt



Tt
TP0310

GaAS RF LNA
and
PA Driver

Tt
TL0374
TL0375

Supercharging engineering innovation



Aerospace & Défense



Automotive



Lifesciences & Healthcare



Retail & Consumer Products Group



Industrial Smart Products (ISP)



Banking, financial services and insurance



Energy & Utilities (E&U)



Software & Internet



Servers & Storage



Consumer Electronics



Network & Telecom



Manufacturing



Semi-chip & Semi Equipment

Leveraging digital technologies to accelerate time-to-value

Cloud

AI/ML

Digital Twin

5G

AR/VR/XR

Computer Vision

IoT

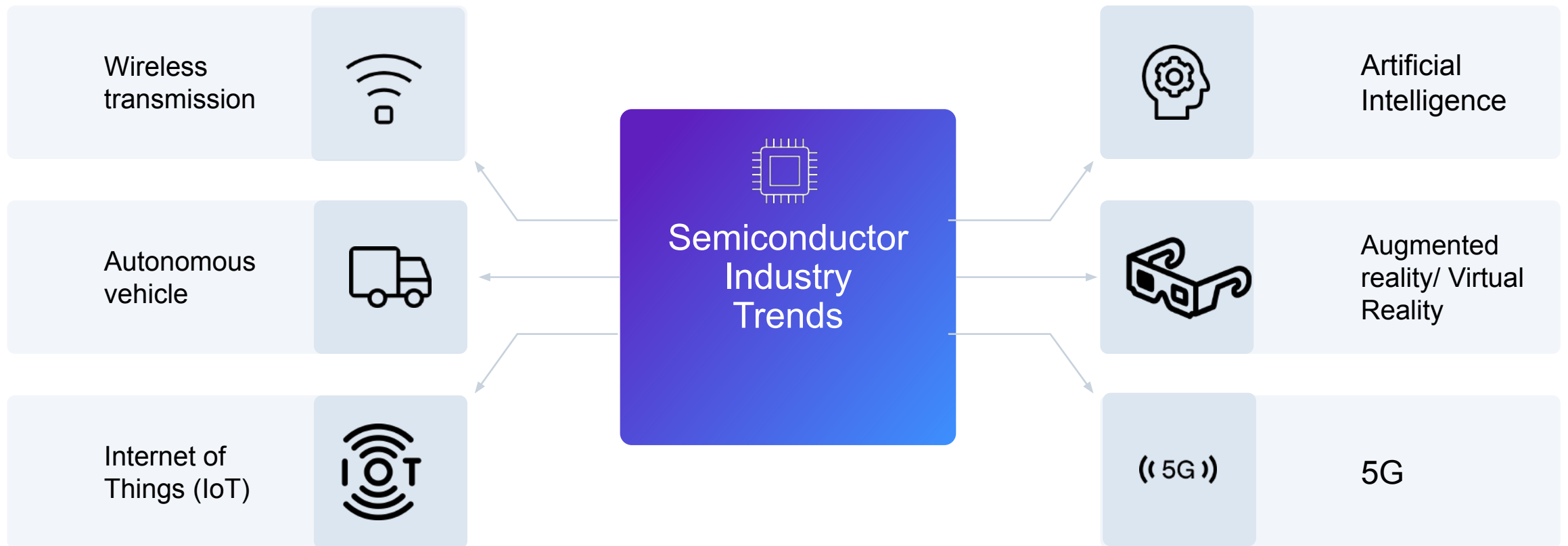
Blockchain

Additive Manufacturing

Robotics

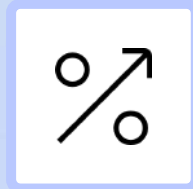
Semiconductor Industry Trends

Semiconductor product has become ubiquitous leading to a burgeoning 'siliconomy'





**Complexity of
the value chain**



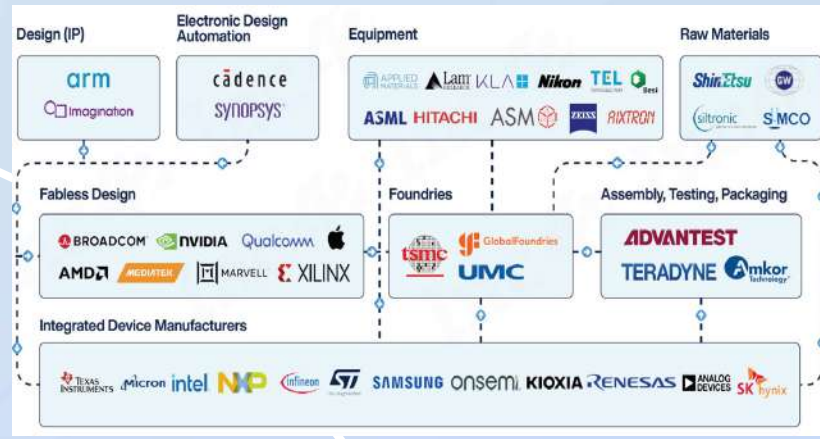
**Productivity
chasm**



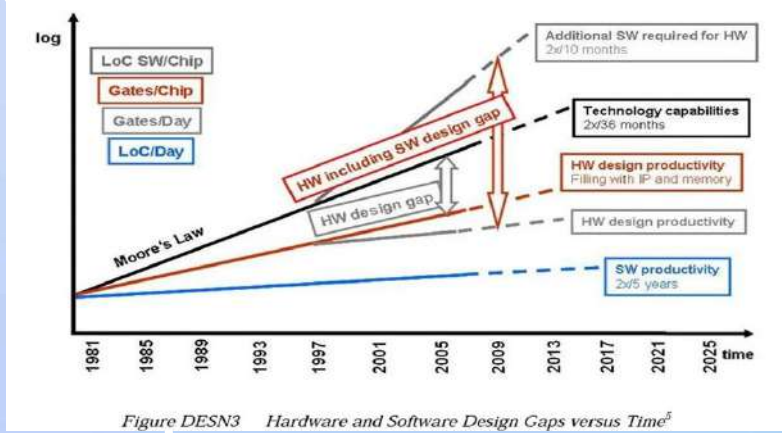
**Mounting
cost
pressure**

Challenges abound

Although the industry holds significant potential, there are obstacles to fully achieving it.



Complexity of the value chain



Productivity chasm



Mounting cost pressure

So, what does the future of semiconductor in India look like?

India will be a leading driver of growth, accelerating at a faster rate as compared to global market

\$27 Bn

Total Market Opportunity For Semiconductors In India in 2023

2.4X

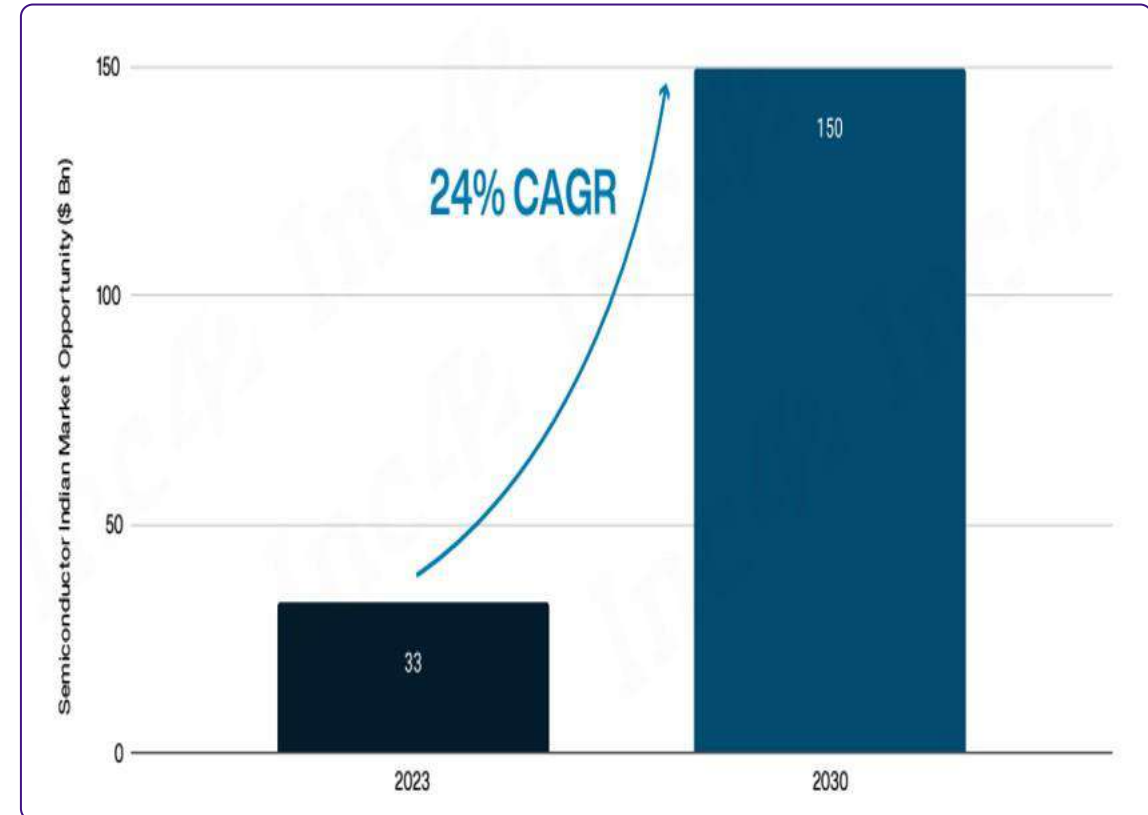
YoY Growth In Indian Semiconductor Startup Launches Since 2014

\$270 Bn

Total Market Opportunity For Semiconductors in India by 2032

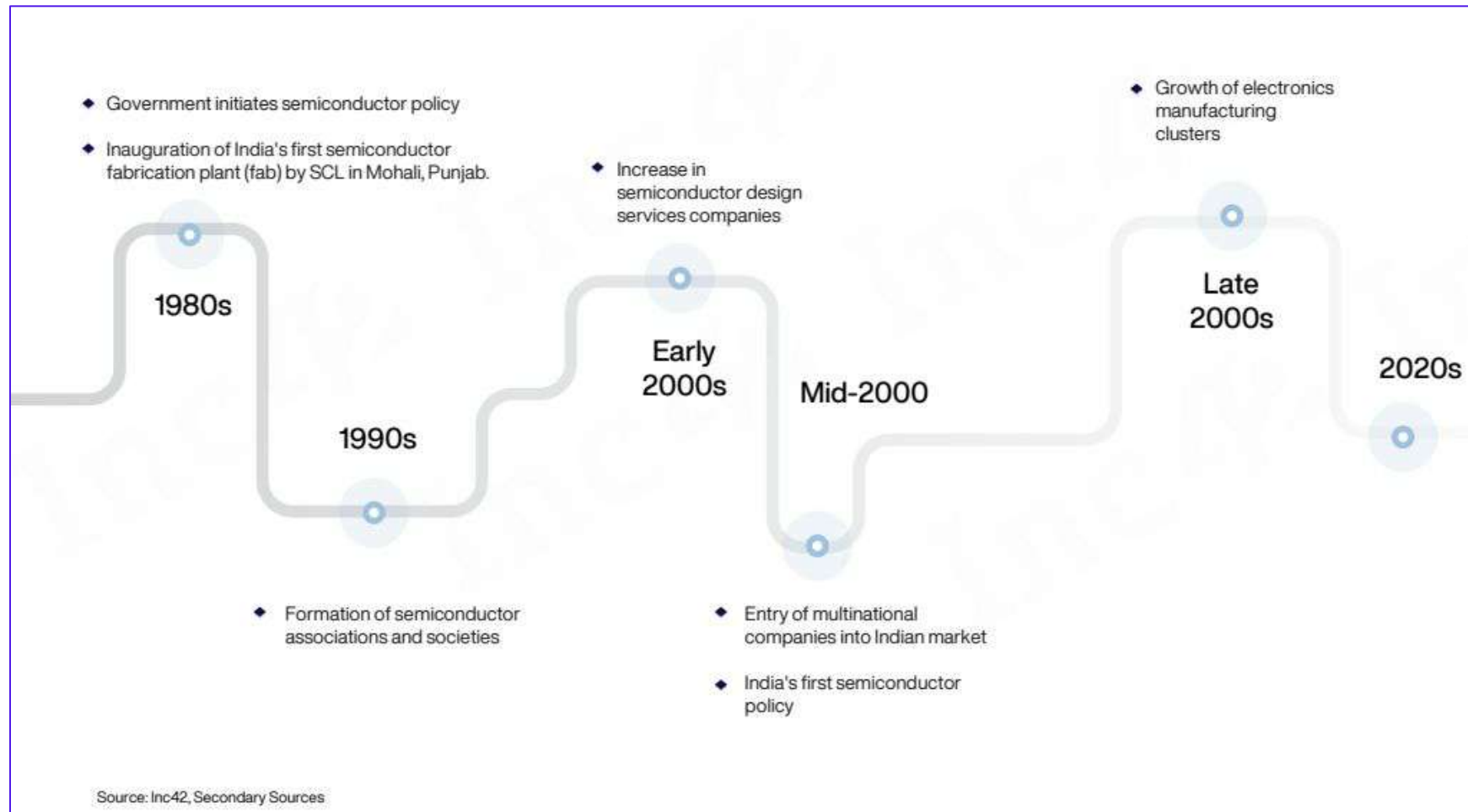
20%

of global semiconductor Integrated Circuit (IC) Design Workforce is from India



Lessons from history of semiconductor industry in India

Growth led by services in specific segments like chip design, thin presence in other areas



Insight into Indian semiconductor startups

Only one third of Indian semiconductor startups are working on IP development

Semiconductor IP

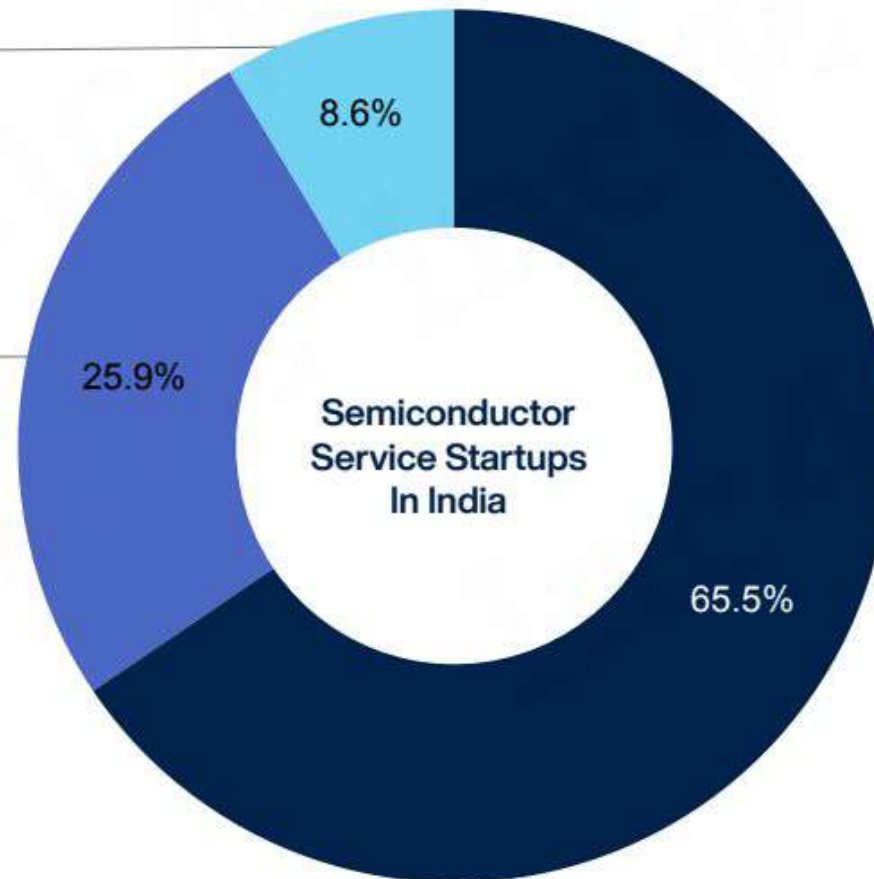
8.6%

Startups that create and design their own proprietary semiconductor technologies and designs.

Semiconductor IP & Service

25.9%

Startups that possess their own semiconductor IP and also offer a range of semiconductor-related services.



Pure Play Semiconductor Services

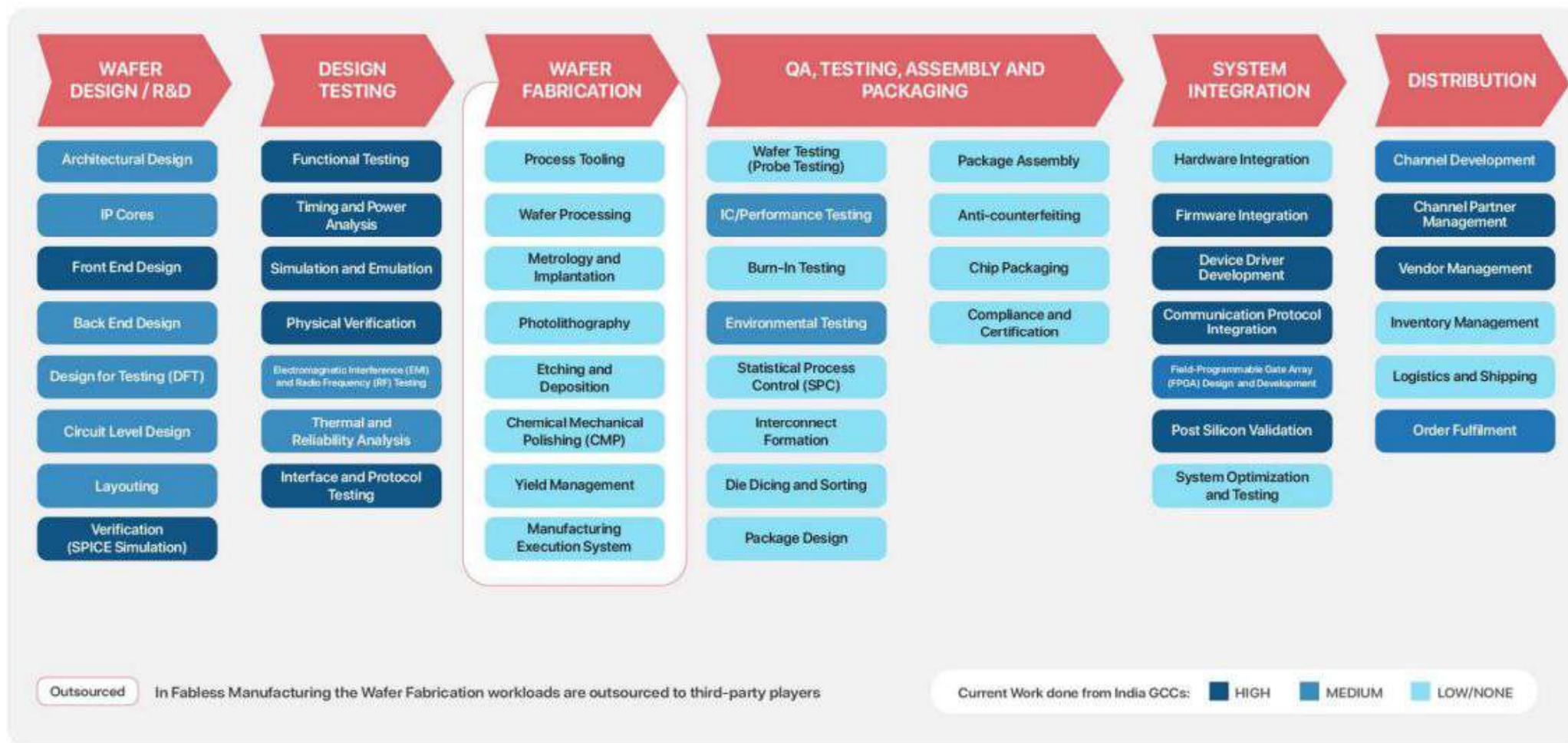
65.5%

Startups that provide semiconductor-related services without owning or developing their own IP.

Source: Inc42, Secondary Sources

Transition from “service provider” to “product developer”

Pockets of excellence due to presence of large number of GCCs

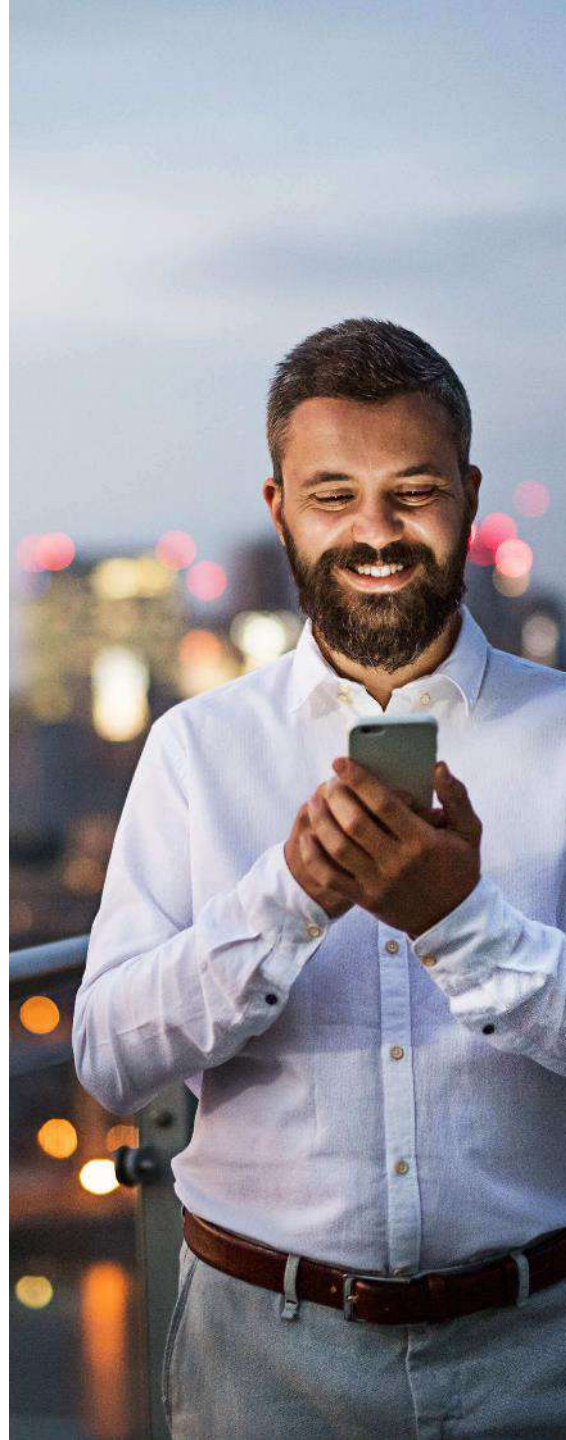


Source: Zinnov Research and Analysis

So how do we march in the new era

Synergistic efforts of public and private sector to address following barriers to growth

- Capital intensive business with long gestation period
- Talent availability & retention
- All round product development capability
- Knowledge gap
- Robust supply chain



Government initiatives

- 1** Chips to Startup (C2S)
Fostering next generation capabilities
- 2** Design Linked Incentive (DLI)
financial incentives & design infrastructure support
- 3** National EDA Tool Grid
Access to EDA tools under auspices of C-DAC
- 4** Production Linked Incentive (PLI)
Boost domestic manufacturing

Industry POV: How to accelerate your product journey

What our 27+ years of silicon expertise & turnkey chip development tells us...

Silicon Platform

Accelerate time-to-market, lower costs and reduce risks.

Specs to parts

One stop shop across the entire silicon life cycle



IP marketplace

Curated IP portfolio combined with value added services

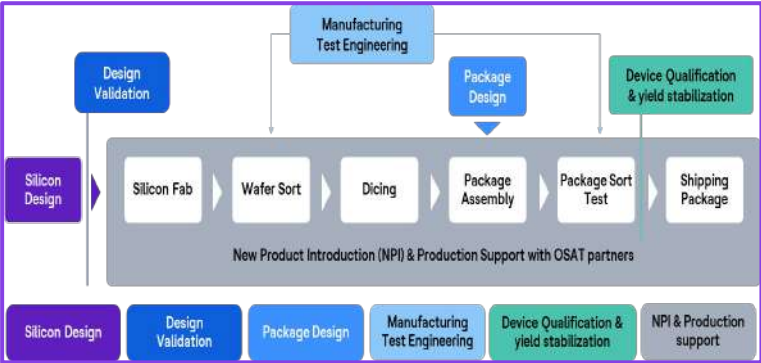
ATMP Lab

State-of-the art lab, 24 x 7 accessible over secure VPN

Industry POV: How to accelerate your product journey

What our 27+ years of silicon expertise & turnkey chip development tells us...

<p>40+ IP Vendor Partnerships</p>	<p>Platforms for SoC Acceleration</p>	<p>Partnerships with Foundries, Packaging and Testing Vendors</p>
<p>Dedicated SoC Architecture Team</p>	<p>Ready Physical Design Flows</p>	<p>IntegraStudio Physical Design Platform for increasing engineer's productivity and shortening Tapeout cycle</p>



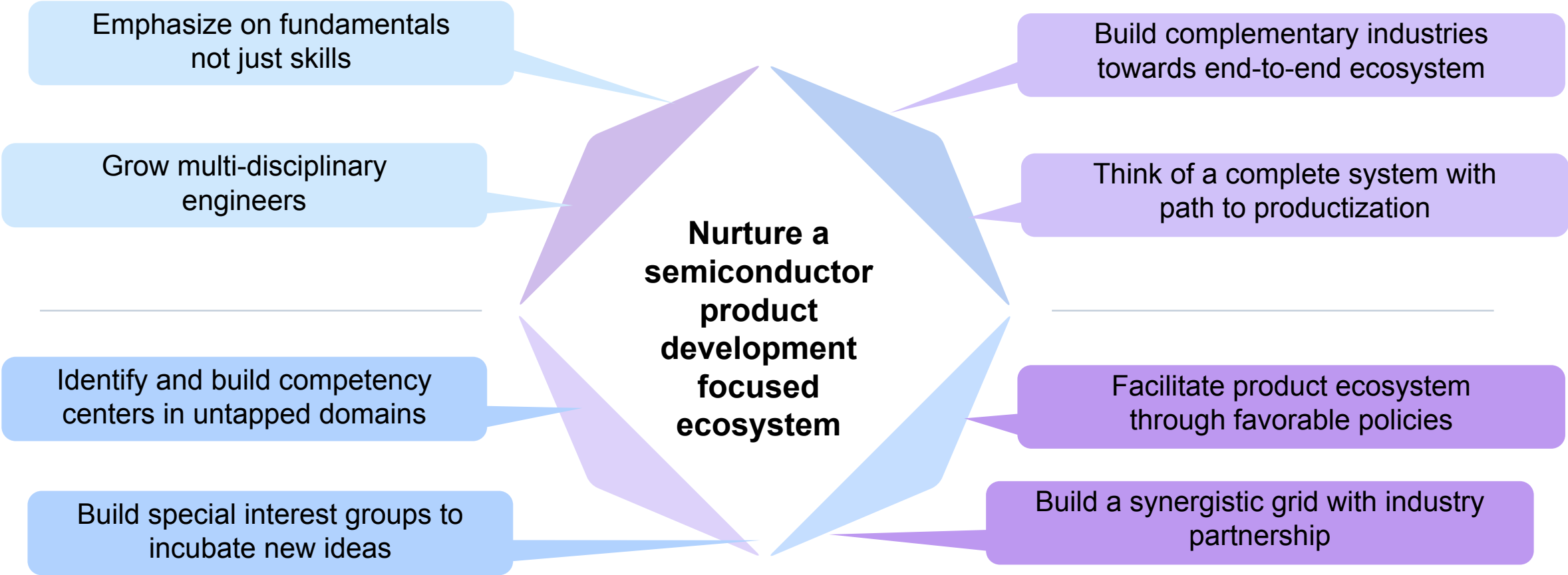
ATMP Lab – accelerated path to productization

V93K	Tri Temp 8" & 12" Wafer Prober
Micro Prober	Auto Clave

© 2024 HCLTech

Weaving it all together

“Don't be encumbered by history, just go out and do something wonderful.” — Robert Noyce



HCLTech | Supercharging
Progress™

hcltech.com