



Growth Engines & Market Drivers

Zohar Gil, CMO
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Zohar Gil

Chief Marketing Officer



● Joined Nova in 2011.

● Appointed as CMO in 2016.

● Beforehand, held senior positions of marketing and business development at Nova and in Israeli high-tech companies.

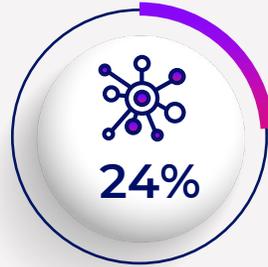
● Engineering and Executive MBA from Tel Aviv and Northwestern Universities.

Framework for \$1B Growth Plan

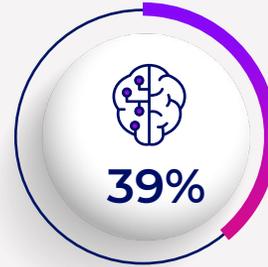


Multiple Demand Catalysts at Double-Digit CAGR

Cloud Computing



AI



Autonomous Vehicle



5G



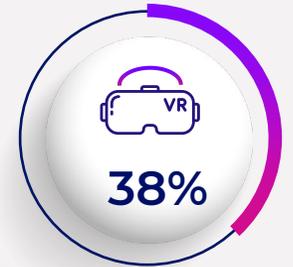
Robotic Process Automation



Industrial IoT



VR



Places



Millions

People



Billions

Things



Trillions



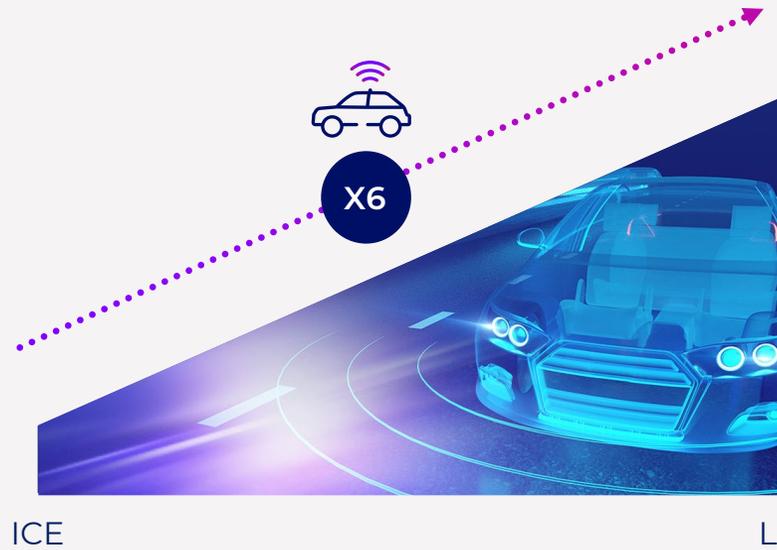
Automotive

Electrification and Autonomous Trends are Driving Exponential Growth

Autonomous chips revenue- \$29B by 2030

The main current growth in driver ADAS

High-performance chips will grow faster



Semiconductor Content
Internal Combustion Engine
vs. Autonomous Vehicle



Automotive Semiconductor Market (\$B)

Artificial Intelligence

Major Growth Driver in the Coming Decade

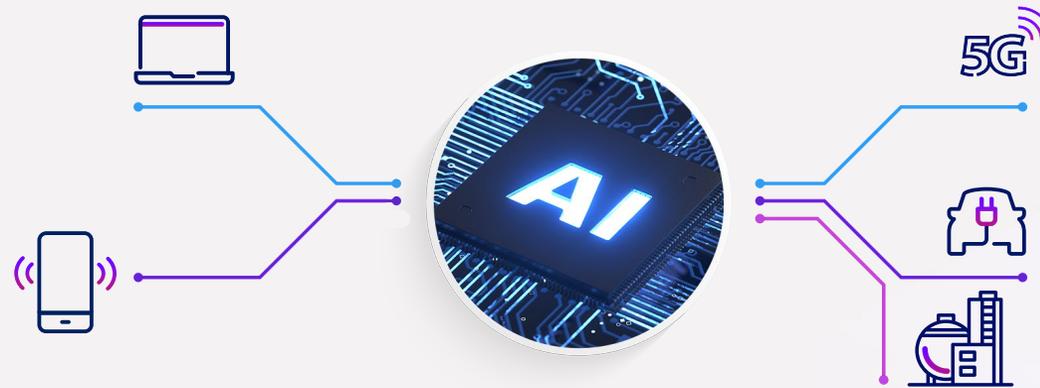
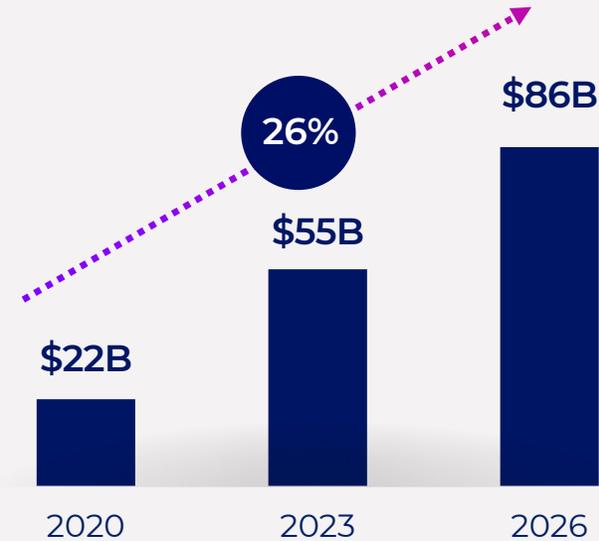
By 2026

- 5x growth in data center servers using AI
- Over 50% of basic smartphones utilize AP with AI

Key Markets

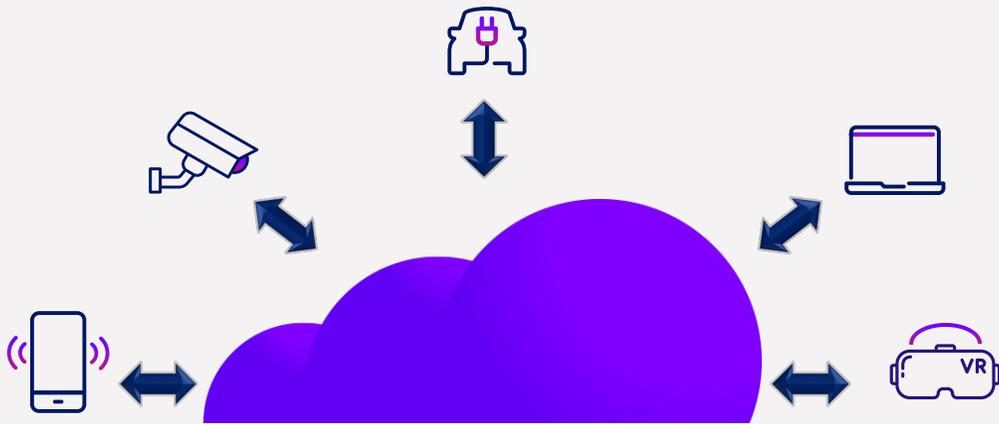
- Mobile
- Automotive
- Data Centers
- Security, Surveillance

AI Semiconductor Market (\$B)



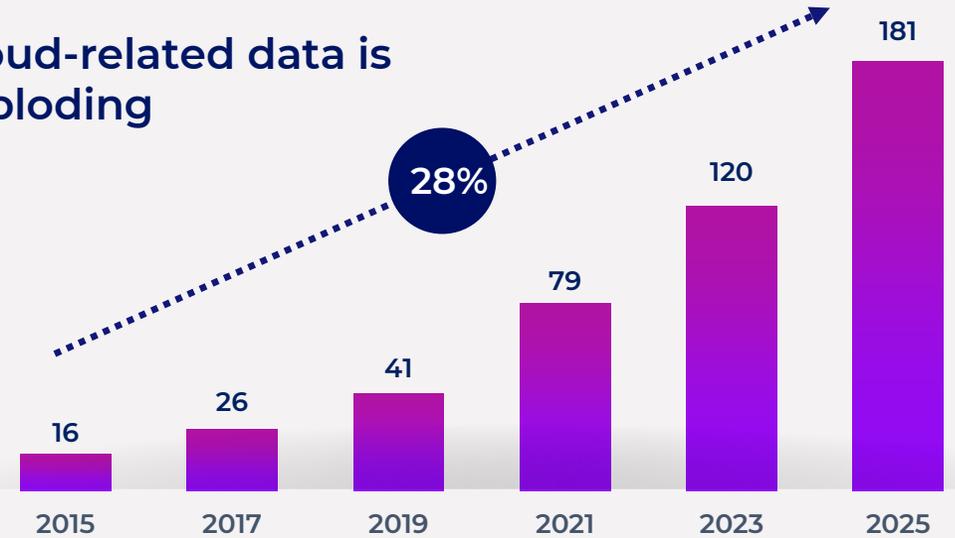
Source: IBM, Gartner

Cloud: the Backbone of a Data-Based World



IoT connectivity will drive double-digit growth in cloud-related semiconductors

Cloud-related data is exploding



Cloud semiconductor market expected to follow



A Secular Growth Market

Semiconductor Grows with Every Computing Revolution



Drivers for Intensified Capital and Equipment Spending

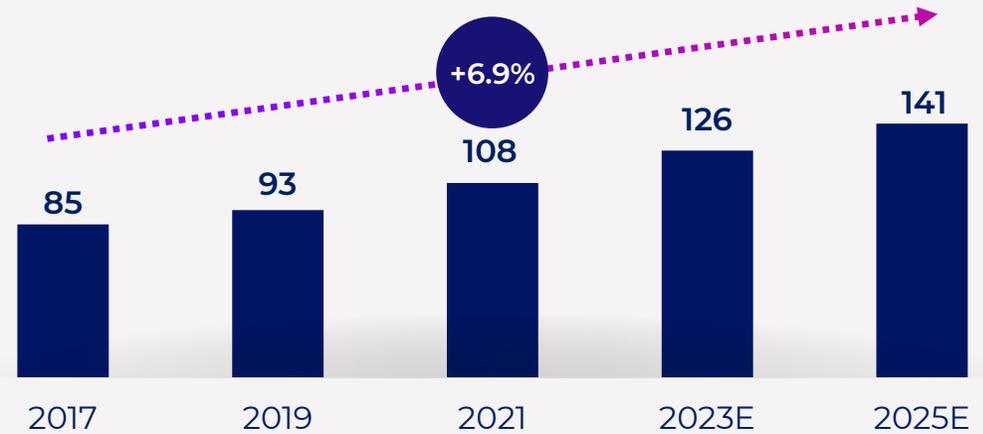
Increase in Advanced Processor Chip Size

Driving Need for More Wafer Capacity

Shift to Parallel Processing chips causes an increase in chip size:

- Data Center CPU (2X) and GPU (50%)
- PC/Notebooks CPU (2-3x)

Global Annual IC Wafer Capacity (M)
(300mm Equivalents)



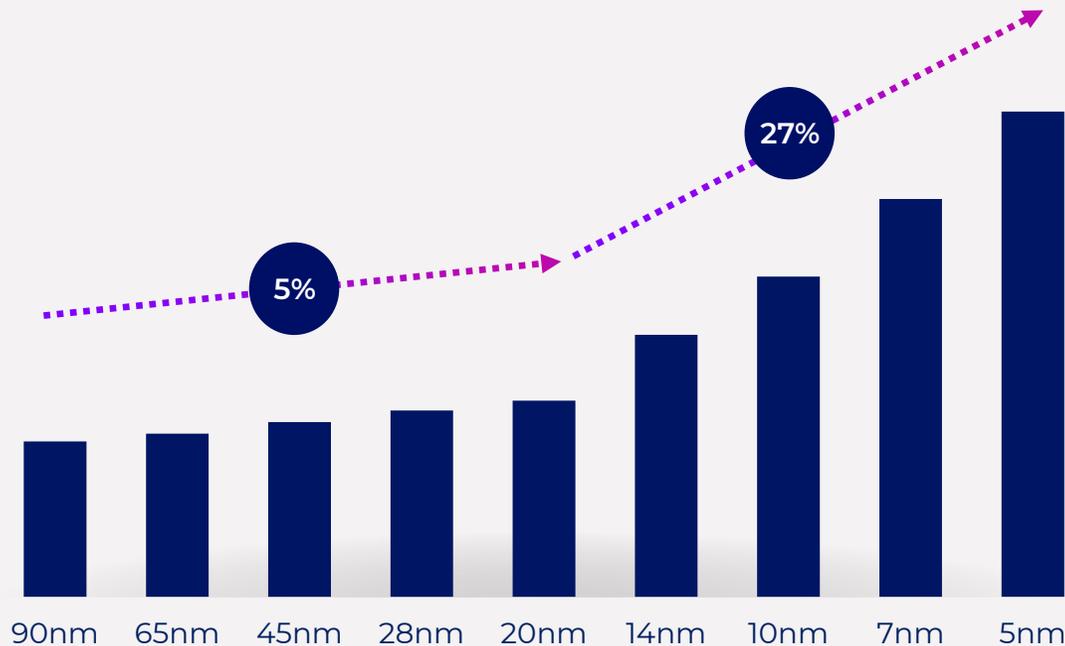
X2 & X3 the number of wafers needed to meet market demand



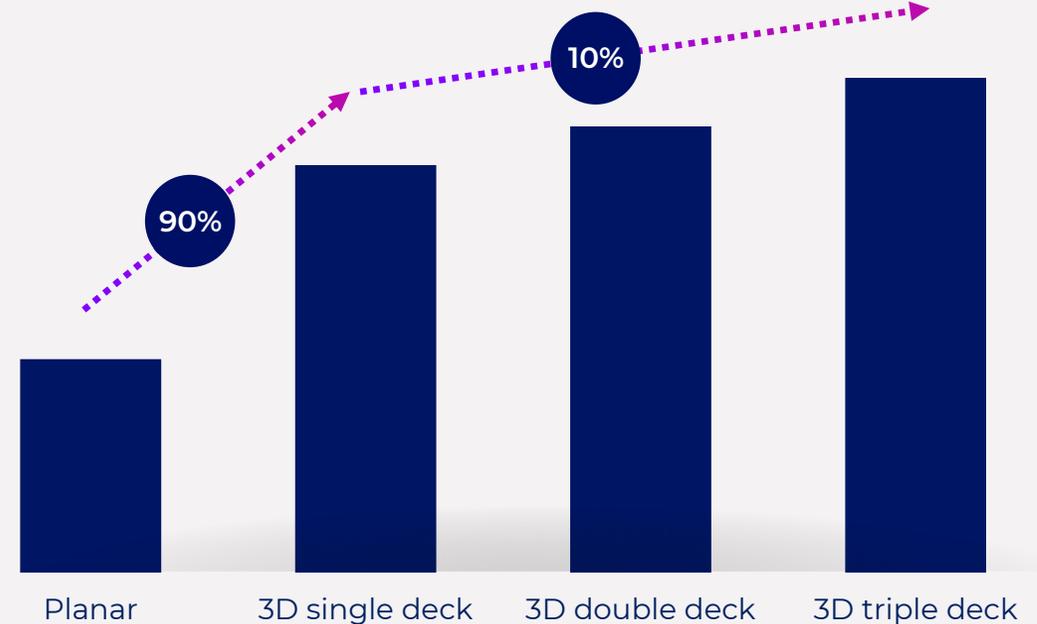
More Process Steps

Driven by Increased Complexity in Advanced Logic and 3D Memory

Process Steps by Node - Logic

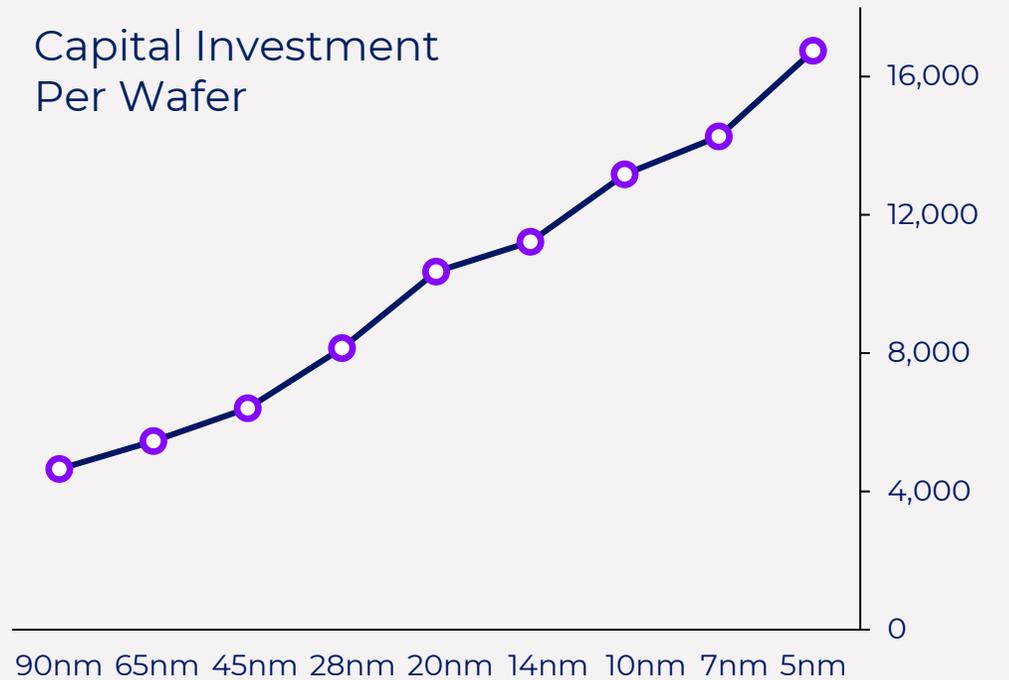
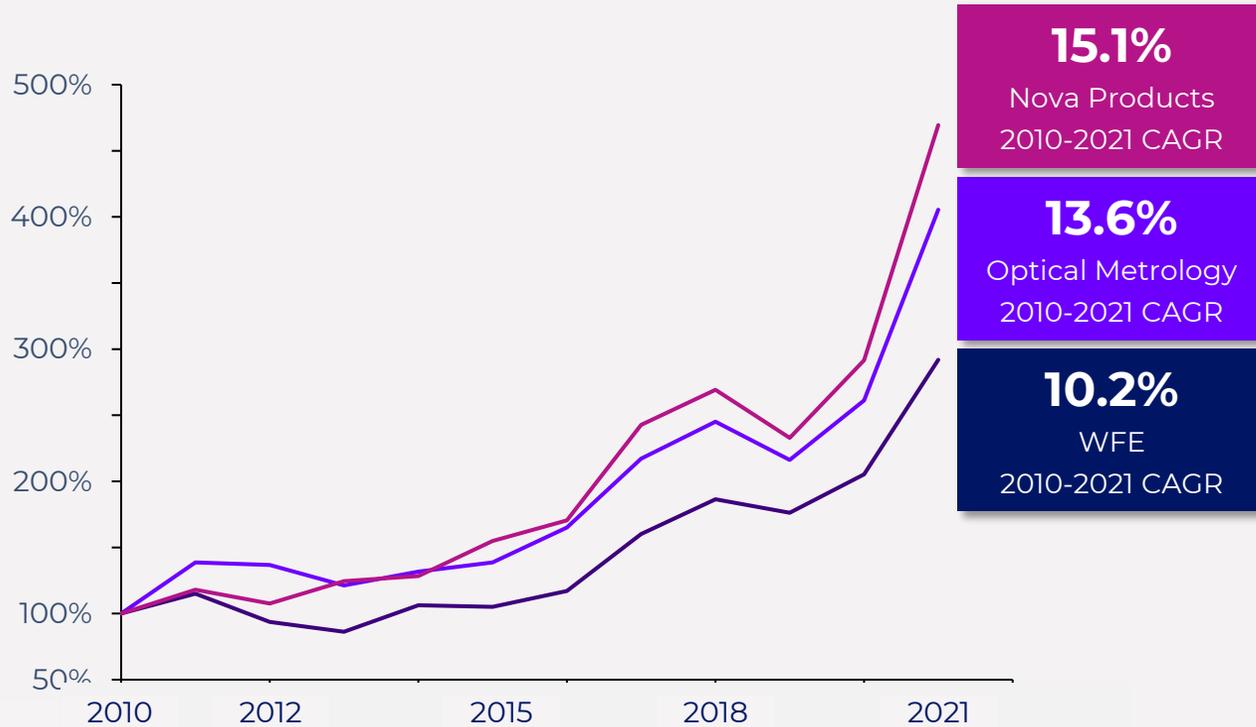


Process Steps by Node - NAND



Capital Investment Intensity

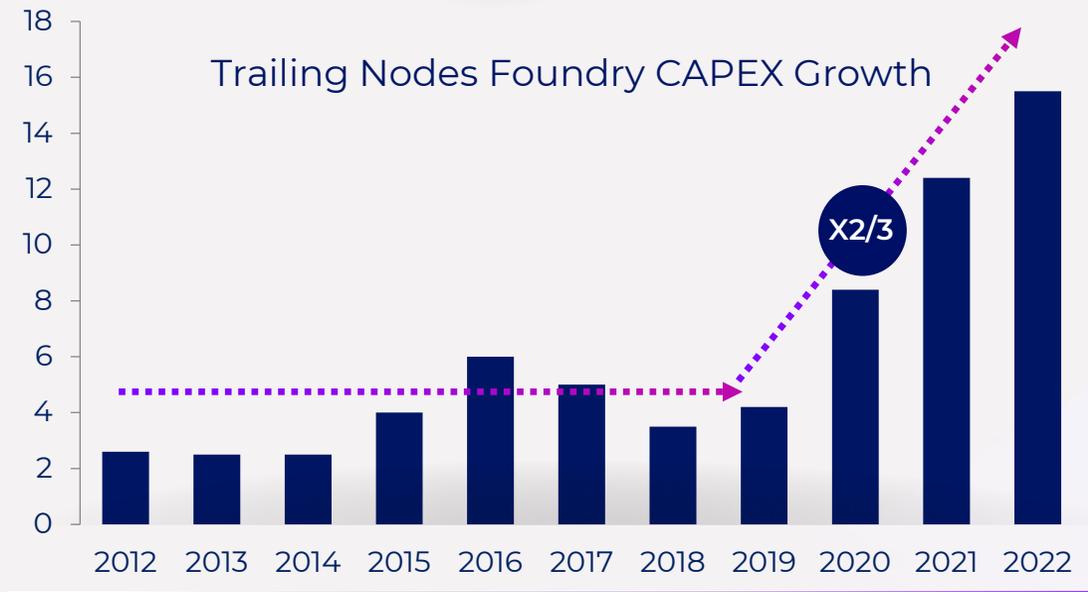
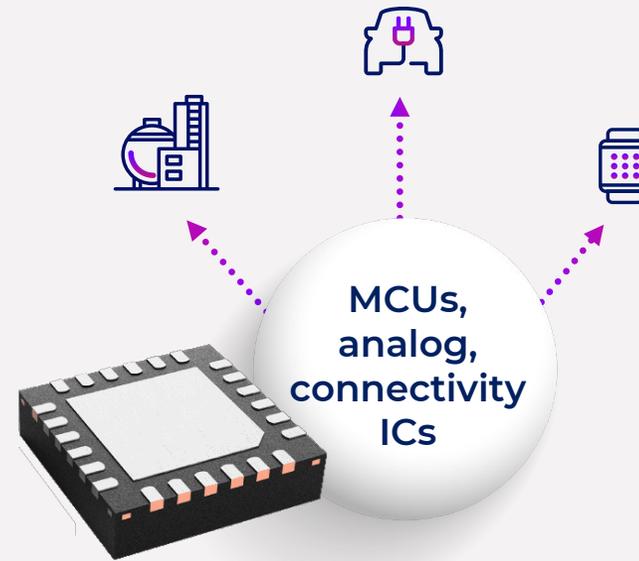
Rising Complexity in Advanced Nodes,
Drives Increase in Capital Investment per Wafer



Trailing Edge Investment

Boosting CAPEX on Top of Leading Edge

- Driven by investment in IoT, sensors for multiple vertical markets
- Trend to continue in coming years with the transition to 4th Tectonic shift in computing
- Driven by leading foundries worldwide



Source: Jefferies, Texas Instruments

Advanced Packaging

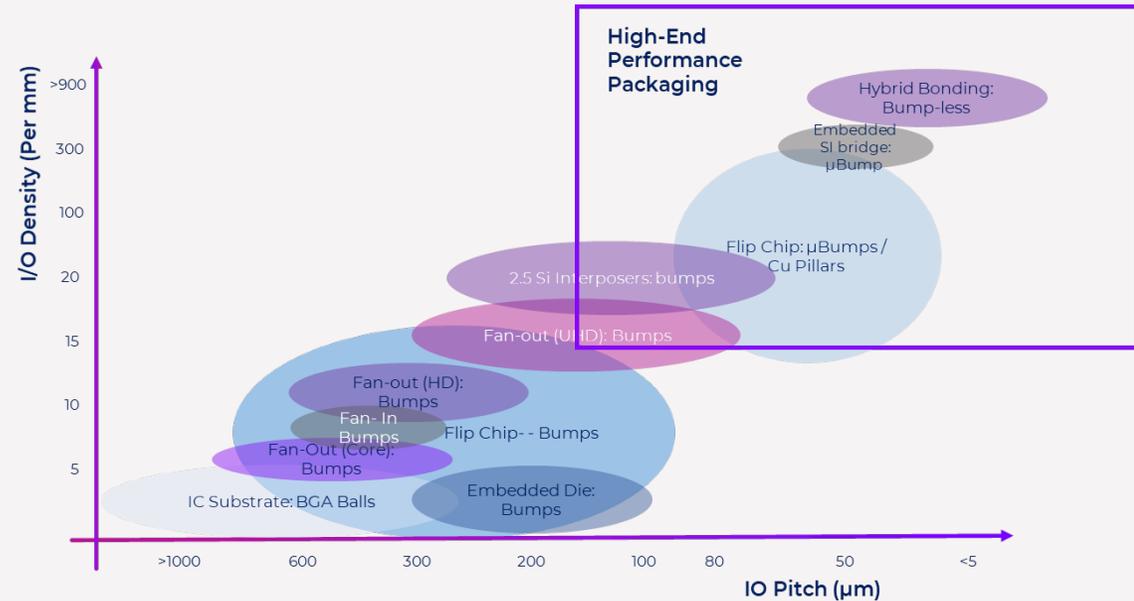
Industry Evolving to FC/FO and 3D Packages with Higher I/O Density and Enhanced Performance

Hybrid Bonding enables near monolithic performance

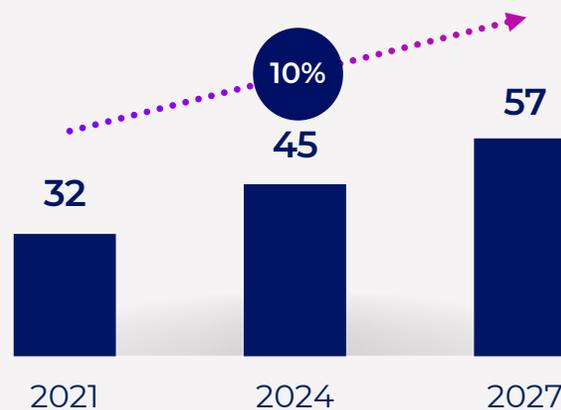
HPP - 19% CAGR, 70% of CAPEX

Investment Transition to IDMs/Foundries

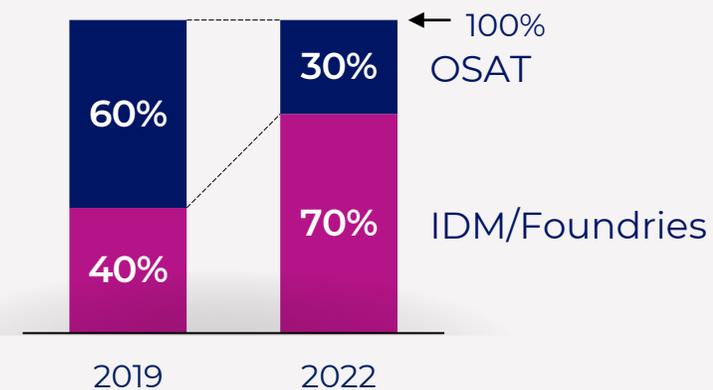
Production and PC becoming similar to FE Fabs



Advanced Packaging Revenue [\$B]

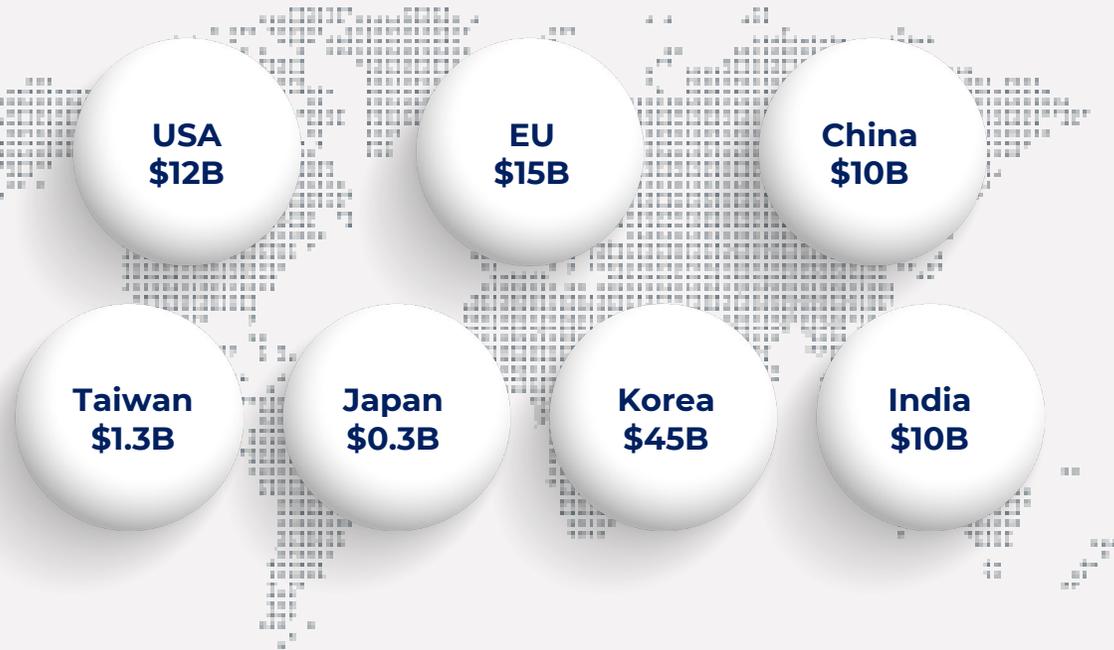


CAPEX Breakdown Trend



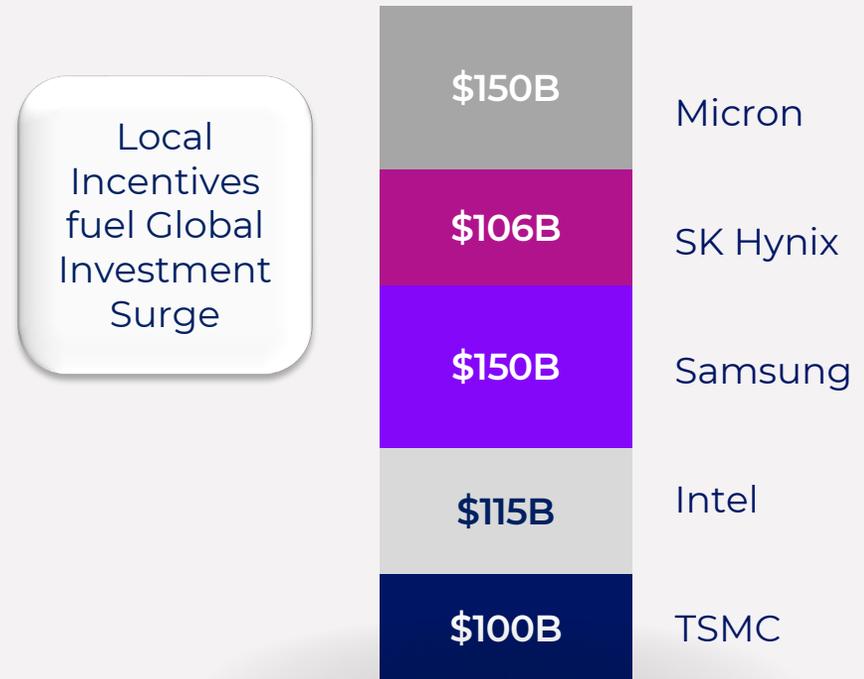
Deglobalization

Incentivizing Semiconductor Investments
\$84B Annually



CAPEX Surge

Top 5 Manufactures:
\$109B Annually



Annualized CAPEX Plans

Differentiated Portfolio

Critical Dimensions

Integrated Metrology
Normal & Multi-Channel



Standalone Metrology



Spectral
Interferometry



Inline
SIMS



Inline
Raman



Materials

Inline
X-Ray



Chemistry

Front End
Chemistry Analysis



Back End
Chemistry Analysis



Backend
Chemistry
Replenishment



Physical
Modeling



Machine
Learning



Big Data
Management

Product Strategy

Elements of Growth



Summary

Nova \$1 Billion Engines and Drivers in Place

Market Drivers

- Healthy market in Nova 1 billion plan horizon
- Driven by Multiple demand catalysts
- Secular semiconductor market growth

Capital Investments

- Wafer capacity demand increase
- Complexity driving rise in CAPEX for leading-edge
- Metrology intensity growing faster than WFE
- Investment in Trailing edge and packaging boots CAPEX
- Semi deglobalization

Nova Portfolio

- Unique portfolio
- Markets diversification
- Disruptive technology
- Innovation in HW and SW algo
- New technologies
- M&A



Thank You
