



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

## Synopsys Cautionary Statement Regarding Forward Looking Statements

This presentation contains certain forward-looking statements within the meaning of the federal securities laws with respect to the proposed transaction between Synopsys and Ansys, including, but not limited to, statements regarding the proposed transaction; the anticipated market demand and outlook, products and business lines of Synopsys, Ansys and the combined company, and the benefits of and cost and revenue synergies from the proposed transaction to Synopsys; combined company financial information; long-term leverage and debt paydown targets; short-term and long-term financial targets of Synopsys, Ansys and the combined company; Synopsys' expectations and objectives; strategies related to Synopsys' and Ansys' products, technology and services; market, software, opportunities, strategies and technological trends and their potential impacts on total addressable markets, products and business lines, such as artificial intelligence; customer demand and market expansion of each of Synopsys and Ansys and the combined company; Synopsys' planned product releases and capabilities; industry growth rates; the current and projected total addressable markets of Synopsys and certain of its segments, Ansys and the combined company; and Synopsys' plans to divest its Software Integrity Group ("SIG") segment. These forward-looking statements generally are identified by the words "believe," "project," "expect," "anticipate," "estimate," "intend," "strategy," "future," "opportunity," "plan," "may," "should," "will," "would," "will be," "will continue," "will likely result," and similar expressions or the negatives of these words or other comparable terminology to convey uncertainty of future events or outcomes. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties.

Many risks, uncertainties and other factors could cause actual future events to differ materially from any future results, performance or achievements expressed or implied by the forward-looking statements, including, but not limited to: (i) the completion of the proposed transaction on anticipated terms and timing, anticipated tax treatment and unforeseen liabilities, future capital expenditures, revenues, expenses, earnings, synergies, economic performance, indebtedness, financial condition, losses, pricing trends, future prospects, credit ratings, business and management strategies which may adversely affect each of Synopsys' and Ansys' business, financial condition, operating results and the price of their common stock, (ii) the failure to satisfy the conditions to the consummation of the proposed transaction, including the adoption of the merger agreement by the stockholders of Ansys and the receipt of certain governmental and regulatory approvals on the terms expected, in a timely manner, or at all, (iii) the risk that such regulatory approvals may result in the imposition of conditions that could adversely affect, following completion of the proposed transaction (if completed), the combined company or the expected benefits of the proposed transaction (including as noted in any forward-looking financial information), (iv) uncertainties as to access to available financing (including any future refinancing of Ansys' or the combined company's debt) to consummate the proposed transaction upon acceptable terms and on a timely basis or at all, (v) the occurrence of any event, change or other circumstance that could give rise to the termination of the merger agreement, (vi) the effect of the announcement or pendency of the proposed transaction on Ansys' or Synopsys' business relationships, competition, business, financial condition, and operating results, (vii) risks that the proposed transaction disrupts current plans and operations of Ansys or Synopsys and the ability of Ansys or Synopsys to retain and hire key personnel, (viii) risks related to diverting either management team's attention from ongoing business operations of Ansys or Synopsys, (ix) the outcome of any legal proceedings that may be instituted against Ansys or Synopsys related to the merger agreement or the proposed transaction, (x) the ability of Synopsys to successfully integrate Ansys' operations and product lines, (xi) the ability of Synopsys to implement its plans, forecasts, expected financial performance and other expectations with respect to Ansys' business or the combined business after the completion of the proposed mergers and realize the benefits expected from the proposed transaction (if completed) as well as manage the scope and size of the combined company, (xii) the ability of Synopsys to manage additional debt and debt covenants as well as successfully de-lever following the proposed transaction and the outcome of any strategic review and any resulting proposed transactions, (xiii) risks associated with third party contracts containing consent and/or other provisions that may be triggered by the proposed transaction, (xiv) uncertainty in the macroeconomic environment and its potential impact on the semiconductor and electronics industries, (xv) uncertainty in the growth of the semiconductor, electronics and artificial intelligence industries, (xvi) the highly competitive industries Synopsys and Ansys operate in, (xvii) actions by the U.S. or foreign governments, such as the imposition of additional export restrictions or tariffs, (xviii) consolidation among Synopsys' customers and within the industries in which Synopsys operates, as well as Synopsys' dependence on a relatively small number of large customers, (xix) the evolving legal, regulatory and tax regimes under which Ansys and Synopsys operate and (xx) restrictions during the pendency of the proposed transaction that may impact Ansys' or Synopsys' ability to pursue certain business opportunities or strategic transactions. The foregoing list of risks, uncertainties and factors is not exhaustive. Unlisted factors may present significant additional obstacles to the realization of forward-looking statements.

You should carefully consider the foregoing factors and the other risks and uncertainties that affect the businesses of Synopsys and Ansys described in the "Risk Factors" section of their respective Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and other documents filed by either of them from time to time with the SEC, including Synopsys' registration statement on Form S-4 (File No. 333-277912) with the SEC on March 14, 2024. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. All forward-looking statements by their nature address matters that involve risks and uncertainties, many of which are beyond Synopsys' and Ansys' control, and are not guarantees of future results. Readers are cautioned not to put undue reliance on forward-looking statements, and Synopsys and Ansys assume no obligation and do not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise, unless required by law. Neither Synopsys nor Ansys gives any assurance that either Synopsys or Ansys will achieve its expectations.

# Ansys Cautionary Statement Regarding Forward-Looking Statements

This presentation contains certain “forward-looking statements” within the meaning of the federal securities laws, including Section 27A of the U.S. Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements are based on Ansys’ current expectations, estimates and projections about the expected date of closing of the proposed transaction and the potential benefits thereof, its business and industry, management’s beliefs and certain assumptions made by Ansys and Synopsys, all of which are subject to change. In this context, forward-looking statements often address expected future business and financial performance and financial condition, and often contain words such as “expect,” “anticipate,” “intend,” “plan,” “believe,” “could,” “seek,” “see,” “will,” “may,” “would,” “might,” “potentially,” “estimate,” “continue,” “expect,” “target,” similar expressions or the negatives of these words or other comparable terminology that convey uncertainty of future events or outcomes. All forward-looking statements by their nature address matters that involve risks and uncertainties, many of which are beyond our control, and are not guarantees of future results, such as statements about the consummation of the proposed transaction and the anticipated benefits thereof. These and other forward-looking statements, including the failure to consummate the proposed transaction or to make or take any filing or other action required to consummate the transaction on a timely matter or at all, are not guarantees of future results and are subject to risks, uncertainties and assumptions that could cause actual results to differ materially from those expressed in any forward-looking statements. Accordingly, there are or will be important factors that could cause actual results to differ materially from those indicated in such statements and, therefore, you should not place undue reliance on any such statements and caution must be exercised in relying on forward-looking statements. Important risk factors that may cause such a difference include, but are not limited to: (i) the completion of the proposed transaction on anticipated terms and timing, including obtaining shareholder and regulatory approvals, anticipated tax treatment, unforeseen liabilities, future capital expenditures, revenues, expenses, earnings, synergies, economic performance, indebtedness, financial condition, losses, future prospects, business and management strategies for the management, expansion and growth of Ansys’ and Synopsys’ businesses and other conditions to the completion of the transaction; (ii) failure to realize the anticipated benefits of the proposed transaction, including as a result of delay in completing the transaction or integrating the businesses of Ansys and Synopsys; (iii) Ansys’ ability to implement its business strategy; (iv) pricing trends, including Ansys’ and Synopsys’ ability to achieve economies of scale; (v) potential litigation relating to the proposed transaction that could be instituted against Ansys, Synopsys or their respective directors; (vi) the risk that disruptions from the proposed transaction will harm Ansys’ or Synopsys’ business, including current plans and operations; (vii) the ability of Ansys or Synopsys to retain and hire key personnel; (viii) potential adverse reactions or changes to business relationships resulting from the announcement or completion of the proposed transaction; (ix) uncertainty as to the long-term value of Synopsys’ common stock; (x) legislative, regulatory and economic developments affecting Ansys’ and Synopsys’ businesses; (xi) general economic and market developments and conditions; (xii) the evolving legal, regulatory and tax regimes under which Ansys and Synopsys operate; (xiii) potential business uncertainty, including changes to existing business relationships, during the pendency of the transaction that could affect Ansys’ or Synopsys’ financial performance; (xiv) restrictions during the pendency of the proposed transaction that may impact Ansys’ or Synopsys’ ability to pursue certain business opportunities or strategic transactions; (xv) unpredictability and severity of catastrophic events, including, but not limited to, acts of terrorism or outbreak of war or hostilities, as well as Ansys’ and Synopsys’ response to any of the aforementioned factors; and (xvi) failure to receive the approval of the stockholders of Ansys. These risks, as well as other risks associated with the proposed transaction, are more fully discussed in the proxy statement/prospectus to be filed with the U.S. Securities and Exchange Commission in connection with the proposed transaction. While the list of factors presented here is, and the list of factors presented in the proxy statement/prospectus will be, considered representative, no such list should be considered to be a complete statement of all potential risks and uncertainties. Unlisted factors may present significant additional obstacles to the realization of forward looking statements. Consequences of material differences in results as compared with those anticipated in the forward-looking statements could include, among other things, business disruption, operational problems, financial loss, legal liability to third parties and similar risks, any of which could have a material adverse effect on Ansys’ or Synopsys’ consolidated financial condition, results of operations, or liquidity. Neither Ansys nor Synopsys assumes any obligation to publicly provide revisions or updates to any forward-looking statements, whether as a result of new information, future developments or otherwise, should circumstances change, except as otherwise required by securities and other applicable laws.

## Important Information and Where to Find It

This presentation relates to a proposed transaction between Synopsys and Ansys. In connection with the proposed transaction, Synopsys filed a preliminary registration statement on Form S-4 (File No. 333-277912) with the SEC on March 14, 2024, that included a prospectus with respect to shares of common stock of Synopsys to be issued in the proposed transaction and a proxy statement of Ansys and is referred to as the proxy statement/prospectus. Each party may also file other documents regarding the proposed transaction with the U.S. Securities and Exchange Commission (the “SEC”). The registration statement has not yet become effective and the proxy statement/prospectus included therein is in preliminary form. This presentation and the information contained herein is not a substitute for the proxy statement/prospectus or registration statement or any other document that Synopsys or Ansys may file with the SEC. The definitive proxy statement/prospectus (if and when available) will be mailed to all Ansys stockholders. **INVESTORS AND SECURITY HOLDERS ARE URGED TO READ THE REGISTRATION STATEMENT, PROXY STATEMENT/PROSPECTUS AND ALL OTHER RELEVANT DOCUMENTS FILED OR THAT WILL BE FILED WITH THE SEC IN CONNECTION WITH THE PROPOSED TRANSACTION, AS WELL AS ANY AMENDMENTS OR SUPPLEMENTS TO THESE DOCUMENTS, CAREFULLY AND IN THEIR ENTIRETY IF AND WHEN THEY BECOME AVAILABLE BECAUSE THEY CONTAIN OR WILL CONTAIN IMPORTANT INFORMATION ABOUT THE PROPOSED TRANSACTION.**

Investors and security holders may obtain free copies of the registration statement, proxy statement/prospectus and all other relevant documents filed or that will be filed with the SEC by Synopsys or Ansys through the website maintained by the SEC at [www.sec.gov](http://www.sec.gov).

The documents filed by Synopsys with the SEC also may be obtained free of charge at Synopsys’ website at <https://investor.synopsys.com/overview/default.aspx> or upon written request to Synopsys at Synopsys, Inc., 675 Almanor Avenue, Sunnyvale, California 94085, Attention: Investor Relations Department. The documents filed by Ansys with the SEC also may be obtained free of charge at Ansys’ website at <https://investors.ansys.com/> or upon written request to [kelsey.debrynn@ansys.com](mailto:kelsey.debrynn@ansys.com).

## Participants in Solicitation

Synopsys, Ansys and their respective directors and executive officers may be deemed to be participants in the solicitation of proxies from Ansys’ stockholders in connection with the proposed transaction. Information about Ansys’ directors and executive officers and their ownership of Ansys’ common stock is set forth in Ansys’ proxy statement for its 2023 Annual Meeting of Shareholders on Schedule 14A filed with the SEC on March 28, 2023. To the extent that holdings of Ansys’ securities have changed since the amounts printed in Ansys’ proxy statement, such changes have been or will be reflected on Statements of Change in Ownership on Form 4 filed with the SEC. Information about Synopsys’ directors and executive officers is set forth in Synopsys’ proxy statement for its 2024 Annual Meeting of Stockholders on Schedule 14A filed with the SEC on February 16, 2024 and Synopsys’ subsequent filings with the SEC. Additional information regarding the direct and indirect interests of those persons and other persons who may be deemed participants in the proposed transaction may be obtained by reading the preliminary proxy statement/prospectus filed on March 14, 2024 by Synopsys and the final version and any other relevant documents that are filed with the SEC relating to the proposed transaction. You may obtain free copies of these documents as described in the preceding paragraph.

## No Offer or Solicitation

This presentation is for informational purposes only and is not intended to and shall not constitute an offer to buy or sell or the solicitation of an offer to buy or sell any securities, or a solicitation of any vote or approval, nor shall there be any sale of securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. No offering of securities shall be made, except by means of a prospectus meeting the requirements of Section 10 of the U.S. Securities Act of 1933, as amended.

## Non-GAAP Financial Information

This presentation contains certain forward looking financial measures that are not in accordance with the U.S. generally accepted accounting principles (“GAAP”). It also includes future estimated ranges for non-GAAP expenses, non-GAAP tax rate, non-GAAP earnings per diluted share and free cash flow.

- Adjusted EBITDA (“Adj. EBITDA”) is calculated as GAAP Operating Income excluding depreciation and amortization, stock compensation, non-qualified deferred compensation plan, acquisition-related costs and restructuring charges
- Free Cash Flow (“FCF”) is calculated as cash provided from operating activities less capital expenditures and capitalization of software development costs
- FCF Margin is calculated as FCF for a period divided by revenue for the same period
- FCF Margin Expansion is calculated as the difference in FCF margins between two periods
- Unlevered Free Cash Flow (“uFCF”) is calculated as Free Cash Flow excluding tax-effected cash net interest
- uFCF Margin is calculated as uFCF for a period divided by revenue for the same period
- Non-GAAP Earnings Per Share (“EPS”) is calculated as GAAP net income excluding amortization of intangible assets, stock compensation, acquisition-related costs, restructuring charges, and legal matters, adjusted for the difference between GAAP and non-GAAP tax rates, divided by fully diluted outstanding shares
- Non-GAAP EPS CAGR is calculated as the average annual growth rate of non-GAAP EPS over a period of time
- Non-GAAP Operating Income is calculated as GAAP Operating Income, excluding amortization of intangible assets, stock compensation, non-qualified deferred compensation plan, acquisition-related costs and restructuring charges
- Non-GAAP Operating Margin is Non-GAAP Operating Income for a period divided by revenue for the same period

Synopsys continues to provide all information required in accordance with GAAP but acknowledges evaluating its ongoing operating results may not be as useful if an investor is limited to reviewing only GAAP financial measures. Synopsys and Ansys present non-GAAP financial measures to provide their investors with an additional tool to evaluate Synopsys’ and Ansys’ respective operating results in a manner that focuses on what Synopsys and Ansys each believe to be their respective core business operations and what Synopsys and Ansys each use to evaluate their respective business operations and for internal budgeting and resource allocation purposes. These non-GAAP measures may be different from non-GAAP measures used by other companies. In addition, these non-GAAP measures are not based on any comprehensive set of accounting rules or principles, and management exercises judgment in determining which items should be excluded in the calculation of non-GAAP measures. The presentation of non-GAAP financial information is not meant to be considered in isolation from, as superior to or as a substitute for the directly comparable financial measures prepared in accordance with GAAP. These non-GAAP financial measures are meant to supplement, and be viewed in conjunction with, the corresponding GAAP financial measures.

When possible with respect to non-GAAP financial measures presented with respect to historical periods, Synopsys provides a reconciliation of its historic non-GAAP financial measures to its most closely applicable GAAP financial measures in the documents filed with the SEC. Synopsys is unable to provide a reconciliation of certain non-GAAP projections, targets and guidance measures to the corresponding GAAP measures on a forward-looking basis because doing so would not be possible without unreasonable effort due to, among other things, the potential variability and limited visibility of the excluded items and expectations as to the financial of performance of Synopsys upon the completion of the proposed transaction. For the same reasons, Synopsys is unable to address the probable significance of the unavailable information. Synopsys is presenting forward looking non-GAAP financial measures for illustrative purposes and may not report on this basis going forward.

Combined company measures for historical periods are based on combining Synopsys’ historical financial results and Ansys’ historical financial results, as applicable, without pro forma adjustments and are included for illustrative purposes in order to provide investors with estimates of what the combined company results could have been. Combined company estimates are not pro forma financial measures, are not prepared in accordance with Regulation S-X under the U.S. Securities Act of 1933, as amended, and are not necessarily indicative of the results that actually would have been realized had Synopsys and Ansys been a single entity during the relevant periods.

### Other Key Business Metrics

Annual Contract Value (“ACV”) is a key performance metric for Ansys and is useful to investors in assessing the strength and trajectory of the business. ACV is a supplemental metric to help evaluate the annual performance of the business. Over the life of the contract, ACV equals the total value realized from a customer. ACV is not impacted by the timing of license revenue recognition. ACV is used by Ansys’ management in financial and operational decision-making and in setting sales targets used for compensation. ACV is not a replacement for, and should be viewed independently of, GAAP revenue and deferred revenue as ACV is a performance metric and is not intended to be combined with any of these items. There is no GAAP measure comparable to ACV.

ACV is composed of the following: 1) the annualized value of maintenance and subscription lease contracts with start dates or anniversary dates during the period, plus; 2) the value of perpetual license contracts with start dates during the period, plus; 3) the annualized value of fixed-term services contracts with start dates or anniversary dates during the period, plus; 4) the value of work performed during the period on fixed-deliverable services contracts.



# Welcome Synopsys Investor Day 2024

Trey Campbell  
*SVP, Investor Relations*

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# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

# Today's Agenda

**SYNOPSYS®**

Seizing Unprecedented Opportunity

**Sassine Ghazi**

*President and CEO*

Unleashing Growth in EDA with Pioneering Innovations

**Shankar Krishnamoorthy**

*GM and Corp Staff, EDA Group*

Accelerating Systems Strategy

**Ravi Subramanian**

*Ph.D., General Manager, Systems Design Group*

Synopsys Design IP

**John Koeter**

*Senior VP, Product Management and Strategy*

Financial Overview

**Shelagh Glaser**

*Chief Financial Officer*

Q&A

**Sassine Ghazi & Shelagh Glaser**

*President and CEO | Chief Financial Officer*



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

# Seizing Unprecedented Opportunity

## Synopsys Investor Day 2024

Sassine Ghazi

*President and Chief Executive Officer*

**SYNOPSYS<sup>®</sup>**

Our Technology, Your Innovation<sup>™</sup>

# Proven Track Record of Powering Innovation and Resilient, Industry-Leading Growth

# Empowering Customers to Ignite Tomorrow's Technology

## PURPOSE

To power innovation today  
that ignites the ingenuity  
of tomorrow

## MISSION

Empower  
technology innovators  
everywhere

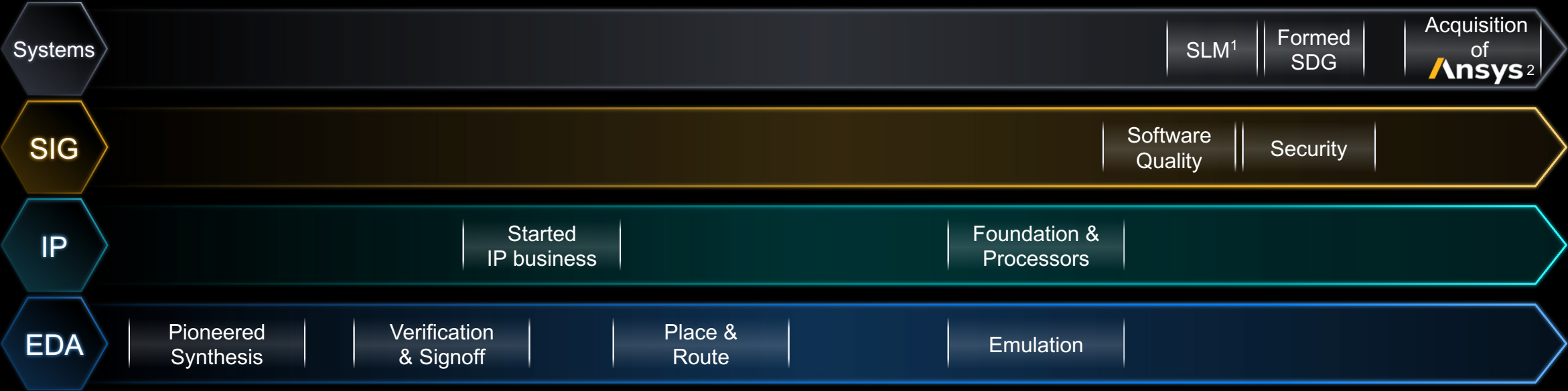
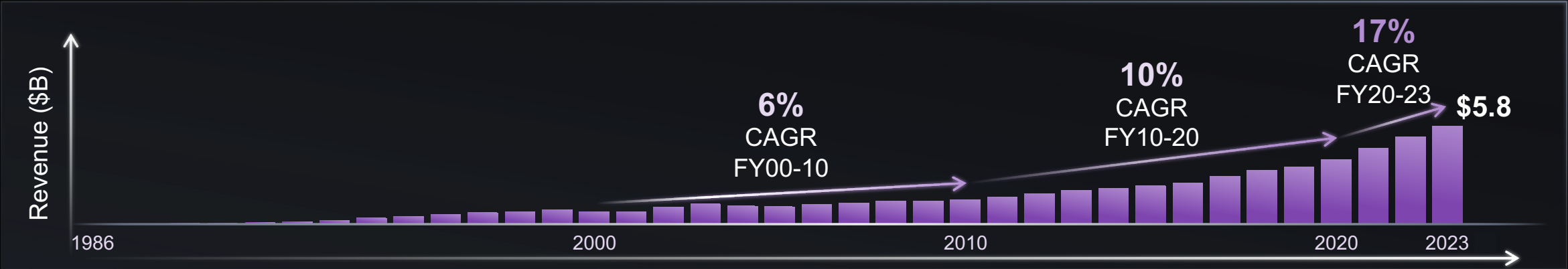
## VALUE PROPOSITION

We maximize customers'  
R&D capabilities and  
multiply their productivity

# SYNOPSYS®

Our Technology, **Your Innovation™**

# 37-Year History of Pioneering New Businesses to Deliver Sustained Long-Term Growth



1. "SLM" stands for "Silicon Lifecycle Management"  
2. Pending transaction close.

# Leading Global Software and Semiconductor Company

## Public Companies Criteria<sup>1</sup>

\$5B+ LTM Revenue

~10%+ NTM Growth

35%+ CY24 Non-GAAP  
Operating Margin

*Synopsys has a Rare Combination of  
Scale, Growth and Profitability*

### SEMICONDUCTOR

**SYNOPSYS®**


 **BROADCOM®**

 **NVIDIA.**

 **tsmc**

### SOFTWARE

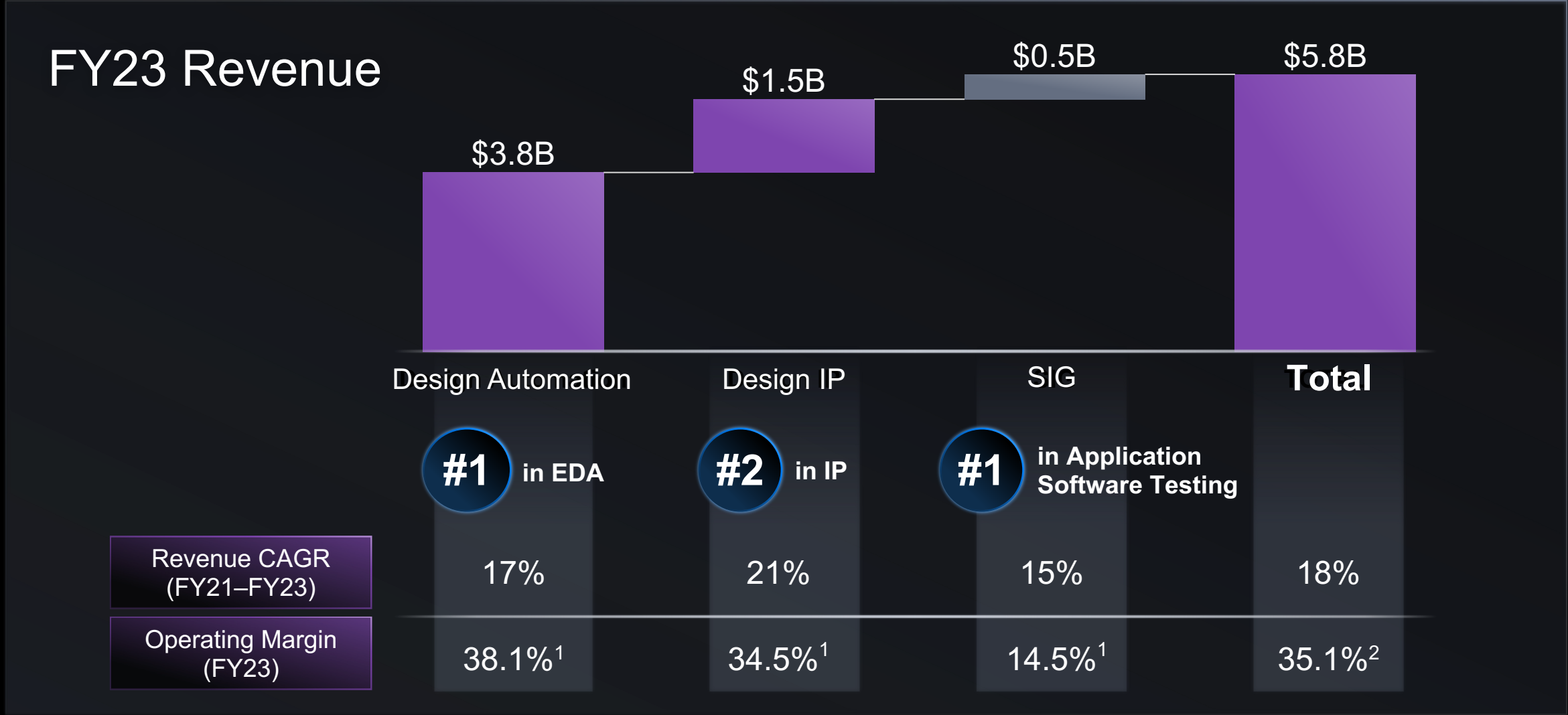
**SYNOPSYS®**

 **Adobe**

 **Microsoft**

**INTUIT**

# A High-Quality Business Portfolio



# Delivering Outstanding Shareholder Value Creation

## Strategic Priorities

## FY20 – FY23 Results

## 3-Year TSR Performance<sup>2</sup>

### Technology and Innovation Leadership

- 3nm/2nm leadership across EDA stack
- Enabling the multi-die industry transition
- Pioneering AI and Cloud in EDA
- Next-gen IP across all leading foundries
- Leader in hardware assisted verification

### Industry-Leading Growth

- 17% revenue CAGR (>300bps above Synopsys' TAM CAGR)

### Margin Expansion<sup>1</sup>

- ~700bps non-GAAP operating margin increase
- 26% non-GAAP EPS CAGR



**SYNOPSYS®**

Magnificent 7<sup>3</sup>

140%

SOXX

67%

S&P 500

30%

NASDAQ

20%

**Synopsys outperformed  
6 out of 7 “Magnificent 7”<sup>3</sup>  
stocks over the last three years**

Sources: ESDA, Ipnest, Synopsys Financials, publicly disclosed financials for “Magnificent 7” and other indices

1. See appendix for a reconciliation of non-GAAP operating margin expansion and non-GAAP EPS CAGR to their most directly comparable measures reported under GAAP as well as information regarding how these measures were calculated

2. 3-Year Total Shareholder Return (TSR) from March 12, 2021 to March 15, 2024

3. “Magnificent 7” includes Alphabet, Amazon, Apple, Meta, Microsoft, NVIDIA and Tesla

# Unprecedented Market Opportunity Driven by Structural Trends

# The era of **PERVASIVE INTELLIGENCE**

## **Artificial Intelligence**

Exponential productivity  
and efficiency gains

But pushing the energy  
and compute limits

## **Silicon Proliferation**

More silicon content  
everywhere

But productivity and  
talent gaps

## **Software-Defined Systems**

New applications,  
new methodologies

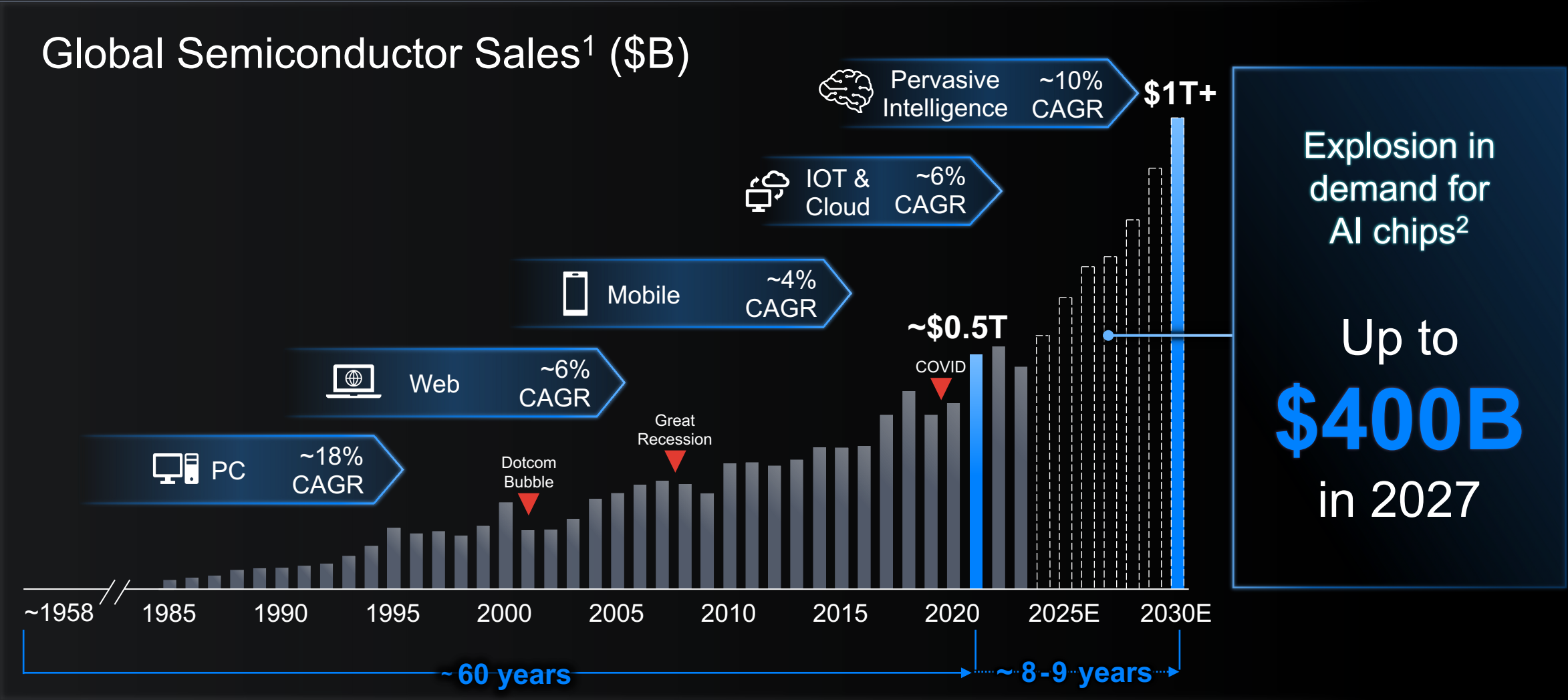
But increased complexity,  
enablement of new developers

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## **Silicon to Systems Design Solutions**

New design paradigm – solving challenges and addressing complexity

# Sharp Acceleration in Semiconductor Demand



# Advanced Chip Requirements Face Multiple Constraints

## Exponentially Increasing Demands...

Increasing  
Compute  
Performance



Data Center



Edge

Improved  
Energy  
Efficiency



Chip Power  
Consumption



Global  
Computing  
Capacity

## ...Are Constrained by Technology and Costs



Moore's  
Law



Memory &  
I/O 'Walls'



Chip  
Design

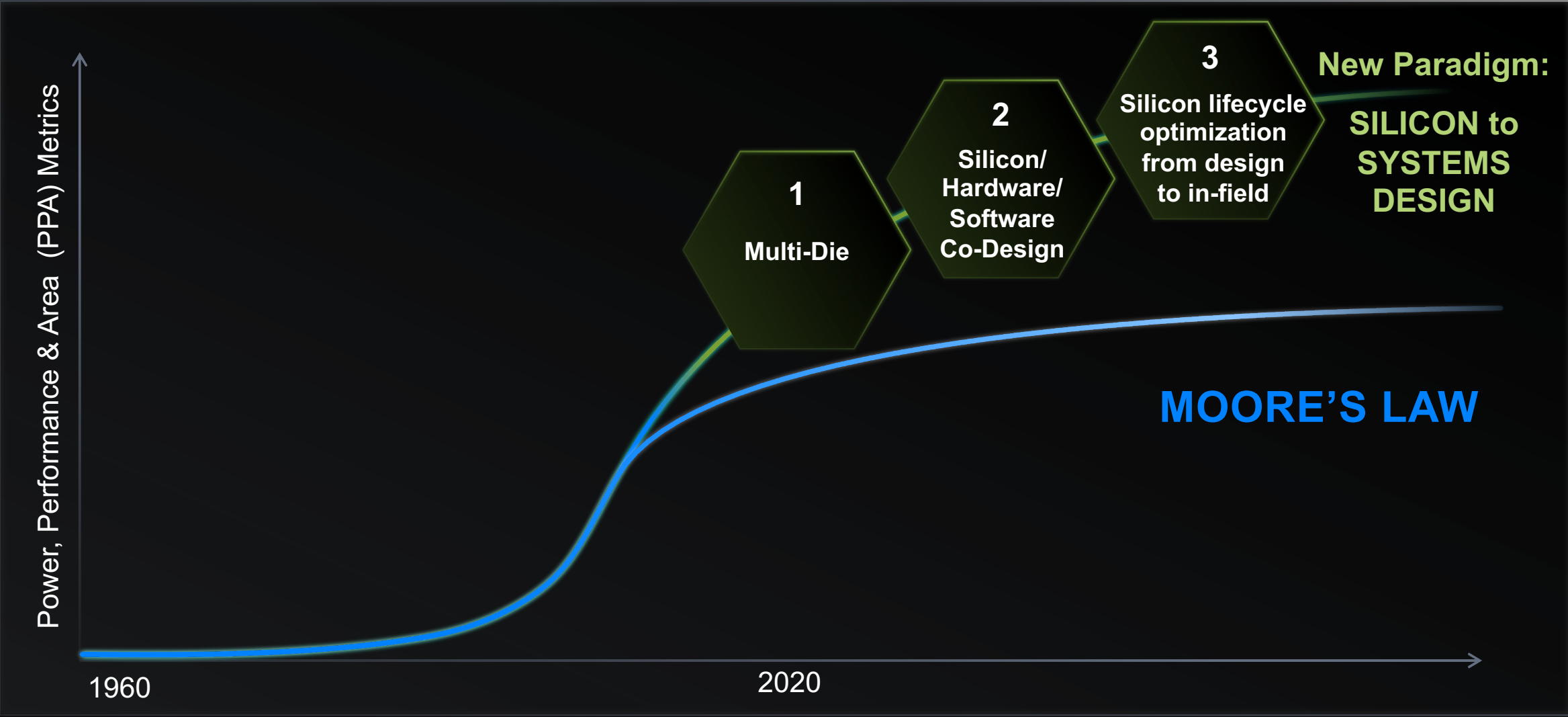


Chip  
Manufacturing

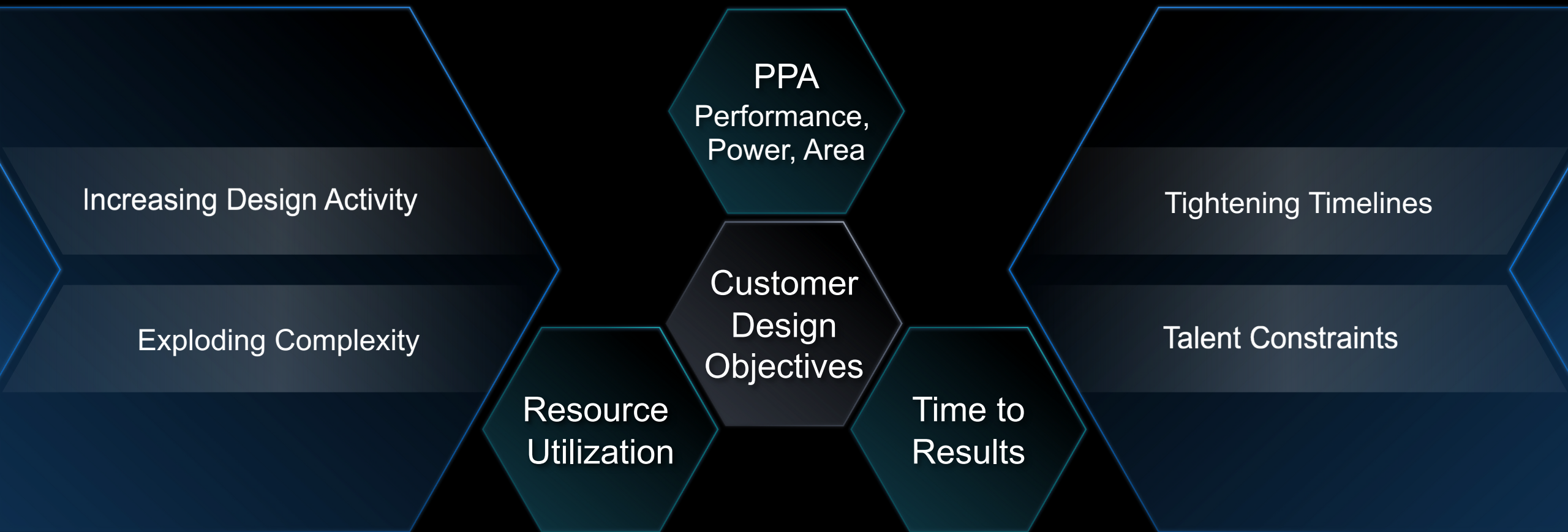
Slowing  
of Classic  
Semis "Laws"

Skyrocketing  
Costs

# New Design Paradigm Needed to Meet Compute Demand



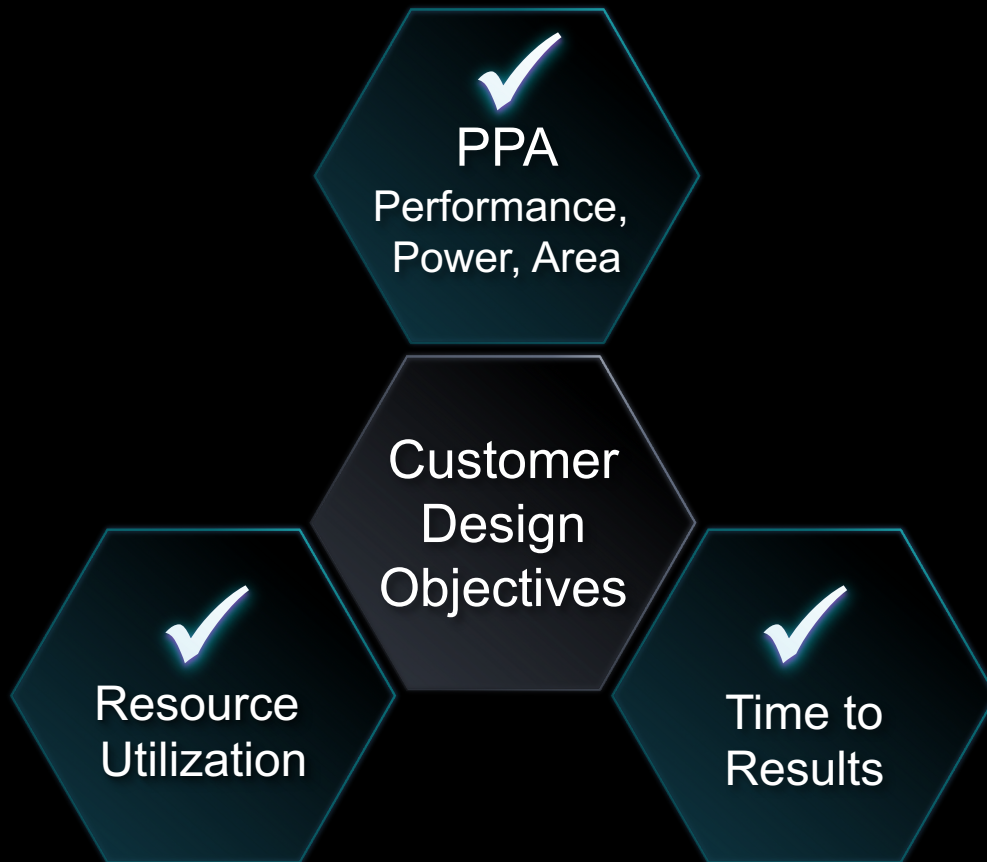
# Silicon to Systems Design Creates New Challenges



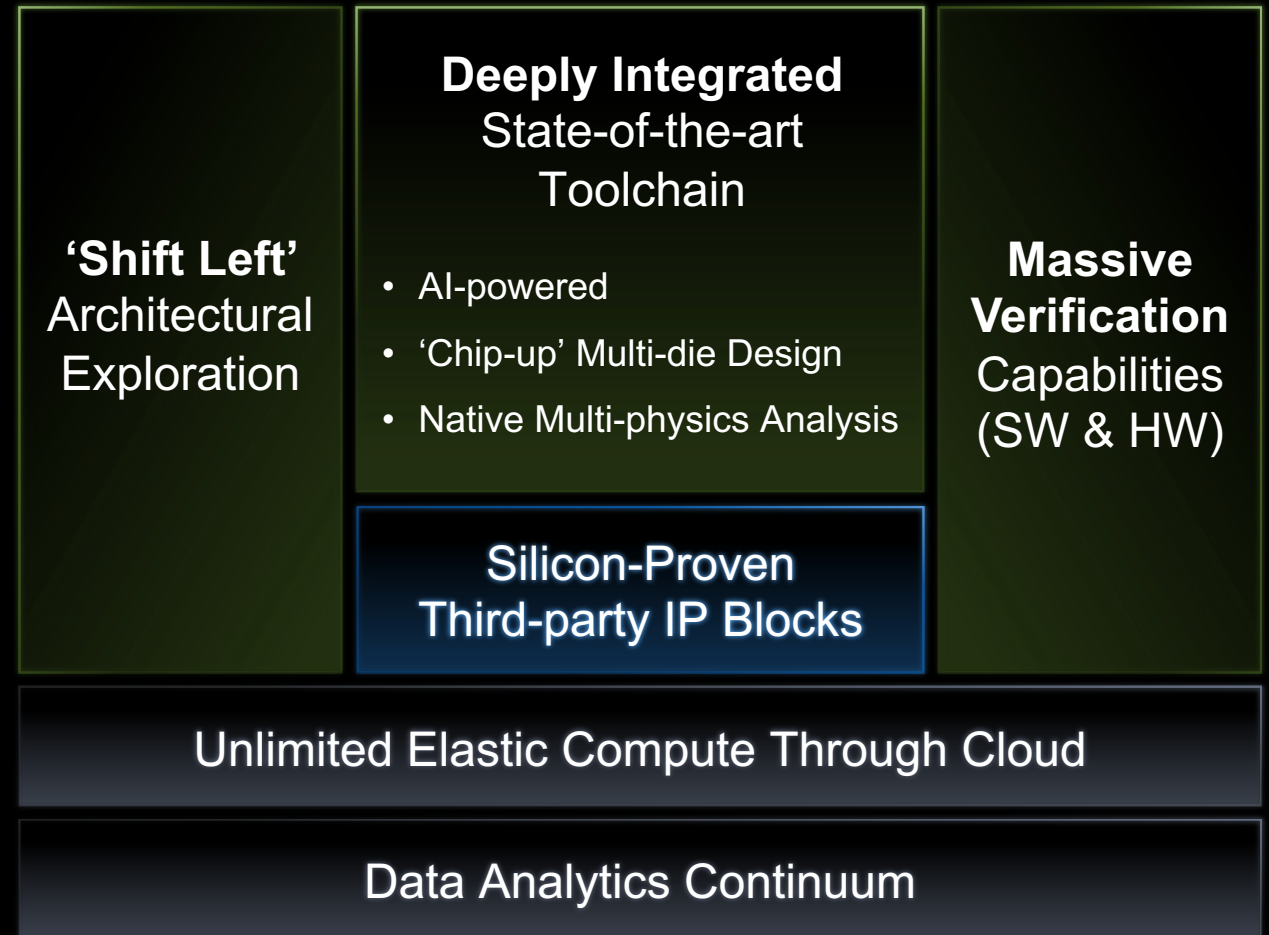
Optimizing across all three vectors

# EDA & IP Innovation Essential to Move the Industry Forward

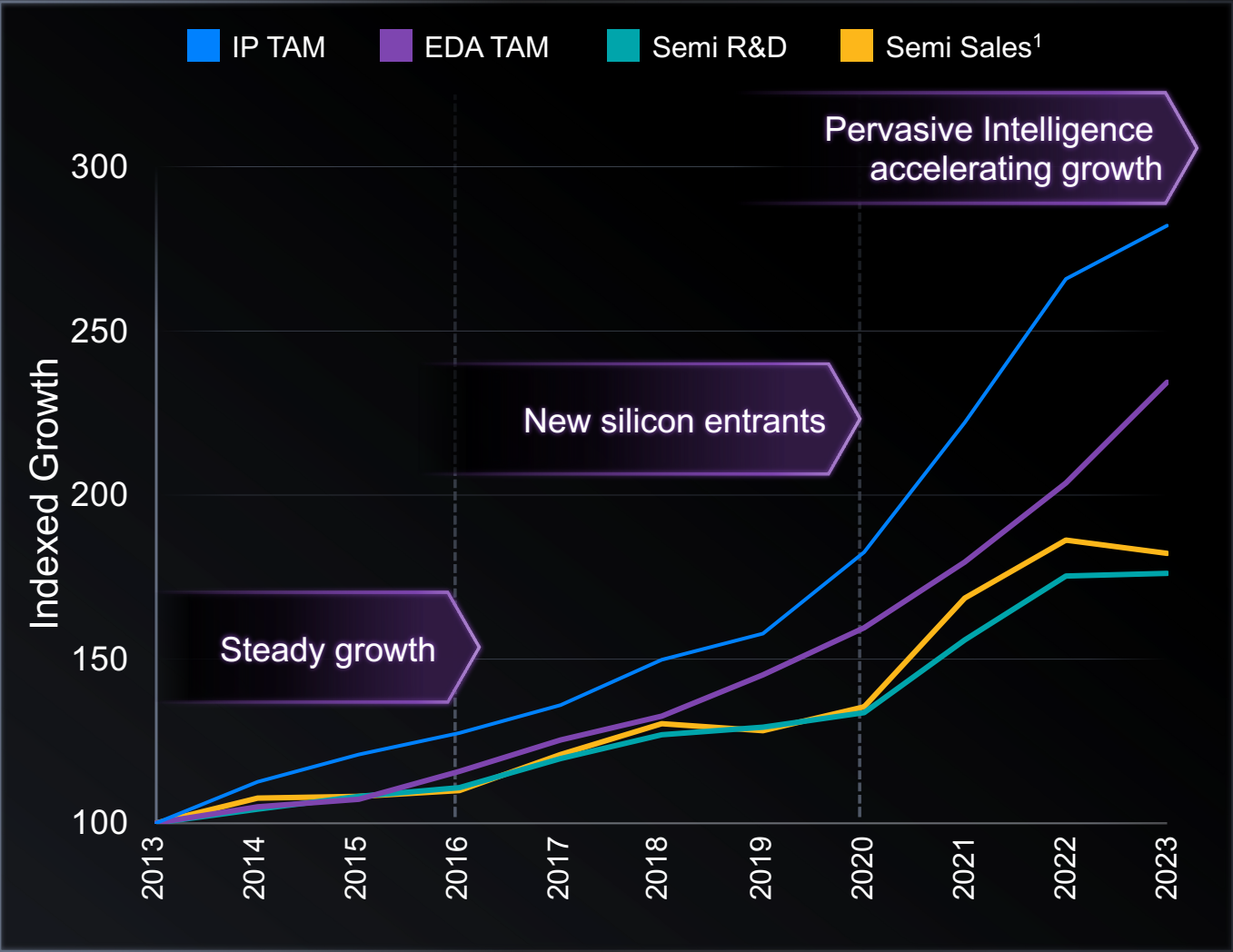
...to Address Customer Needs



Key Elements of Modern Advanced Chip Design...

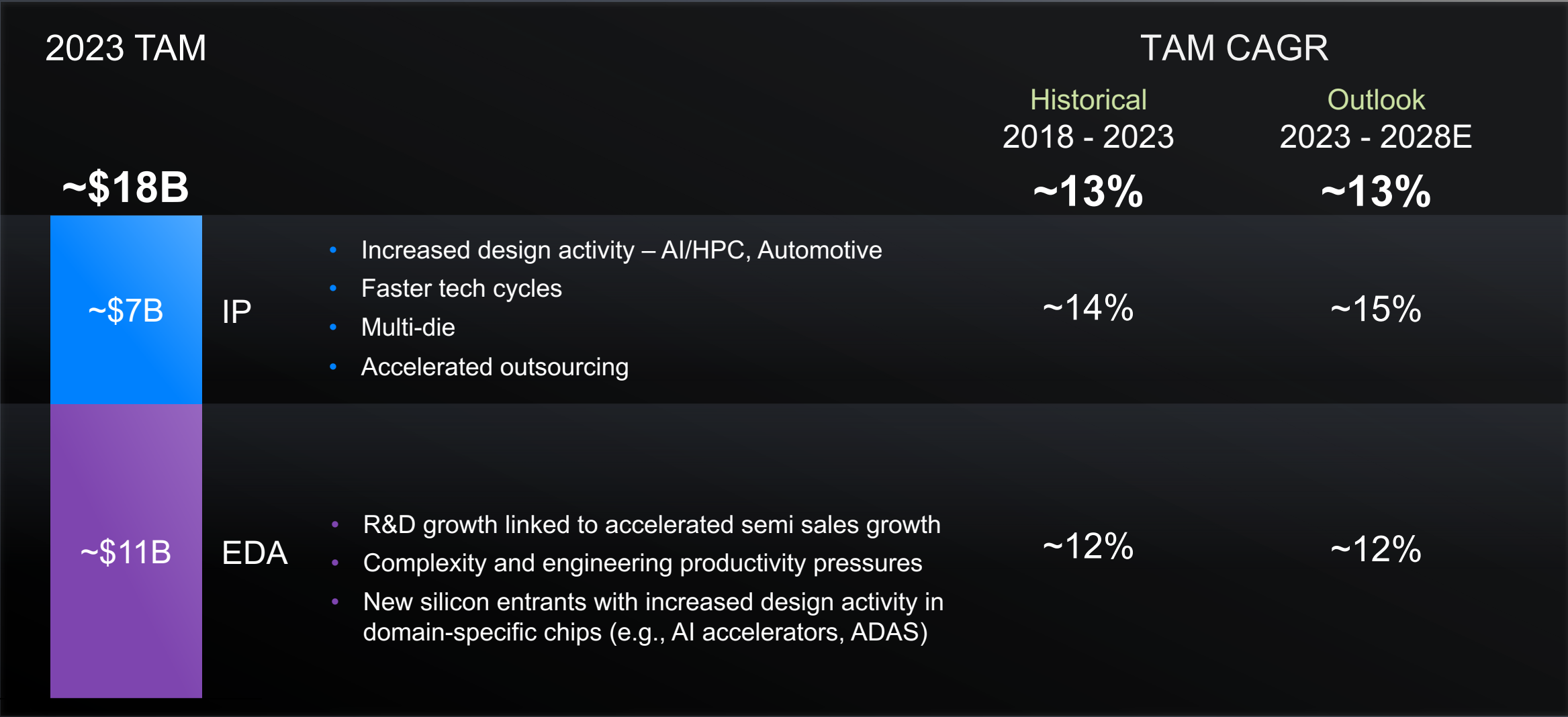


# EDA and IP Growth Outpacing Semiconductor R&D



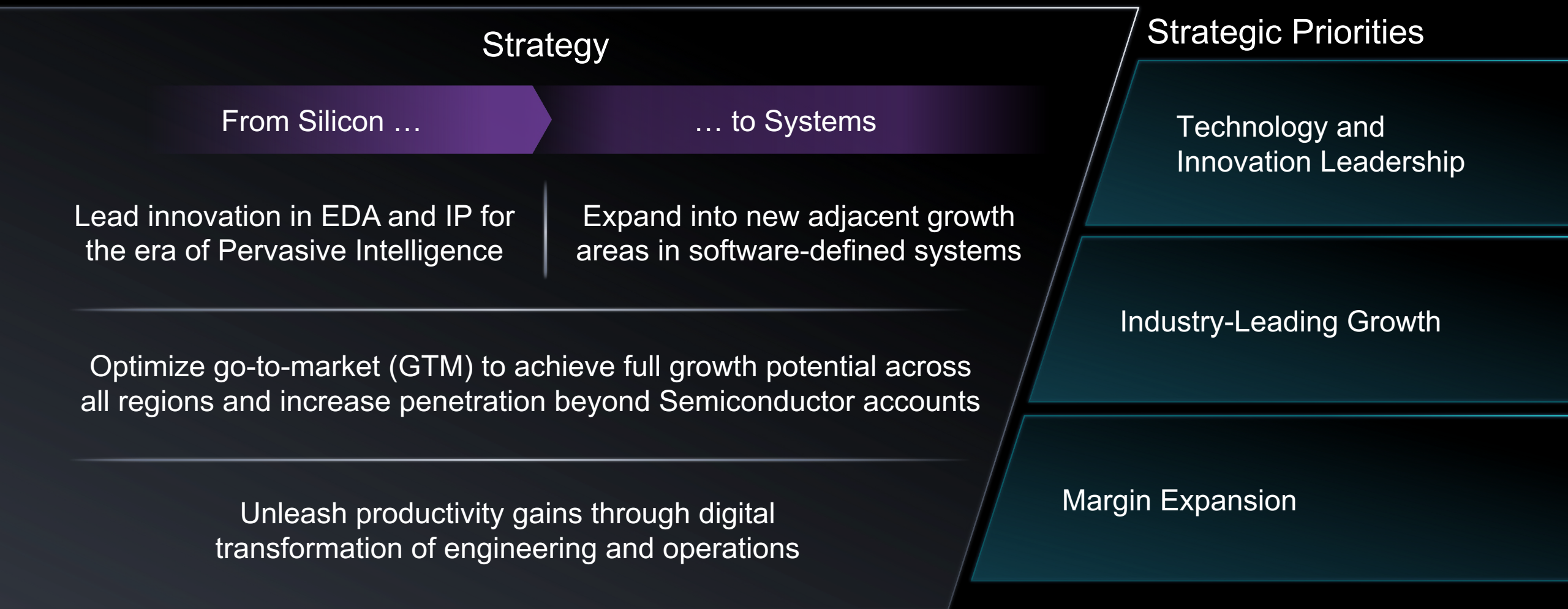
	CAGR 2018-23	
IP TAM	~14%	Growth consistently above EDA
EDA TAM	~12%	Growth consistently above Semi R&D
Semi R&D	~7%	Resilient growth: stable % of sales over medium term
Semi Sales <sup>1</sup>	~7%	Acceleration of demand growth

# Continued Momentum from TAM Drivers to Propel Growth

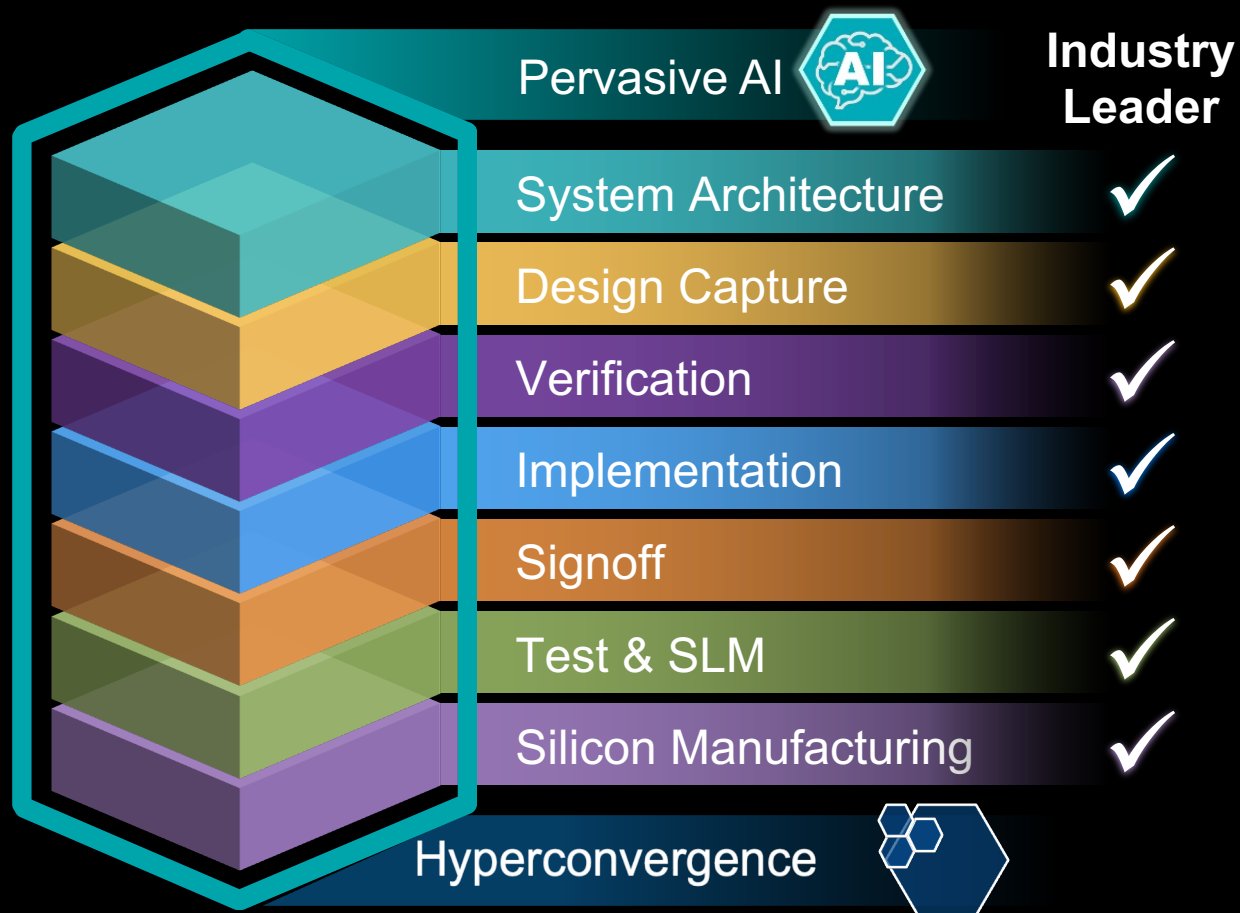


Well-Positioned to Win

# Our Strategy for Sustained, Value-Creating Growth



# Industry-Leading, Full-Stack EDA Solution



#1 in EDA, 30+ years of EDA investment

65% of Synopsys FY23 revenue

Leader in digital design and verification

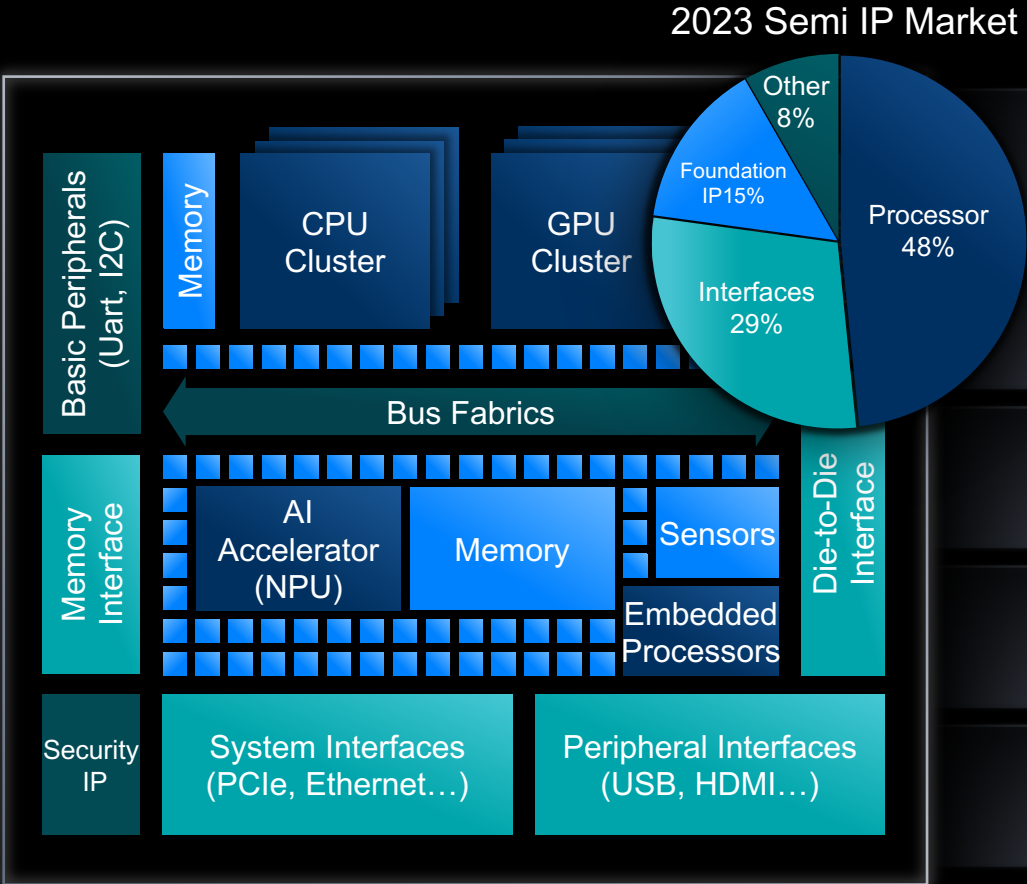
Leader in GPU-accelerated analog verification

Gold standard in Signoff and TCAD

Pioneer in Silicon Lifecycle Management

Superior customer outcomes through deeper integration of best-in-class tools

# Broadest IP Portfolio with Prominent Positions in Key Blocks



Broadest IP portfolio, 25 years in the making

A decade of sustainable, profitable growth

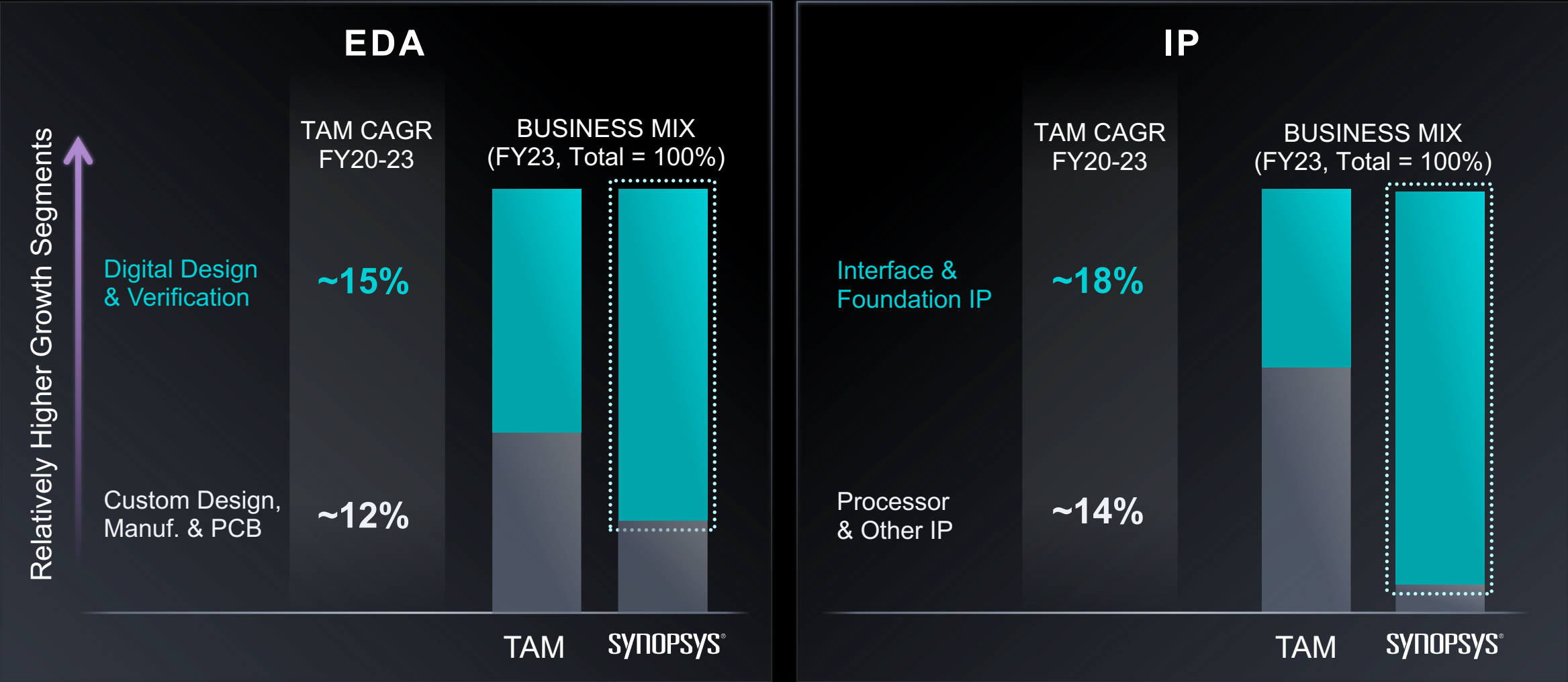
Leader in Interfaces and Foundation IP

Indexed to the fastest-growing segments

Highest quality IP portfolio with the best support

Trusted provider with scope and scale to meet customer needs across markets

# Over-Indexed to Fastest Growing Segments in the Industry



**We are an AI Company...Unlocking  
Massive Customer Productivity Gains...**

...in the Early Stages  
of the AI Transition

# Positioned to Realize Value Creation Potential from AI

1

## Surge in AI Chip Designs

- 2.5x increase in AI chip design starts since 2018
- Largest exposure to this segment
  - **EDA**: Leader in Digital
  - **IP**: Leader in Interfaces

2

## AI-Enabled EDA Across Full Stack

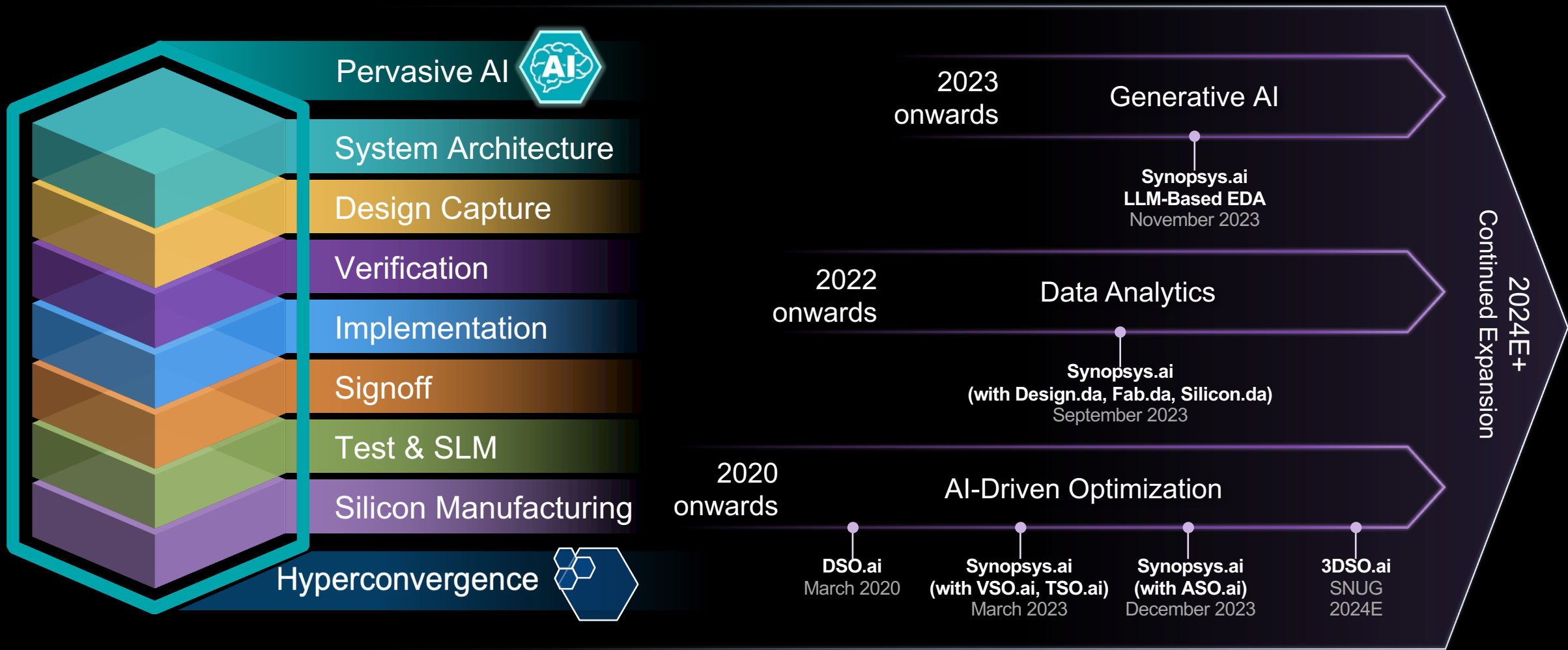
- Pioneer since 2020
- Expanding industry-leading suite including GenAI
- Strong adoption momentum
- Initial monetization proof points

3

## AI-Driven Operational Transformation

- Center of Excellence driving GenAI roadmap
- **Engineering**: GitHub Copilot rollout + Code review assistant
- **Other functions**: 20+ use cases in active pilots

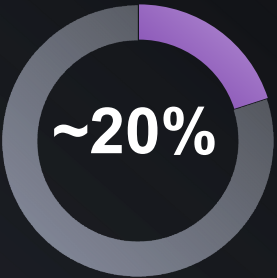
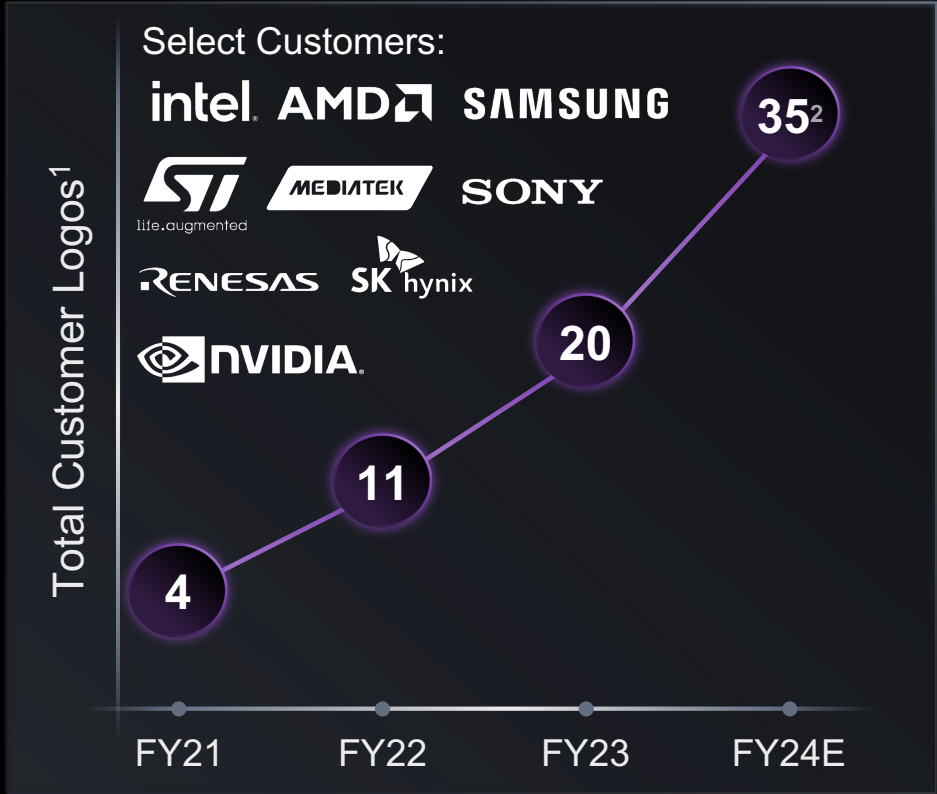
# Industry-Leading AI Suite with Expanding Capabilities



# Strong Adoption Momentum in Our Earliest Offering (DSO.ai)

Increasing customer adoption of DSO.ai...

...with significant opportunity to further penetrate



In production in ~20% of addressable customer base<sup>3</sup>



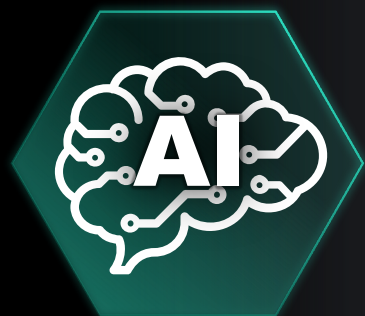
Utilized in ~10-15% of design content<sup>4</sup>

~20% uplift vs baseline contract value<sup>5</sup>

1. Including customers in deployment  
2. Target numbers in 2024  
3. Figure as of end of 2023, calculated over top 100 Place & Route customers

4. Estimated by number of blocks  
5. Baseline is calculated as Fusion contract value prior to the introduction to DSO.ai

# AI-Enabled EDA Delivers Step-Change Improvements



Synopsys.ai

**AI-driven solutions** to optimize silicon performance, improve power efficiency and accelerate design throughout the entire EDA flow

## DIGITAL DESIGN

Better quality designs with less time / resources

**~10%**

Reduction in Power / Area

## VERIFICATION

Faster and better coverage with efficient testbench suite

**2-10x**

Faster Turnaround Time (TAT)

## TEST

Lowers cost of testing a chip (i.e., test pattern count)

**~20-70%**

Pattern Count Reduction

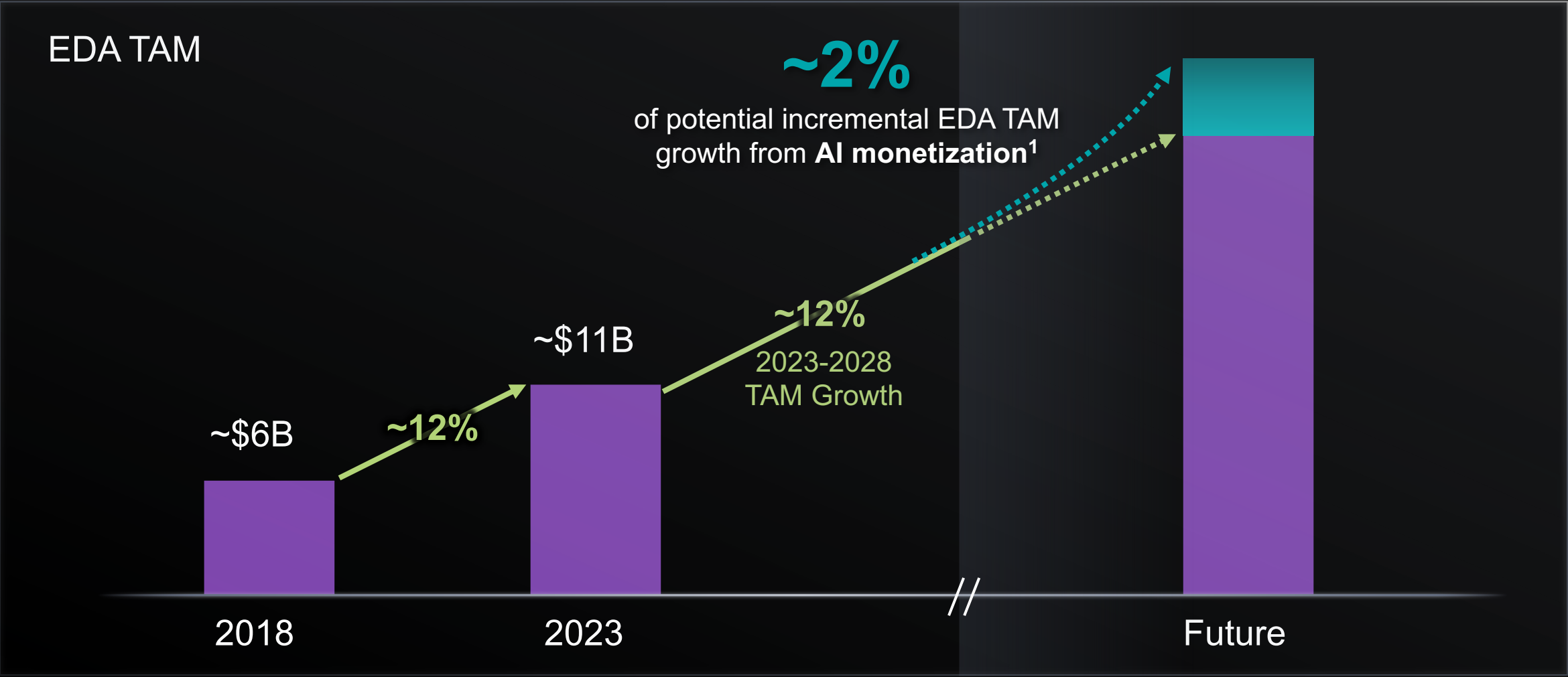
## ANALOG DESIGN

Migration of analog circuits from node to node with automation

**~3x**

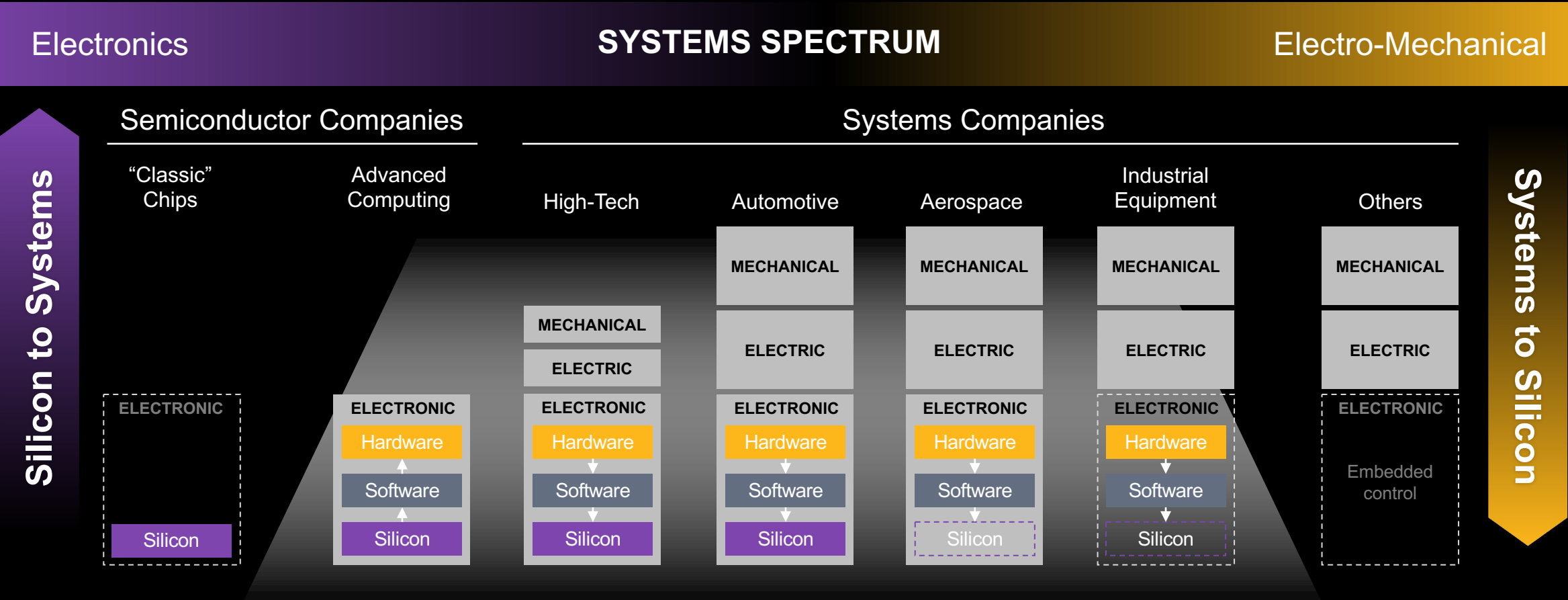
Overall TAT Improvement

# Potential AI Impact on Future EDA TAM Growth



# Creating the Leader in Silicon to Systems Design Solutions

# Silicon to Systems Transition Ongoing Across Verticals



# Most Comprehensive System Virtualization Solution Portfolio

**SYNOPSYS®**

Building the Most  
Comprehensive  
Digital Twin

INDUSTRY  
LEADER

INDUSTRY  
LEADER

**Product Operating  
in Environment**

*Virtual model of product in environment*

**Ansys<sup>1</sup>**

**Virtual Product**

*Virtual model of product*

**Software in  
Electronics**

*Software development &  
test automation*

**PIKETEC**  
software engineering

**Virtualization**

*Virtual model of chip / ECU*

**VIRTUALIZER™**

**Hardware Assisted  
Verification**

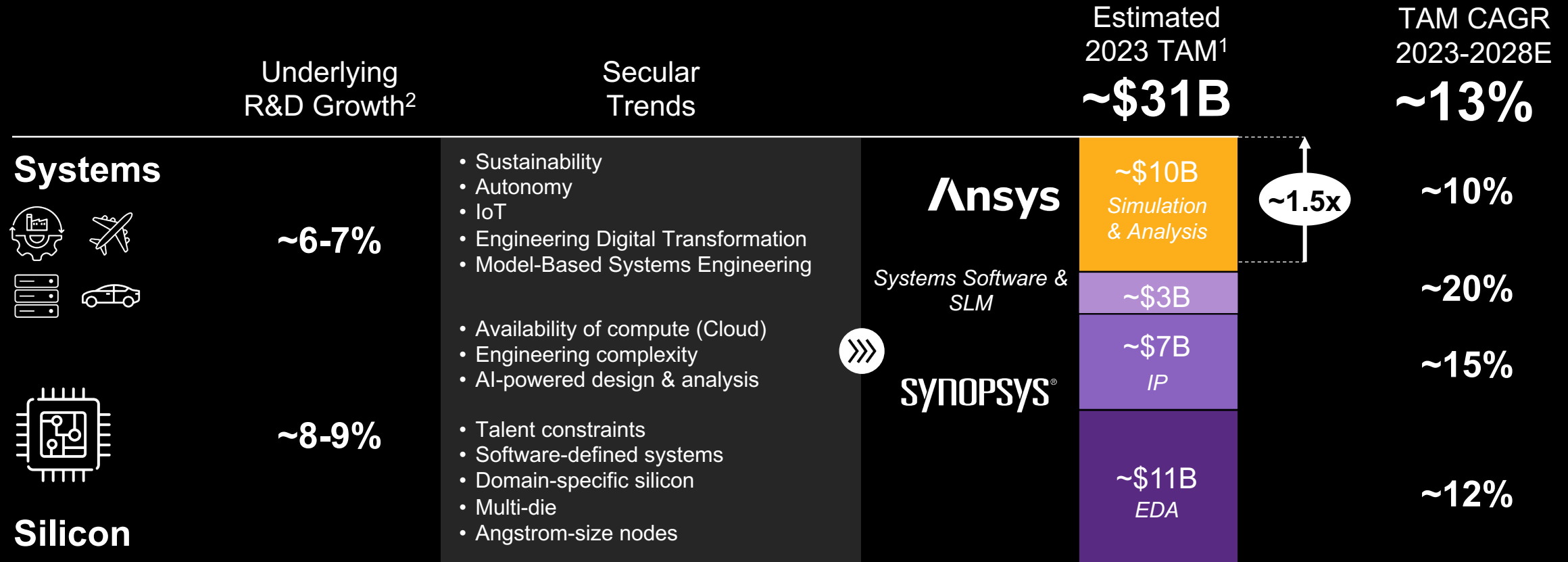
*Foundational EDA*

**ZeBu® & HAPS®**

2005

2023

# Attractive, Industry-Leading ~\$31B TAM<sup>1</sup>



**Expect combined company revenue growth to outpace TAM growth**

Note: Figures exclude impact from SIG

1. Synopsys management estimates, excludes SIG; pending transaction close

2. Wall Street Research and Synopsys management estimates; growth for the period 2007-2021; Systems R&D growth rate calculated as a blended rate across sectors applying Ansys ACV industry mix

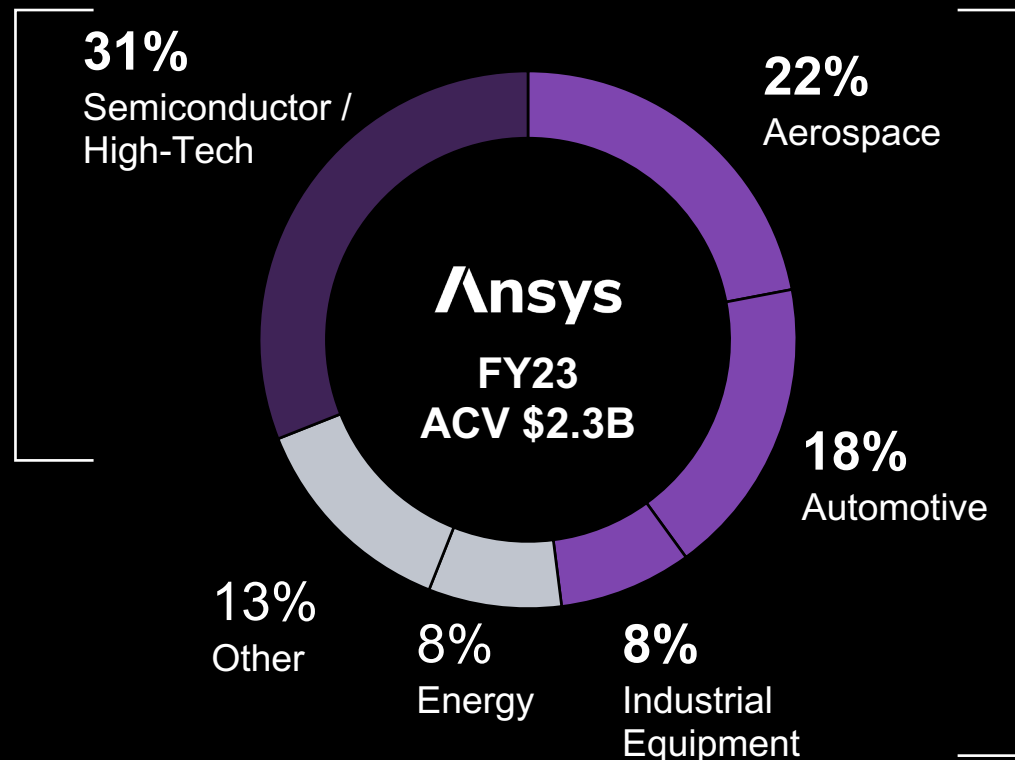
# Accelerating Our Silicon to Systems Strategy

From Silicon ...

... to Systems

## Strengthens capabilities in advanced chip design technology

- Extends portfolio with industry-leading simulation and analysis solutions
- Enables fusion of multi-physics analysis into digital design flows
- Allows development of joint solutions in new areas (e.g., Analog/RF)



## Accelerates expansion into new growth verticals

- Opportunities to improve EDA penetration
- Scale fast-growing Synopsys system software businesses through Ansys GTM
- High-potential verticals for digital twin and functional safety solutions combining physics and electronics

# What Our Customers Have to Say About the Combination

“

In a multi-die environment, power and thermal analysis needs to happen not only at the individual die level, but also at the system-level. **Further integrating Synopsys and Ansys capabilities will help designers better optimize heterogeneous, multi-die products for signal, power, and thermal integrity**, while achieving faster convergence during signoff.

”

Mark Papermaster  
Chief Technology Officer and EVP



“

Chips are now complex systems requiring harmonization of power integrity, sophisticated structure, and thermal and electro-magnetic analysis. **Deeply integrating Synopsys' and Ansys' capabilities will further enhance our ability to co-optimize dies and packages as one system**, as we continually push the boundaries of power, performance and area.

”

Jensen Huang  
Founder, President and CEO



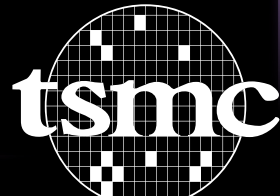
# What Our Customers Have to Say About the Combination

“

Multi-die systems provide a way forward to achieve reduced power and area and higher performance, **opening the door to a new era of innovation at the system-level.** Glad to see Synopsys accelerate the path to multi-die system success.

”

Dr. Cliff Hou  
Senior Vice President



“

Bringing Synopsys and Ansys together **holds the promise of a powerful digital twin solution** that can expedite and optimize the virtual design and validation of our vehicle platforms.

”

Peter Bannon  
VP, Low Voltage and Silicon Engineering



# Ansys

## Synopsys Investor Day 2024

Ajei Gopal  
*President and Chief Executive Officer, Ansys*

**SYNOPSYS®**

Our Technology, Your Innovation™

# Creating a Leader in Silicon to Systems Design Solutions

**SYNOPSYS®**

Leader in Semiconductor Design

+

**Ansys**

Leader in Simulation & Analysis

Enhances and  
accelerates Silicon to  
Systems strategy

Expands TAM to  
~\$31B, growing at  
~13% CAGR<sup>1</sup>

Extends pioneering AI  
and Cloud leadership  
in EDA and simulation

Committed to Industry-Leading  
Revenue Growth and Margin Accretion

# Long-Term Financial Objectives Aligned with Strategy<sup>1</sup>

## Revenue

**17%**

FY20-23  
CAGR

## Non-GAAP Op. Margin

**28% → 35%**

FY20-23 Non-GAAP  
Op. Margin<sup>2</sup>

## Free Cash Flow

**23% → 26%**

FY20-23 FCF  
Margin<sup>3</sup>

## Non-GAAP EPS

**26%**

FY20-23 Non-GAAP  
EPS CAGR<sup>2</sup>

## Combined company long-term, multi-year objectives

Industry-leading  
double-digit  
growth

Long-term non-GAAP  
operating margins in  
mid-40s<sup>4</sup>

Long-term unlevered  
free cash flow margins  
in mid-30s<sup>4</sup>

Non-GAAP EPS growth  
in the high-teens range<sup>4</sup>

Note: Combined company objectives exclude impact from SIG

1. These multi-year objectives are provided as of March 20, 2024

2. See appendix for a reconciliation of non-GAAP operating margin and non-GAAP EPS CAGR to their most directly comparable measures reported under GAAP as well as information regarding how these measures were calculated

3. Calculated as cash flows from operating activities less net capital expenditures less capitalized software development costs; see appendix for a reconciliation of free cash flow margin to its most directly comparable measure reported under GAAP as well as information regarding how this measure was calculated

4. Reconciliations of long-term non-GAAP operating margin, unlevered free cash flow margin and non-GAAP EPS are not available, see "Non-GAAP Financial Information" for more information

# Seizing Unprecedented Opportunity

Multi-decade track record of delivering outsized shareholder value

Solving customer challenges in the face of exploding complexity

Technology leadership in AI, multi-die & Silicon to Systems design

Commitment to resilient, market-leading growth

The background is a solid dark purple. In the bottom left corner, there is a glowing blue and white graphic consisting of a network of dots connected by lines, resembling a digital or molecular structure. The Synopsys logo is centered at the top in white.

**SYNOPSYS<sup>®</sup>**

Our Technology, **Your Innovation<sup>™</sup>**

THANK YOU



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

# Unleashing Growth in EDA with Pioneering Innovations

Shankar Krishnamoorthy  
*GM and Corp Staff, EDA Group*

**SYNOPSYS®**

Our Technology, Your Innovation™

# Synopsys EDA is Moving from Important to Mission Critical

# Process Scaling Gains Lagging Compute Growth Needs



# Process Scaling Gains Lagging Compute Growth Needs

  
Grace Hopper GH200


  
MI300


  
Clearwater Forest

Trillion  
 $10^{+12}$   
Market Needs

+10 ~ 15% speed  
+10 ~ 30% power

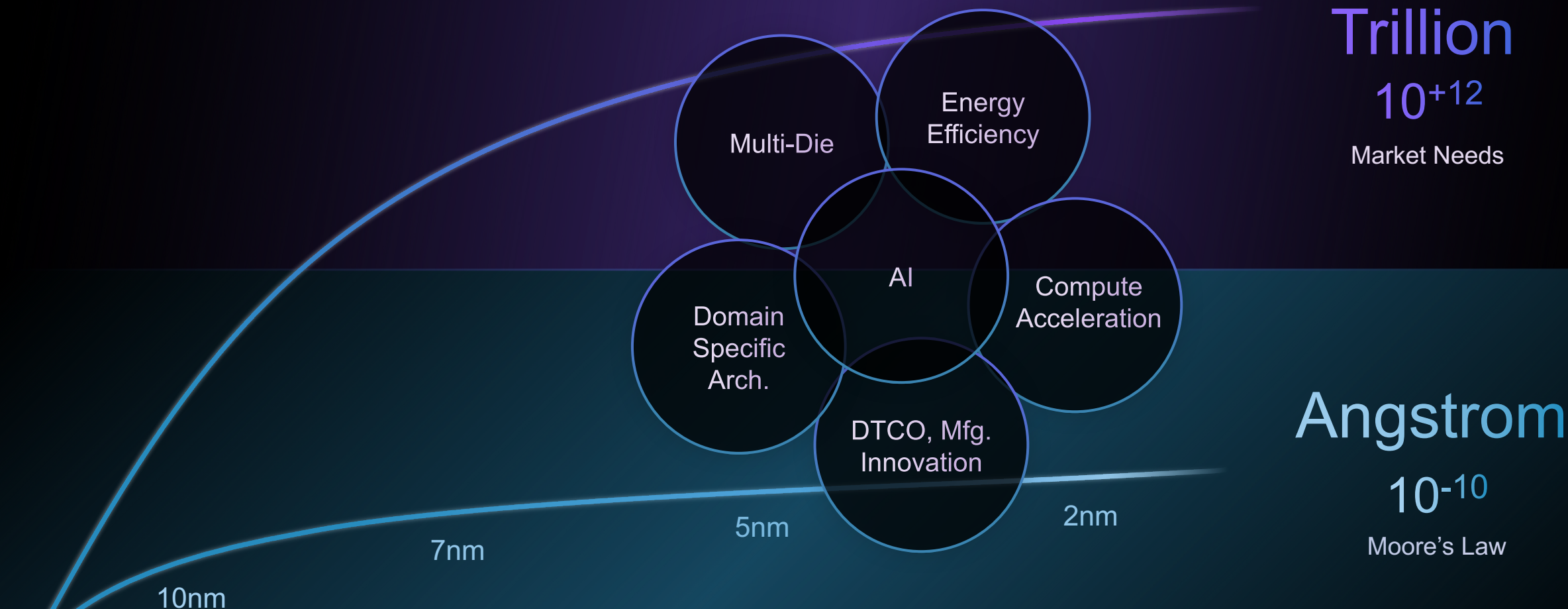
  
GAA Technology,  
Advanced  
Package

  
N2, 3D Fabric

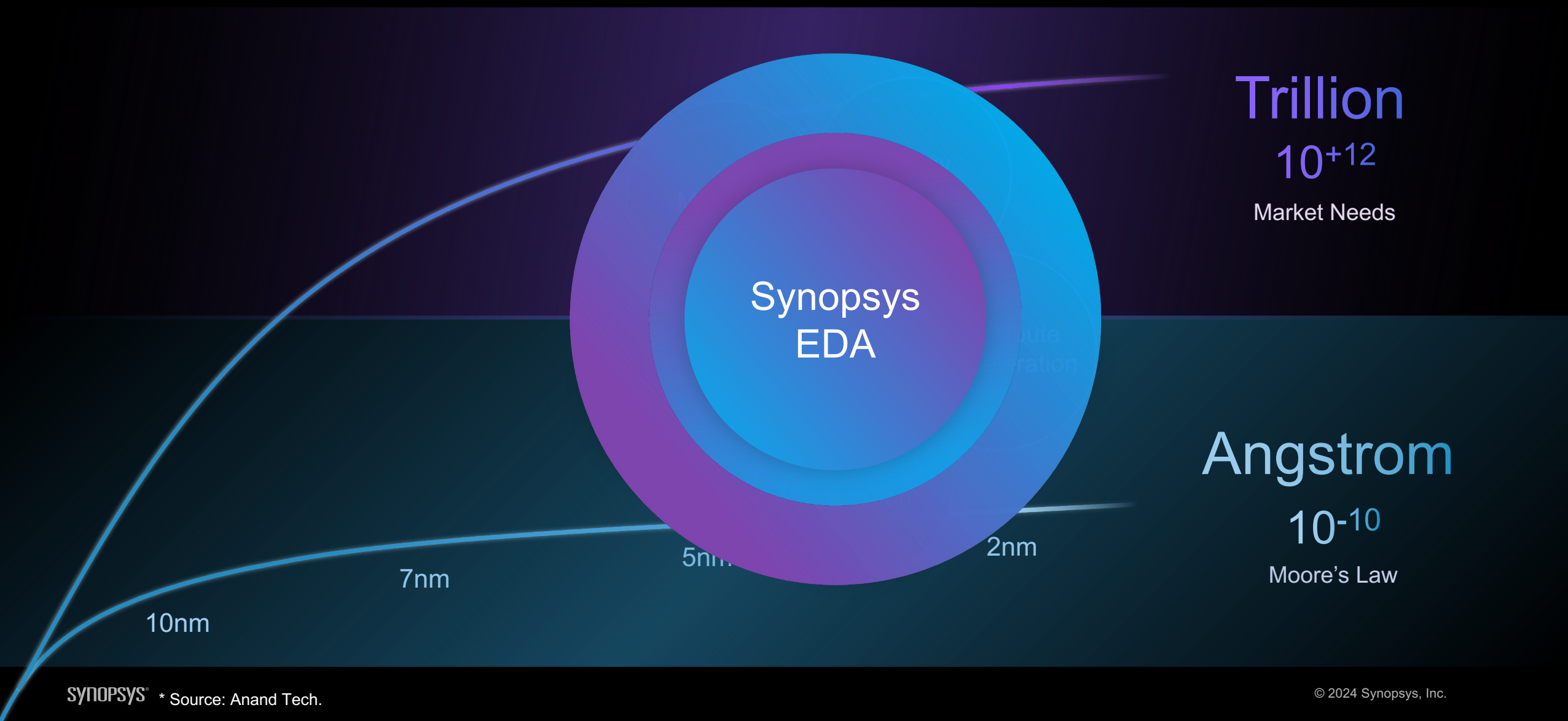
  
18A,  
EMIB/Foveros

Angstrom  
 $10^{-10}$   
Moore's Law

# Multiple Innovations Closing the Gap

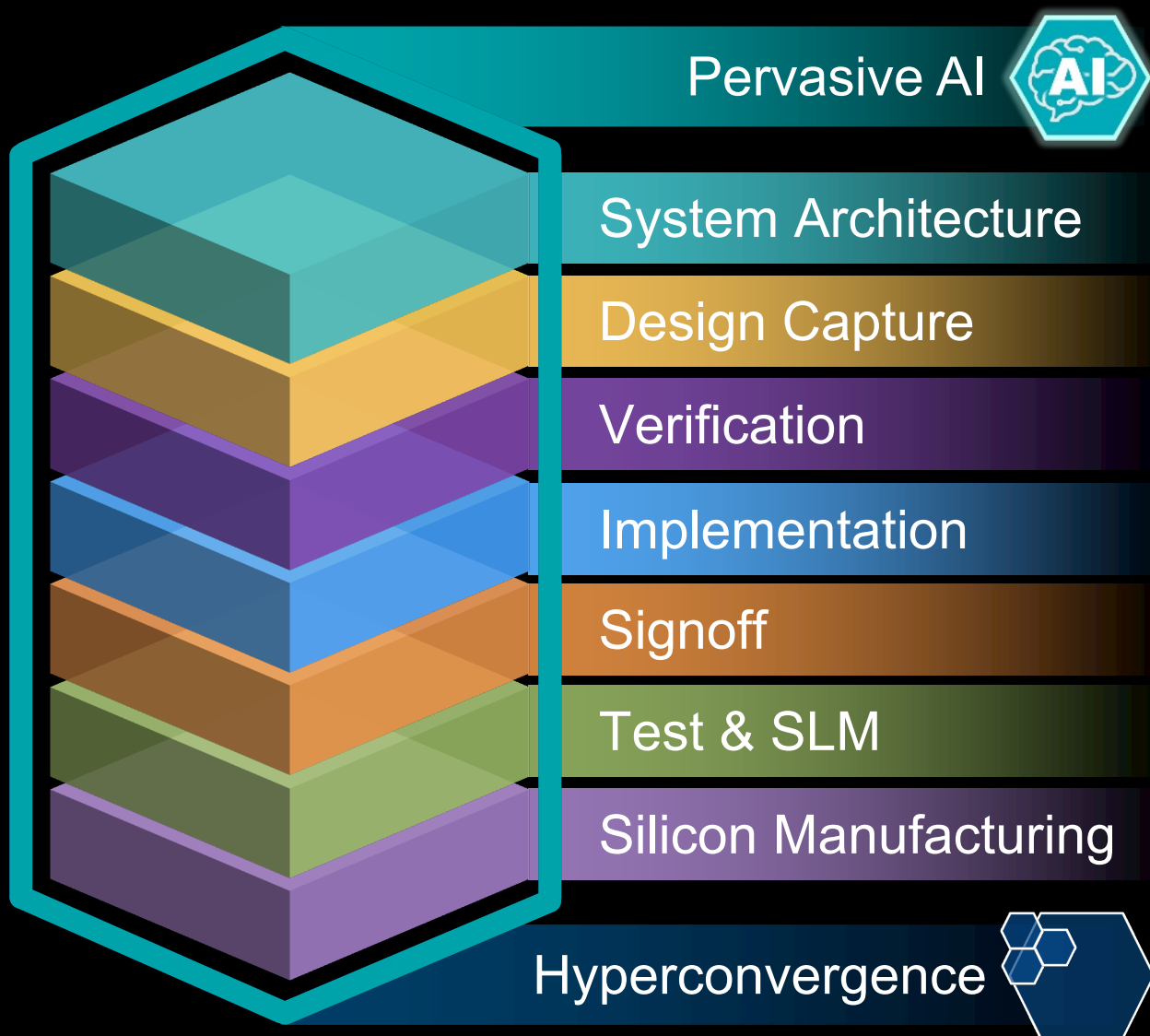


# Synopsys is Mission Critical to Enabling these Innovations



# Synopsys EDA Well Positioned with Breadth and Depth of Portfolio

# AI-Powered Full-Stack EDA Portfolio



#1 in EDA, 30+ years of EDA investment

65% of Synopsys FY23 revenue

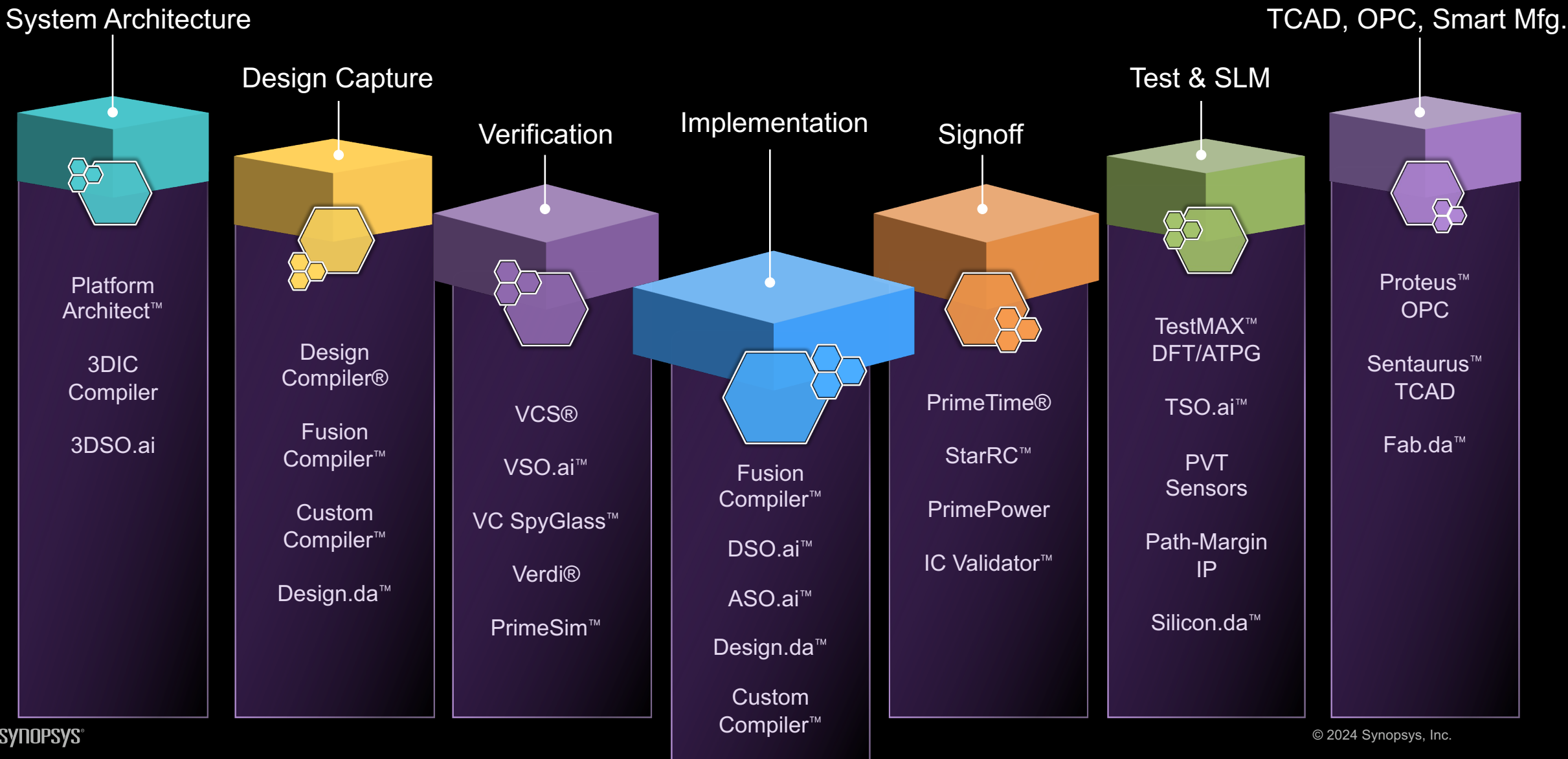
Leader in Digital Design and Verification

Leader in GPU-Accelerated Analog Verification

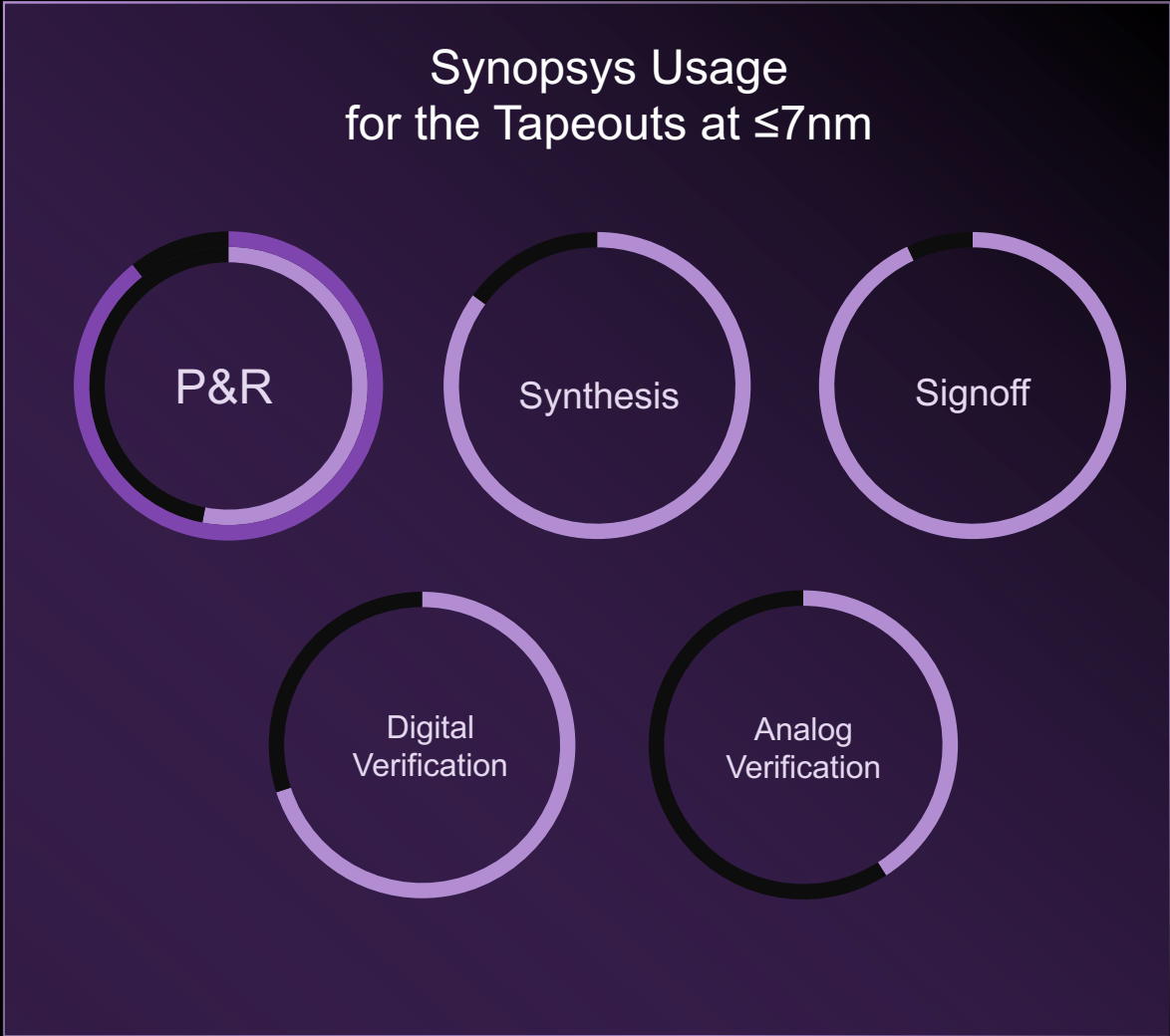
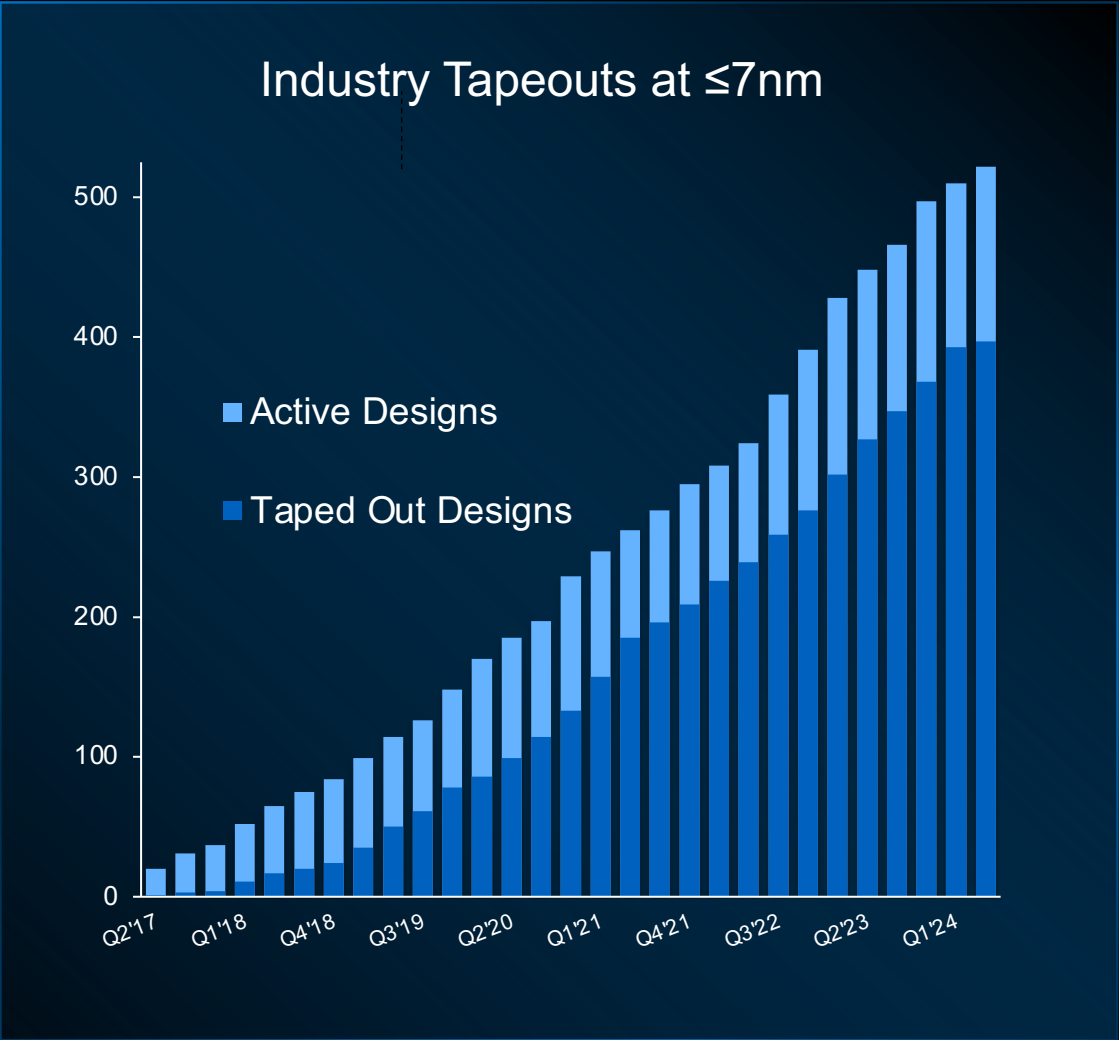
Gold Standard in Signoff and TCAD

Pioneer in Silicon Lifecycle Management

# Industry-Leading EDA Products

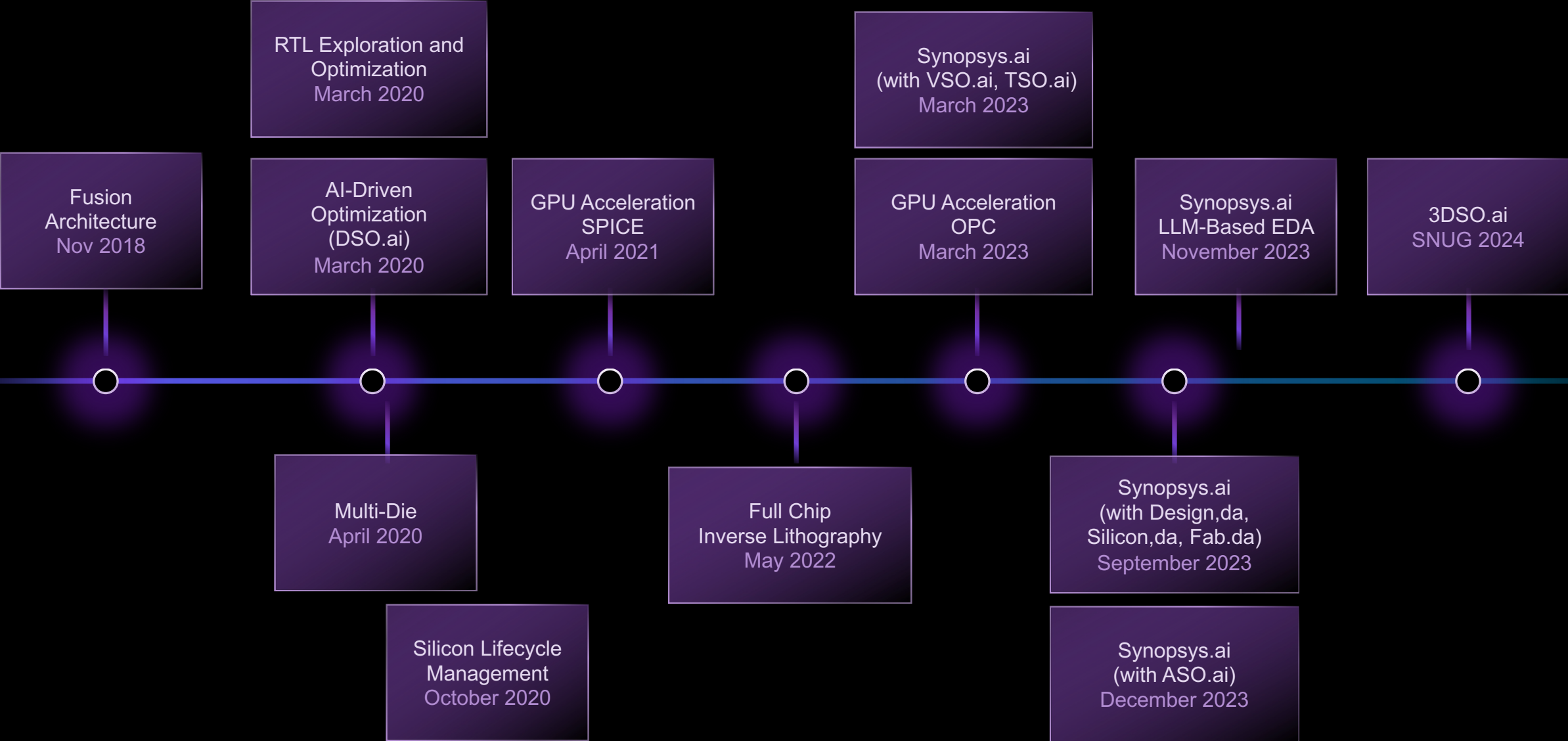


# Preferred Choice for Established and Emerging Nodes

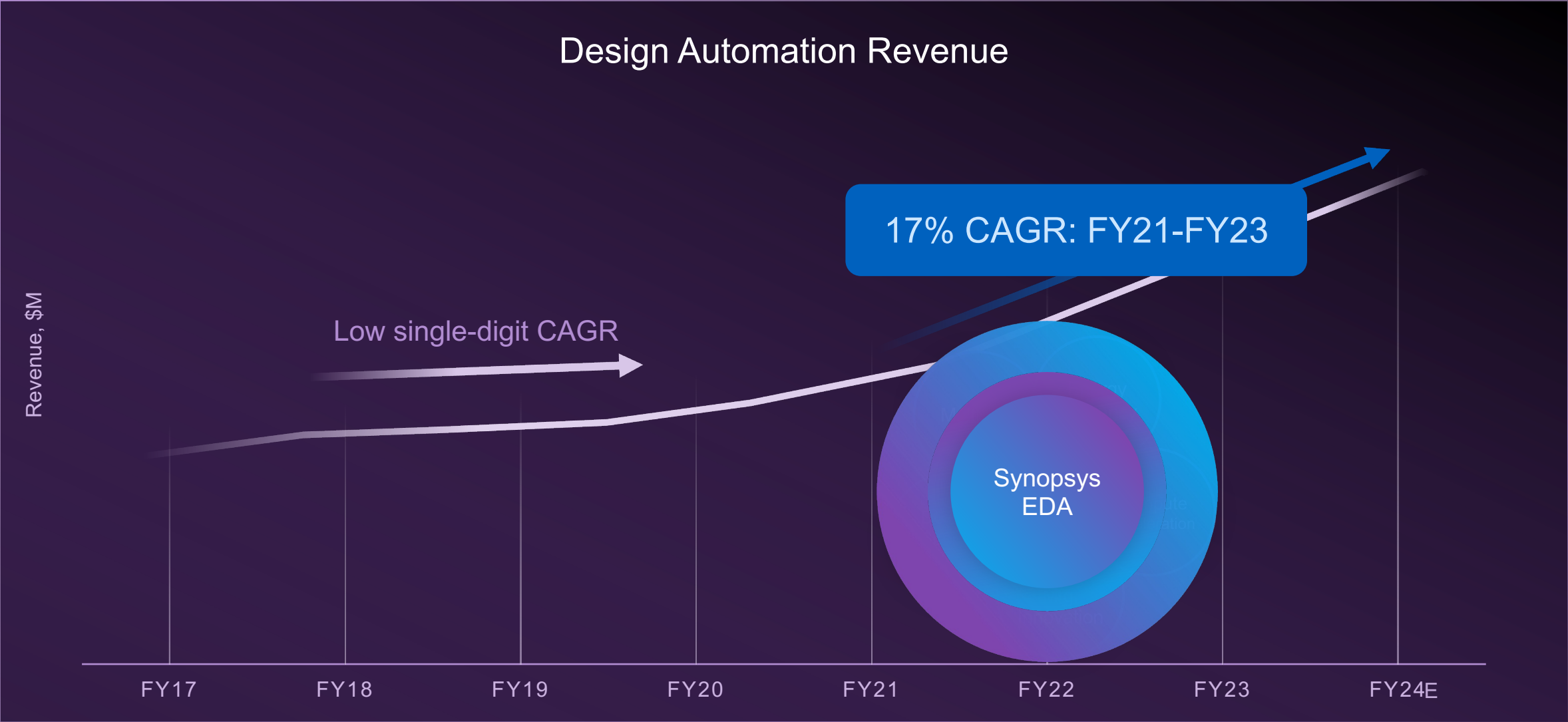


Source: Synopsys Global Technical Services, February 2024

# Pioneering Innovations Enable Semiconductor Progress



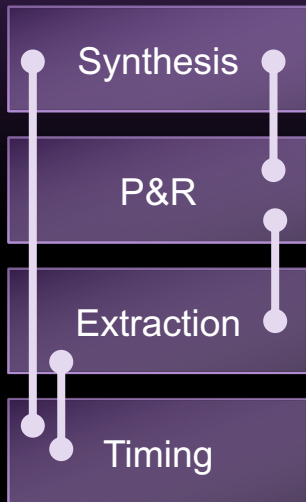
# Delivering Strong Double-Digit Growth



It's All About the Architecture

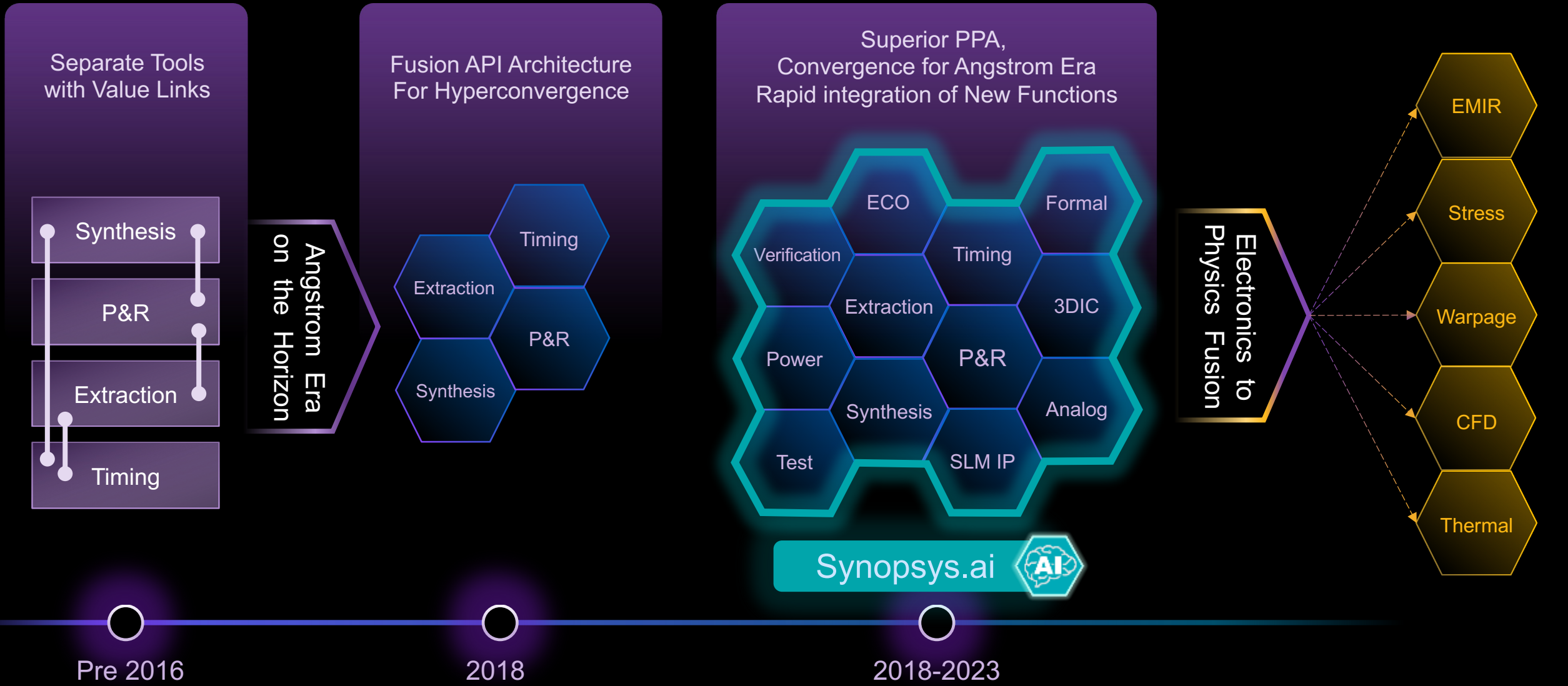
# Synopsys Next-Gen Fusion EDA Architecture

Separate Tools  
with Value Links



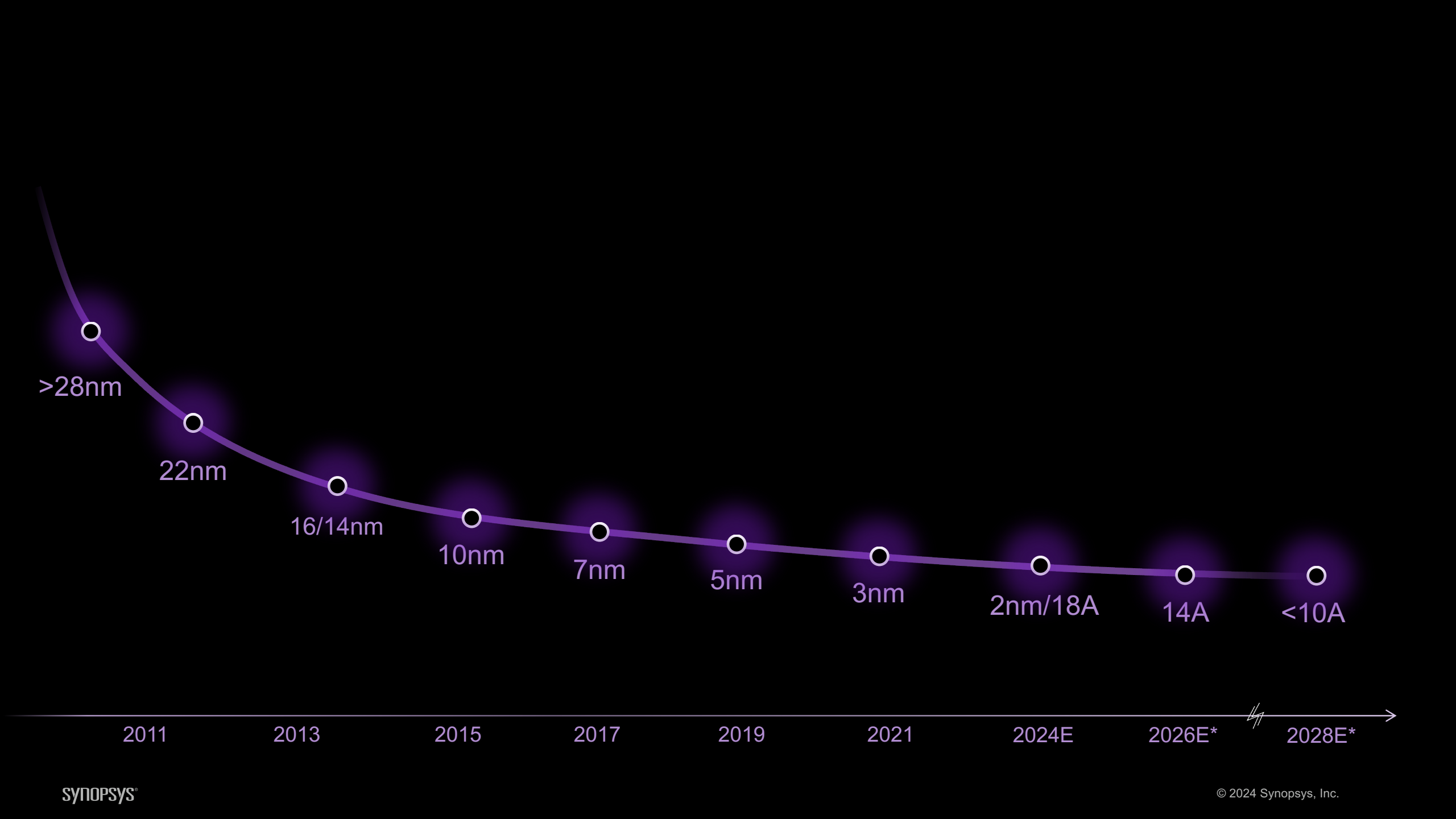
Pre 2016

# Synopsys Next-Gen Fusion EDA Architecture



# Pioneering Innovations Unleash New Growth Vectors

## March to Angstroms



>28nm

22nm

16/14nm

10nm

7nm

5nm

3nm

2nm/18A

14A

<10A

2011

2013

2015

2017

2019




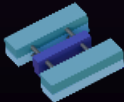
2021

2024E

2026E\*

2028E\*

# Maximizing Process Entitlement in Angstrom Era

Library	PPA Optimized	Double Patterning	Nanosheet Optimized	Pre-PDK DTCO
P&R	Double Patterning	Hybrid Row	Backside Power	Backside Clock, Signal
Signoff	SI Modeling	Hierarchical Modeling	Variability Modeling	Hybrid Extraction
Mask	Model Based OPC	Inverse Lithography (ILT)	Curve OPC	High NA EUV
<div><div>λ 248nm</div><div>Deep UV = 193nm, 193i</div><div>Extreme UV = 13.5nm</div></div>				
TCAD DTCO	<div> Planar</div> <div>Physics based modeling</div>	<div> FinFET</div> <div>3D simulation</div>	<div> GAA</div> <div>New materials, DTCO</div>	<div> CFET</div> <div>2D materials</div>

# Maximizing Process Entitlement in Angstrom Era

Library	Foundation Libraries
P&R	Fusion Compiler
Signoff	Prime* (Time, Power, Simulation, ECO)
Mask	Proteus OPC
TCAD DTCO	Sentaurus

Highest PPA  
Delivered at 2nm/18A

From All Leading Foundries  
with the Synopsys Portfolio

# Maximizing Process Entitlement in Angstrom Era

TSMC and Synopsys help our mutual customers achieve the best-in-class design results across the full Synopsys EDA stack on TSMC's most advanced N2 process

**Dan Kochpatcharin**

*Head of Design Infrastructure  
Management Division, TSMC*



Synopsys provides designers with access to industry-leading certified EDA flows and IP that deliver the best performance, power, and area for the Intel 18A technology

**Rahul Goyal**

*Vice President & General Manager,  
Product & Design Ecosystem, Intel Foundry*



...our latest, advanced 3nm GAA process has benefited from our extensive collaboration with Synopsys to enable the efficient realization of the process' promise.

**Sangyun Kim**

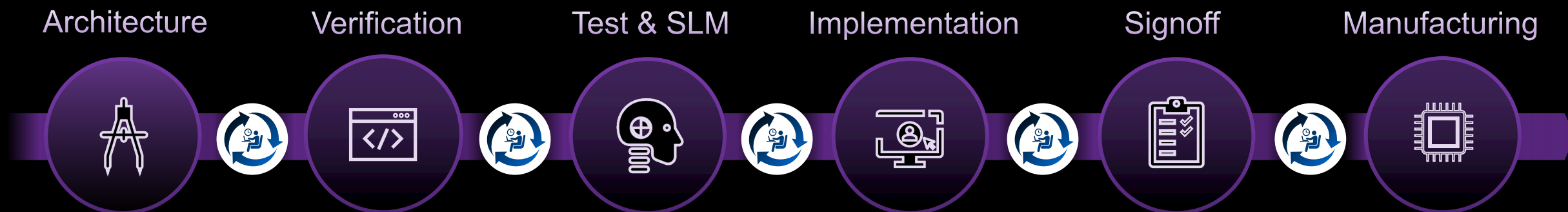
*Vice President of Foundry Design  
Technology Team, Samsung Electronics*

**SAMSUNG**

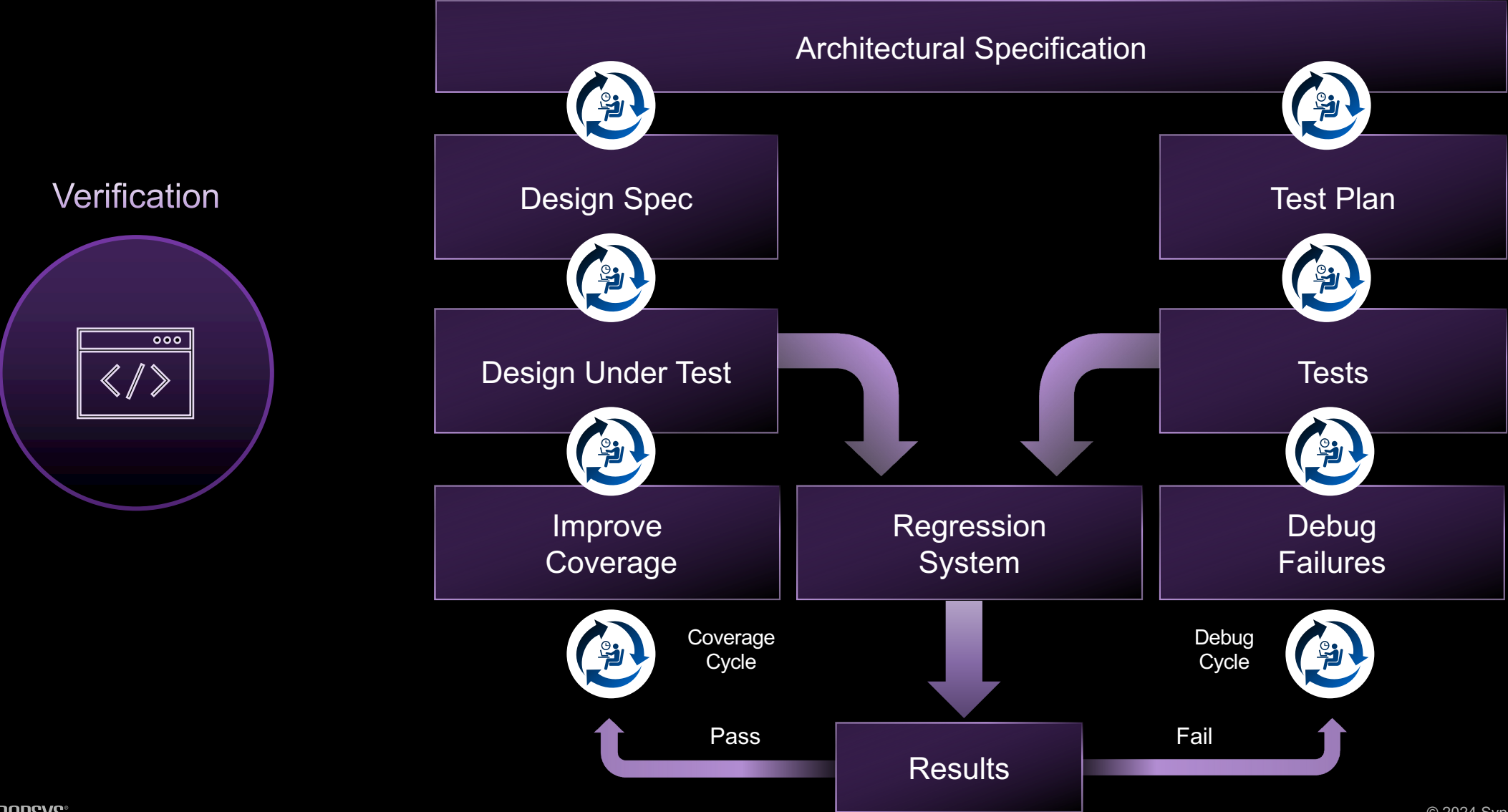
# Pioneering Innovations Unleash New Growth Vectors

Synopsys.ai

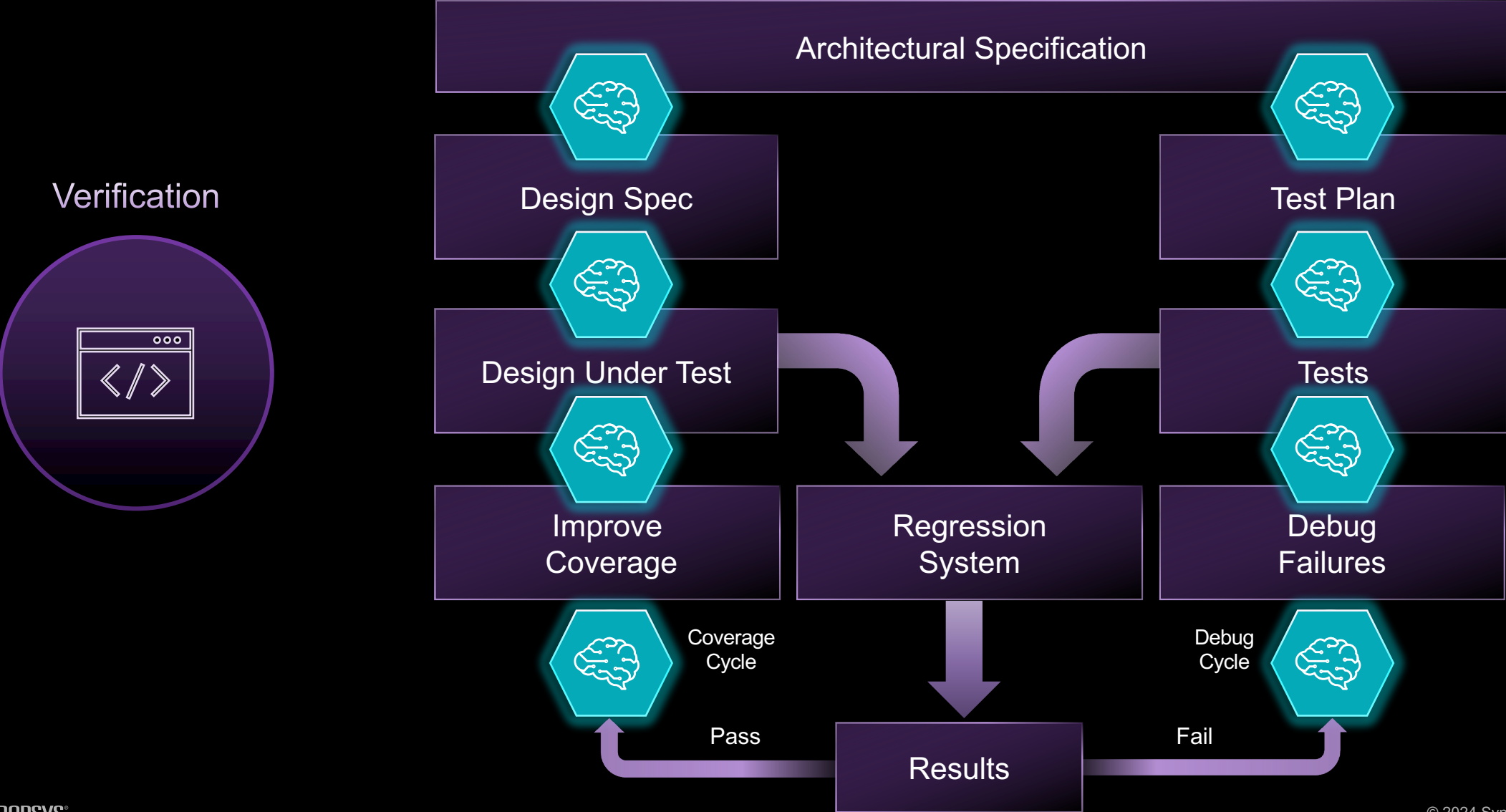
# EDA Workflow Offers Opportunities for AI



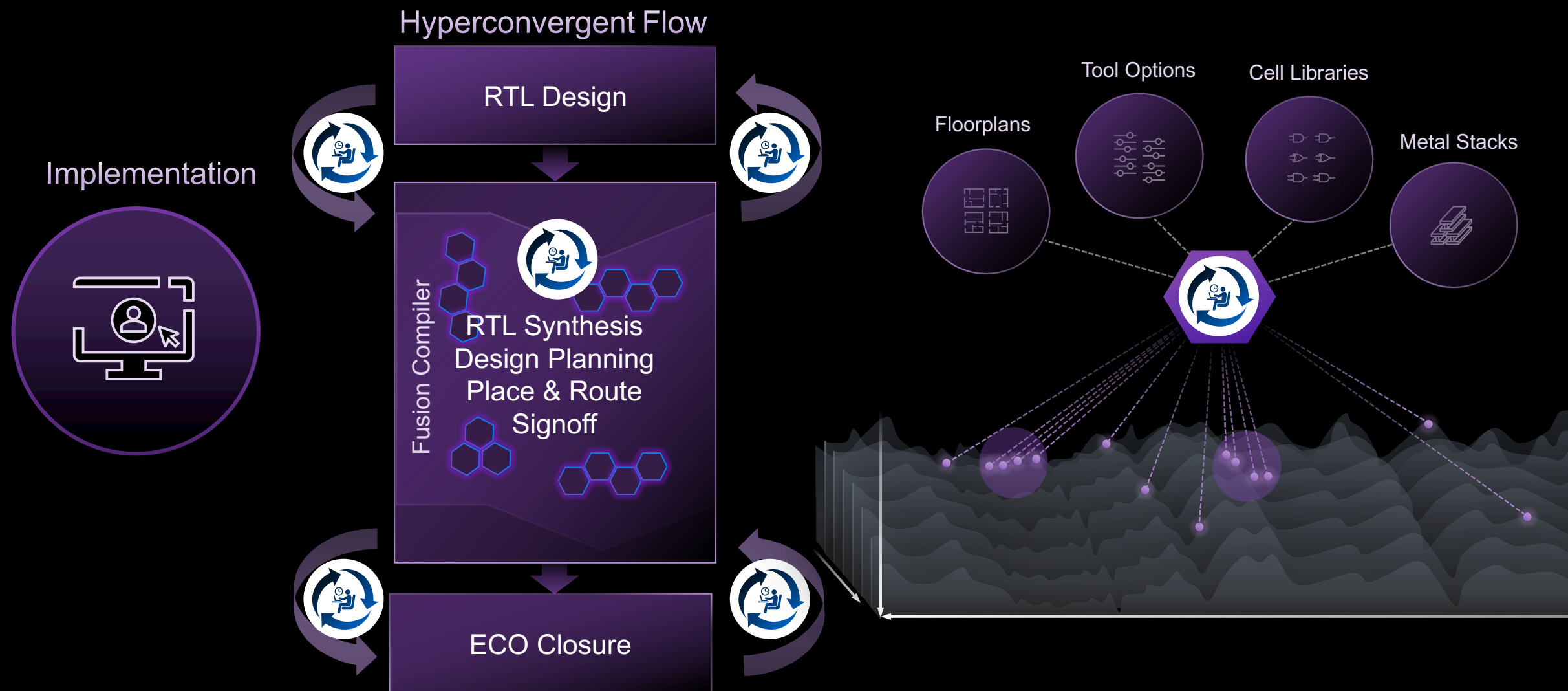
# EDA Workflow Offers Opportunities for AI



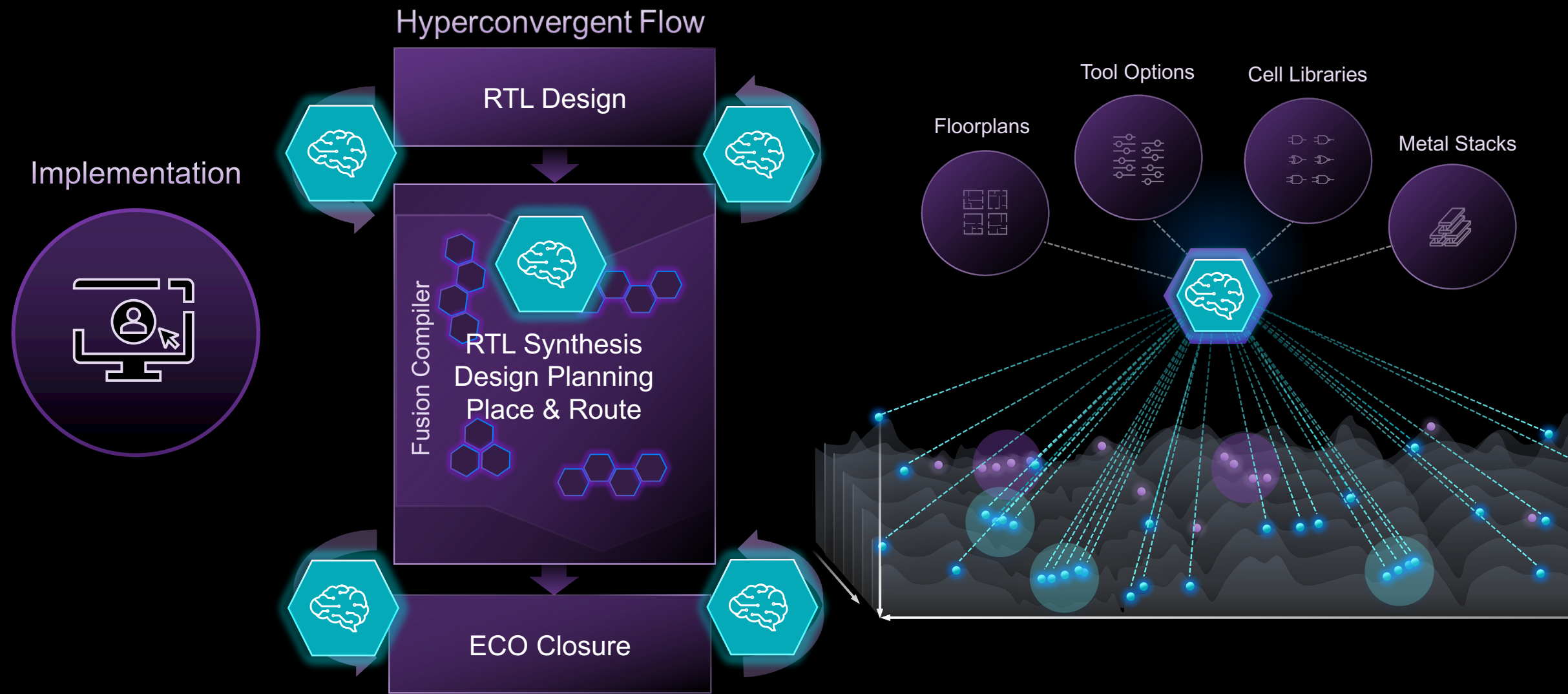
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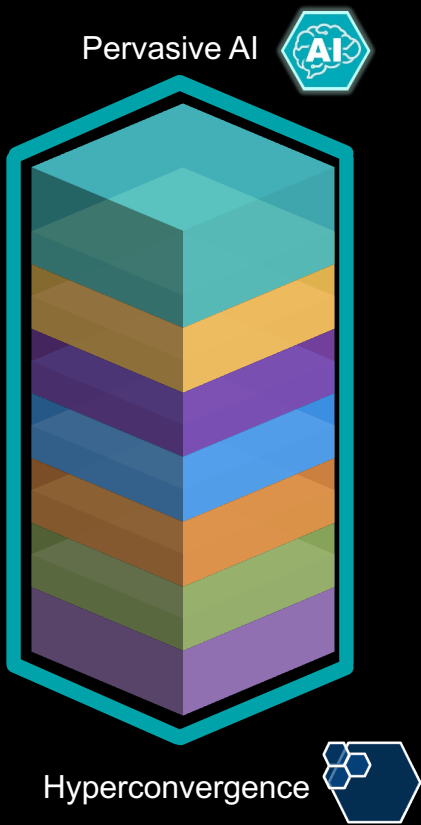
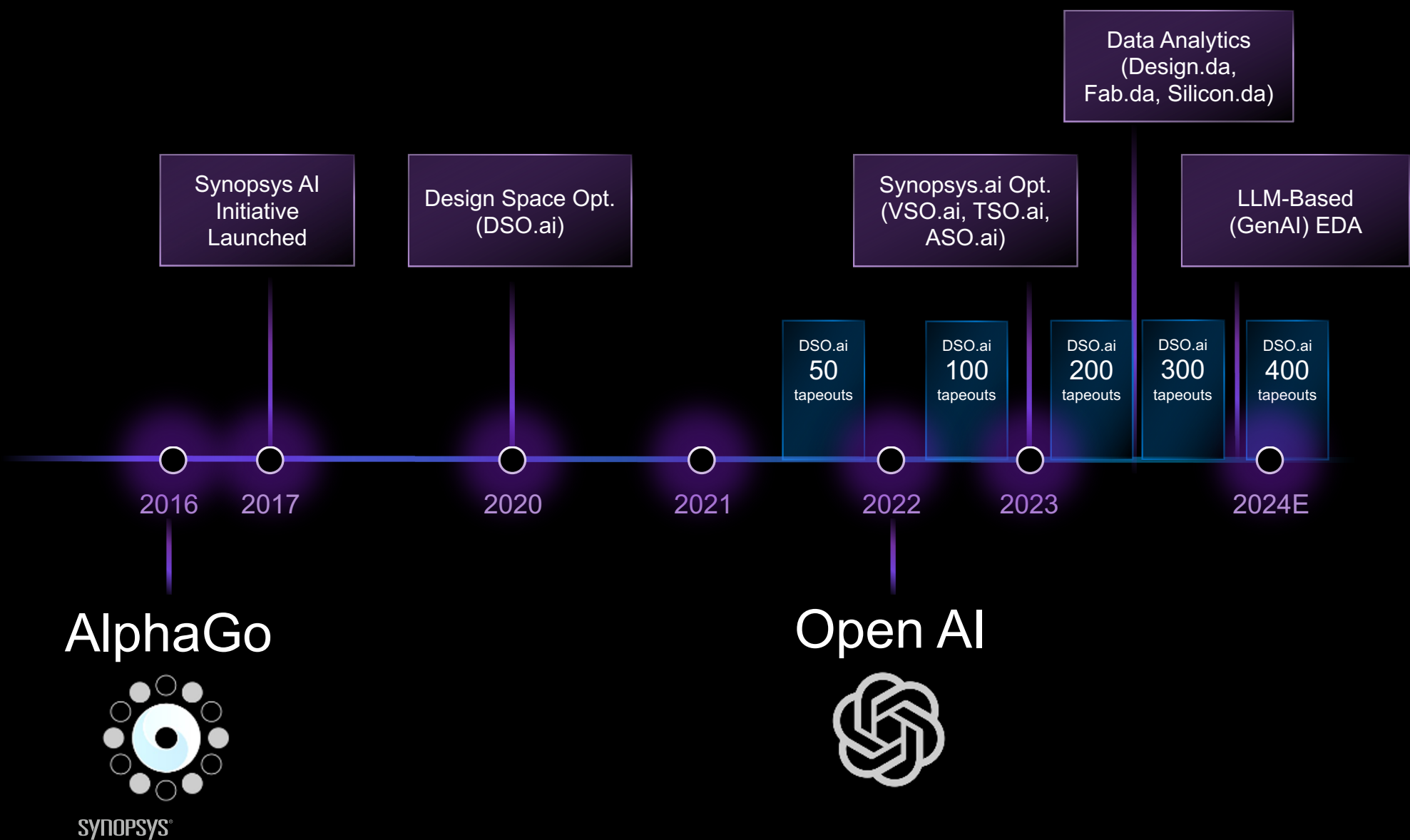
# EDA Workflow Offers Opportunities for AI



# EDA Workflow Offers Opportunities for AI

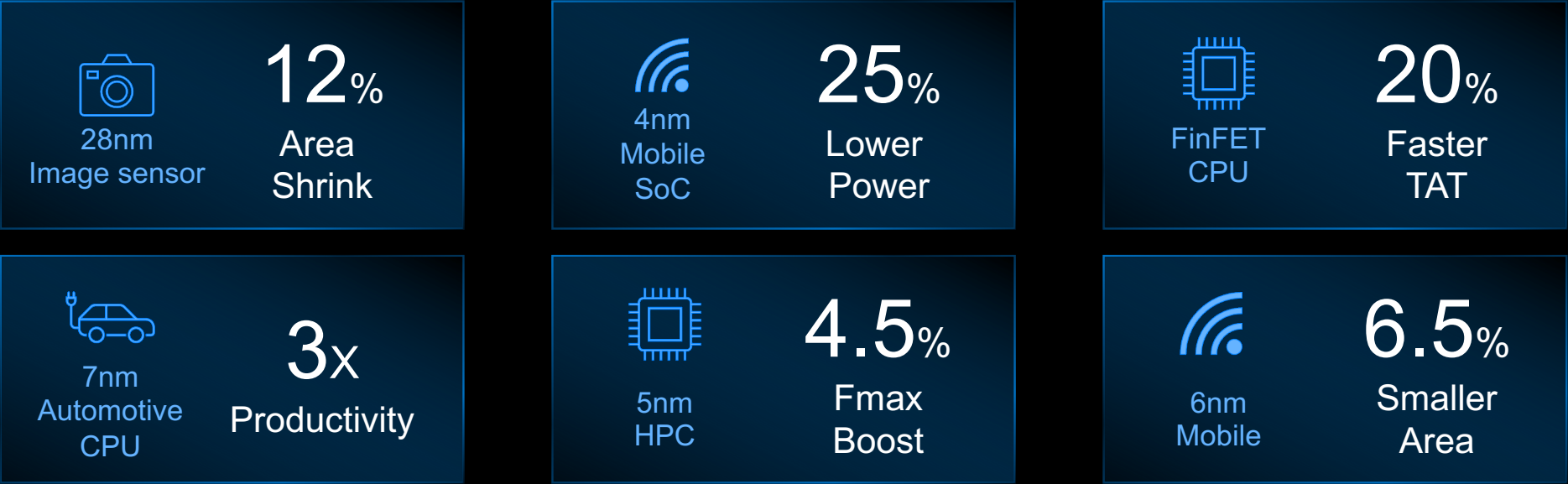


# Blistering Pace of AI Innovations

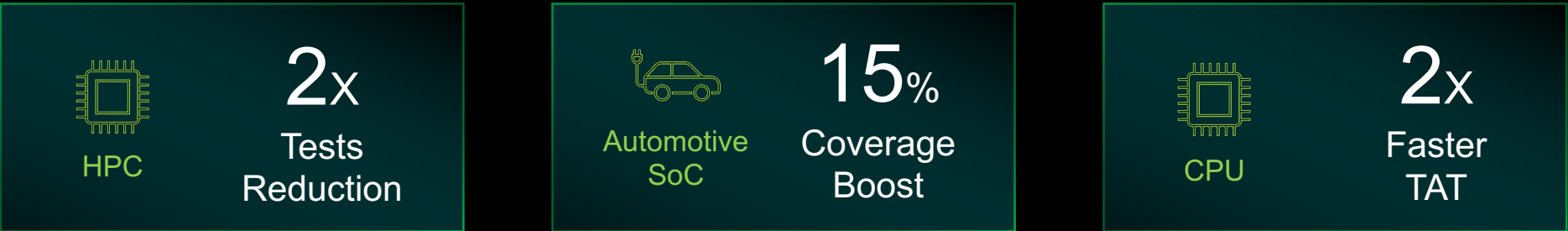


# Market Leaders Realizing Significant Gains from Synopsys.ai

DSO.ai\*



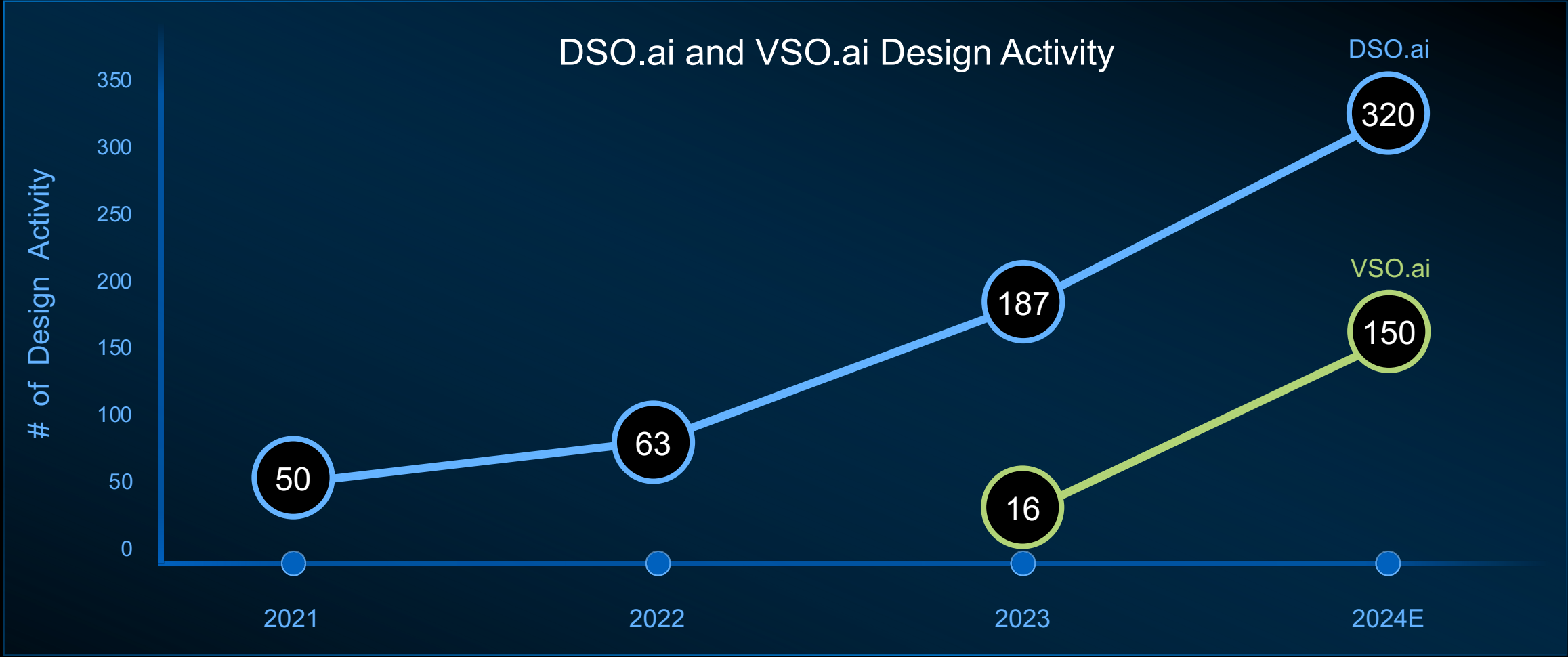
VSO.ai\*



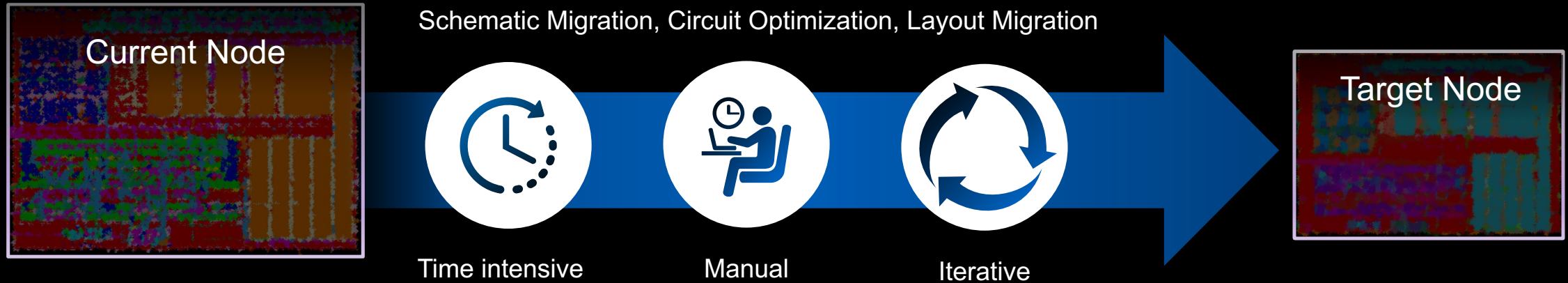
*\*Based on results from deployments at:*



# Rapid Adoption of AI-Driven Optimization



# Accelerating Analog Migration with ASO.ai



# Accelerating Analog Migration with ASO.ai



3x Overall TAT  
Improvement

# Accelerating Analog Migration with ASO.ai



**3x Overall TAT**  
Improvement

**ASO.ai**  
**Faster Time to Results**

**10x Faster TAT**  
Analog Circuit Optimization

**3x Faster TAT**  
Analog IP Node Migration

Enabled at Leading Foundries

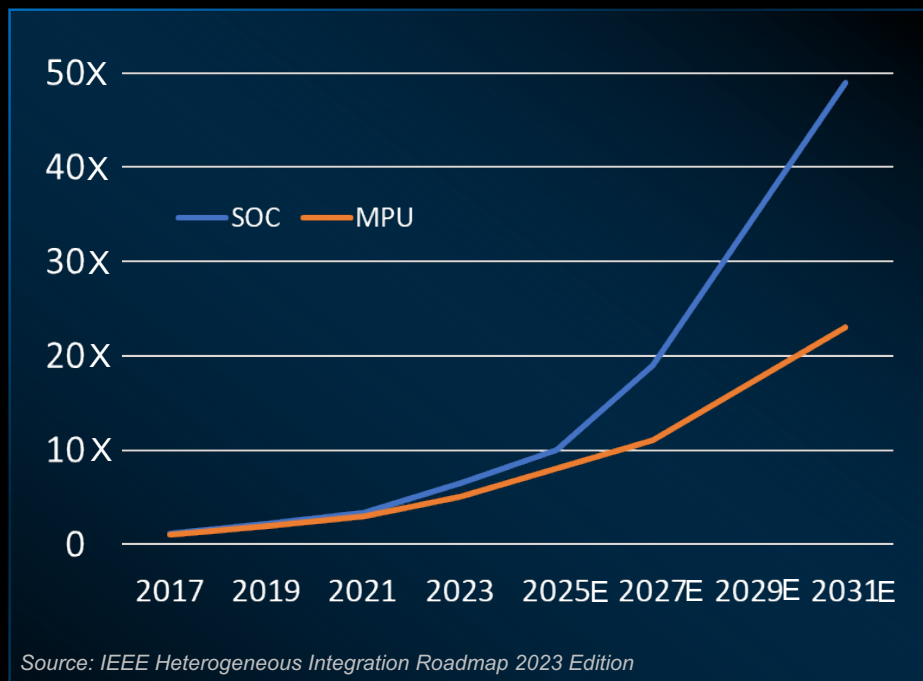
**intel**

**SAMSUNG**



# TSO.ai Lowers Cost of Testing a Chip

Exponential Growth in Test Times



Die test time directly proportional  
to test pattern count



Customer Results  
(Pattern Count Reduction)



Mobile

**45% - 70%**



Systems

**18% - 60%**



Graphics

**19% - 25%**

# LLM-Based EDA (GenAI) is a New Growth Opportunity



Knowledge  
Assistant

Answer expert questions  
on tools & workflows



Debug  
Assistant

In-context Analysis &  
Design Debug



Workflow  
Assistant

Prescriptive Guidance &  
Workflow recommendation



Collateral  
Generation

Design Collateral Gen: RTL,  
Testbench, Assertion creation

“30% faster ramp-time for junior engineers without having to depend on expert engineers”

“We can focus on the critical tasks while GenAI is taking care of the mundane stuff”

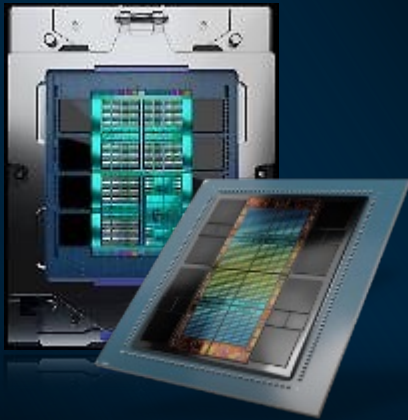
“The responses are at least 2x faster to expert queries than the search process”

# Pioneering Innovations Unleash New Growth Vectors

## Multi-Die

# Multi-Die Packages: Enabling Many Transformative Products

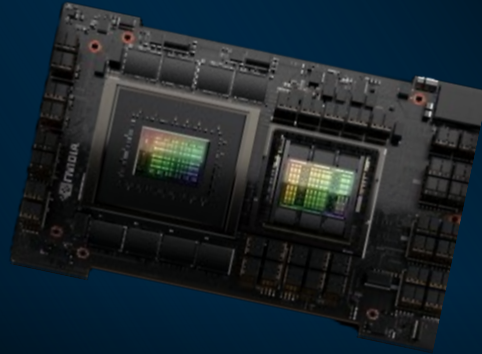
## AMD Instinct™ MI300



**Gen AI Accelerator**  
304 GPUs, 192GB HBM3

Source: AMD

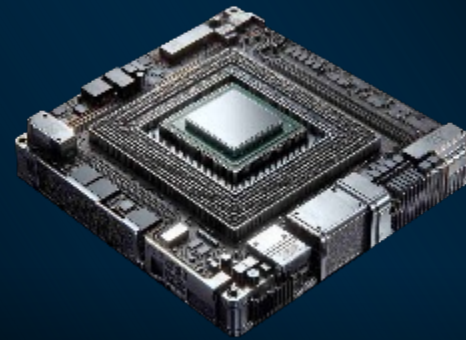
## NVIDIA Grace Hopper



**Gen AI Superchip**  
72-core CPU, H100 Tensor GPU,  
96GB HBM3 / 144GB HBM3e

Source: nVIDIA

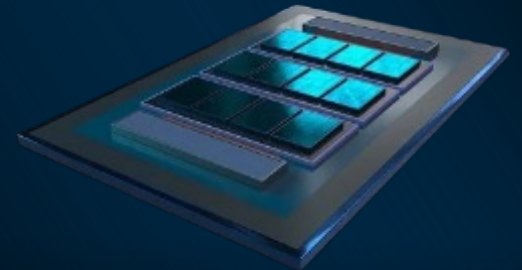
## Google TPU v5



**“Hypercomputer” AI**  
256 chips/pod, 95GB HBM2e

Source: Google

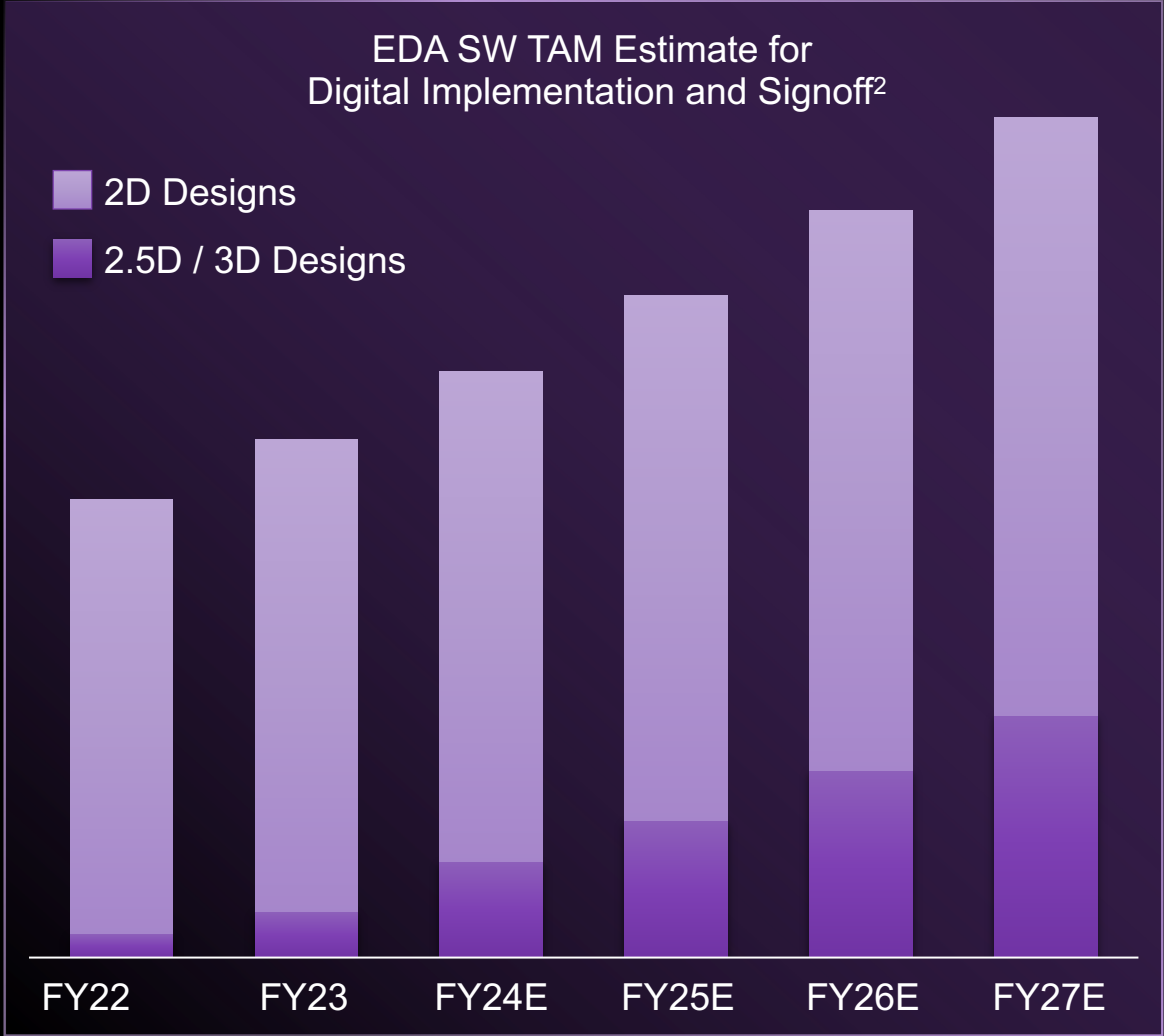
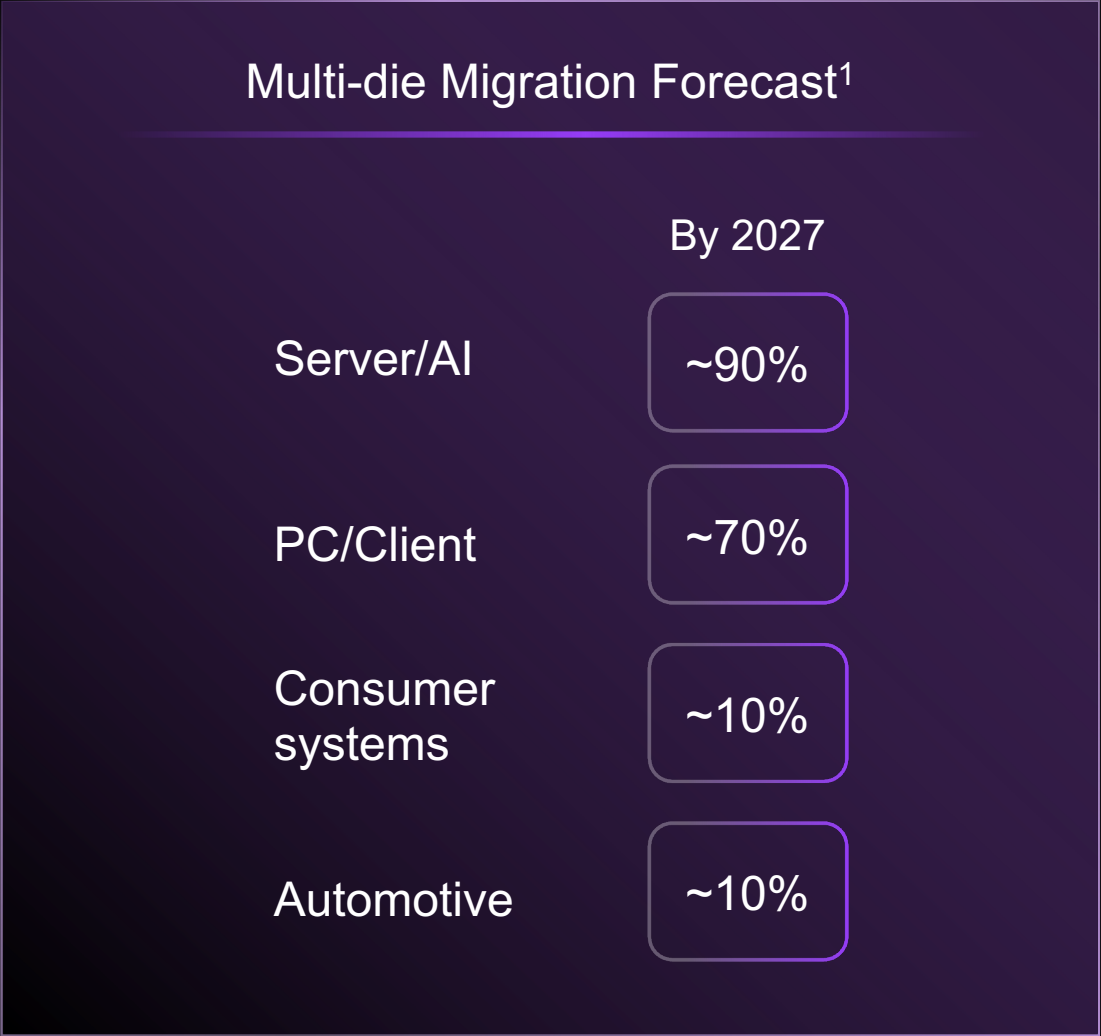
## Intel Clearwater Forest (Xeon)



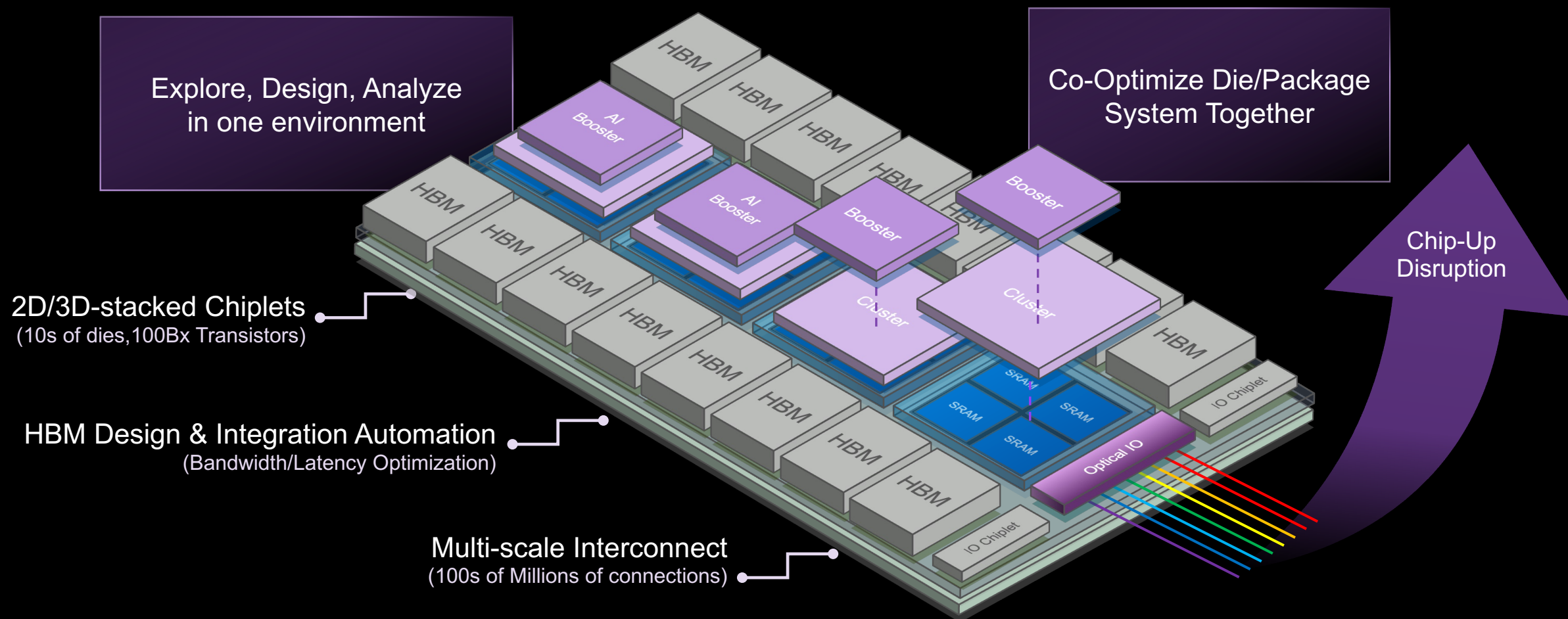
**Nextgen Server Chip**  
288-core CPU, Intel 18A,  
Advanced 3D packaging

Source: Intel

# Estimated 30% of EDA SW TAM Driven by Multi-Die by 2027

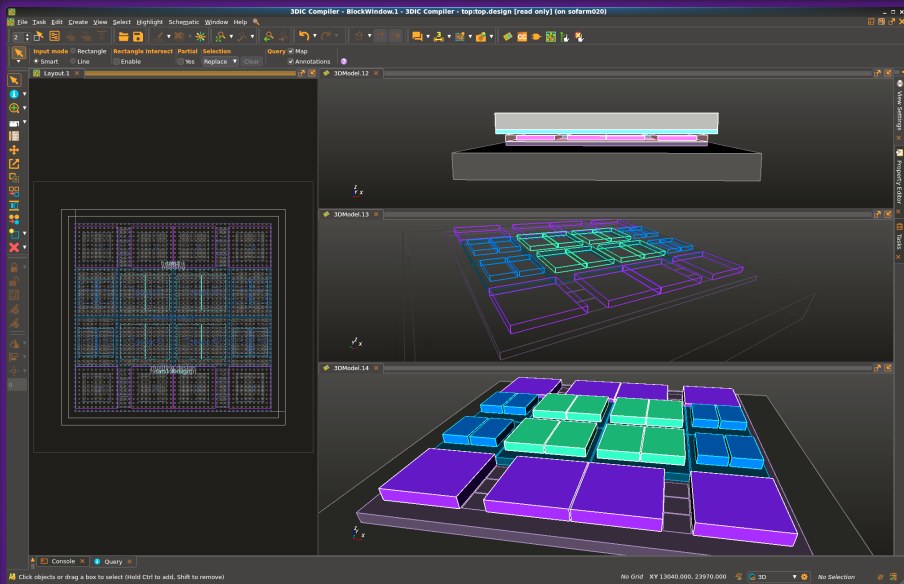


# Chip-Up Disruption to Meet Trillion-Scale Multi-Die Challenge



# Comprehensive Multi-Die Package Solution

## Synopsys 3DIC Compiler Platform



Unified Exploration to Signoff  
(Common Fusion Data-model and UX)

AI-Powered architecture exploration and design  
with software co-development and validation

Broadest Die-to-Die IP portfolio  
on silicon-proven technologies

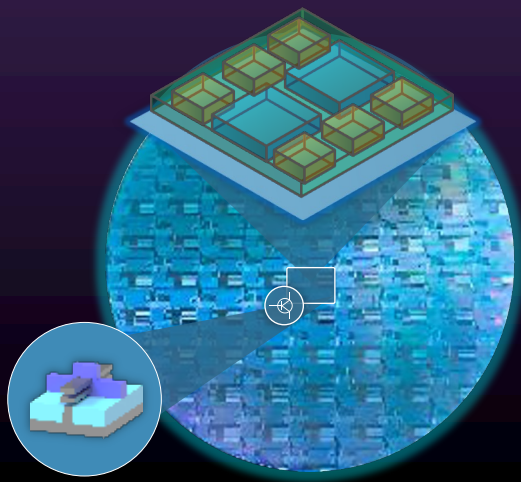
Industry's only unified and scalable platform  
for 3D heterogeneous integration design

Integrated Test and Silicon lifecycle management  
to improve yield, health and reliability

# Enabling Multi-Die Innovation at Market Makers

## CPU Company

Delivered A<sup>o</sup> architecture intricacy with 3D integration for 300B+ transistor system



## HPC / AI Semi Company

Made over 10 different pieces of silicon to behave as a single superchip



“Single” chip system for AI workloads

## Hyperscale System Company

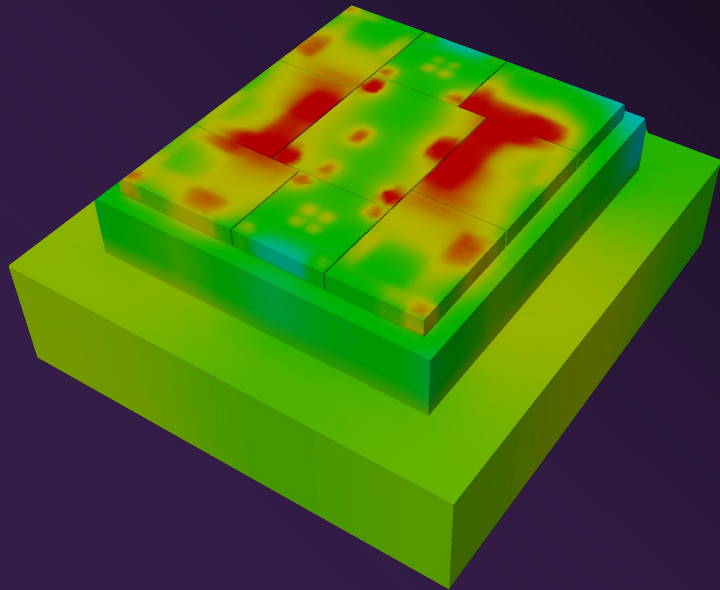
Optimized thermal profiles to unlock significant energy efficiency



10,000x/more efficiency across the array of datacenter racks of chips

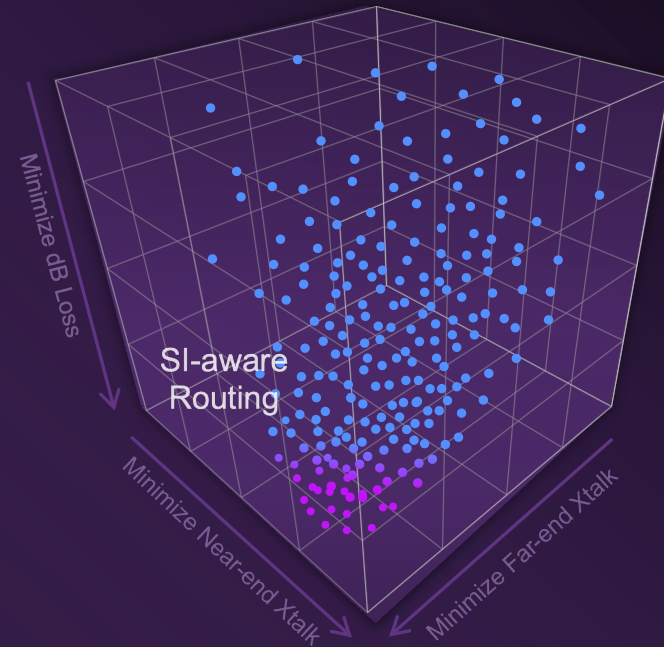
# New Innovations to Accelerate Multi-Die Exploration/Design

## Fast Native Thermal Analysis



Hours vs. Days  
in Incremental Analysis

## 3DSO.ai: AI-Driven Optimization

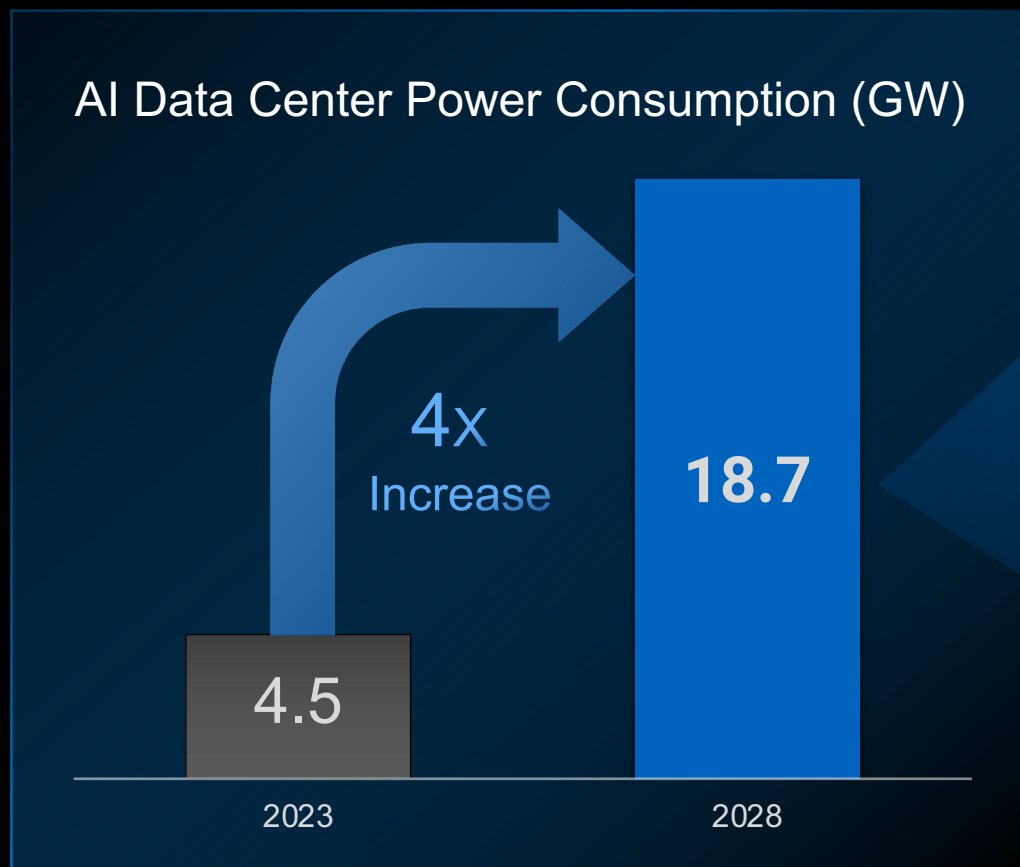


10x Productivity Boost  
Superior QoR

# Pioneering Innovations Unleash New Growth Vectors

## Energy Efficiency

# AI Driving Unprecedented Power Consumption



Source: Schneider Electric, December 2023

nVIDIA H100 GPU

700 Watts\*

Source: Schneider Electric, December 2023 \* Thermal Design Power

Energy to train GPT-4

50 GWh

Source: RISE Research Institutes of Sweden, Oct 2023

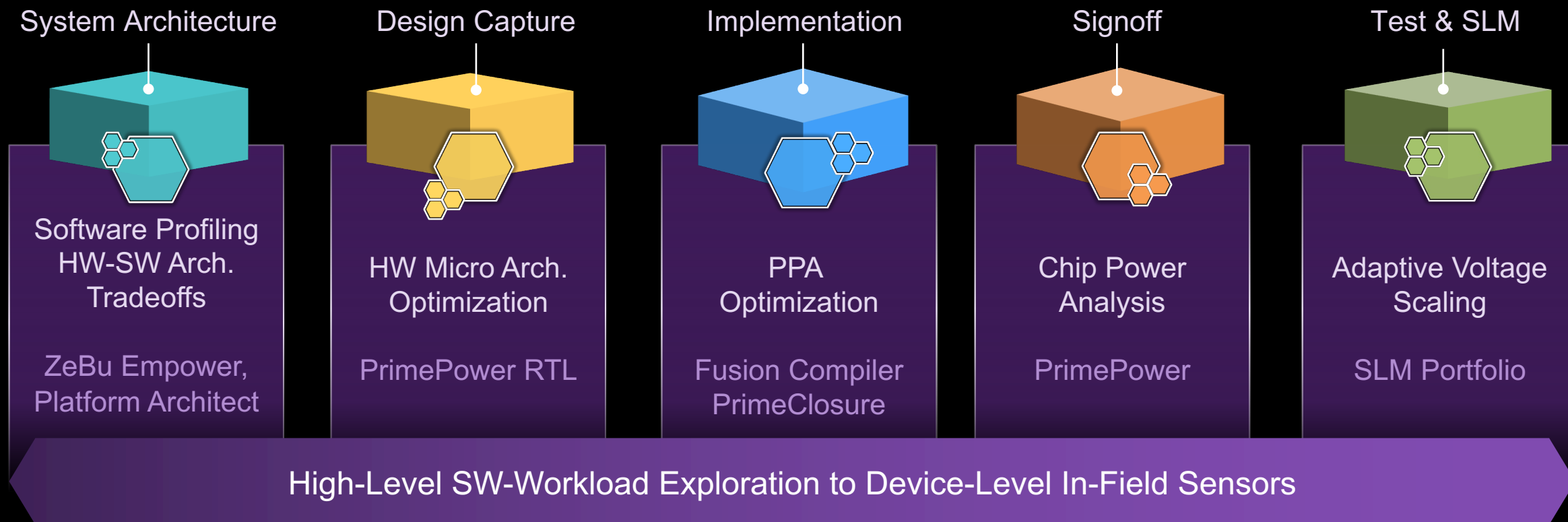
ChatGPT request vs Google search

10x More Power

Source: International Energy Agency, January 2024 report

Software to Device Solution Needed to Address the Magnitude of Power Consumption

# Optimizing Power at Every Design Phase



>2X

Savings with Arch. Exploration  
and SW Profiling of AI Design

20%

Savings from RTL  
Changes of NPU Design

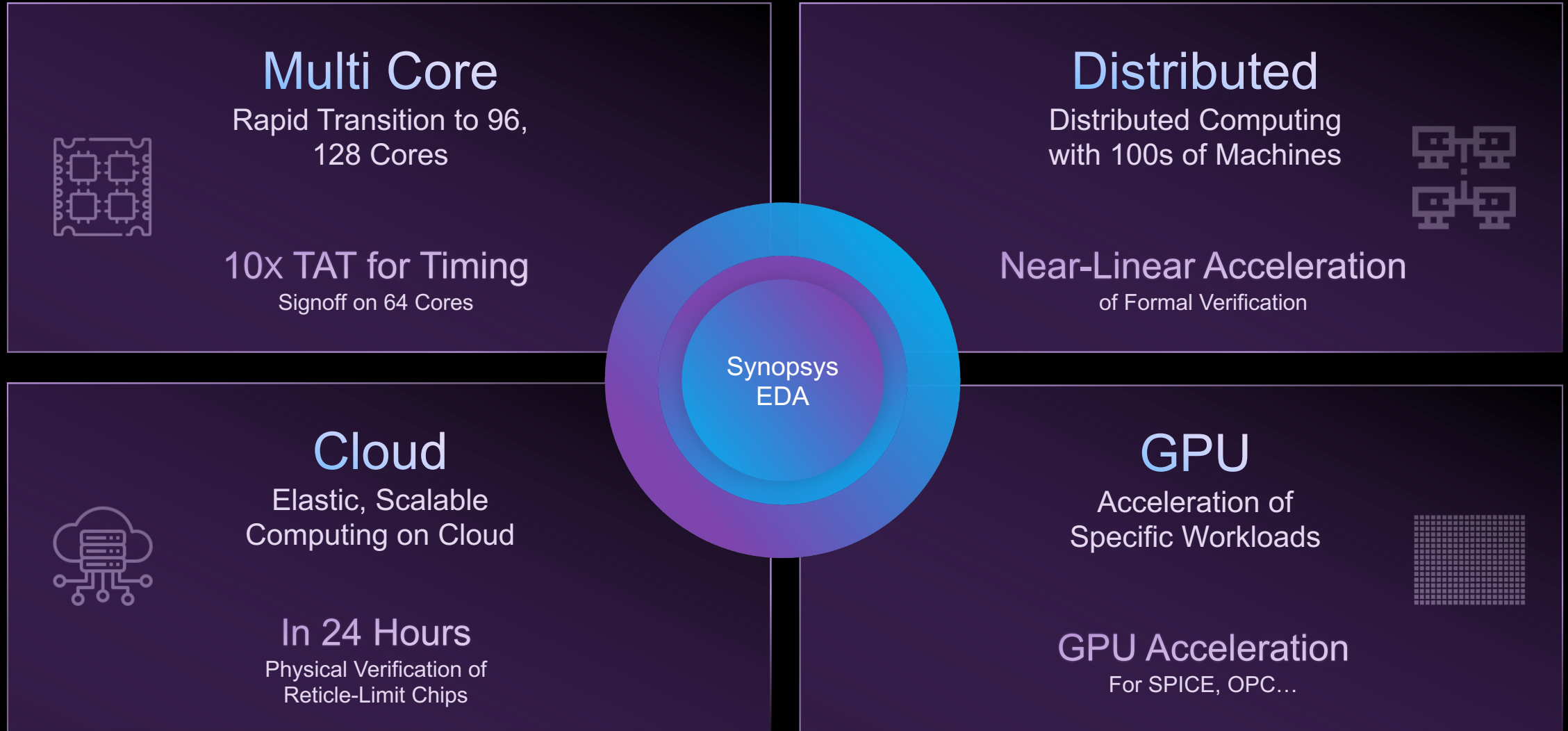
12%

Dynamic Power Savings from  
Implementation Opt. of HPC Design

**Pioneering Innovations  
Unleash New Growth Vectors**

**EDA Compute Acceleration**

# EDA Compute Acceleration Innovations



## SYNOPSYS: MISSION CRITICAL FOR NVIDIA SILICON SUCCESS

DECADES OF COLLABORATION ACROSS FULL EDA SUITE POWERS ACCELERATED COMPUTING

13x

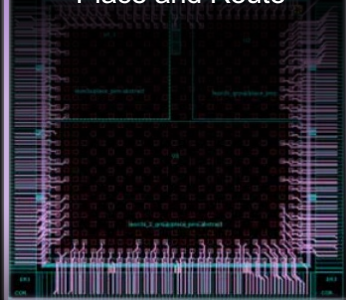
### Verification Functional Verification



- Synopsys VCS
- NVIDIA L40
- NVIDIA Grace Hopper

10x

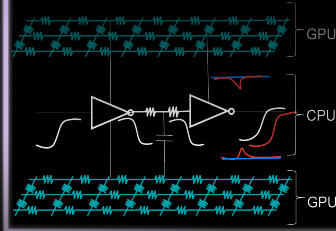
### Design Place and Route



- Synopsys Fusion Compiler
- NVIDIA Grace Hopper

15x

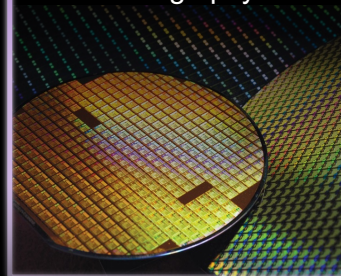
### Simulation SPICE Simulation



- Synopsys PrimeSim
- NVIDIA Hopper
- NVIDIA Grace Hopper

15x

### Manufacturing Computational Lithography



- Synopsys Proteus
- NVIDIA cuLitho
- NVIDIA Grace Hopper

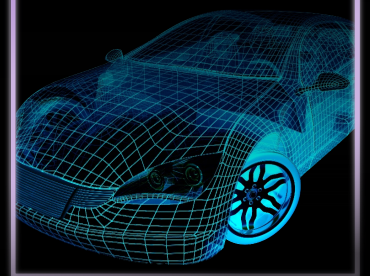
### Generative AI Industry's 1st LLM- Based GenAI EDA Solution



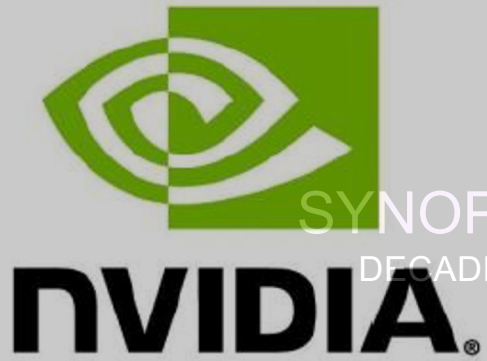
- Synopsys.ai
- NVIDIA NeMo & NIM
- NVIDIA DGX

### Systems Software

Testing & Validation of  
Automotive Software



- Synopsys Electronics Digital Twin, vECU, TPT
- NVIDIA Omniverse



SYNOPSYS®



SYNOPSYS: MISSION CRITICAL FOR NVIDIA SILICON SUCCESS  
DECADES OF COLLABORATION ACROSS FULL EDA SUITE POWERS ACCELERATED COMPUTING

# TSMC and Synopsys Bring Breakthrough NVIDIA Computational Lithography Platform to Production

Verification  
Functional Verification

Design  
Place and Route

Simulation  
SPICE Simulation

Manufacturing  
Computational  
Lithography

Generative AI  
Industry's 1st LLM-  
Based GenAI EDA  
Solution

Systems  
Software  
Testing & Validation of  
Automotive Software

*NVIDIA cuLitho Accelerates Semiconductor Manufacturing's Most Compute-Intensive Workload by 40-60x, Opens Industry to New Generative AI Algorithms*

“Computational lithography is a cornerstone of chip manufacturing,” said Jensen Huang, founder and CEO of NVIDIA. “Our work on cuLitho, in partnership with TSMC and Synopsys, applies accelerated computing and generative AI to open new frontiers for semiconductor scaling.”

• Synopsys VCS  
• NVIDIA Grace Hopper

• Synopsys Fusion Compiler  
• NVIDIA Grace Hopper

• Synopsys PrimeSim  
• NVIDIA Grace Hopper

• Synopsys Proteus  
• NVIDIA Grace Hopper

• Synopsys.ai  
• NVIDIA DGX

• Synopsys Electronics  
• NVIDIA Omniverse

Synopsys EDA is Mission Critical in the Era of Pervasive AI

Well Positioned with Breadth and Depth of Portfolio

Next-Gen Architecture to Rapidly Fuse Electronics & Multi-Physics

Pioneering in Emerging Areas Unleashes New Growth Vectors

The background is a solid dark purple. In the bottom left corner, there is a glowing blue and white graphic consisting of a network of dots connected by lines, resembling a digital or molecular structure. The Synopsys logo is centered at the top in white.

**SYNOPSYS**<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

THANK YOU



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

# Accelerating Systems Strategy

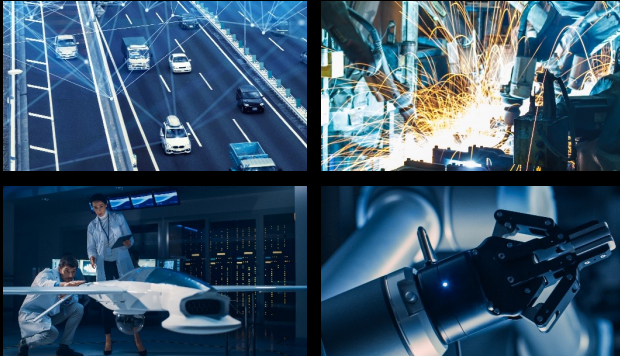
## Synopsys Investor Day 2024

Ravi Subramanian, Ph.D.  
*General Manager, Systems Design Group*

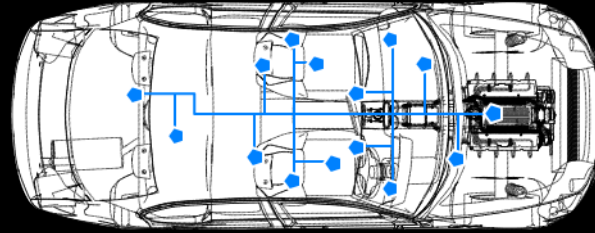
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Our Technology, Your Innovation<sup>™</sup>

# Pervasive Intelligence Driven By Increasing Silicon and Software Content In Systems Products



Autonomy and software-defined systems reshaping industries

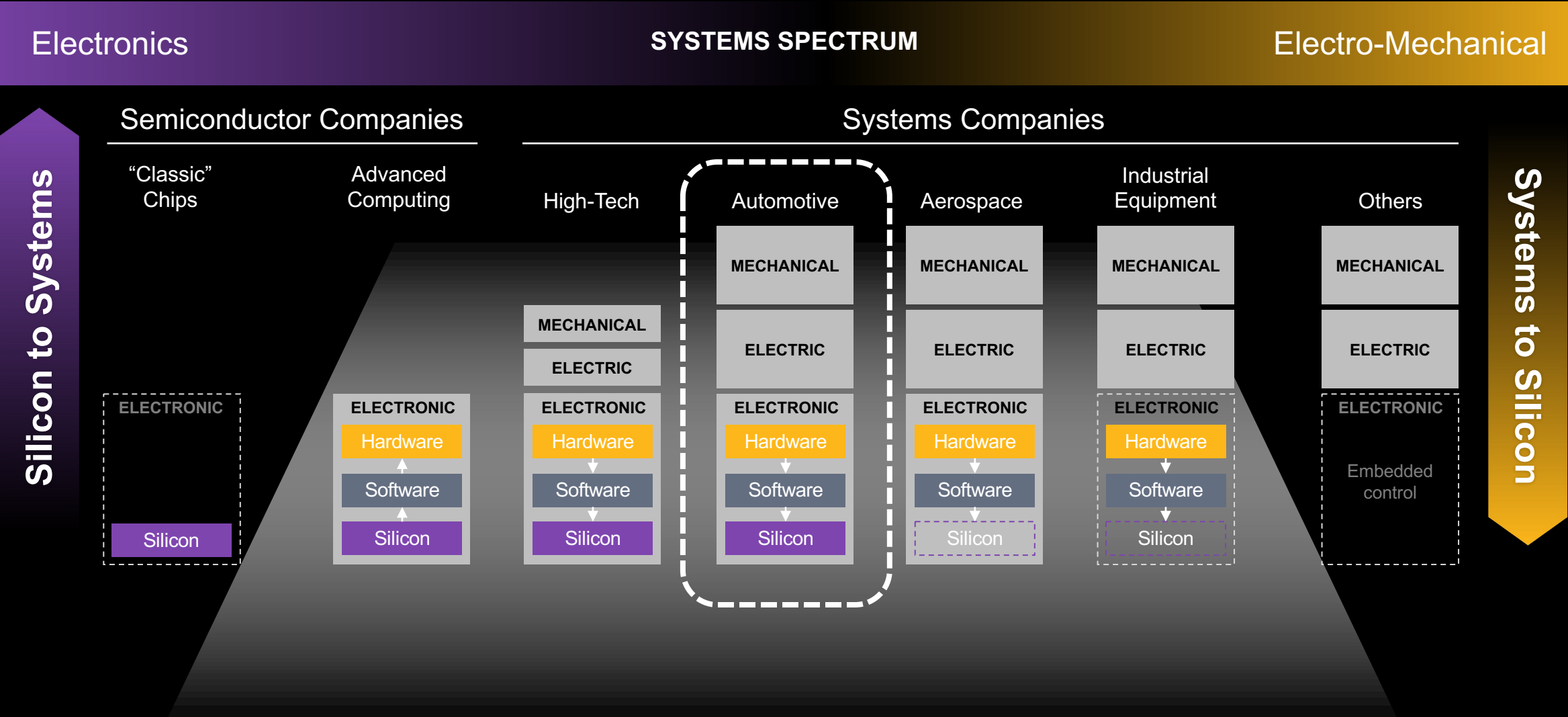


Systems companies re-architecting products, business models and development processes



Driving demand for massive compute, both at the edge and the data center

# Silicon to Systems Transition Ongoing Across Verticals

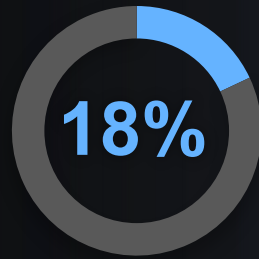


# Systems R&D Processes Are More Complex, More Costly

YESTERDAY

TODAY

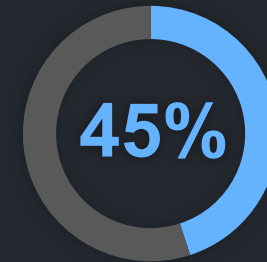
% of electronics in the cost of a new car<sup>1</sup>...



2000

*Increasing  
cost of  
electronics*

...increasing by ~2.5x



2030

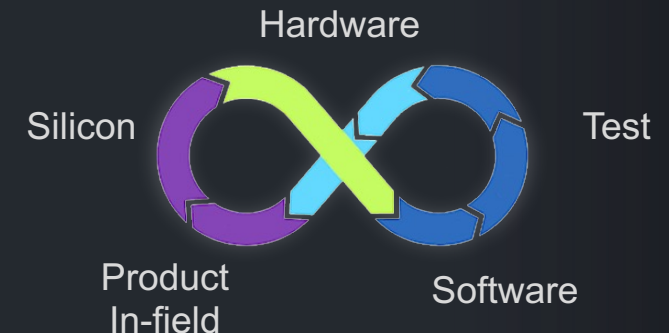
Sequential design flows...

Silicon   Hardware   Software   Test   Product  
in-field

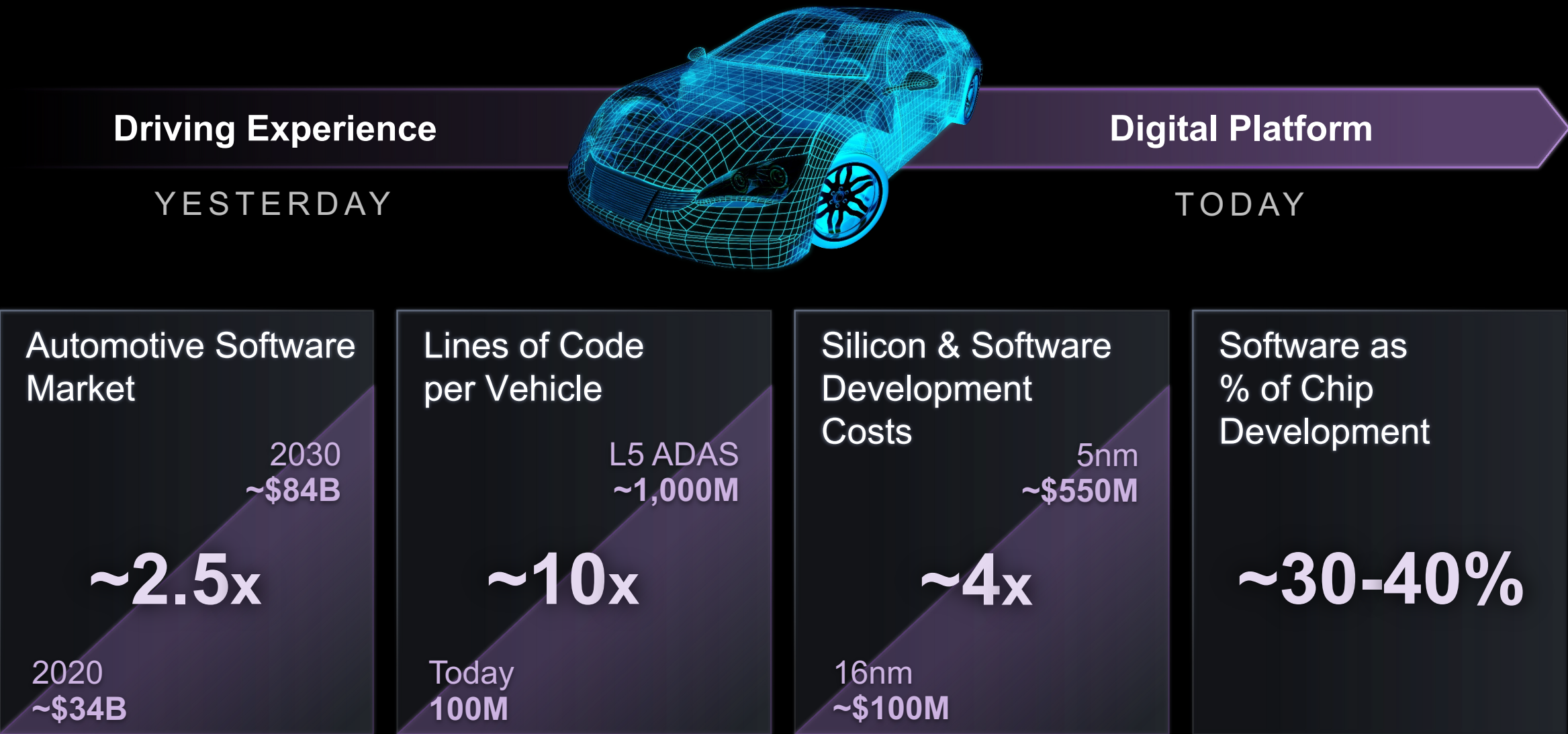


*New  
design  
flows*

...are now continuous



# Massive Challenges Facing Auto Industry Forcing Change...



Source: Automotive Software and Electronics 2030 (McKinsey, Jul 2019); Levers to Unleash Value (Volkswagen, Jan 2020); Computer on Wheels (Roland Berger, Q1 2020)

# ...and Previous Product Testing Methods Are Unsustainable...



“

Autonomous vehicles would have to be **driven hundreds of Millions of miles** and sometimes **hundreds of billions of miles** to demonstrate their reliability...

...existing fleets would take tens and sometimes **hundreds of years** to drive these miles – **an impossible proposition**

”

Rand Corporation  
“Driving to Safety” Report

# Solving These Challenges Requires Digital Twin Technologies



## Digital Twin

A virtual representation  
of a physical product

### Expected Customer Benefits<sup>1</sup>

Increase revenue  
growth

**+10%**

Accelerate  
time to market

**+50%**

Improve product  
quality

**+25%**

Increase contribution  
margin

**~5-10%**

Source: Digital twins: The Art of the Possible in Product Development and Beyond (McKinsey, Apr 2022)

1. Percentage increases represent a comparison between without and with digital twin

# Industry Leaders Agree Virtualization Is Necessary Today



Mercedes-Benz



**nVIDIA**

“

**Virtual  
development** is  
essential for solving  
our challenges.

”

Volkswagen  
Synopsys 2022 Virtual Prototyping Day



# Our Silicon to Systems Solutions Journey to Digital Twin...

**SYNOPSYS®**

Building the Most  
Comprehensive  
Digital Twin

INDUSTRY  
LEADER

INDUSTRY  
LEADER

**Product Operating  
in Environment**

*Virtual model of product in environment*

**Ansys<sup>1</sup>**

**Virtual Product**

*Virtual model of product*

**Software in  
Electronics**

*Software development &  
test automation*

**PIKETEC**  
software engineering

**Virtualization**

*Virtual model of chip / ECU*

**VIRTUALIZER™**

**Hardware Assisted  
Verification**

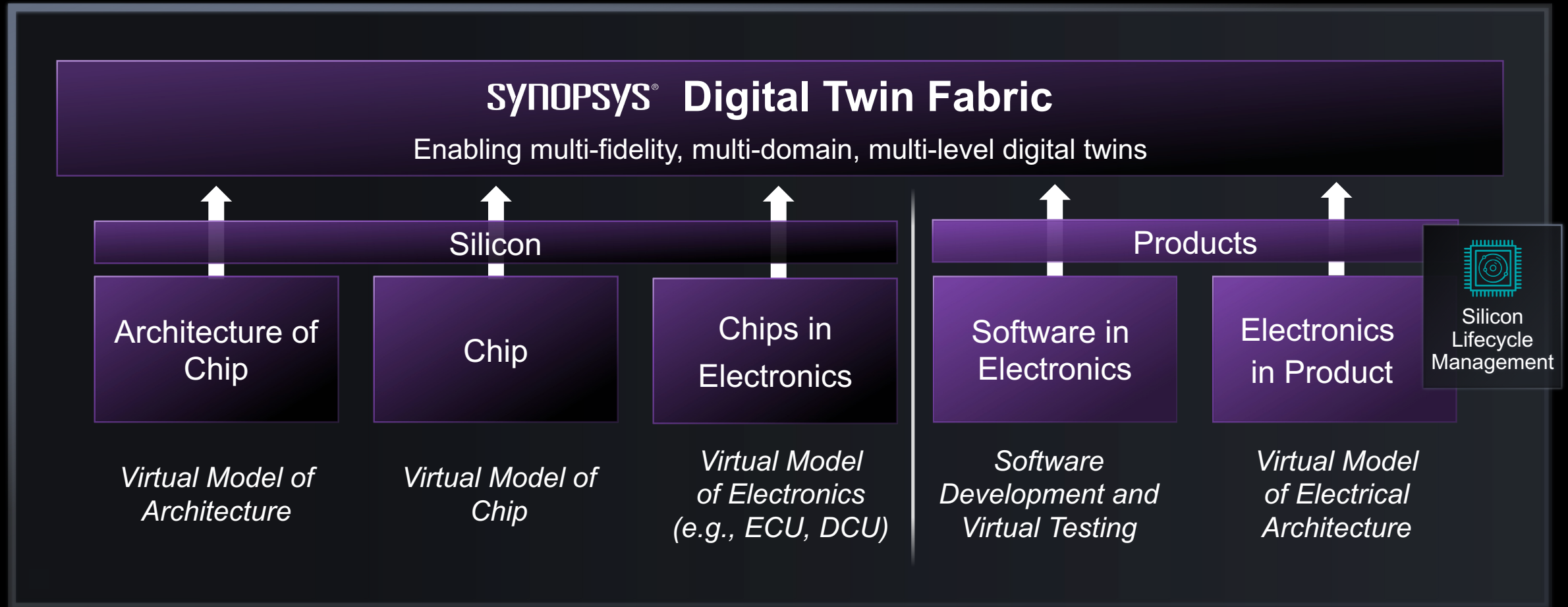
*Foundational EDA*

**ZeBu® & HAPS®**

2005

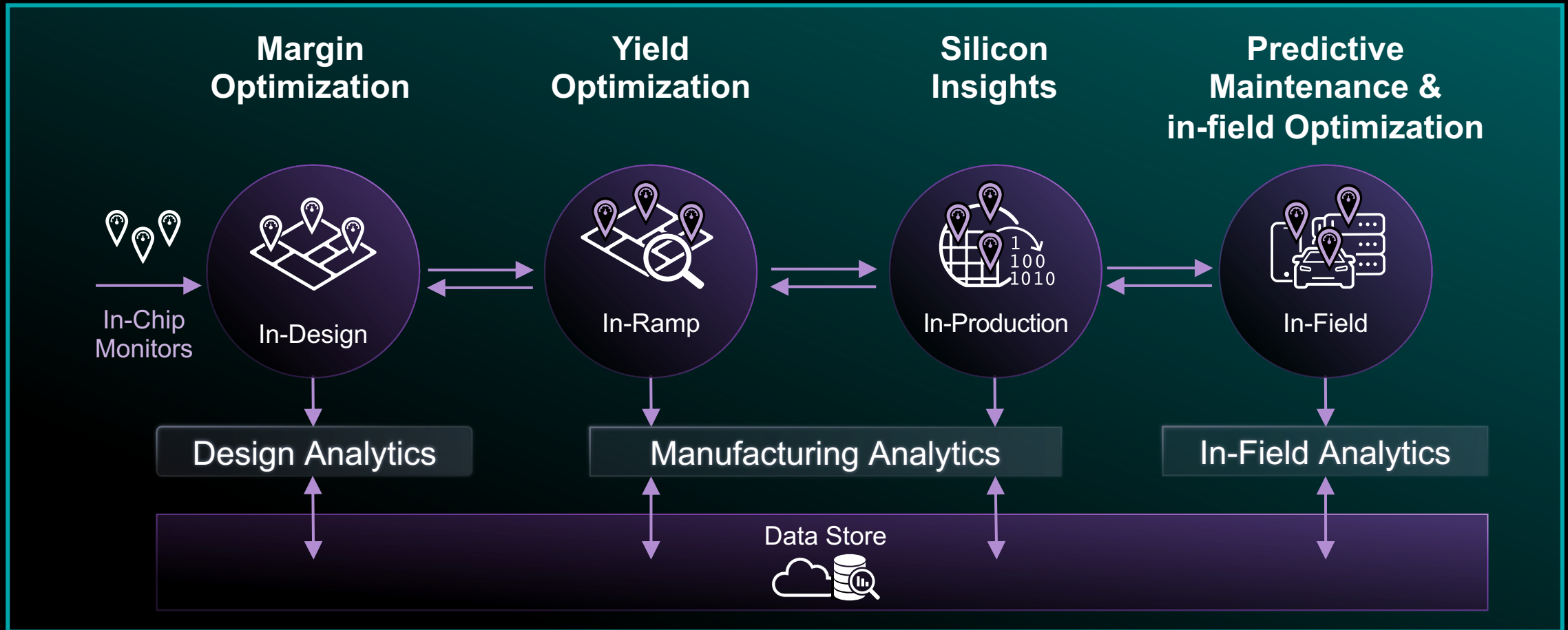
2023

# ...Paving the Way for an Electronics Digital Twin (eDT)...



# ...Including Silicon Lifecycle Management Innovation

Monitoring and optimization of relevant chip metrics across lifecycle stages



**Silicon Lifecycle Management**

# Synopsys Uniquely Positioned to Address Challenge

**9 of Top 10**

Auto OEMs use Synopsys virtualization technology

**400+**

Engineers focused on digital twin technologies serving all automotive geographies

**65**

Virtual chip models from top automotive semis and OEMs

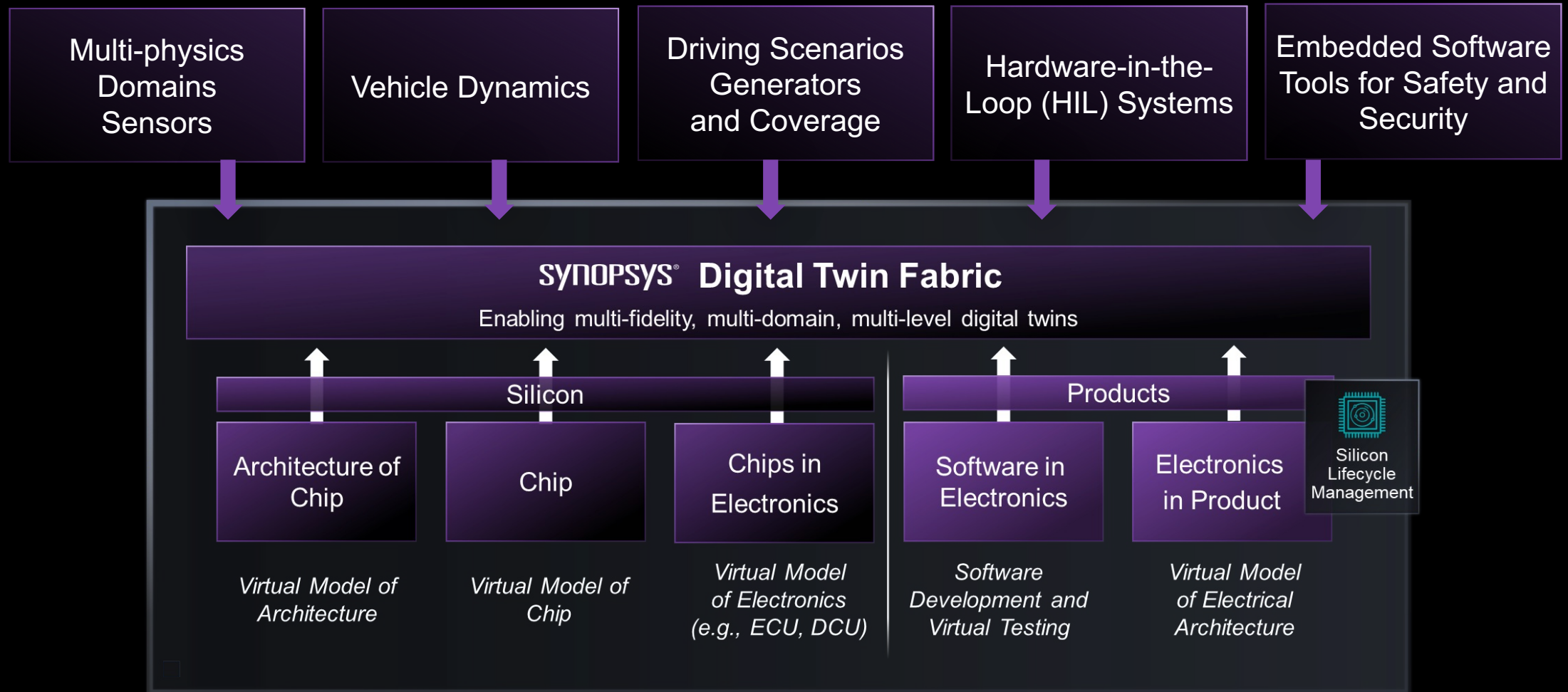
**~\$3B**

Systems Software + SLM TAM

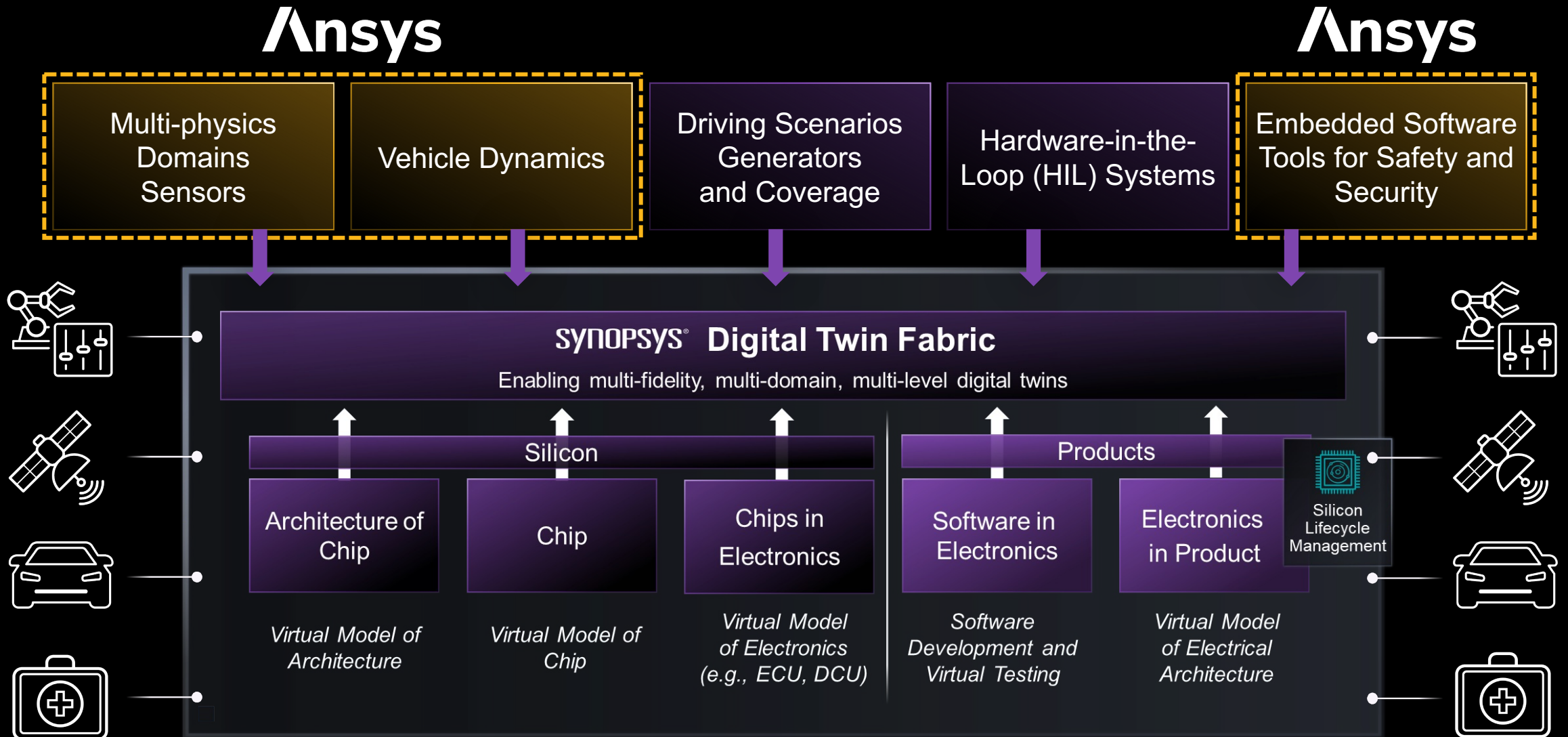
**~30%**

FY20-23 Systems Software + SLM Revenue Growth

# Acquisition of Ansys Accelerates Our eDT Strategy<sup>1</sup>



# Acquisition of Ansys Accelerates Our eDT Strategy<sup>1</sup>



# Pending Combination Will Accelerate Automotive Opportunity

**SYNOPSYS®**



- Virtual vehicle for electronic systems and software testing
- Software testing continuum from virtual to physical platforms
- Integration into rich ecosystem for complete automotive flow

**New Joint Solutions**



## **Automotive Digital Twin**

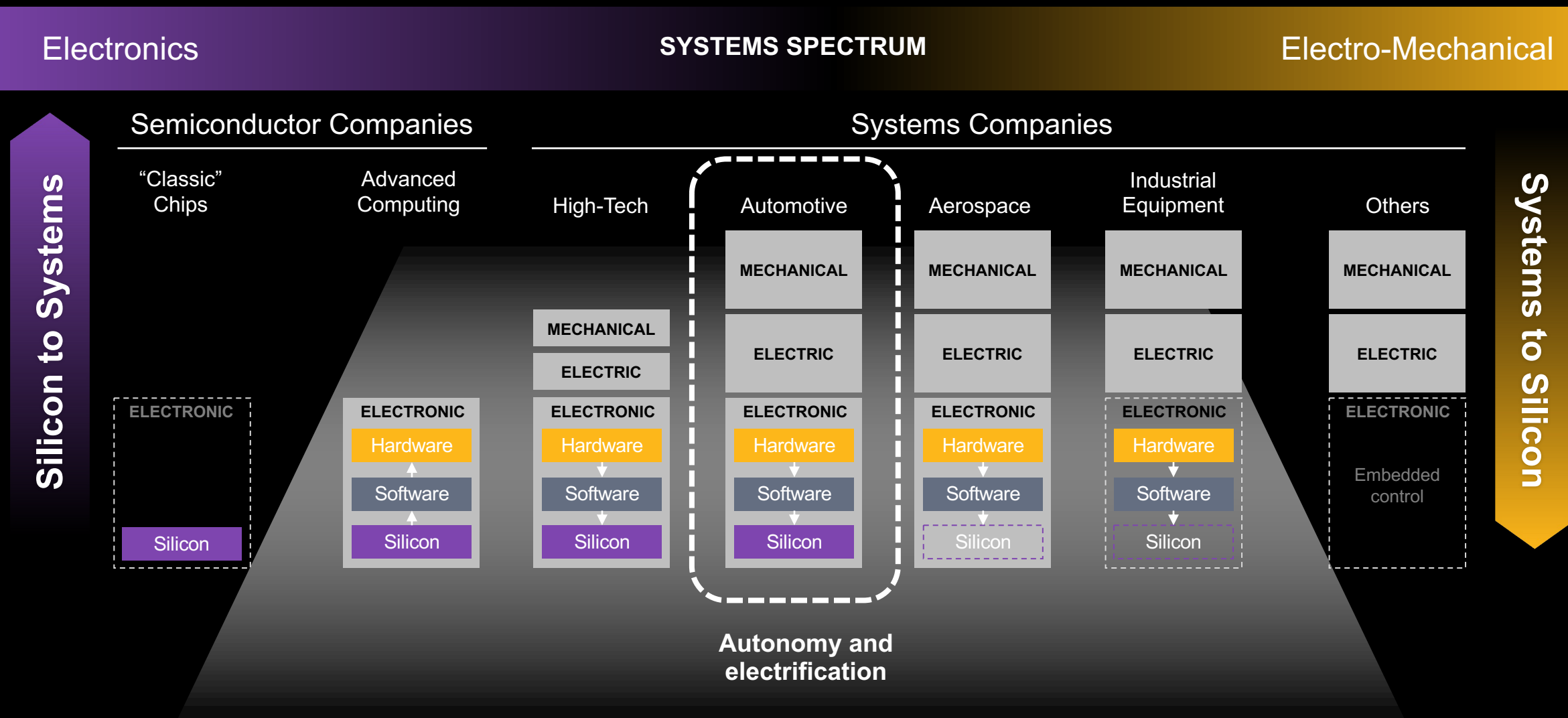
- Comprehensive digital twins for SDV
- Virtual vehicle testing
- Multi-domain system modeling
- Simulation data management
- Twin deployment and lifecycle management

**Ansys**



- Core multi-physics (mechanical, thermal, etc.)
- Auto-specific virtual testing (e.g., collision)
- Auto-grade secure and safe software generation
- Simulation process data management
- Model-based systems engineering

# “...As Well As Opportunities Across Other Verticals”



# “...As Well As Opportunities Across Other Verticals”

Electronics

SYSTEMS SPECTRUM

Electro-Mechanical

Semiconductor Companies

Systems Companies

Silicon to Systems

Systems to Silicon

“Classic”  
Chips

Advanced  
Computing

High-Tech

Automotive

Aerospace

Industrial  
Equipment

Others

ELECTRONIC

Silicon

ELECTRONIC

Hardware

Software

Silicon

MECHANICAL

ELECTRIC

ELECTRONIC

Hardware

Software

Silicon

MECHANICAL

ELECTRIC

ELECTRONIC

Hardware

Software

Silicon

MECHANICAL

ELECTRIC

ELECTRONIC

Hardware

Software

Silicon

MECHANICAL

ELECTRIC

ELECTRONIC

Hardware

Software

Silicon

MECHANICAL

ELECTRIC

ELECTRONIC

Embedded  
control

Autonomy and  
electrification

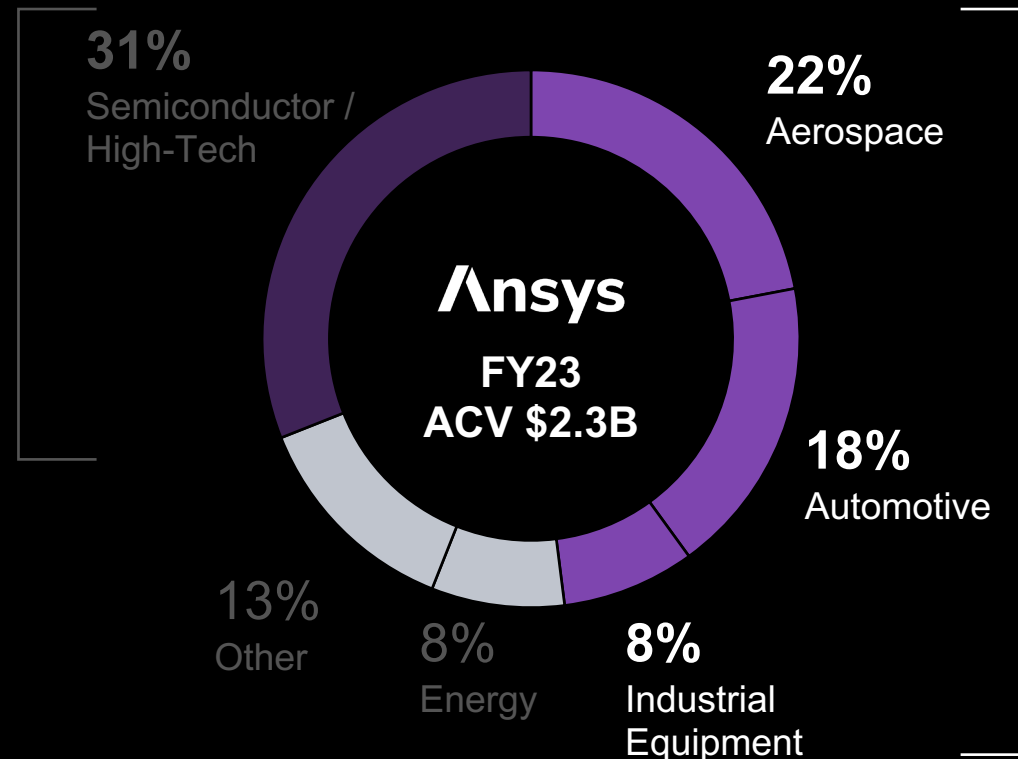
# ...and Accelerates Expansion via Focused Go-to-Market

From Silicon ...

... to Systems

## Strengthens capabilities in advanced chip design technology

- Extends portfolio with industry-leading simulation and analysis solutions
- Enables fusion of multi-physics analysis into digital design flows
- Allows development of joint solutions in new areas (e.g., Analog/RF)



## Accelerates expansion into new growth verticals

- Opportunities to improve EDA Penetration
- Scale fast-growing Synopsys system software businesses through Ansys GTM
- High-potential verticals for digital twin and functional safety solutions combining physics and electronics

# Unlocking ~\$13 Billion Systems TAM with Ansys

Systems TAM

Systems Software  
& SLM

~\$3B

SYNOPSYS®

>20%

Simulation  
& Analysis

~\$10B

Ansys

~10%



Combined  
Systems TAM

~12%

Potential  
additional  
future  
TAM from  
digital twin

TAM CAGR  
(2023–2028)

# In Summary

Unprecedented opportunity as silicon, software, and systems meet

Industry leader in hardware assisted verification and virtualization

Strategically positioned to win with proof points in automotive

Ansys acquisition will accelerate our Silicon to Systems strategy



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Our Technology, **Your Innovation<sup>™</sup>**

THANK YOU



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

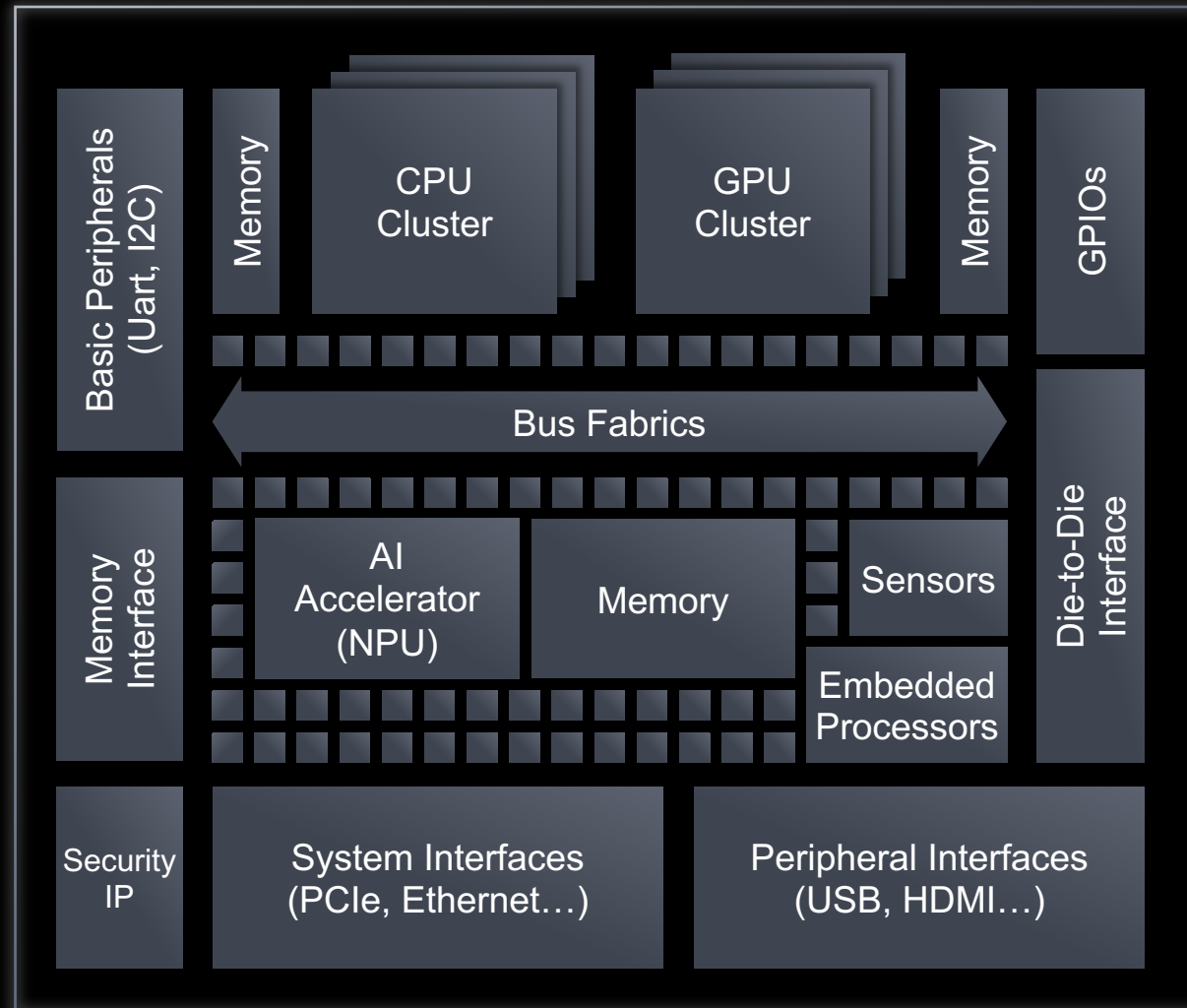
# Synopsys Design IP

John Koeter  
*Senior VP, Product Management and Strategy*

**SYNOPSYS<sup>®</sup>**

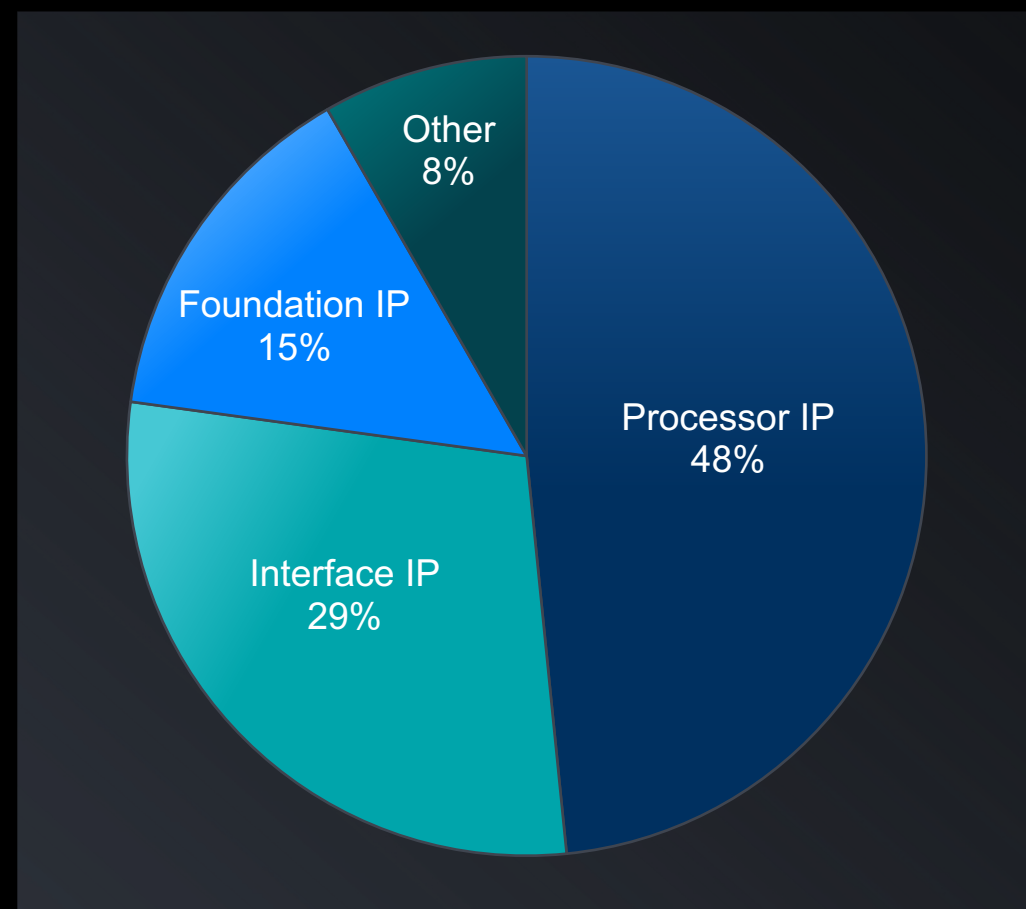
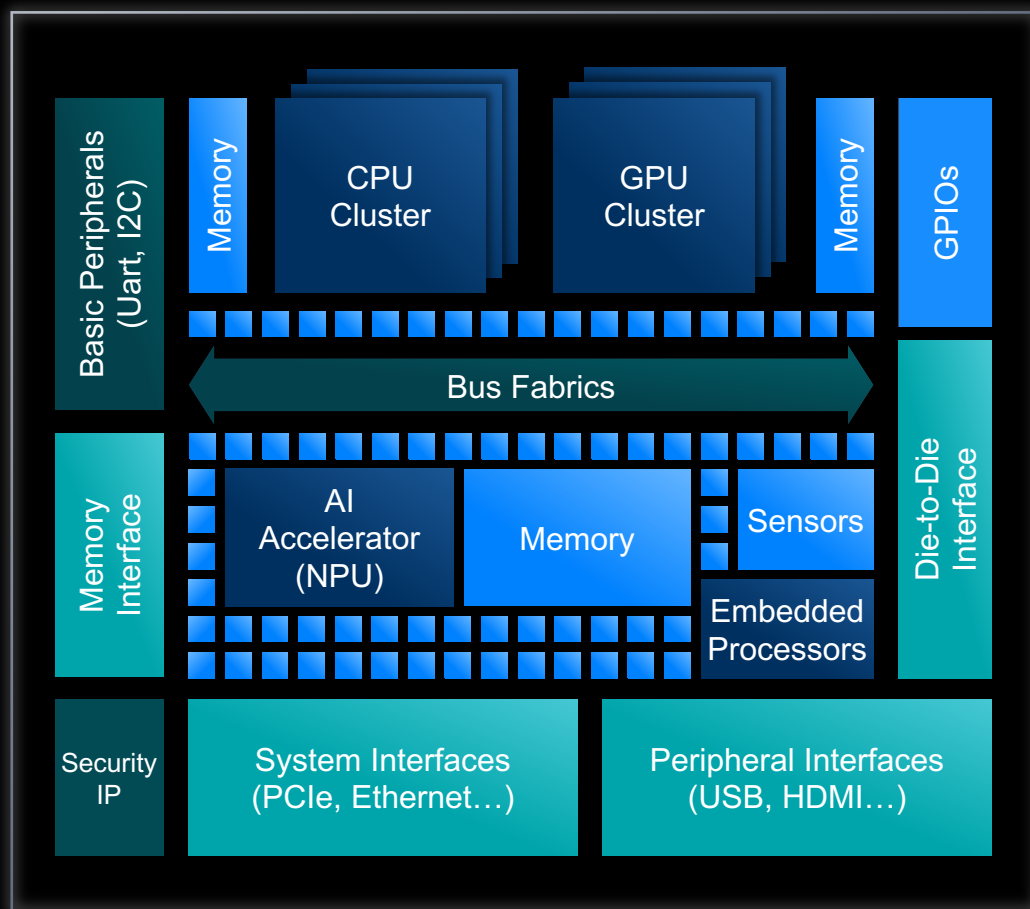
Our Technology, Your Innovation<sup>™</sup>

# Major Components of Semiconductor Chip



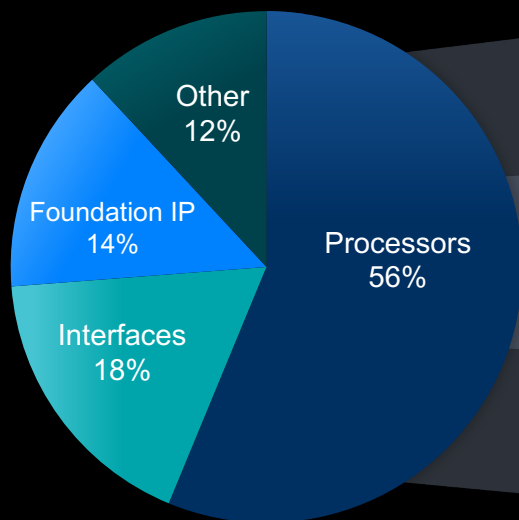
Small boxes are standard cell library elements

# 3rd Party Design IP Market: \$7.05B in 2023



# 3<sup>rd</sup> Party Design IP Market: 11% 2015-2023 CAGR

2015 Semi IP Market

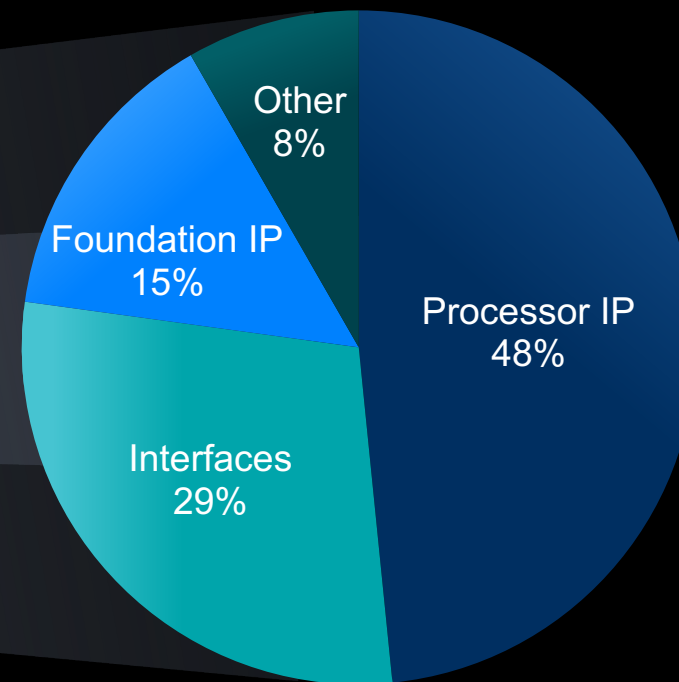


Foundation: 11% CAGR

Processors: 9% CAGR

Interfaces: 18% CAGR

2023 Semi IP Market



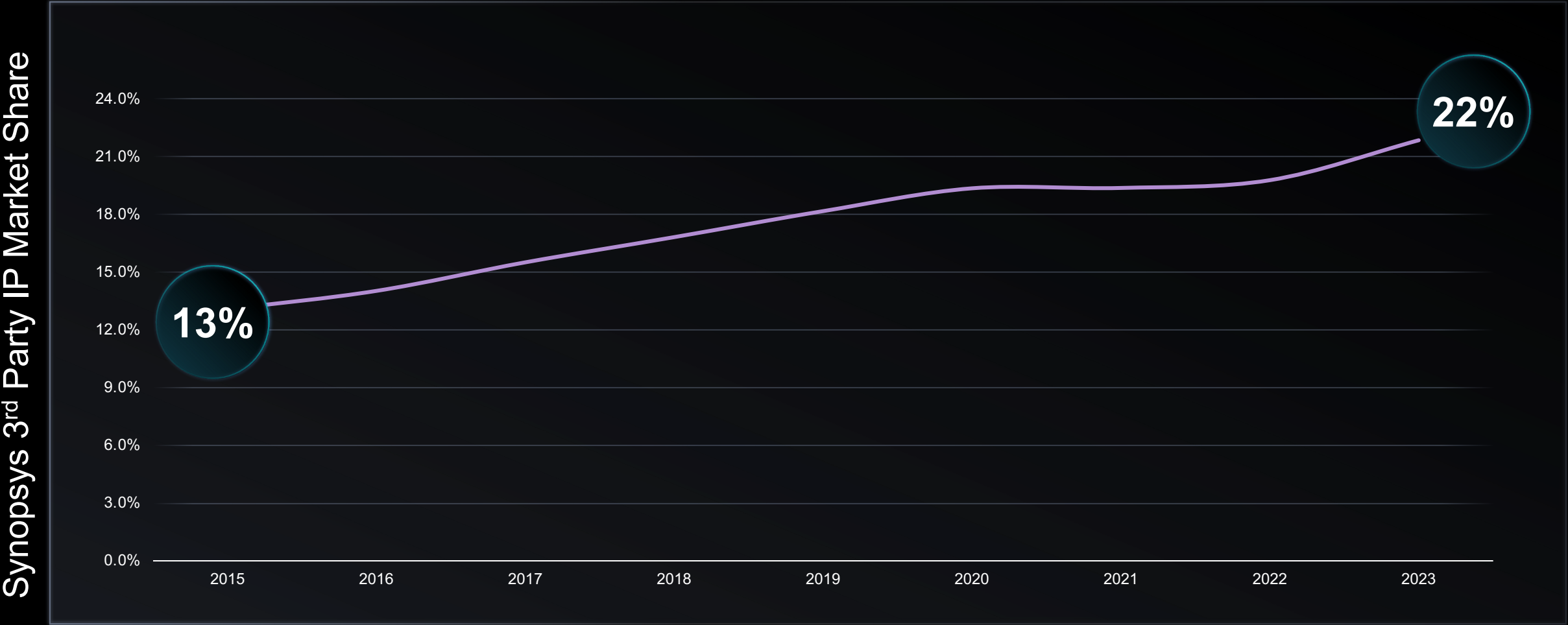
2015 Design IP Market: \$3.0B\*

2023 Design IP Market: \$7.0B\*

Synopsys IP CAGR: 19%\*

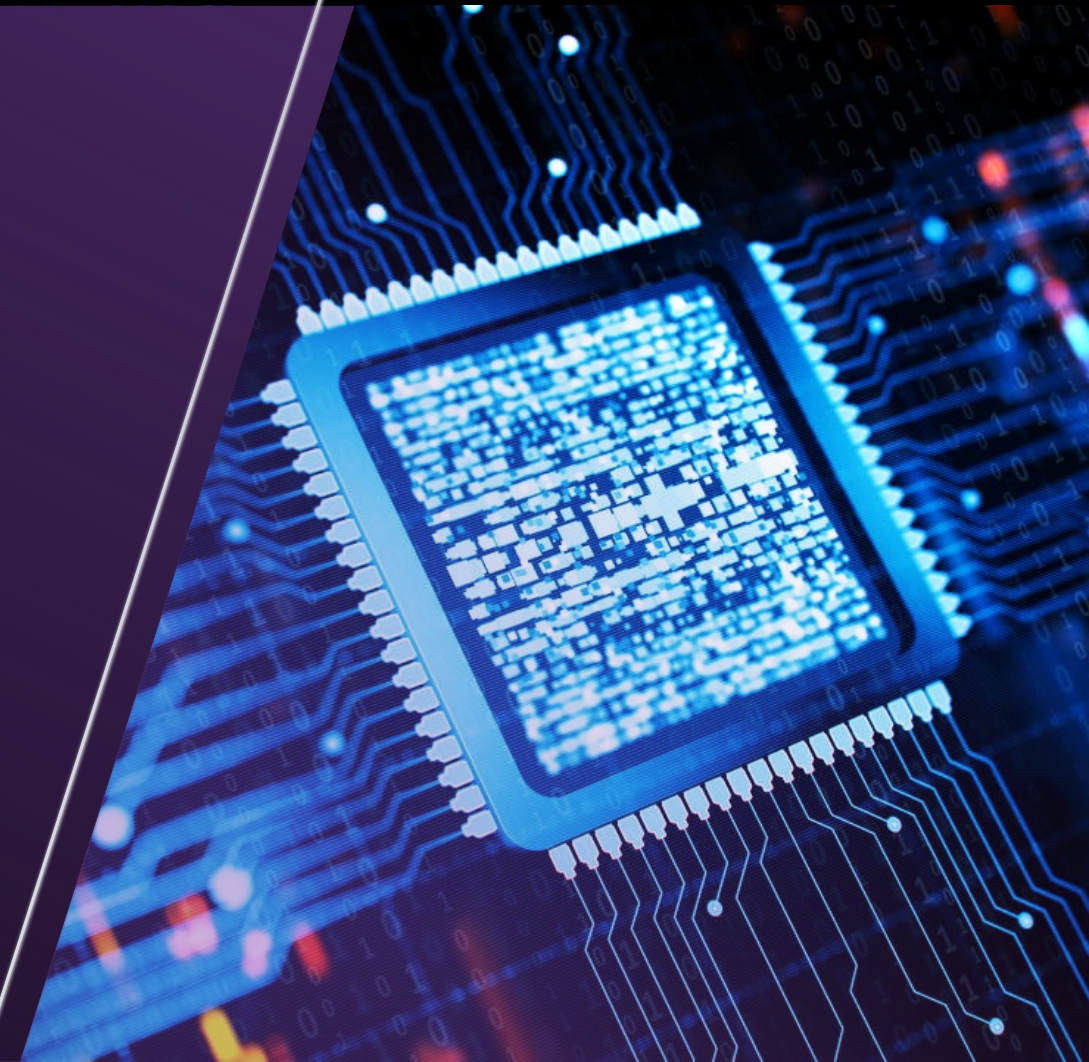
# Synopsys 3<sup>rd</sup> Party IP Market Share Growth

9% Market Share Gain

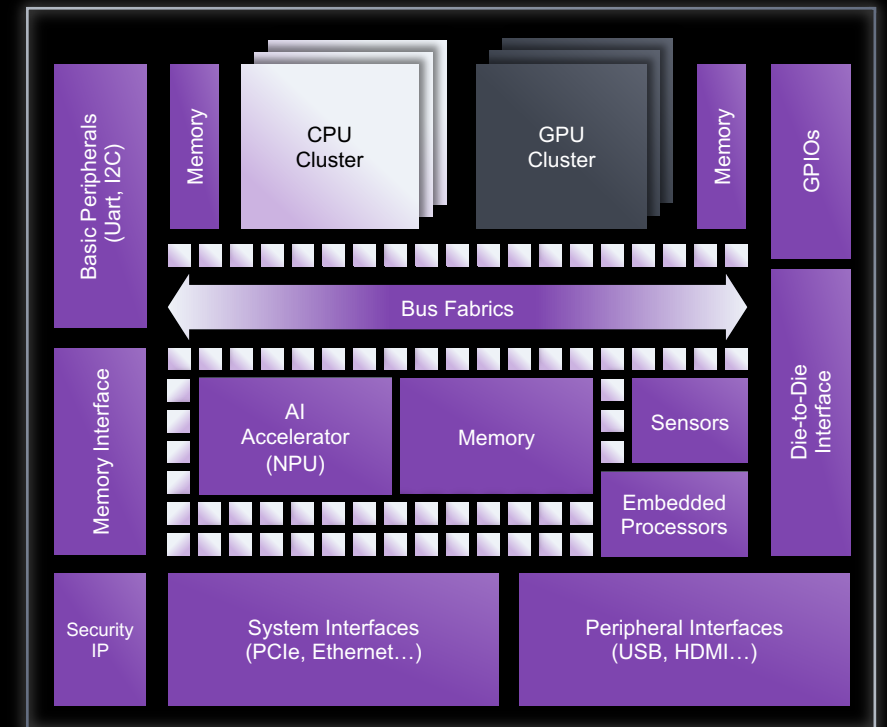
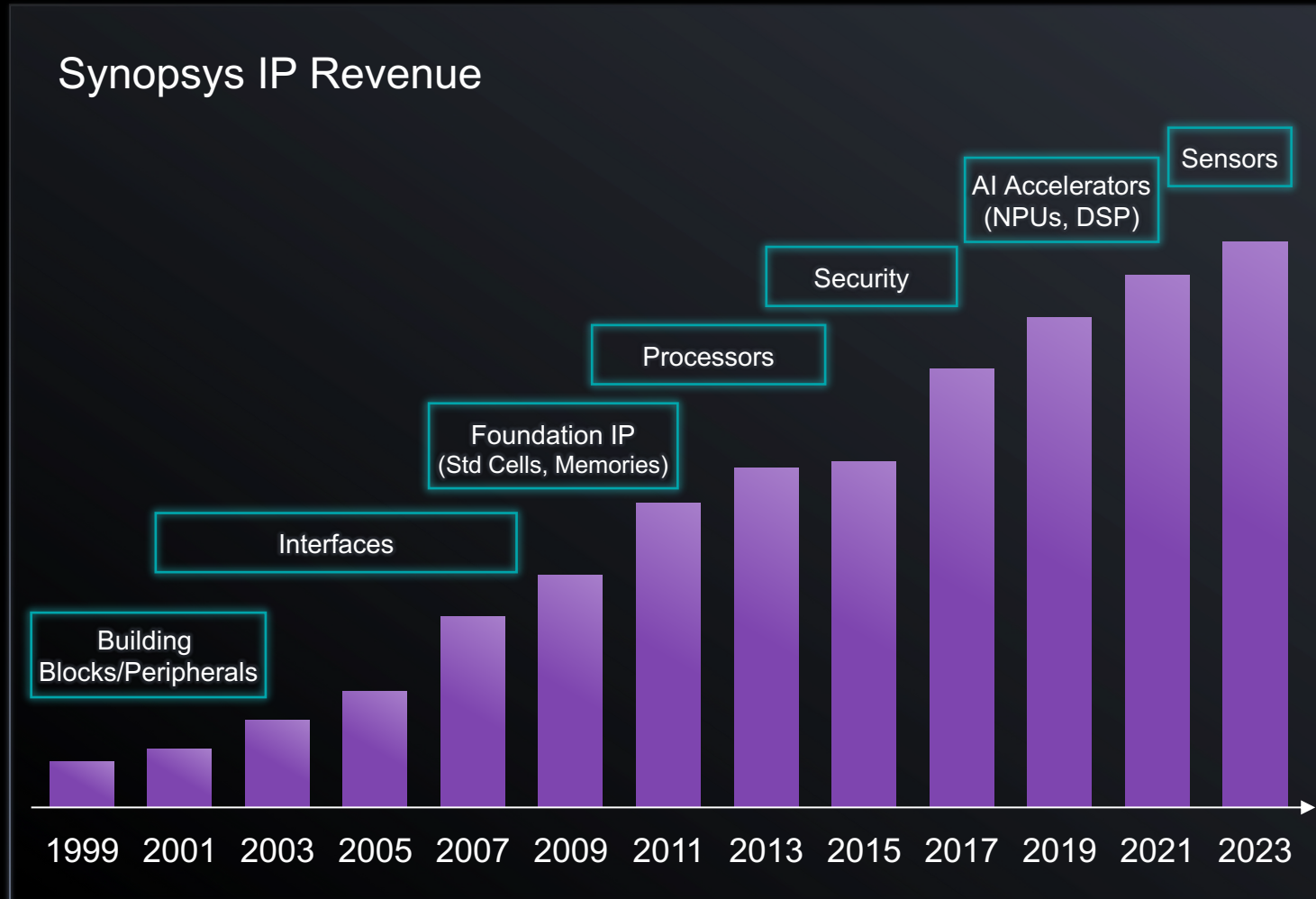


# Synopsys Design IP: The World's Broadest IP Portfolio

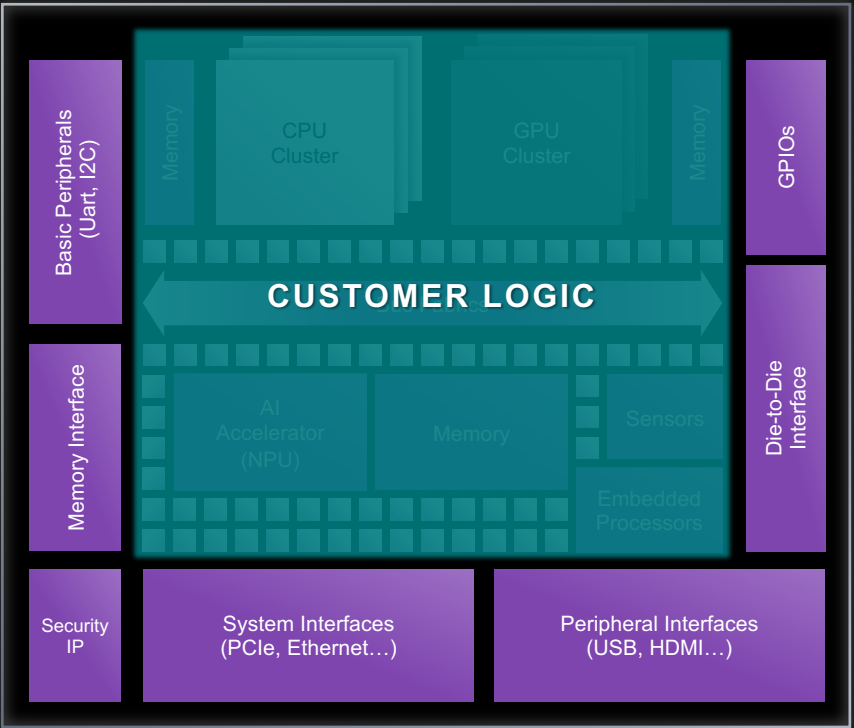
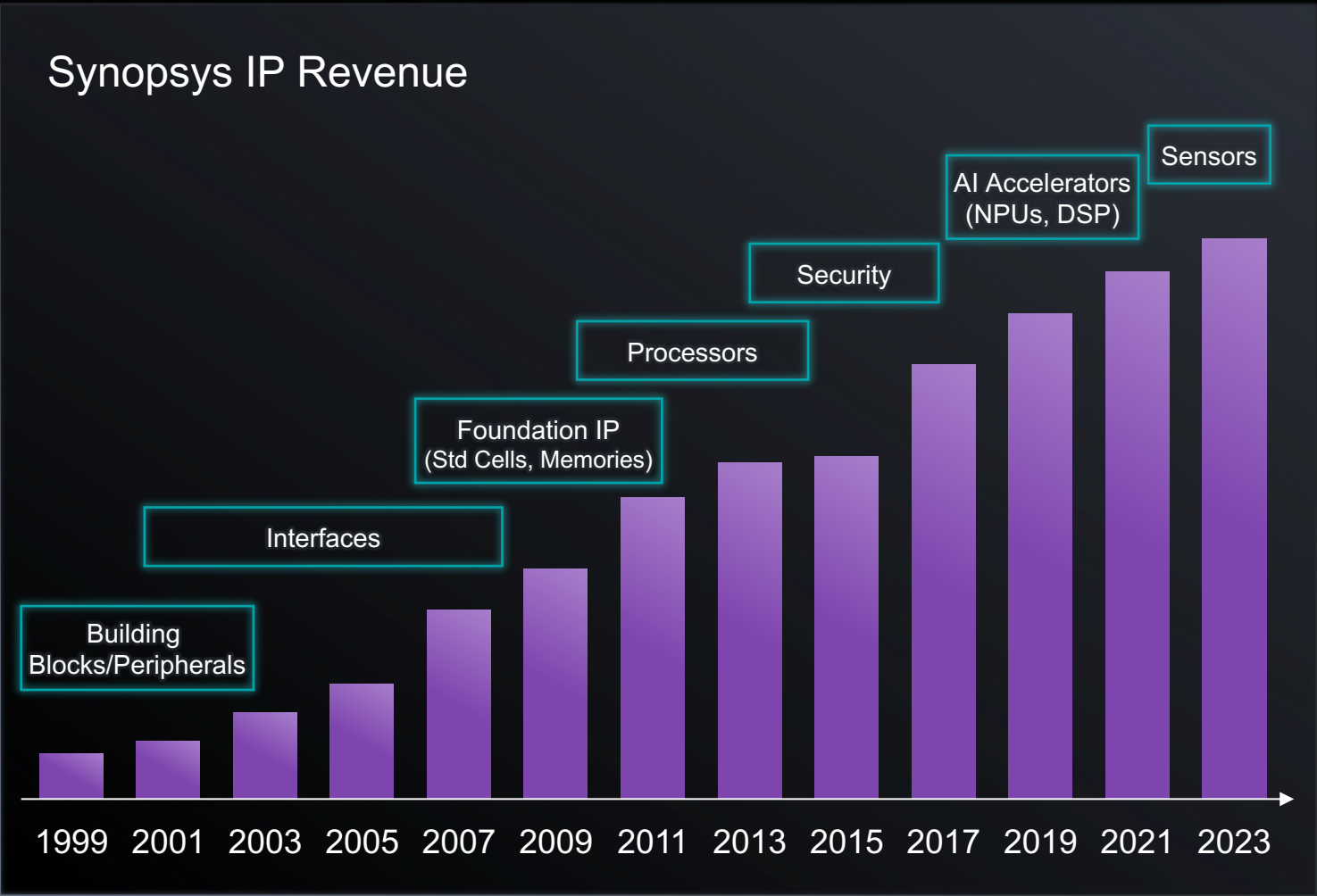
- 25 years of investment and commitment
- ~25% of Synopsys revenue, ~\$1.54B in 2023
- #2 IP provider worldwide
- Leader in interface IP
- Leader in foundation IP
- Growing processor IP with ARC-V™, AI Accelerators (NPUs) and DSPs



# Synopsys IP: Strategic Growth for 25 Years



# Synopsys IP: Strategic Growth for 25 Years



NEW!

# Synopsys Expands IP Portfolio with Acquisition of Intrinsic ID

## Adds Production-Proven PUF IP to Synopsys' Semiconductor IP Portfolio

SYNOPSYS®

### Synopsys Expands Semiconductor IP Portfolio With Acquisition of Intrinsic ID



**SUNNYVALE, Calif., March 20, 2024** - Synopsys, Inc. (Nasdaq: SNPS) today announced that it has completed the acquisition of Intrinsic ID, a leading provider of Physical Unclonable Function (PUF) IP used in the design of system-on-chips (SoCs). The acquisition adds production proven PUF IP to Synopsys' broadly used semiconductor IP portfolio, enabling SoC designers worldwide to protect their SoCs by generating a unique identifier on chip utilizing the inherent and distinctive characteristics of every silicon chip. The acquisition also adds Intrinsic ID's team of experienced research and development engineers who have deep expertise in PUF technology. The terms of the deal, which are not material to Synopsys financials, are not being disclosed.

Physical Unclonable Function (PUF) IP complements Synopsys' extensive IP portfolio

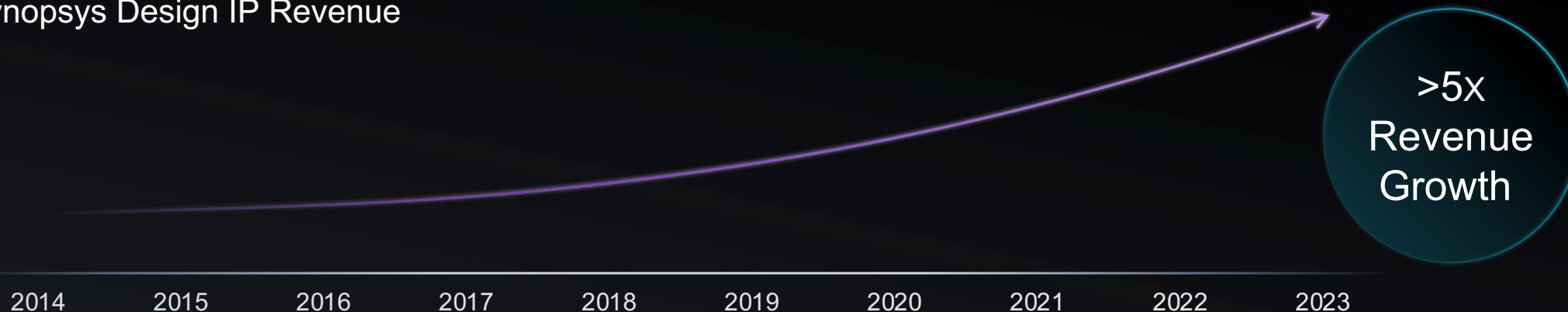
Enables SoC designers to protect SoCs by generating unique identifiers on chip

Adds team of experienced R&D engineers with deep expertise in PUF technology

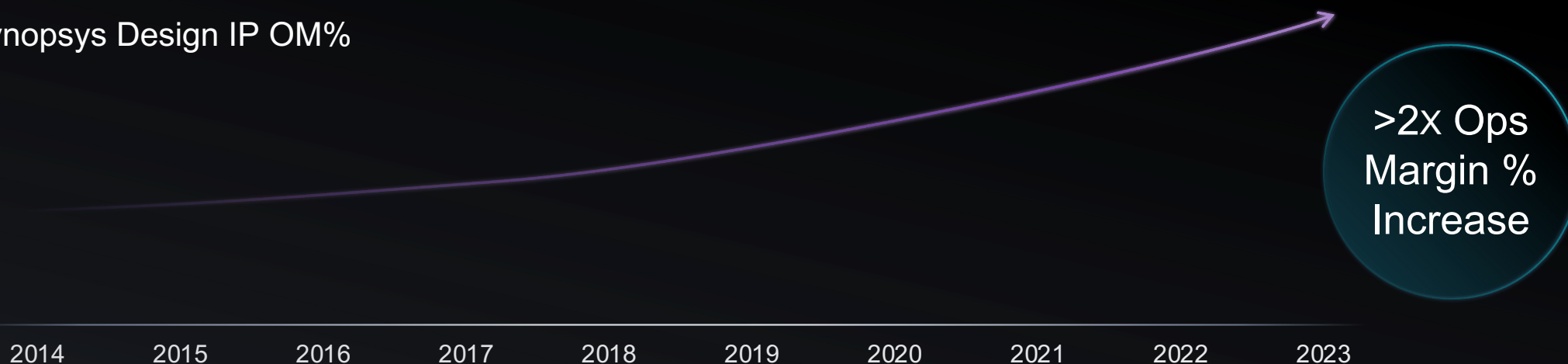
# A Decade of Scaling: >10x Operating Leverage

10x Operating Leverage

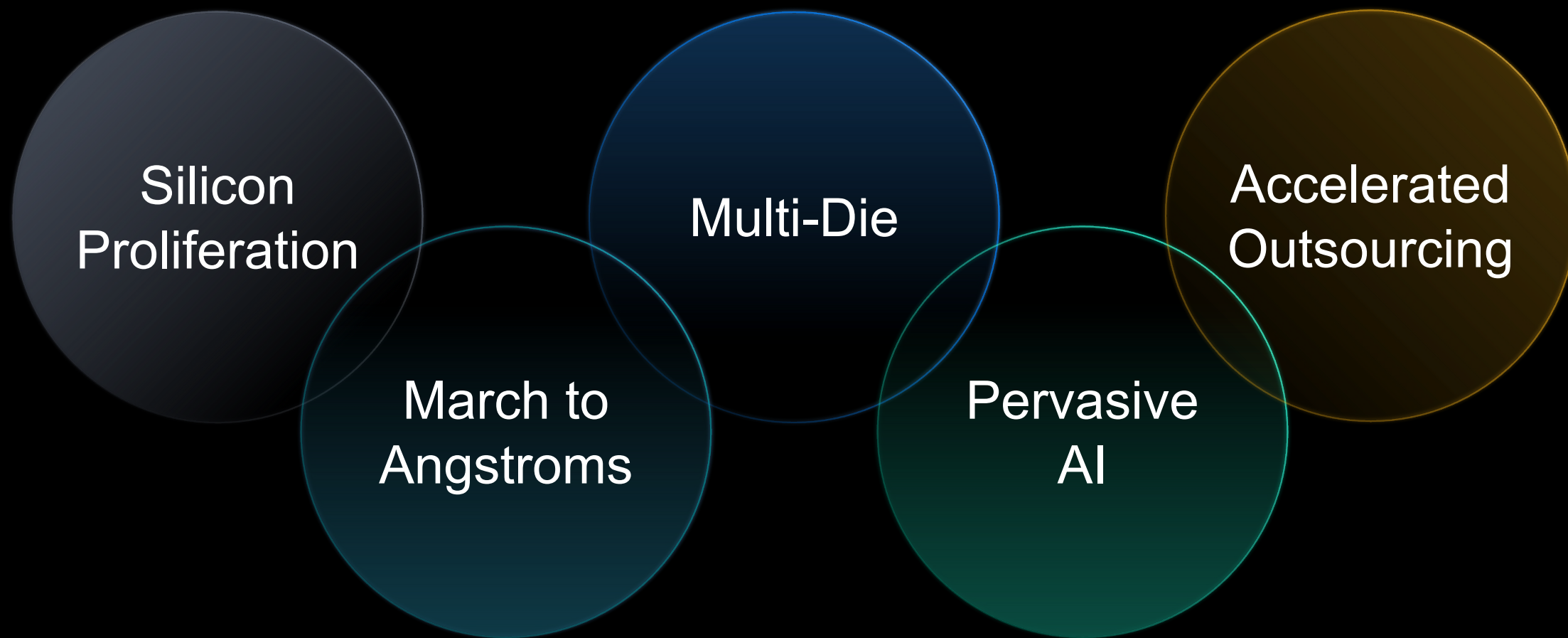
Synopsys Design IP Revenue



Synopsys Design IP OM%

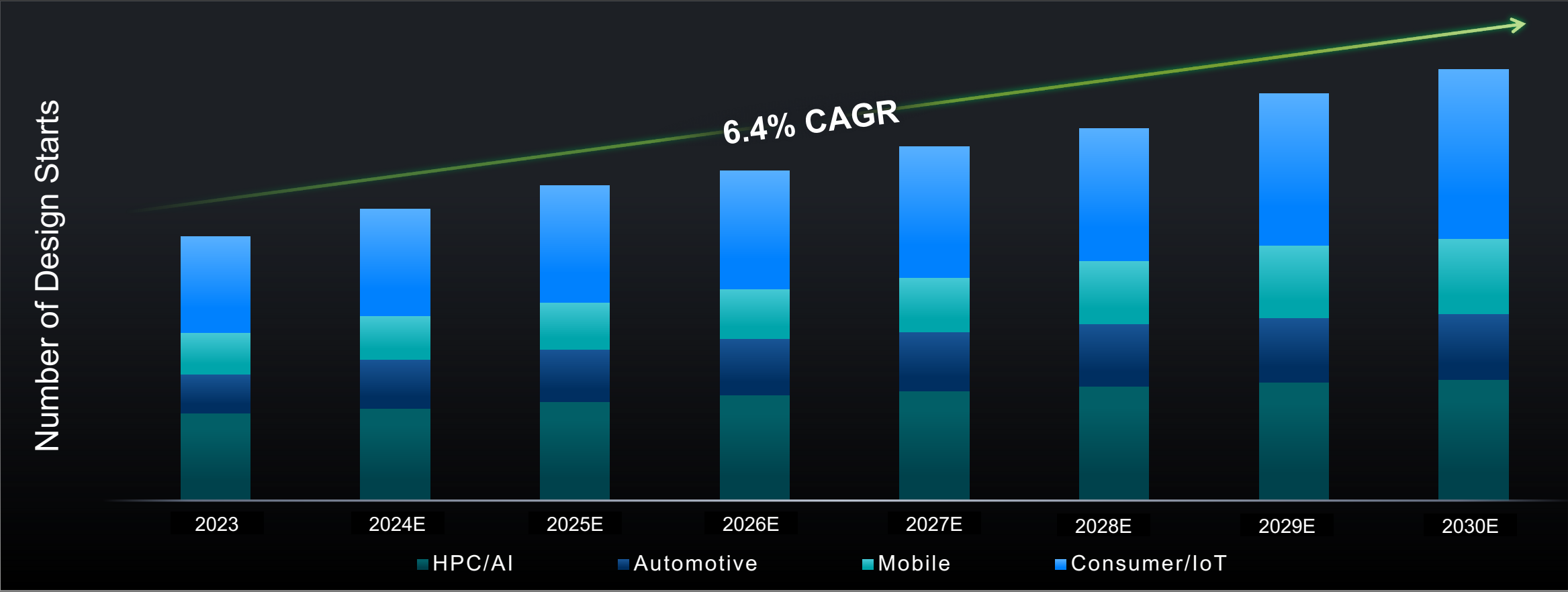


# IP Growth Drivers



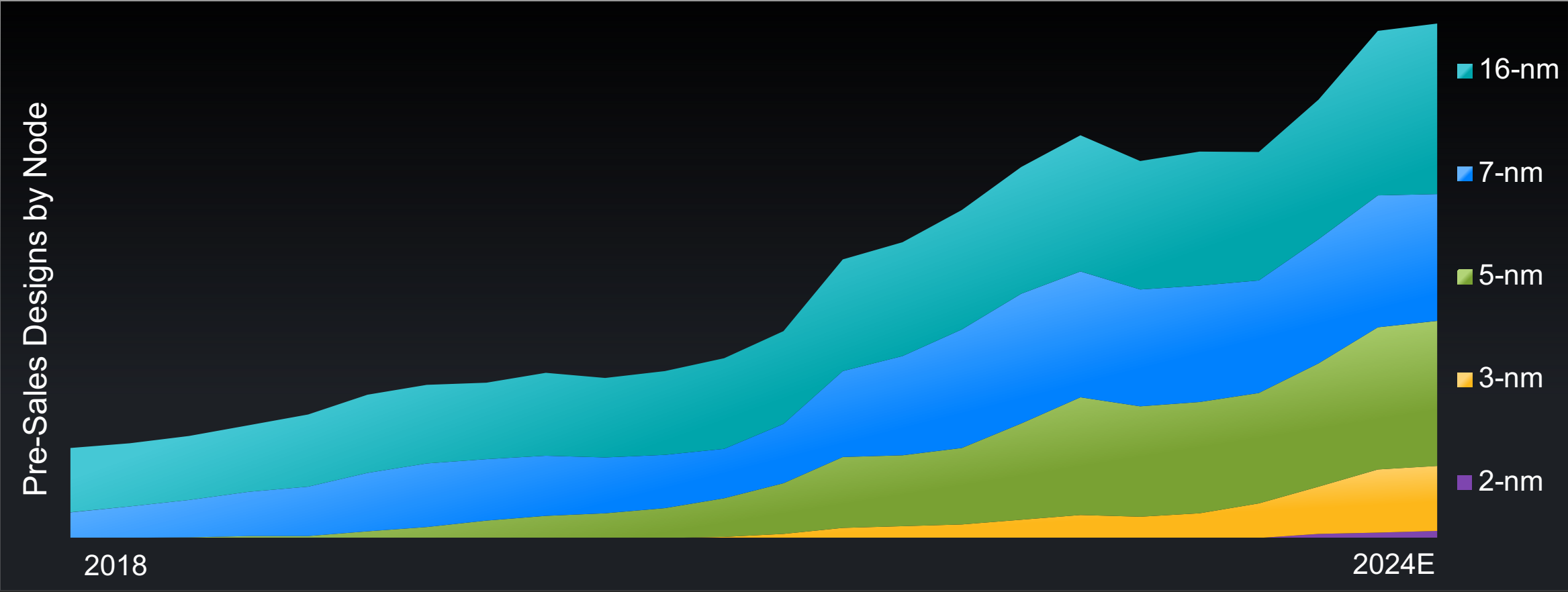
Five Factors Driving More Use of Synopsys IP

# More Silicon in More Markets Drive Advanced Design Starts



Each Advanced Design Drives Multi-Million \$ IP Opportunity

# Moore's Law Marches On: 3-nm Ramping, 2-nm Starting



Advanced Processes Drive Higher IP ASPs

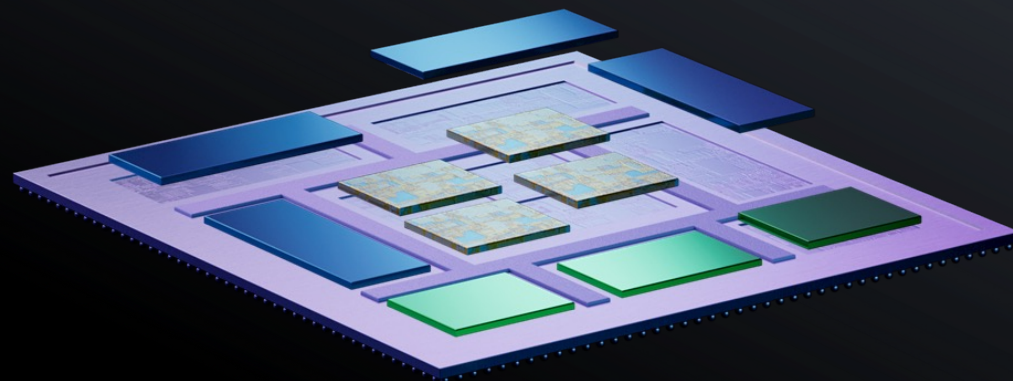
# Silicon Complexity Exploding

Software Defined Systems:  
Compounds Silicon Complexity

Pervasive Intelligence:  
Explosion of Heterogenous Complexity

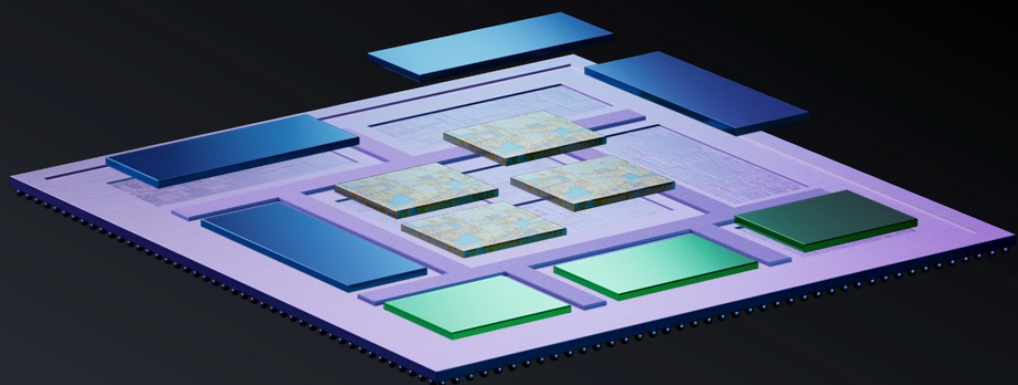
March to Trillions of Transistors:  
Expanding System Functionality

SoCs Shifting from  
Monolithic to Multi-Die Designs

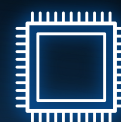


# Multi-Die Drives IP Growth

## Multi-Die Designs



More Design Starts



More Interfaces



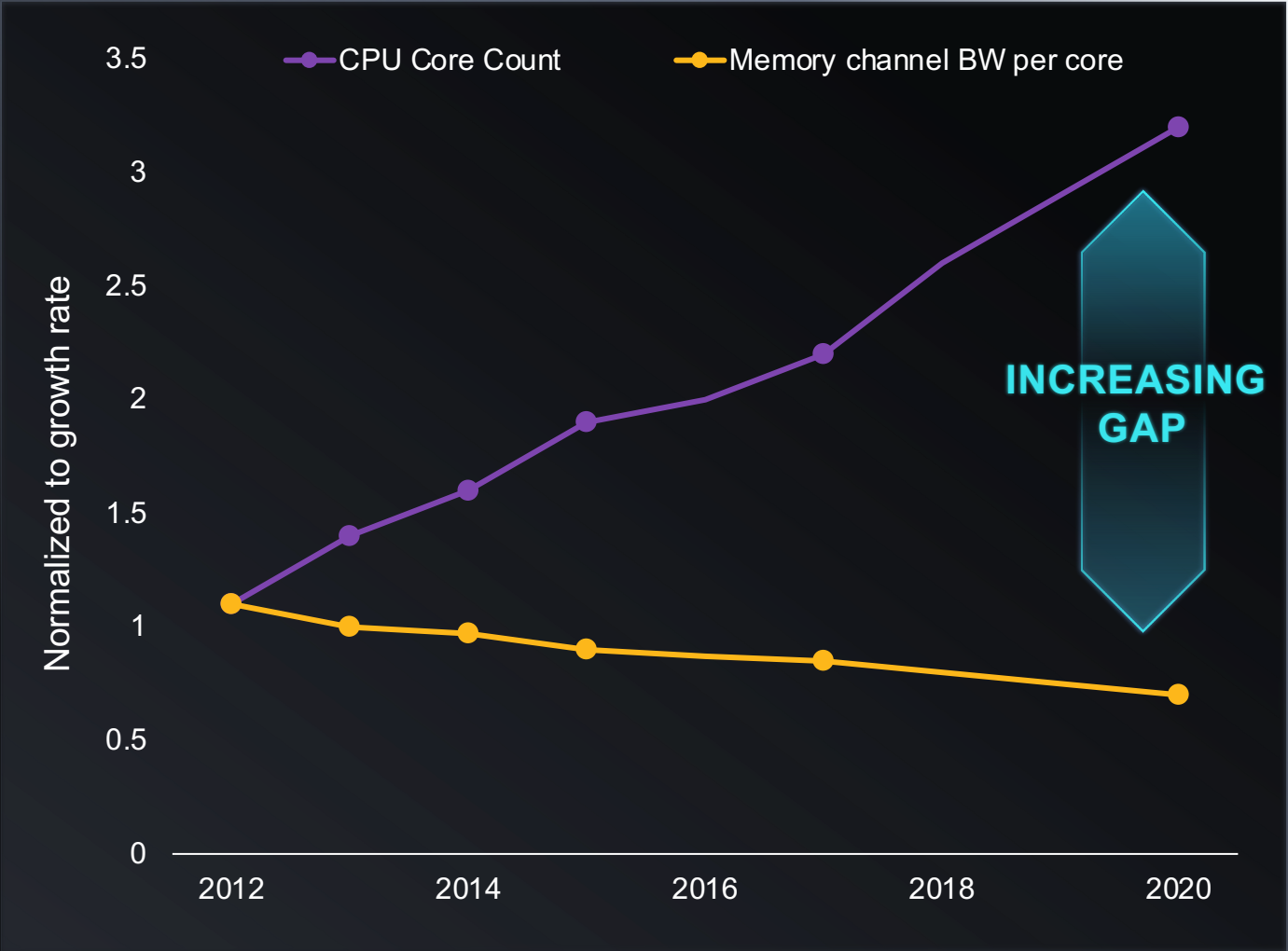
More IP in Multiple Foundries



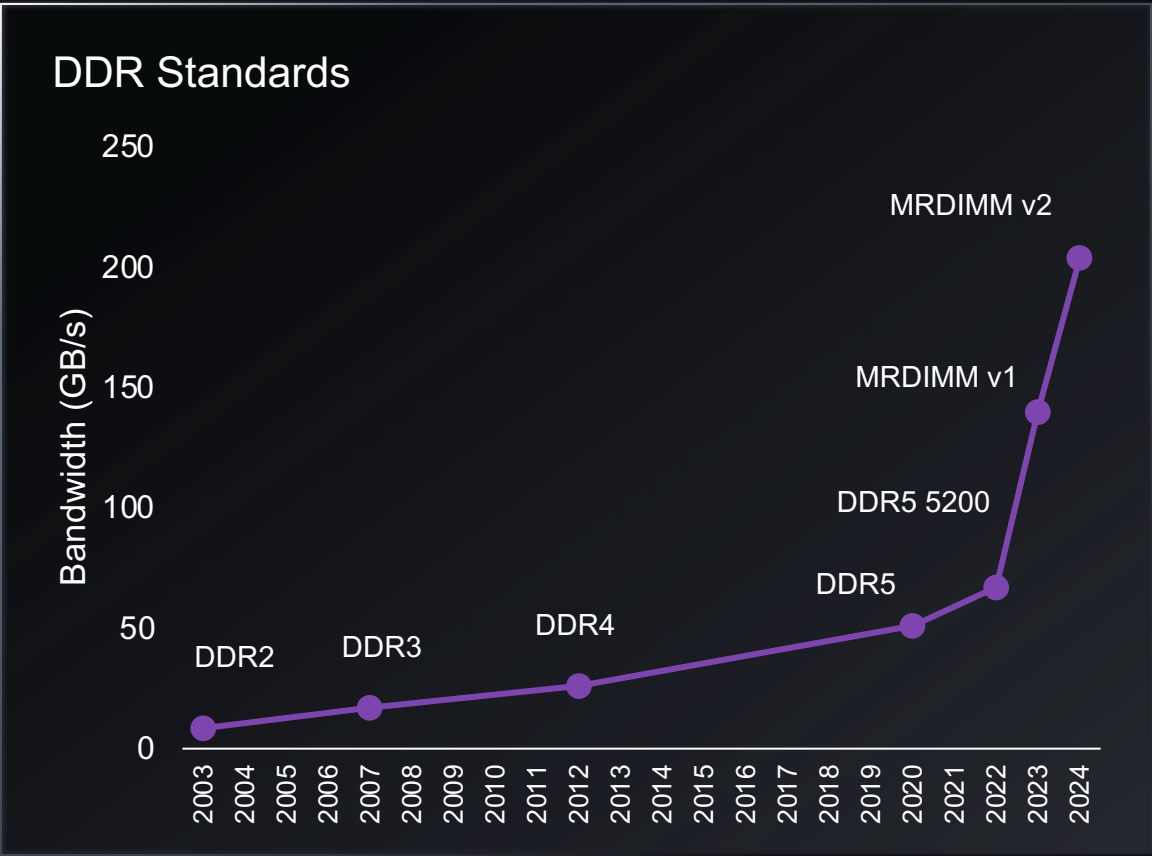
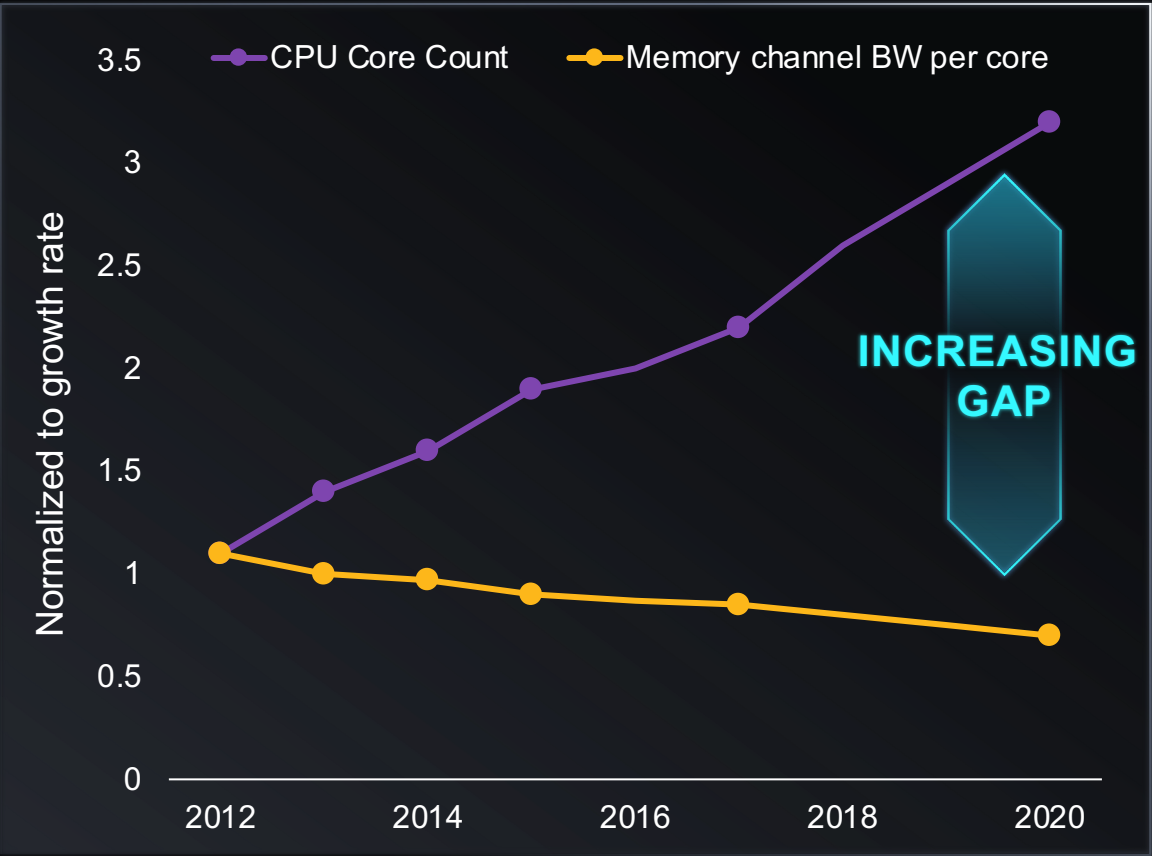
More IP in Multiple Nodes

## Multi-Die Drives Design Starts, More IP Opportunities

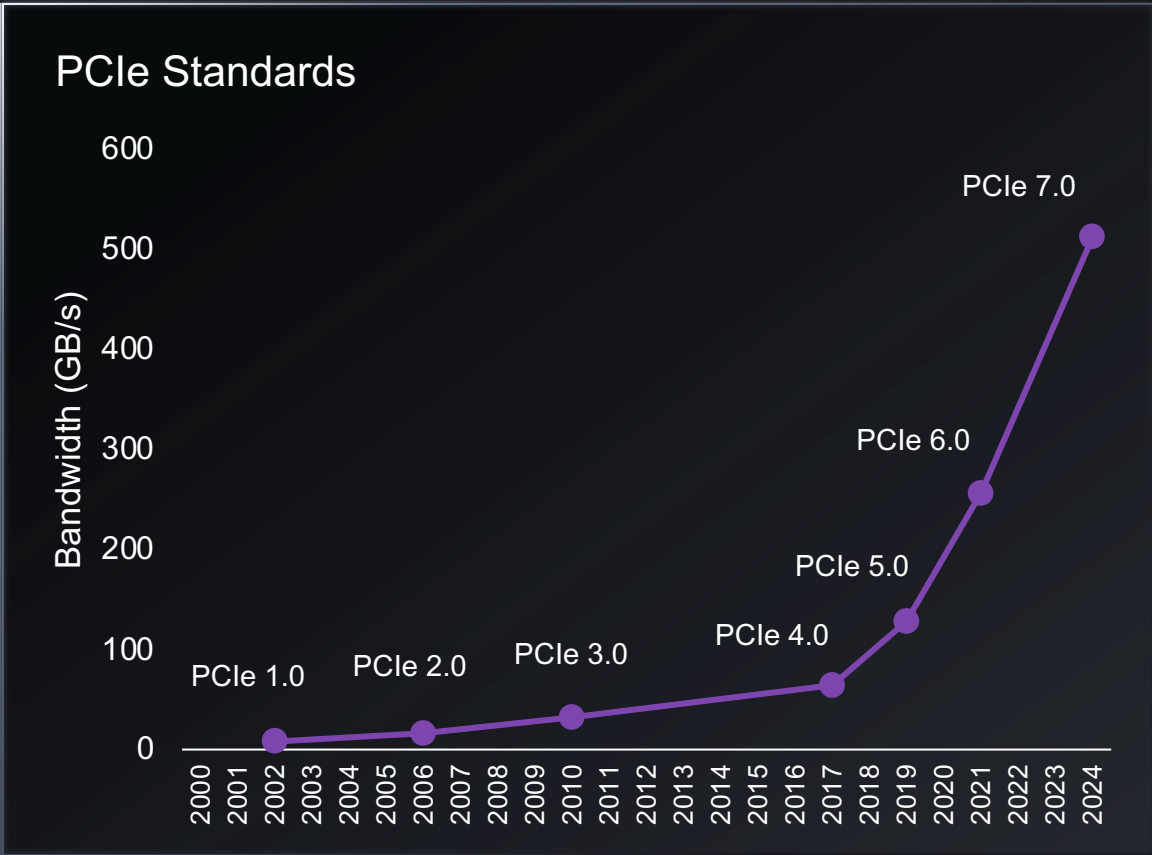
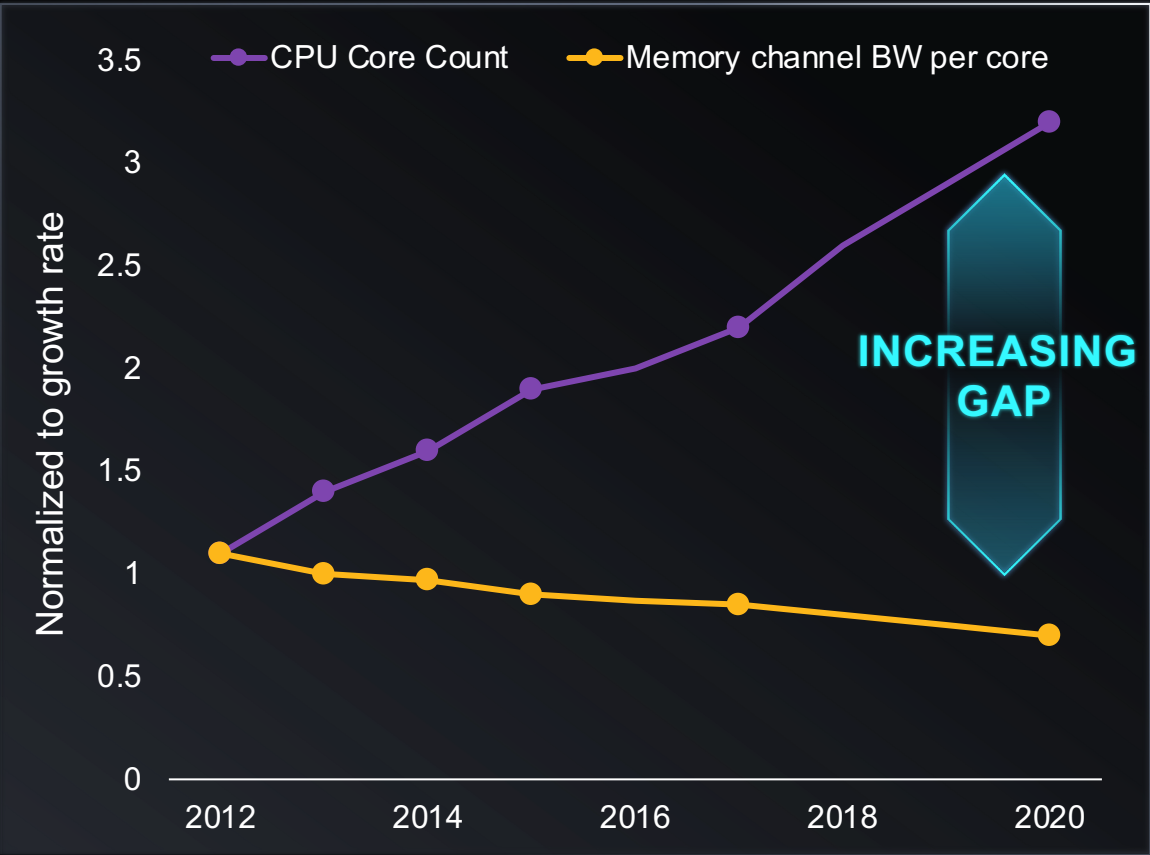
# Pervasive AI is Driving Insatiable Need for Data Processing



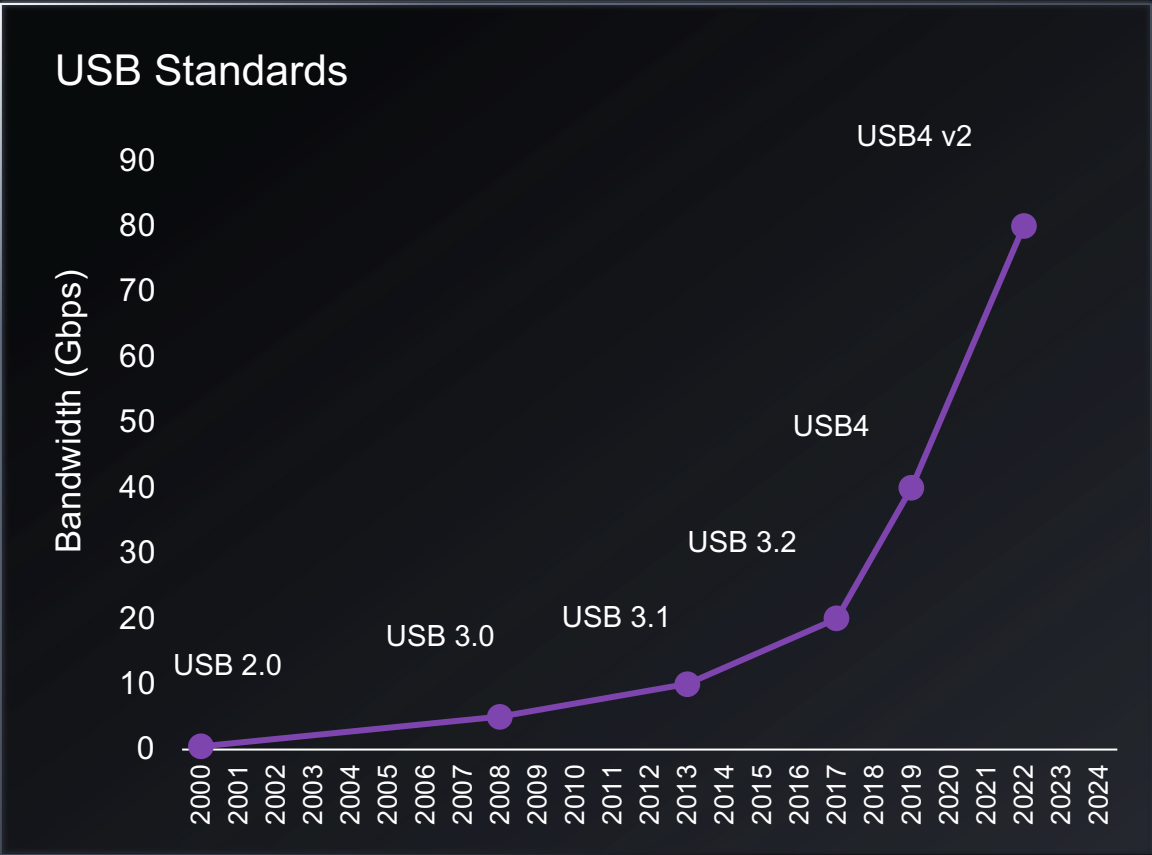
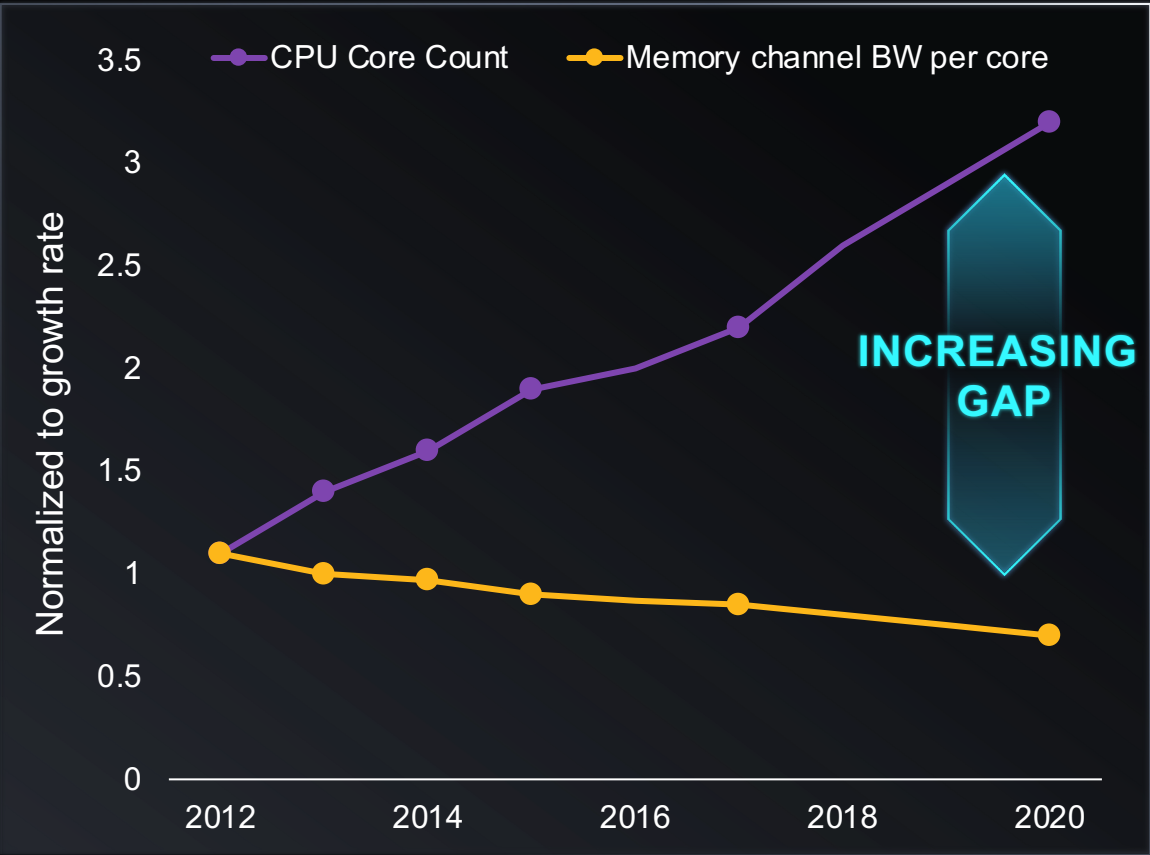
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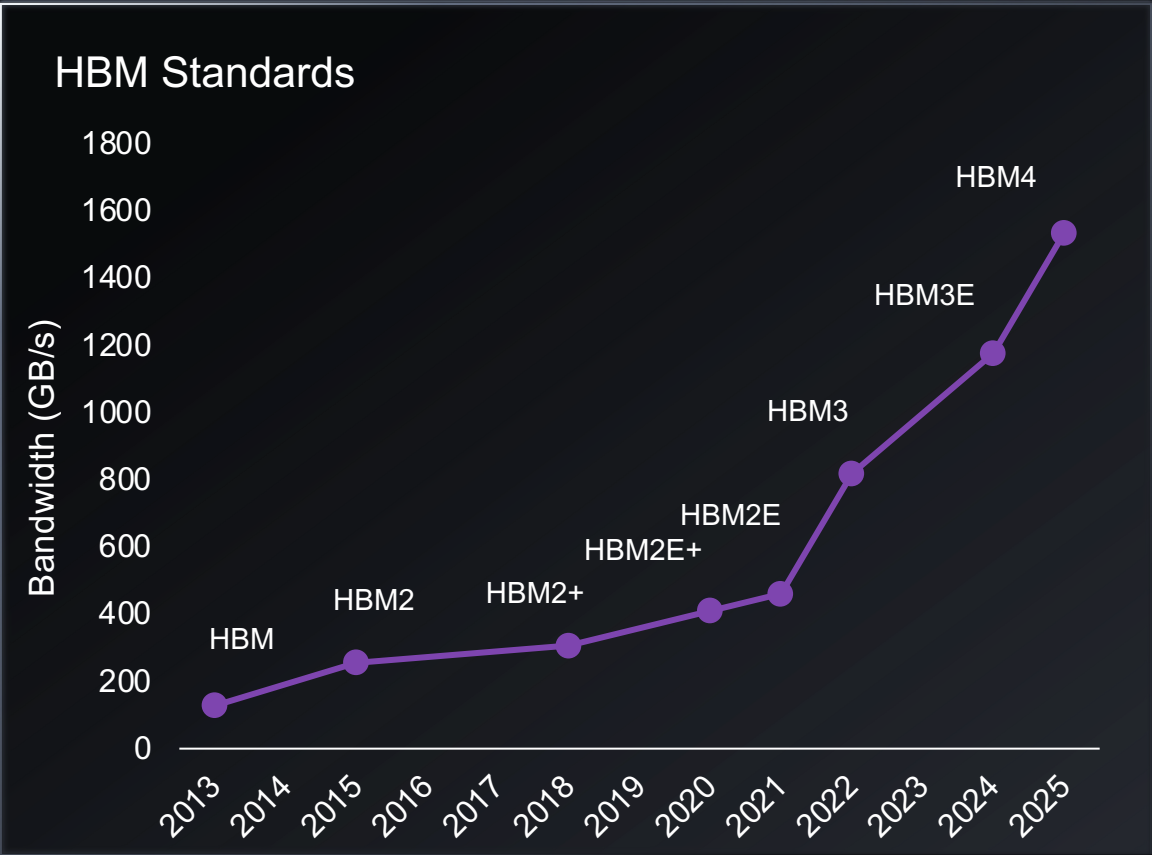
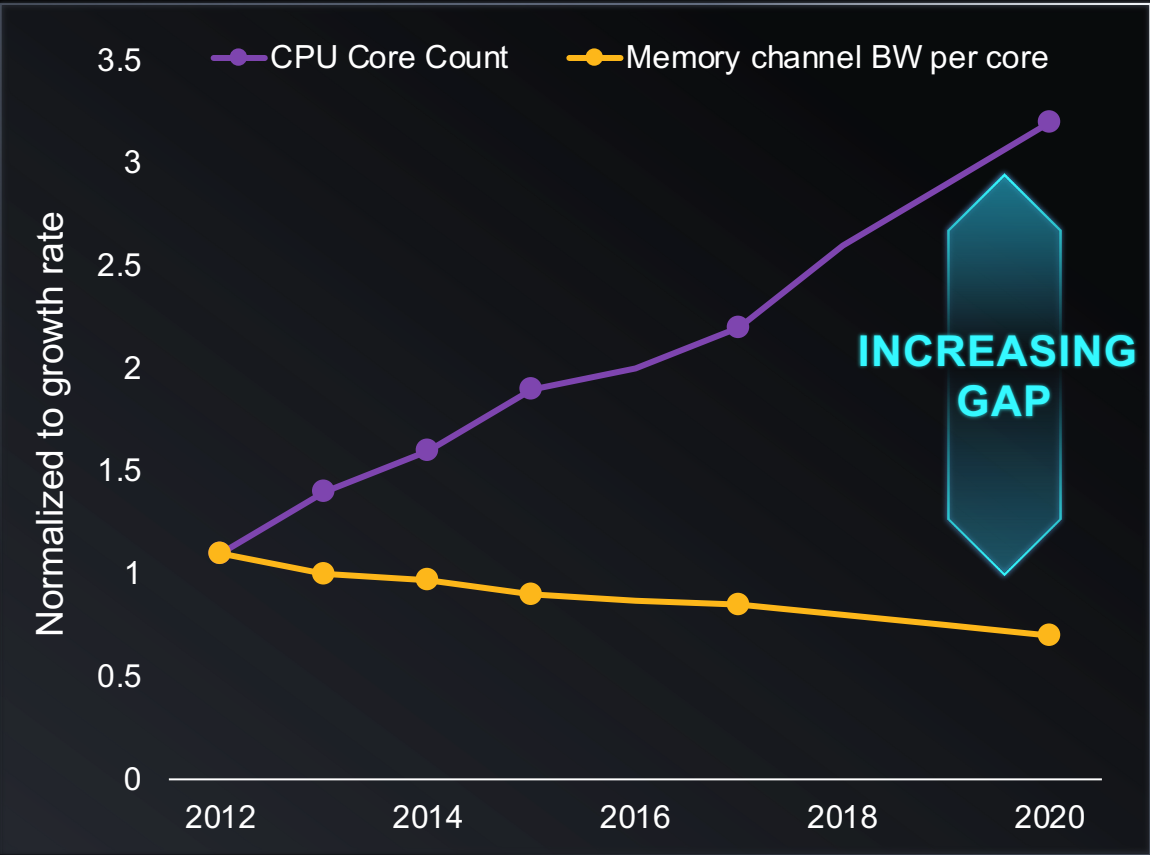
# Pervasive AI is Driving Insatiable Need for Data Processing



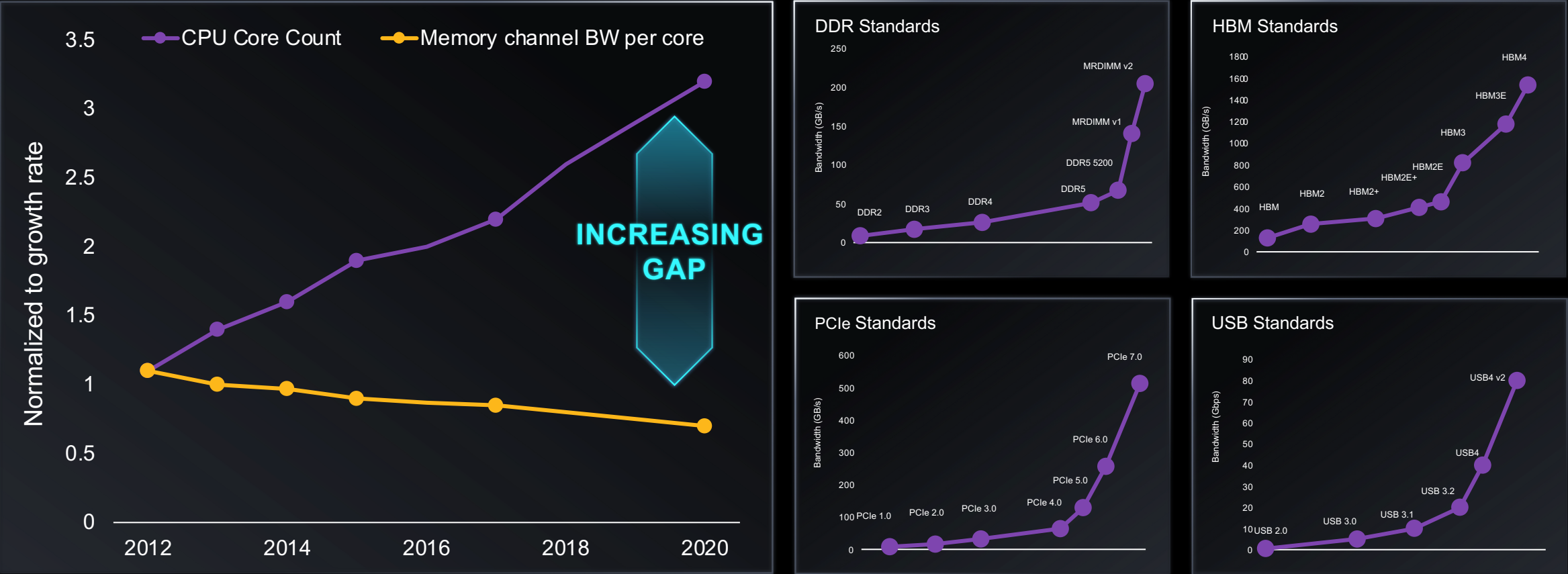
# Pervasive AI is Driving Insatiable Need for Data Processing



# Pervasive AI is Driving Insatiable Need for Data Processing



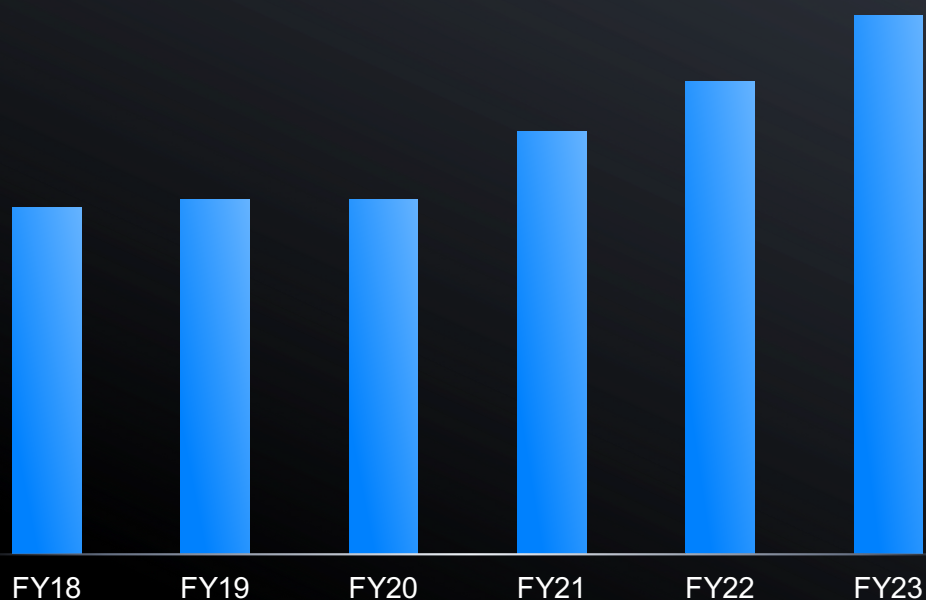
# Pervasive AI is Driving Insatiable Need for Data Processing



Faster Data Interfaces = Higher ASPs

# New Customers: System Companies Developing SoCs

% IP Revenue from System Companies



% of Revenue from Systems Companies Steadily Growing

Up 50% over 5 years

Leading Shift to Multi-Die Packages

## System Companies: Green Fields for IP

# Supply Chain Resilience: Optionality and Optimality



**SAMSUNG**



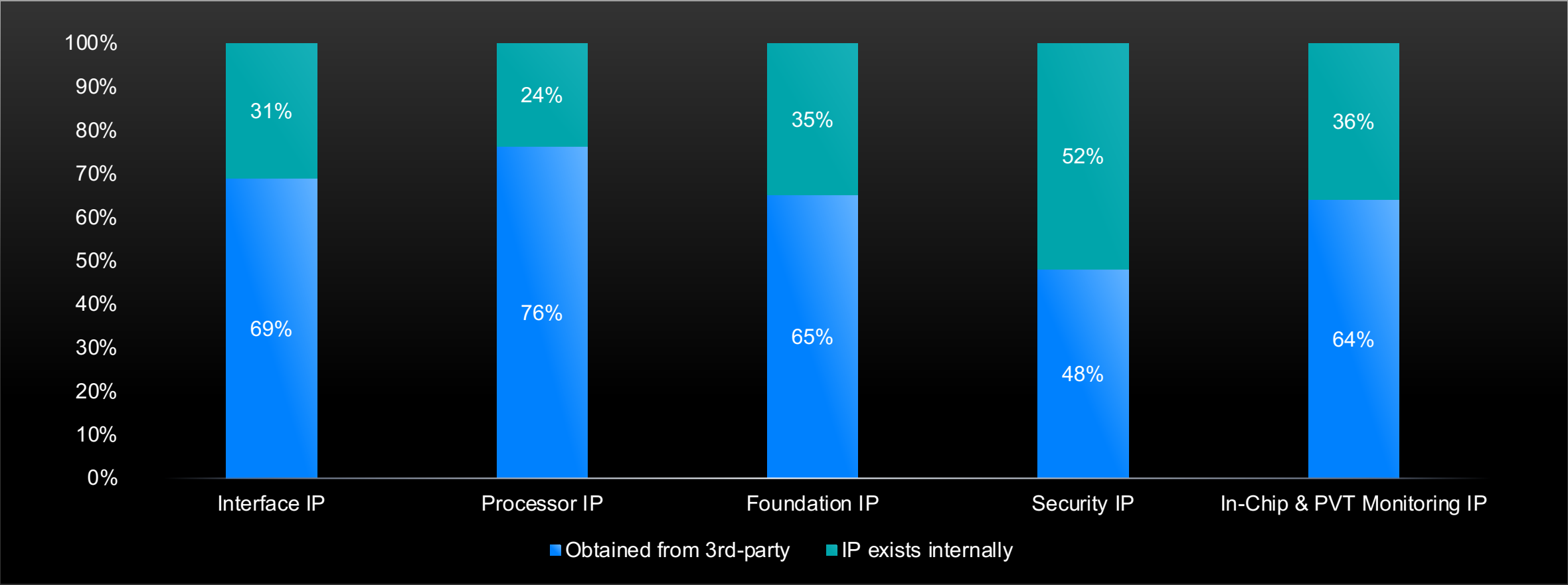
**intel**  
foundry



**UMC**

Synopsys Broad IP Portfolio: The On-Ramp to Foundries

# Core vs Context: Established Companies Buying More IP



More Growth Potential With More Outsourcing

# What Matters in Selecting IP Vendor: Top 10

	Extremely Important
Quality of the IP	89%
Understand Our Use Case/Application	88%
Security	87%
Customer Service/Support	85%
Licensing Terms	83%
Level of Engineering Expertise/Knowledge	80%
Best PPA	80%
Features Match Application Requirements	76%
Vendor Reputation (Quality, Support, Financial Stability)	76%
Scalability	74%

# And How Does Synopsys Stack Up?

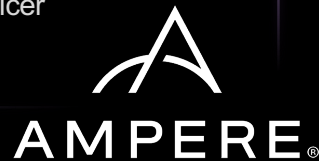
Which of the following do you believe has the/is the...

	Best IP	Highest Quality IP	Best IP Support	Industry Leader for IP
Synopsys	35%	36%	37%	40%
Competitor A	17%	12%	14%	10%
Competitor B	16%	16%	13%	15%
Competitor C	9%	13%	7%	7%
Competitor D	8%	5%	8%	5%
Competitor E	5%	4%	7%	8%
Competitor F	4%	5%	4%	5%
Competitor G	3%	2%	3%	4%

# Here is What our Customers & Partners Have to Say

“ We know they will be there to help us **achieve our best designs.** ”

Rohit Vidwans,  
Chief Eng & Manufacturing Officer



“ Synopsys is supporting us to... build automotive systems with the **highest levels of functional safety.** ”

Thomas Boehm  
Sr. VP, Auto Microcontroller



“ Synopsys provides technology to innovate, speed design time & reduce risk – our most recent autopilot chip, **AP4, shipped on first-pass silicon.** ”

Pete Bannon  
VP of Low Voltage & Silicon Engineering



# Here is What our Customers & Partners Have to Say

“ Synopsys’ broad IP portfolio helps chip designers **achieve first-pass silicon success.** ”

Stuart Pann  
Sr. VP & General Manager

**intel**  
foundry

“ Synopsys...**our primary IP partner,** has benefited our mutual customers by providing access to high-quality IP. ”

Jongshin Shin  
Corp Exec VP of Foundry IP Development

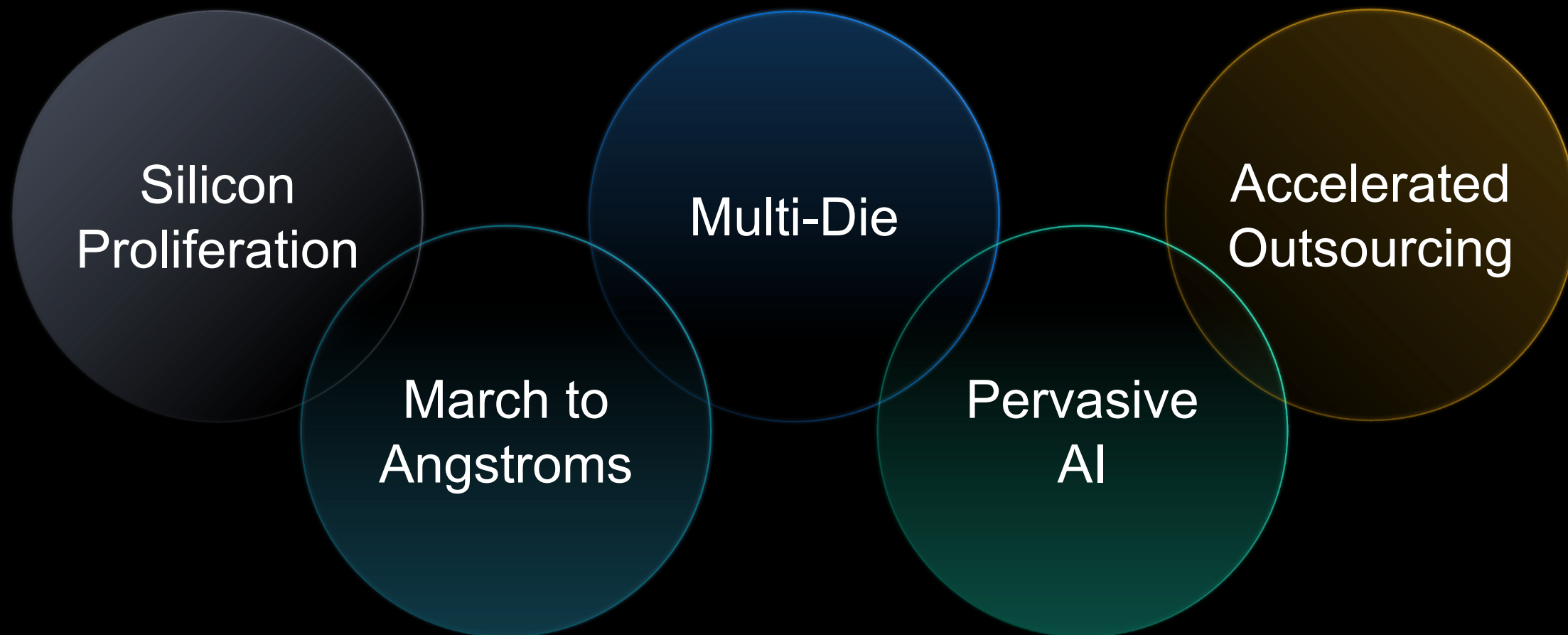
**SAMSUNG**

“ Our collaboration with Synopsys leads customers to their **fastest path to silicon success.** ”

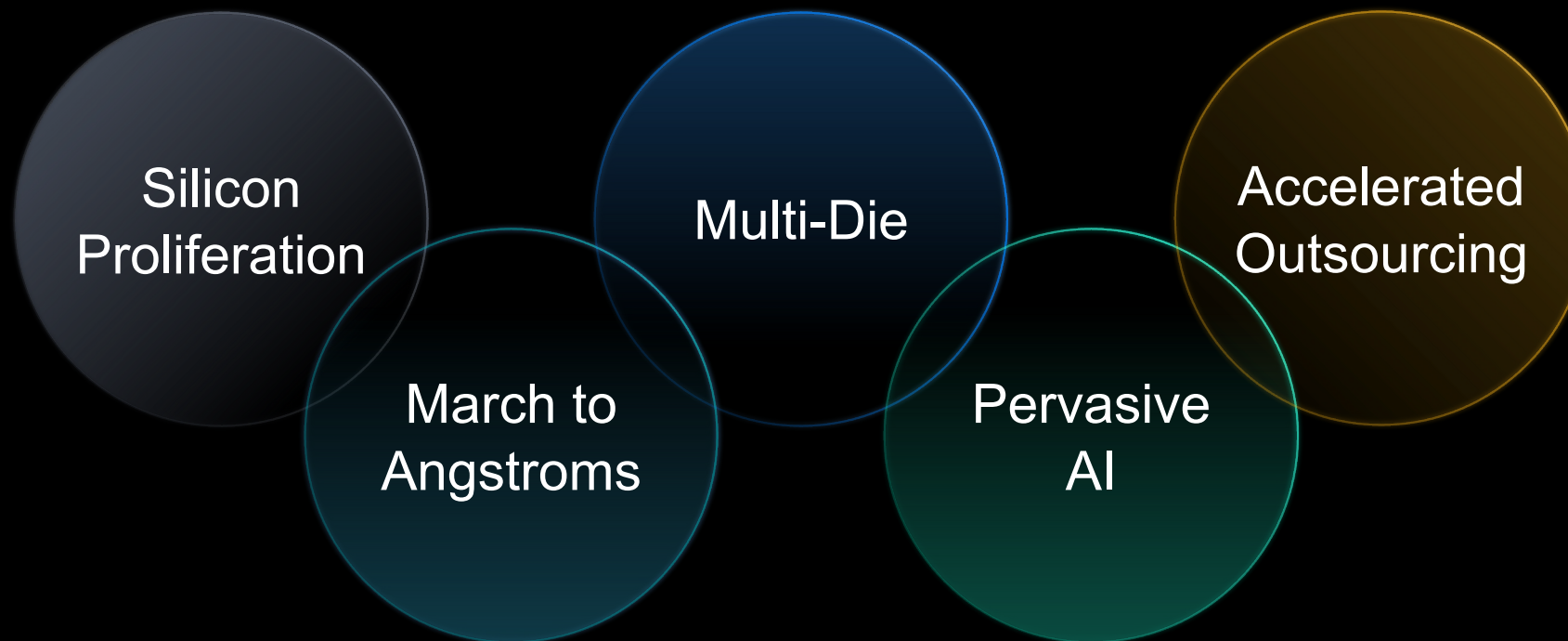
Cliff Hou  
Sr Vice President, Europe & Asia Sales

**tsmc**

# IP Growth Drivers



# IP Growth Drives Revenue Growth



More Designs



Faster Interfaces



Higher ASPs



More Outsourcing



## Sustainable Mid-Teens Growth

# Synopsys IP Scale: A Sustainable Advantage



10,000

Wins over last 5 Years



8,100

Unique IP titles



6,300

Synopsys engineers developing IP



380

Process technologies down to 2nm



30

Foundries supported worldwide by Synopsys IP

# In Summary

- Vibrant 3<sup>rd</sup> party IP market with strong growth vectors
- Synopsys leadership in interface IP, foundation IP & growing processor IP opportunity
- High quality, best support, broadest IP portfolio
- 25 years, ~25% of Synopsys
- Resilient business model

Sustainable Mid-Teens Revenue Growth



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Our Technology, **Your Innovation<sup>™</sup>**

THANK YOU



# SYNOPSYS<sup>®</sup>

Our Technology, **Your Innovation**<sup>™</sup>

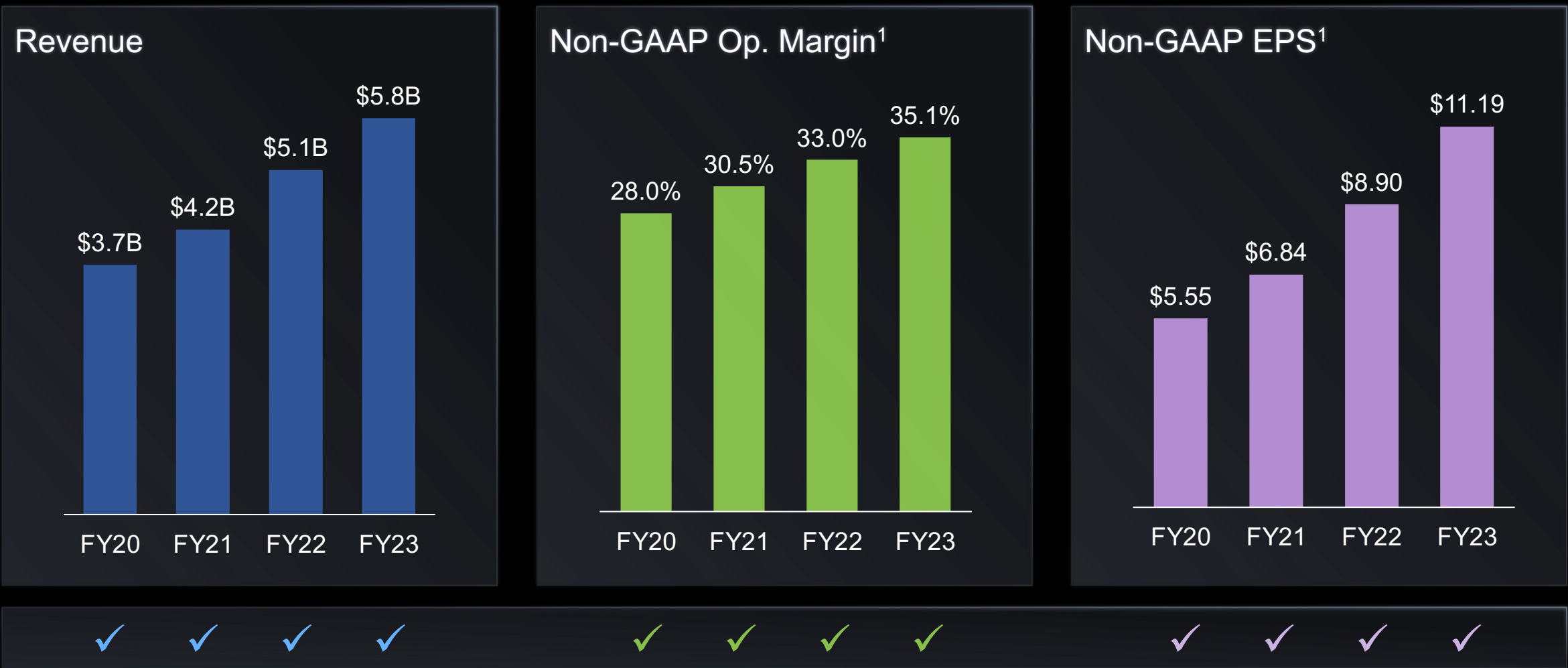
# Financial Overview

Shelagh Glaser  
*Chief Financial Officer*

**SYNOPSYS<sup>®</sup>**

Our Technology, Your Innovation<sup>™</sup>

# We Do What We Say – Consistent Business Execution...

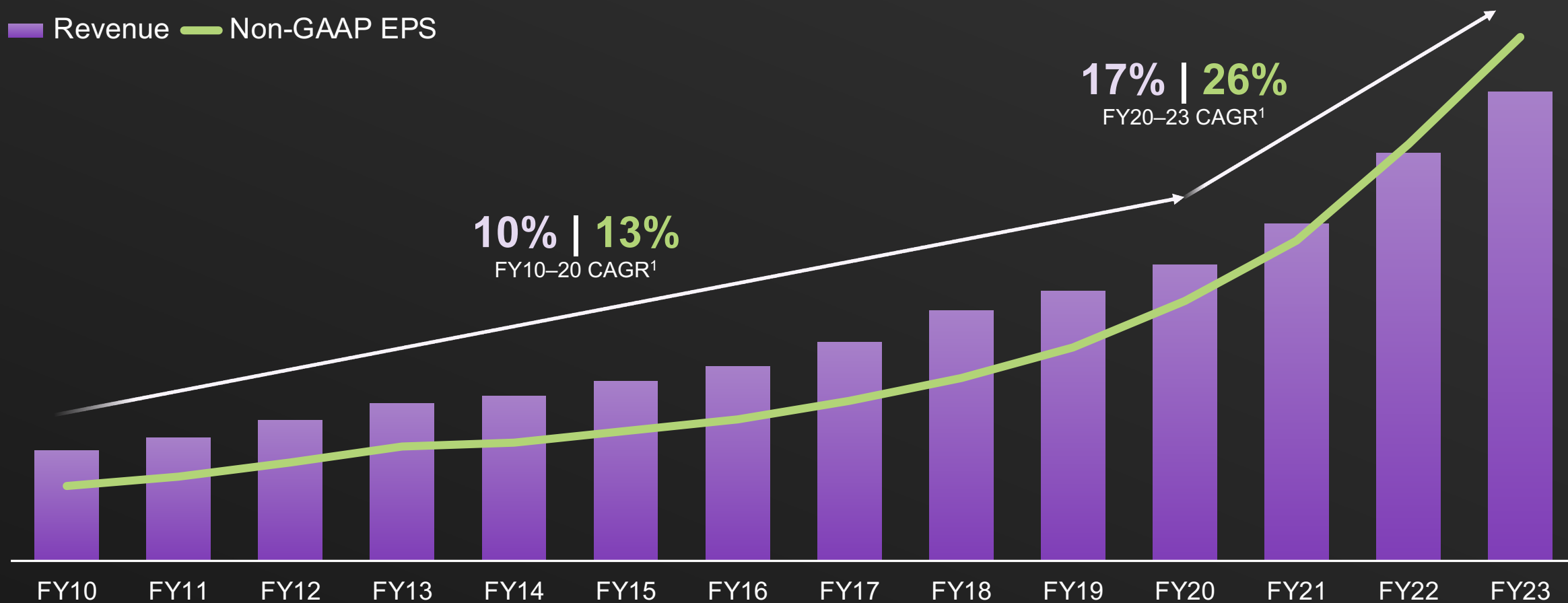


Exceed / Met Guidance

# ...with Track Record of Resilient, Profitable Growth...



# ...that has Accelerated Over Time...

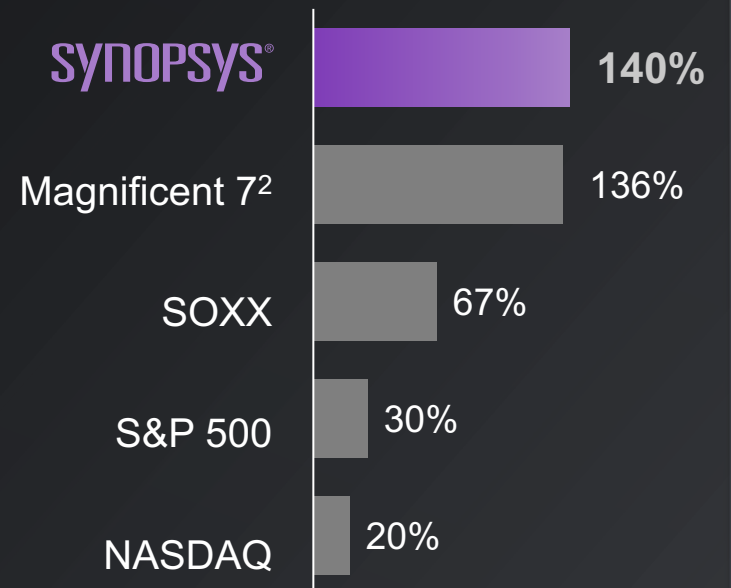


# ...Leading to Shareholder Value Creation Outperformance

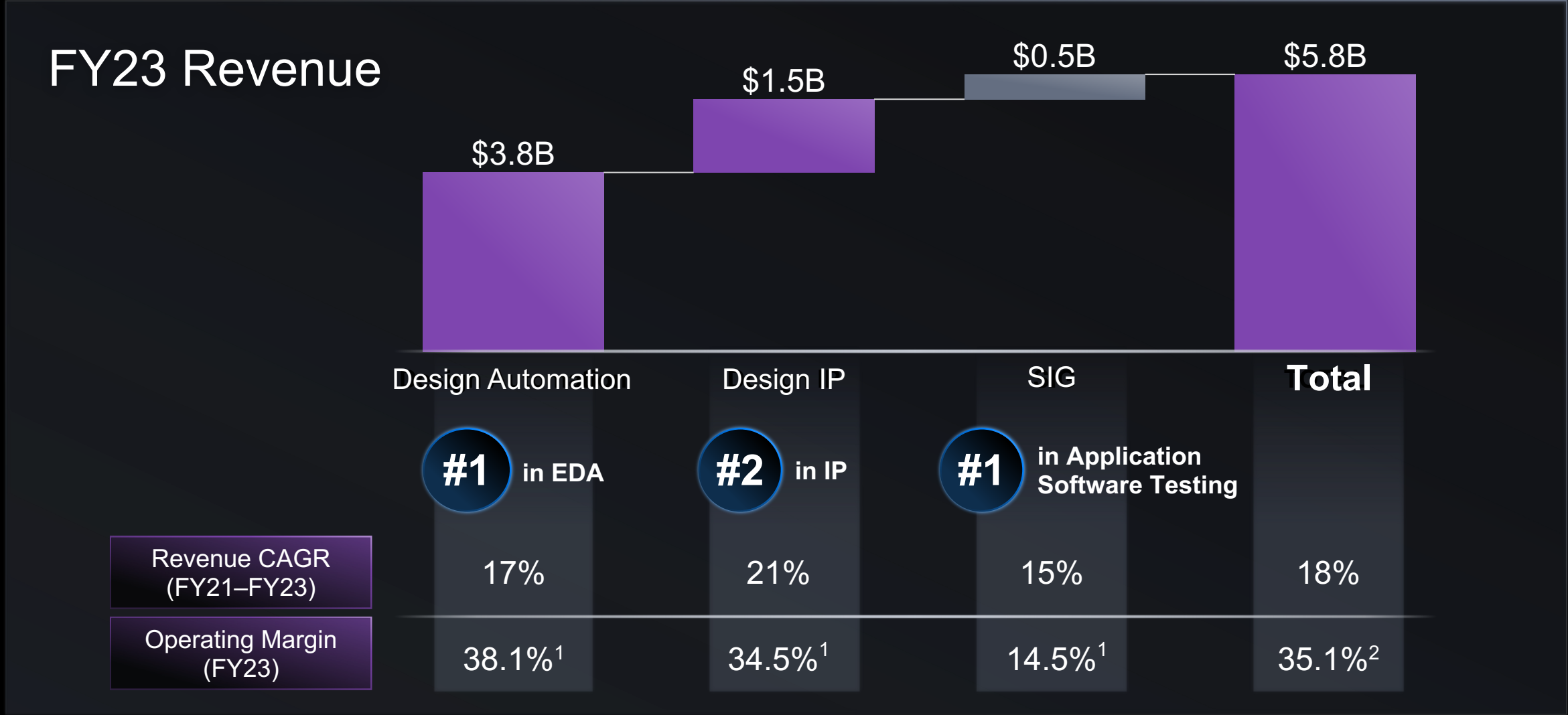
## 3-Year TSR Performance<sup>1</sup>



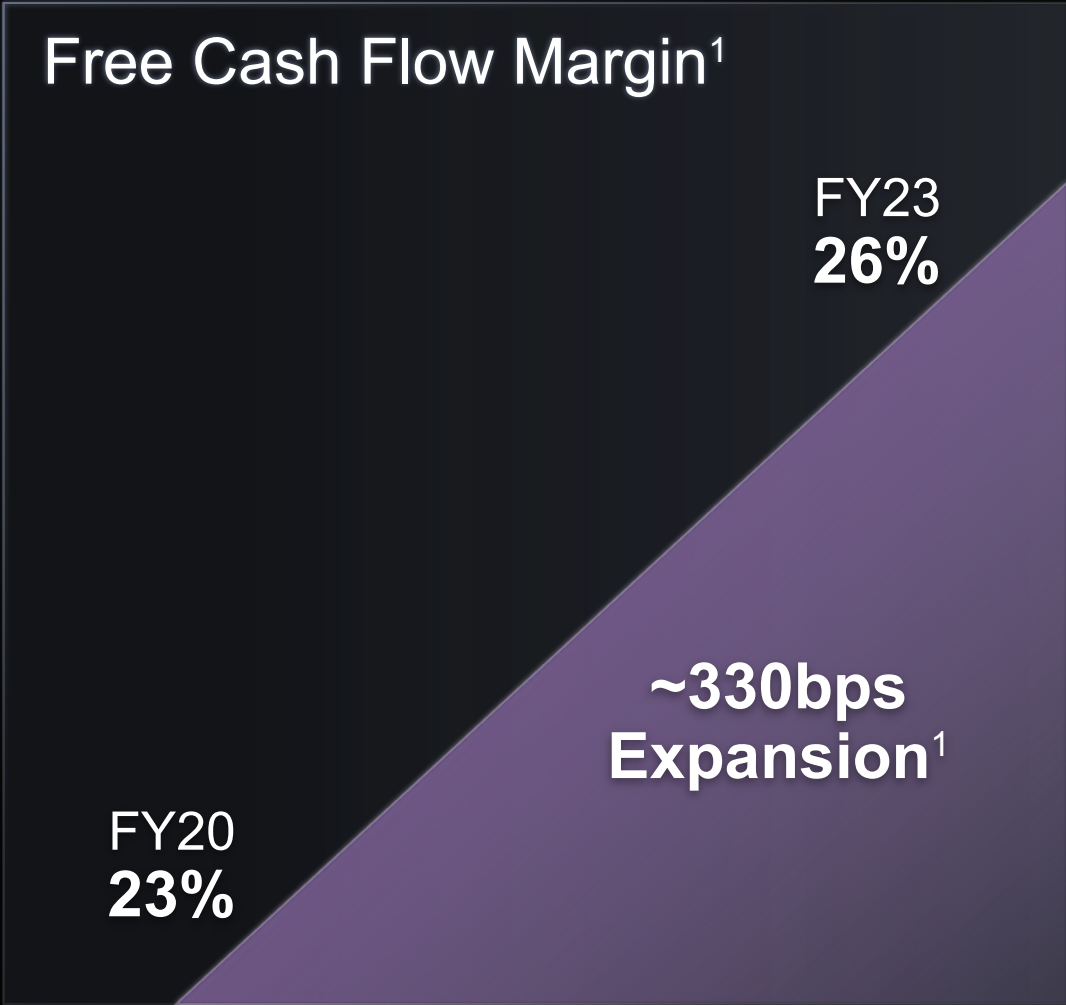
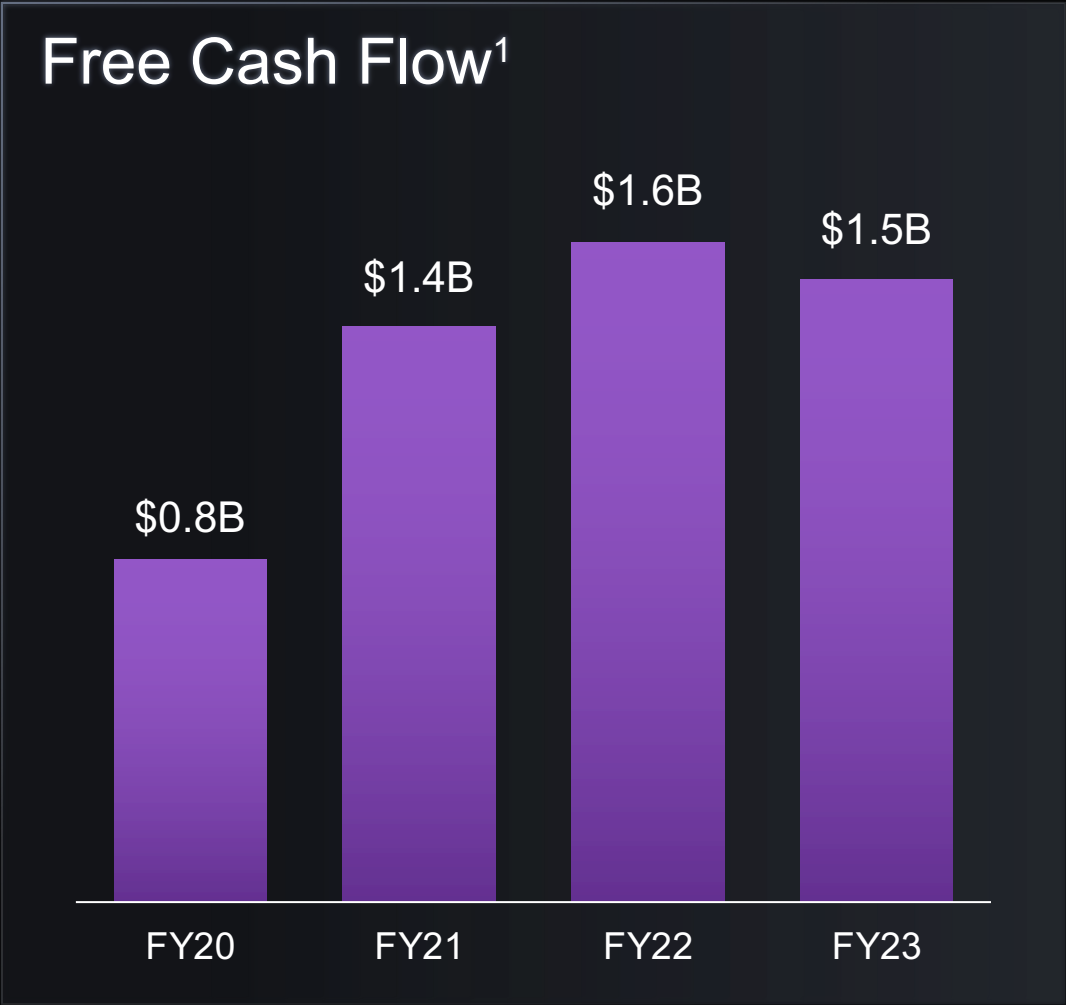
Synopsys **outperformed** 6 out of 7 “Magnificent 7” stocks over the last three years (3-Year TSR)



# A High-Quality Business Portfolio

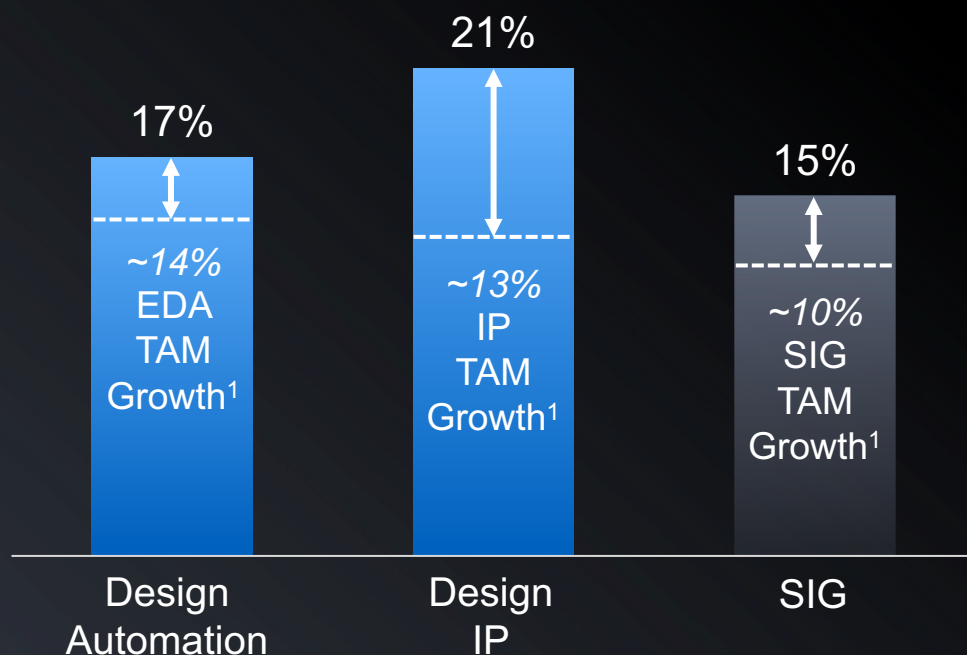


# Generating Strong Unlevered Free Cash Flow and Margins

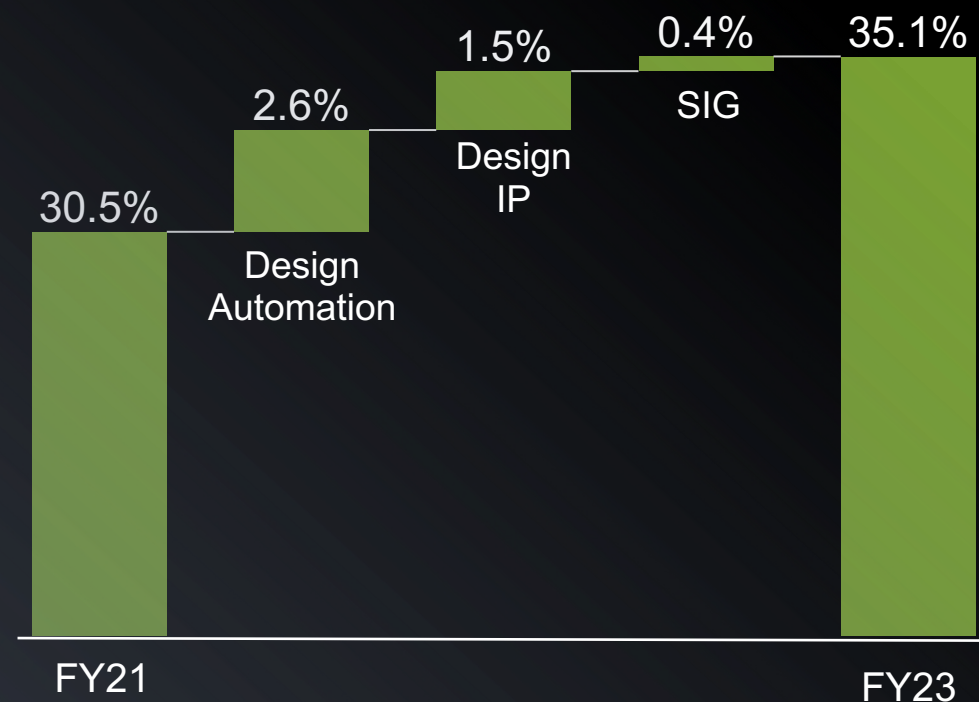


# Driving Above Market Revenue Growth and Non-GAAP Margin Expansion

## Revenue CAGR (FY21-23)



## Operating Margin Expansion (FY21-23)<sup>2</sup>



# Design Automation: Innovation to Drive Above Market Growth

## Design Automation

Revenue | Adj. Op Margin<sup>1</sup>

FY23: \$3.8B | 38.1%

**17% CAGR**  
**~460bps**  
**Expansion**

FY21: \$2.8B | 33.6%

## Key EDA Growth Drivers

- ↑ March to Angstroms
- ↑ Multi-Die
- ↑ AI
- ↑ Energy Efficiency
- ↑ Compute Acceleration

## Industry-Leading Growth

*SNPS EDA Long-Term Objective*

**Double-digit growth**  
**above market**

**~12%**  
EDA TAM  
CAGR  
(FY23–28)

**~2%**  
Potential  
future  
incremental EDA  
TAM growth  
from AI  
monetization<sup>2</sup>

# Design IP: Profitable and Growing Resilient Business Model

## Design IP

Revenue | Adj. Op Margin<sup>1</sup>

FY23: \$1.5B | 34.5%

**21% CAGR**  
**~430bps**  
**Expansion**

FY21: \$1.1B | 30.2%

## Key IP Growth Drivers

- ↑ Silicon Proliferation
- ↑ March to Angstroms
- ↑ Multi-Die
- ↑ Pervasive AI
- ↑ Accelerated Outsourcing

## Industry-Leading Growth

*SNPS IP Long-Term Objective*

**Mid-teens growth**  
**above market**

**~15%**

IP TAM  
CAGR  
(FY23–28)

# Creating a Leader in Silicon to Systems Design Solutions

**SYNOPSYS®**

Design  
Automation

**#1**

in EDA

Design  
IP

**#2**

in IP

SIG

**#1**

in AST

**~\$6B** FY23 Revenue<sup>1</sup>

**Ansys**

Simulation &  
Analysis

**Industry  
Leader**

**~\$2B** FY23 Revenue<sup>1</sup>

## Building on our successful seven-year partnership

# Attractive Financial Benefits Drive Shareholder Value

## High Quality Revenue

Expected to add high quality,  
durable revenue stream

~\$8B

Combined Revenue<sup>1</sup>

- High growth (industry-leading double-digit)
  - Neutral to Synopsys revenue growth by first full year and accretive thereafter
  - Combined company revenue growth expected to outpace TAM growth
- High quality recurring revenue

## High Margin

Expected to immediately  
expand margins

~125bps

Year 1 Non-GAAP  
Operating Margin  
Expansion<sup>2</sup>

~75 bps

Year 1  
uFCF Margin  
Expansion<sup>2</sup>

- Two high-margin businesses
- ~37% combined non-GAAP operating margin<sup>2</sup>
- Opportunity for further margin expansion as cost synergies are realized

## Better Together

Expected to add high quality,  
durable revenue stream

~\$400M

Run-rate  
Cost Synergies

~\$400M

Run-rate  
Revenue  
Synergies

- Expected to be accretive to non-GAAP EPS within the second full year post close and substantially accretive thereafter<sup>3</sup>
- Identified and actionable run-rate cost synergies of ~\$400M by year 3
- Run-rate revenue synergies of ~\$400M by year 4, growing to ~\$1B+ annually in the longer-term

Note: Figures exclude impact from SIG

1. Based on Synopsys FY results in 10-K as filed with the SEC on December 12, 2023, and Ansys based on Ansys FY results in 10-K as filed with the SEC on February 21, 2024

2. Based on Synopsys FY2023 non-GAAP operating margin of ~35% and Ansys FY2023 non-GAAP operating margin of ~43%; reconciliation for Year 1 Non-GAAP operating margin and uFCF margin expansion is not available

3. Expected to be accretive in second full year post close including cost synergies only, substantially accretive thereafter including cost and revenue synergies

# Highly Achievable, Identified Synergies and Potential for More

~\$400M

of run-rate cost synergies  
expected by year 3

- Streamlining and realizing the benefits of scale
- Integration of engineering platforms and technology reuse for AI and Cloud

~\$400M

of run-rate revenue  
synergies expected by year 4

- Integration of multi-physics system analysis for advanced chip design
- Expansion of direct account coverage for Ansys portfolio in Semiconductor / High-Tech sector
- Joint semiconductor solutions (e.g., Analog/RF)
- Accelerated expansion in Automotive, Aerospace, and Industrial Equipment

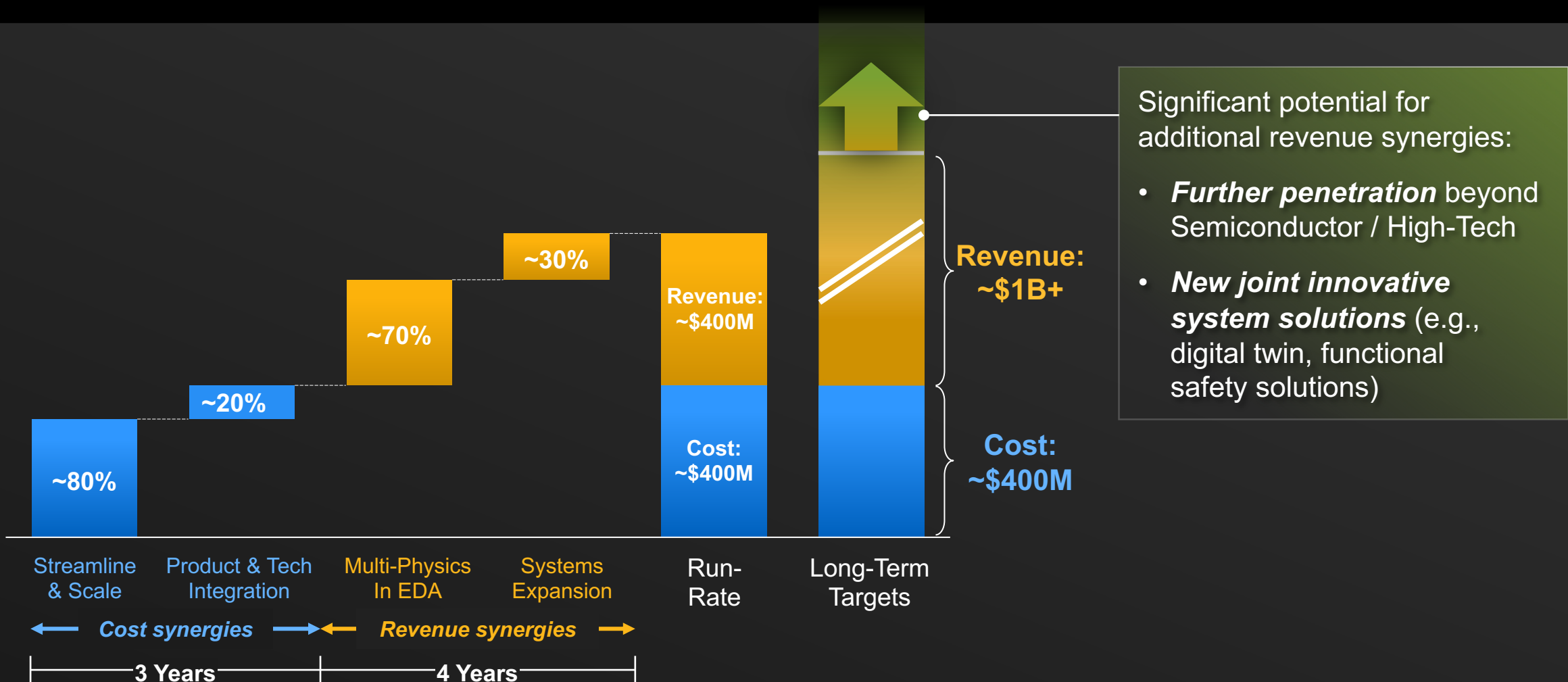
~\$1B+

of annual revenue synergies  
expected over longer-term

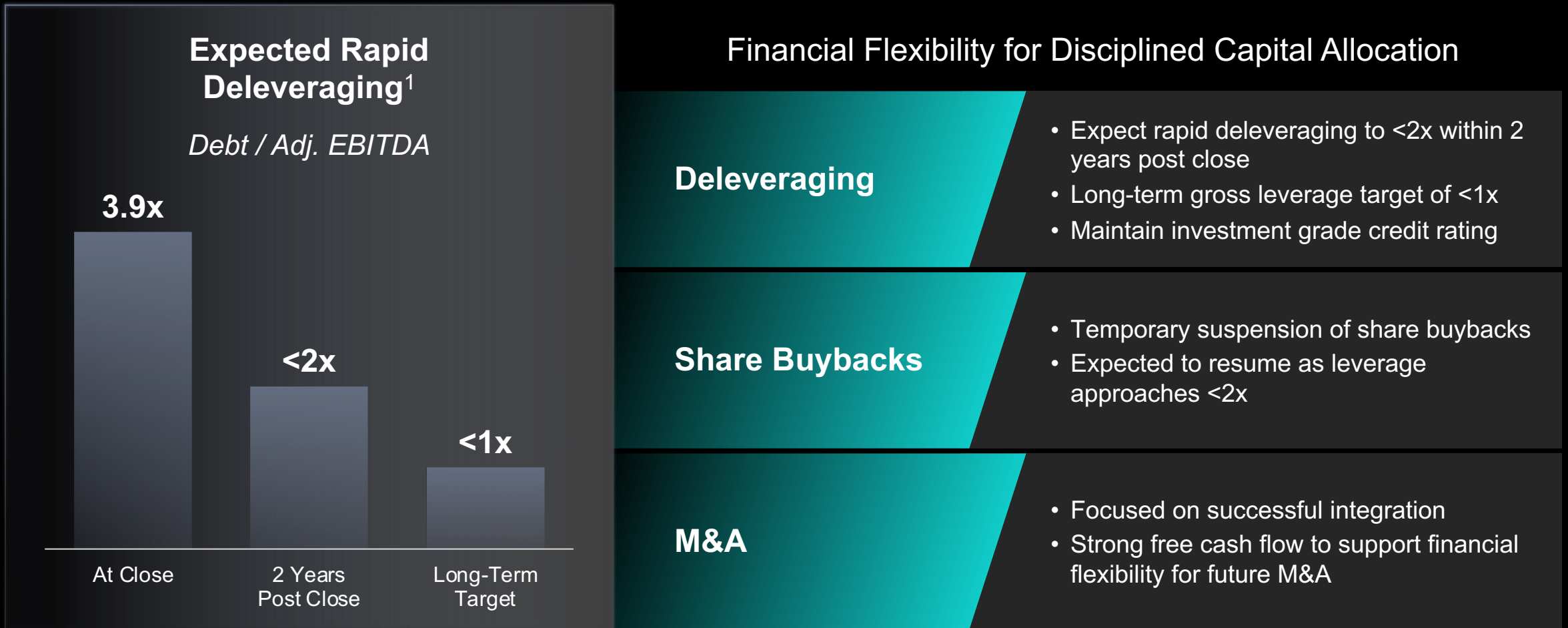
- Full potential realization of current identified synergies and TAM growth
- Significant potential for additional revenue synergies from
  - Further penetration beyond Semiconductor / High-Tech sector
  - New joint innovative system solutions (e.g., digital twin, functional safety)

We have identified specific, substantial and actionable cost and revenue synergies

# Identified and Achievable Drivers of Synergies



# Strong Combined Balance Sheet with Strong Free Cash Flow Generation Supporting Financial Flexibility



# Committed to a Successful Integration

Highly complementary businesses

Common secular trends and customer needs

Shared deep tech and science core competences

Similar talent profile and cultures

Builds on success of seven-year partnership

## Dedicated team to execute integration post-close

### Objectives

Continued successful execution

Maintain strong customer engagements

Retain critical talent

Realize identified synergies

### Key Functional Areas

☐ Engineering

☐ GTM

☐ People

☐ Corporate Functions

*Committed to providing regular updates on our integration efforts*

**Rigorous integration planning approach informed by comprehensive diligence**

# Disciplined Capital Allocation: Strategic Portfolio Decision

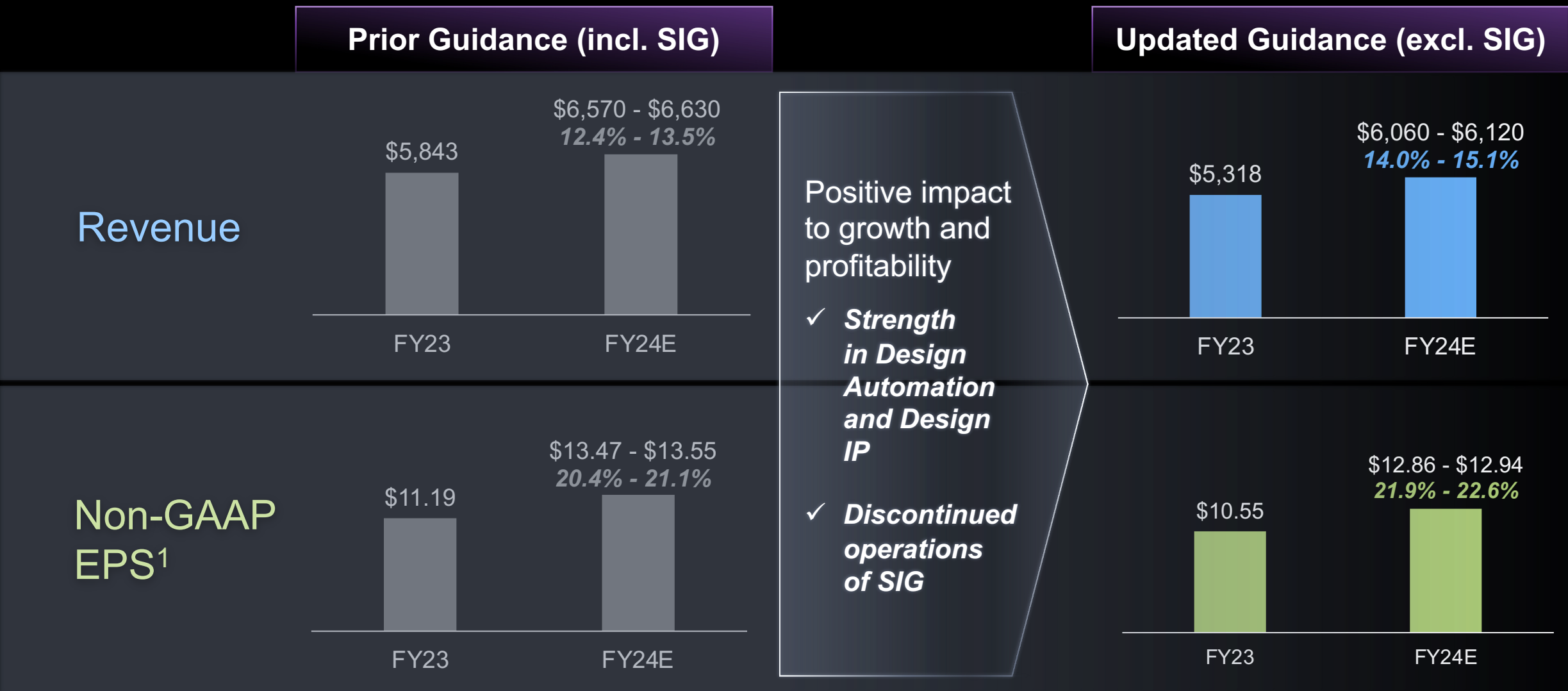
Compelling growth opportunities in Design Automation and Design IP

Announced in Q4'23 exploration of strategic alternatives for Software Integrity Group, the leader in application security testing

Completed a comprehensive review of alternatives and have decided to pursue the sale of SIG

FY 2024 guidance updated to reflect the strength of Design Automation and Design IP, and discontinued operations of Software Integrity Group

# FY 2024 Guidance Update



1. See appendix for a reconciliation of non-GAAP EPS to its most directly comparable measures reported under GAAP as well as information regarding how these measures were calculated

# Long-Term Financial Objectives<sup>1</sup>

## Combined company long-term, multi-year objectives

### Revenue

Industry-leading  
double-digit growth

### Non-GAAP Op. Margin

Long-term non-GAAP  
operating margins in  
mid 40s<sup>2</sup>

### Free Cash Flow

Long-term unlevered  
free cash flow margins  
in mid 30s<sup>2</sup>

### Non-GAAP EPS

Non-GAAP EPS  
growth in the  
high-teens range<sup>2</sup>

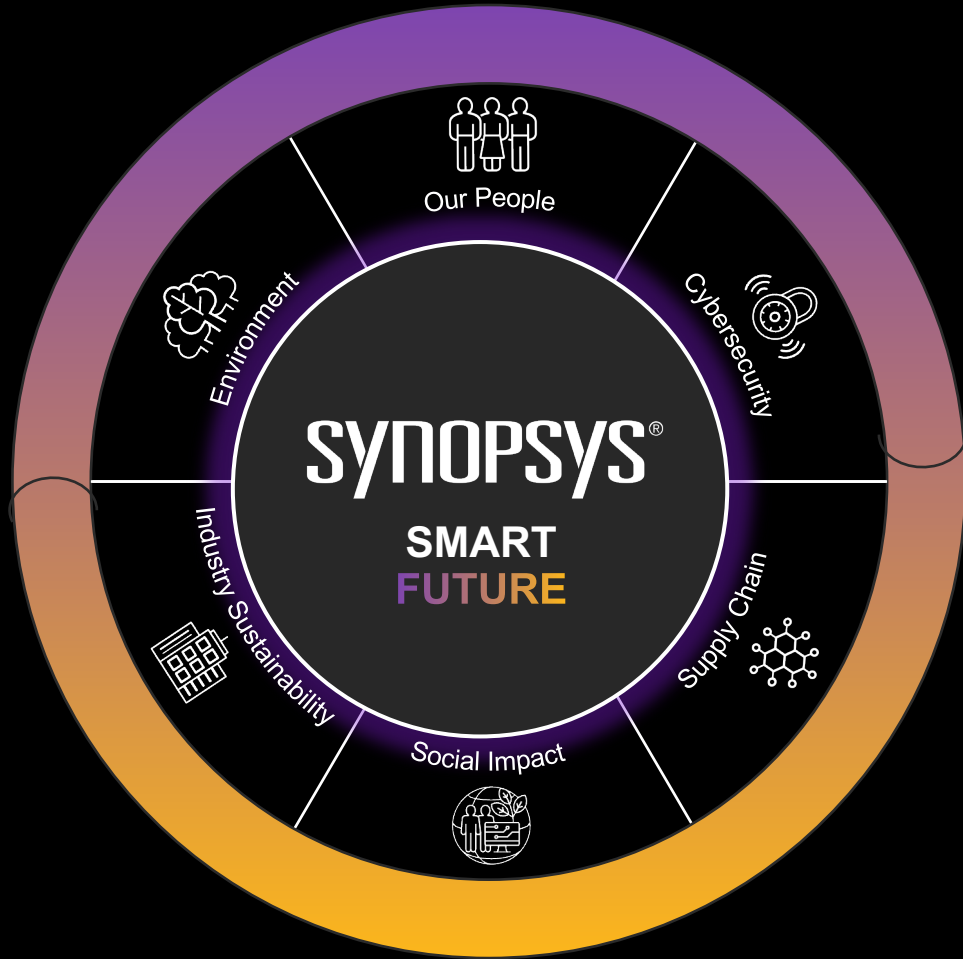
Near-term prioritization of our strong cash flow for debt paydown

Note: Combined company objectives exclude impact from SIG

1. These multi-year objectives are provided as of March 20, 2024; excludes SIG

2. Reconciliation of long-term non-GAAP operating margin, free cash flow and non-GAAP EPS are not available, see appendix for more information

# Committed to Creating a Smart Future Together



*Enabling customers to innovate for a greener world*

*Reducing our carbon footprint with science-based targets*

*Empowering global talent through a culture of innovation, inclusion, and respect*

*Dedicated to security across our enterprise and helping customers design trusted silicon*

*Building a resilient and responsible supply chain*

*Helping the communities in which we work*

# Confidence in Trajectory

Delivering outsized shareholder value

Industry-leading, resilient growth

Expanding and accelerating margins

Balanced, disciplined capital allocation priorities

The background is a solid dark purple. In the bottom left corner, there is a glowing blue and white graphic consisting of a network of dots connected by lines, resembling a digital or molecular structure. The Synopsys logo is centered at the top in white.

**SYNOPSYS<sup>®</sup>**

Our Technology, **Your Innovation<sup>™</sup>**

THANK YOU



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# Appendix

# Our Revised FY 2024 Guidance

	Prior Guidance (incl. SIG)	Updated Guidance (excl. SIG)
Revenue (\$M)	\$6,570 - \$6,630 +12.4% - 13.5%	\$6,060 - \$6,120 +14.0% - 15.1%
Non-GAAP Expenses <sup>1</sup> (\$M)	\$4,140 - \$4,180	\$3,755 - \$3,795
Non-GAAP Other Income & Expense Net (\$M)	\$24 - \$28	\$32 - \$36
Non-GAAP Tax Rate	15%	15%
Fully Diluted Outstanding Shares (M)	155 - 157	155 - 157
Non-GAAP EPS <sup>1</sup>	\$13.47 - \$13.55 +20.4% - 21.1%	\$12.86 - \$12.94 +21.9% - 22.6%
Operating Cash Flow	~\$1.4B	~\$1.3B
Capital Expenditures (\$M)	~\$140	~\$200
Free Cash Flow	-	~\$1.1B

- For a reconciliation of Synopsys' fiscal year 2024 targets, including expenses, earnings per diluted share and other measures on a GAAP and non-GAAP basis and a discussion of the financial targets that we are not able to reconcile without unreasonable efforts, see "GAAP to Non-GAAP Reconciliation" in the accompanying tables below

# Our Revised Q2 2024 Guidance

	Prior Guidance (incl. SIG)	Updated Guidance (excl. SIG)
Revenue (\$M)	\$1,560 - \$1,590 +11.8% - 14.0%	\$1,425 - \$1,455 12.8% - 15.2%
Non-GAAP Expenses <sup>1</sup> (\$M)	\$1,005 - \$1,015	\$905 - \$915
Non-GAAP Other Income & Expense Net (\$M)	\$2 - \$4	\$2 - \$4
Non-GAAP Tax Rate	15%	15%
Fully Diluted Outstanding Shares (M)	155 - 157	155 - 157
Non-GAAP EPS <sup>1</sup>	\$3.09 - \$3.14 +21.6% - 23.5%	\$2.93 - \$2.98 22.9% - 25.0%

• For a reconciliation of Synopsys' Q2'24 targets, including expenses, earnings per diluted share and other measures on a GAAP and non-GAAP basis and a discussion of the financial targets that we are not able to reconcile without unreasonable efforts, see "GAAP to Non-GAAP Reconciliation" in the accompanying tables below

# GAAP to Non-GAAP Reconciliation

## Operating Income and Operating Margin

(\$ in millions)	2020		2021		2022		2023	
	Margin \$	Margin %	Margin \$	Margin %	Margin \$	Margin %	Margin \$	Margin %
GAAP operating income and operating margin	\$620.1	16.8%	\$734.8	17.5%	\$1,162.0	22.9%	\$1,269.3	21.7%
Adjustments:								
Amortization of intangible assets	\$91.3	2.5%	\$82.4	2.0%	\$96.7	1.9%	\$102.9	1.8%
Stock compensation	\$248.6	6.7%	\$345.3	8.2%	\$459.0	9.0%	\$563.3	9.6%
Acquisition-related items	\$14.1	0.4%	\$15.4	0.4%	\$14.1	0.3%	\$15.1	0.3%
Restructuring charges	\$36.1	1.0%	\$33.4	0.8%	\$12.1	0.2%	\$77.0	1.3%
Non-qualified deferred compensation plan	\$21.5	0.6%	\$71.6	1.6%	(\$68.8)	(1.3%)	\$20.5	0.4%
Legal Matters	—	—	(\$1.5)	(0.0%)	—	—	—	—
Non-GAAP operating income and operating margin	\$1,031.6	28.0%	\$1,281.4	30.5%	\$1,675.1	33.0%	\$2,048.0	35.1%
Non-GAAP operating margin expansion FY20–FY23							7.1% / 706bps	

# GAAP to Non-GAAP Reconciliation

## Net Income per Diluted Share

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
GAAP net income per diluted share	\$1.56	\$1.47	\$1.21	\$1.58	\$1.64	\$1.43	\$1.73	\$0.88	\$2.82	\$3.45	\$4.27	\$4.81	\$6.29	\$7.92
Adjustments:														
Amortization of intangible assets	\$0.31	\$0.46	\$0.66	\$0.81	\$0.80	\$0.86	\$0.84	\$0.70	\$0.82	\$0.65	\$0.59	\$0.52	\$0.61	\$0.64
Stock compensation	\$0.40	\$0.38	\$0.48	\$0.43	\$0.51	\$0.54	\$0.63	\$0.70	\$0.91	\$1.01	\$1.60	\$2.19	\$2.93	\$3.62
Acquisition-related items	\$0.14	\$0.01	\$0.30	\$0.04	\$0.04	\$0.10	\$0.07	\$0.06	\$0.14	\$0.04	\$0.08	\$0.10	\$0.06	\$0.10
In-process research and development	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Inventory fair value adjustment	–	–	\$0.01	\$0.04	–	–	–	–	–	–	–	–	–	–
Restructuring charges	\$0.01	–	–	–	\$0.00	\$0.10	\$0.06	\$0.24	\$0.08	\$0.31	\$0.23	\$0.21	\$0.08	\$0.50
Gain on sale of strategic investments	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tax adjustments and settlement	(\$0.82)	(\$0.52)	(\$0.55)	(\$0.46)	(\$0.35)	(\$0.22)	(\$0.31)	\$0.79	(\$1.03)	(\$0.78)	(\$1.22)	(\$0.98)	(\$1.07)	(\$1.59)
Legal Matters	–	–	–	–	(\$0.11)	(\$0.04)	–	\$0.05	\$0.17	(\$0.12)	\$0.00	(\$0.01)	–	–
Non-GAAP net income per diluted share	\$1.60	\$1.80	\$2.10	\$2.44	\$2.53	\$2.77	\$3.02	\$3.42	\$3.91	\$4.56	\$5.55	\$6.84	\$8.90	\$11.19
Non-GAAP EPS CAGR (FY10-20)	13%													
Non-GAAP EPS CAGR (FY20-23)	26%													

# GAAP to Non-GAAP Reconciliation

## FY24 Updated Guidance: Expenses

	Prior Guidance (incl. SIG)				Updated Guidance (excl. SIG)			
	Q2'24		FY'24		Q2'24		FY'24	
	Low	High	Low	High	Low	High	Low	High
<i>(\$ in millions)</i>								
Target GAAP expenses	\$1,206	\$1,226	\$5,022	\$5,079	\$1,083	\$1,103	\$4,535	\$4,592
Adjustments:								
Amortization of acquired intangible assets	(\$26)	(\$29)	(\$103)	(\$108)	(\$16)	(\$19)	(\$61)	(\$66)
Stock-based compensation	(\$175)	(\$182)	(\$748)	(\$760)	(\$162)	(\$169)	(\$690)	(\$702)
Acquisition/divestiture related items	-	-	(\$31)	(\$31)	-	-	(\$29)	(\$29)
Target non-GAAP expenses	\$1,005	\$1,015	\$4,140	\$4,180	\$905	\$915	\$3,755	\$3,795

# GAAP to Non-GAAP Reconciliation

## FY24 Updated Guidance: Net Income per Diluted Share

	Prior Guidance (incl. SIG)					Updated Guidance (excl. SIG)				
	FY'23	Q2'24		FY'24		FY'23	Q2'24		FY'24	
		Low	High	Low	High		Low	High	Low	High
GAAP net income per diluted share	\$7.92	\$2.05	\$2.16	\$9.56	\$9.74	\$7.95	\$2.01	\$2.12	\$9.47	\$9.65
Adjustments:										
Amortization of intangible assets	\$0.64	\$0.19	\$0.17	\$0.69	\$0.66	\$0.33	\$0.12	\$0.10	\$0.42	\$0.39
Stock-based compensation	\$3.62	\$1.17	\$1.12	\$4.87	\$4.79	\$3.30	\$1.08	\$1.04	\$4.50	\$4.42
Acquisition-related items	\$0.10	-	-	\$0.20	\$0.20	\$0.09	-	-	\$0.19	\$0.19
Gain on sale of strategic investments	-	-	-	(\$0.35)	(\$0.35)	-	-	-	(\$0.35)	(\$0.35)
Restructuring charges	\$0.50	-	-	-	-	\$0.34	-	-	-	-
Tax adjustments and settlement	(\$1.59)	(\$0.32)	(0.31)	(\$1.50)	(\$1.49)	(\$1.46)	(\$0.28)	(\$0.28)	(\$1.37)	(\$1.36)
Non-GAAP net income per diluted share	\$11.19	\$3.09	\$3.14	\$13.47	\$13.55	\$10.55	\$2.93	\$2.98	\$12.86	\$12.94

# Reconciliation of Unlevered Free Cash Flow and Related Metrics

(\$ in millions)	FY2020	FY2021	FY2022	FY2023
Cash flow from operating activities	\$991	\$1,493	\$1,739	\$1,703
( - ) Purchases of Property and Equipment	(155)	(94)	(137)	(190)
( - ) Capitalized Software Development Costs	(4)	(2)	(2)	(2)
= Free Cash Flow	\$832	\$1,397	\$1,600	\$1,511
( / ) Revenue	\$3,685	\$4,204	\$5,082	\$5,843
= Free Cash Flow Margins	22.6%	33.2%	31.5%	25.9%
Free Cash Flow Margin expansion FY20–FY23				3.3% / 330bps

# Business Segment Reporting<sup>1, 2</sup>

UNAUDITED, IN MILLIONS

	FY 2021	FY 2022	FY 2023
<b>Revenue by segment</b>			
Design automation	\$2,754.7	\$3,300.2	\$3,775.3
<i>% of total</i>	65.5%	64.9%	64.6%
Design IP	\$1,055.7	\$1,315.5	\$1,542.7
<i>% of total</i>	25.1%	25.9%	26.4%
Software integrity	\$393.8	\$465.8	\$524.6
<i>% of total</i>	9.4%	9.2%	9.0%
<b>Adjusted operating income by segment</b>			
Design automation	\$924.6	\$1,206.6	\$1,439.7
Design IP	\$318.5	\$421.5	\$532.1
Software integrity	\$38.3	\$47.0	\$76.3
<b>Adjusting operating margin by segment</b>			
Design automation	33.6%	36.6%	38.1%
Design IP	30.2%	32.0%	34.5%
Software integrity	9.7%	10.1%	14.5%

Certain operating expenses are not allocated to the segments and are managed at a consolidated level. The unallocated expenses managed at a consolidated level, including amortization of intangible assets, stock-based compensation, the gains (losses) related to deferred compensation plan, restructuring charges, and certain acquisition-related items, are presented in the table below to provide a reconciliation of the total adjusted operating income from segments to our consolidated operating income:

<sup>1</sup> Synopsys' fiscal year 2023 ended on October 28, 2023. For presentation purposes, we refer to the closest calendar month end

<sup>2</sup> Synopsys manages the business on a long-term, annual basis, and considers quarterly fluctuations of revenue and profitability as normal elements of our business. Amounts may not foot due to rounding