Powering innovation in the era of pervasive intelligence
Cautionary Statement Regarding Forward-Looking Statements

This presentation contains forward-looking statements, including, but not limited to, statements regarding strategies related to our products, technology and services; business and market outlook, opportunities, strategies and technological trends, such as artificial intelligence; customer demand and market expansion; our planned product releases and capabilities; and industry growth rates. These statements involve risks, uncertainties and other factors that could cause our actual results, time frames or achievements to differ materially from those expressed or implied in such forward-looking statements. Such risks, uncertainties and factors include, but are not limited to: macroeconomic conditions and geopolitical uncertainty in the global economy; uncertainty in the growth of the semiconductor and electronics industries; the highly competitive industry we operate in; actions by the U.S. or foreign governments, such as the imposition of additional export restrictions or tariffs; consolidation among our customers and our dependence on a relatively small number of large customers; risks and compliance obligations relating to the global nature of our operations; and more.

Additional information on potential risks, uncertainties and other factors that could affect Synopsys' results is included in filings we make with the SEC from time to time, including in the sections entitled “Risk Factors” in our latest Annual Report on Form 10-K and in our latest Quarterly Report on Form 10-Q. The information provided herein is as of March 20, 2024. Synopsys undertakes no duty to, and does not intend to, update any forward-looking statement, whether as a result of new information, future events or otherwise, unless required by law.
Artificial intelligence

Exponential productivity and efficiency gains
Silicon proliferation
More silicon content everywhere
Software-defined systems

New applications, new methodologies
The era of pervasive intelligence
Pervasive Intelligence

- Artificial intelligence
  - Exponential productivity and efficiency gains
- Silicon proliferation
  - More silicon content everywhere
- Software-defined systems
  - New applications, new methodologies

Silicon-to-Systems Design Solutions
  - New design paradigms to accelerate innovation
Reinvention of computing

Explosion of intelligent systems
Unprecedented transformation
Driven by silicon and systems innovation
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

*Performance Speed-Up Based on Projected Results*
Challenges

Silicon Complexity

Productivity Bottleneck

Silicon & Systems Intersection
Silicon complexity
March to trillions

10^12

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

10-15% speed at same power
25-30% power at same speed

10^10

Angstroms

* Source: AnandTech.
Silicon design solutions

- Most Trusted and Broadest IP Portfolio
  - Security IP
  - Foundation IP
  - Interface IP
  - Processor IP
  - Other IP
  - Custom Logic

- Most Comprehensive EDA Platform
  - Systems Architecture
  - Design Capture
  - Verification
  - Implementation
  - Signoff
  - Test
  - Manufacturing

- Most Advanced Multi-Die Solutions
Silicon design solutions

Most Trusted and Broadest IP Portfolio

Most Comprehensive EDA Platform
- Systems Architecture
- Design Capture
- Verification
- Implementation
- Signoff
- Test
- Manufacturing

Most Advanced Multi-Die Solutions
Synopsys IP Revenue*

*IP Nest, Gartner
Silicon design solutions

Most Trusted and Broadest IP Portfolio

Most Comprehensive EDA Platform
- Systems Architecture
- Design Capture
- Verification
- Implementation
- Signoff
- Test
- Manufacturing

Most Advanced Multi-Die Solutions
Advanced Node

14nm and older nodes
Mid-2010's

2024-2025
2026-2027
2028-2029
2030-2031
Silicon design solutions

Most Trusted and Broader IP Portfolio
- Security IP
- Processor IP
- Foundation IP
- Other IP
- Custom Logic
- Interface IP

Most Comprehensive EDA Platform
- Systems Architecture
- Design Capture
- Verification
- Implementation
- Signoff
- Test
- Manufacturing

Most Advanced Multi-Die Solutions
Advanced packaging technology codenamed Pike Creek
Industry Interoperability Demo

Synopsys UCle
TSMC N3E Technology

Intel UCle
Intel 3 Technology

EMIB
Advanced Packaging Technology
3DIC Compiler

- Highly scalable platform for 2D/3D integration
- Comprehensive design and closure
- Integrated industry golden signoff

Fusion Data Model

- 3D Heterogeneous Computing
- Design and Implementation
- Advanced Package Implementation
- 3D System Analysis and Signoff
- Test and SLM
Synopsys Platform Architect™ – Multi-Die
Synopsys Platform Architect - Multi-Die

Explore and optimize 6-12 months before RTL available
Announcing

Synopsys 3DSO.ai™
Native Thermal Analysis
Accelerating 3D design from days to hours

AI-Driven Optimization
Over 10x productivity boost

1. Minimize dB loss
2. Minimize Near-end Xtalk
3. Minimize Far-end Xtalk

SI-aware Routing
Synopsys silicon ecosystem

ADVANTEST
Amkor Technology
Andes Technology
arm
ASE
Ansys
CEVA
EXOSTELLAR
GlobalFoundries
Imagination
imec
intel foundry
Keysight Technologies
Rapidus
RISC-V
Samsung
SiFive
TERADYNE
Tower Semiconductor
tSMC
UMC
VeriSilicon
Productivity bottleneck
What do you see as the biggest issues facing the semiconductor industry over the next three years?

- Talent risk (not enough skilled workers, struggle for talent): 46%
- Territorialism / The nationalization of semiconductor technology and intellectual property: 41%
- Global inflation and government responses: 41%
- Supply chain disruption: 28%
- Excess semiconductor production capacity: 25%
- Increasing R&D costs: 17%
- High foundry cost: 17%
- Convestment in semiconductors: 15%
- Global ramifications of the Russia-Ukraine war: 15%
- Semiconductor production capacity constraints: 14%
- Cyber security: 13%
- ASP erosion: 7%
- Other: 6%

Source: KPMG Global Semiconductor Industry Outlook Survey, n=151.
IP a major productivity enabler
Leading edge PHY development

Source: Synopsys internal estimates
Synopsys IP

Boost productivity with world-class IP, accelerate time to market
AI-driven optimization
2020 onwards

- **DSO.ai™**: 10% better performance per watt
- **VSO.ai™**: 4x TAT for same coverage
- **TSO.ai™**: 25% average pattern count reduction
- **ASO.ai™**: 4x TAT for circuit opt.

Source: Synopsys Internal Estimates
AI-driven data analytics

2022 onwards

Design.da

Better PPA from aggregated insights

Silicon.da | Fab.da

Higher yield and quality
Higher fab efficiency
Generative AI
2023 onwards

Synopsys.ai Copilot
Synopsys.ai

Generative AI
2023 onwards

Generative
Generate RTL, Test Bench, Formal Collateral

Collaborative
Expert answers, expert root causes
Synopsys Cloud

Up to 40% faster time to results

Source: Synopsys Internal Estimates
Synopsys Cloud Hybrid Solution
Synopsys Cloud Hybrid Solution

- Up to 50% productivity improvement

Compute
Data

On-prem data center
Cloud service provider

- Up to 40% faster time to results

Bring your own cloud
Software as a service

Source: Synopsys Internal Estimates
Synopsys productivity ecosystem
Silicon & systems intersection
Software-Defined Products

- Systems Companies
  Customized silicon essential for differentiation

- Silicon Companies
  Software workloads driving silicon requirements
Industry-leading system design solutions

Software-driven architecture exploration

Software-driven design verification

Software and system validation

Silicon lifecycle management
Announcing

Synopsys HAPS®-100 12
HAPS-100 12 prototyping platform

HAPS leading prototyping performance for up to 3x larger designs

Run interface IP over 400MHz
Announcing Synopsys ZeBu® EP2
ZeBu EP2 emulation and prototyping platform

Highest performance for all hardware assisted verification use cases

Unique single system for emulation and prototyping

Supports up to 5.6 billion gate designs
Electronics digital twin
Synopsys systems ecosystem
Synopsys Ecosystem

Productivity

Silicon

Systems

Synopsys Ecosystem
Synopsys silicon to systems ecosystem