SILVACO

Company Overview

Speaker Name
Speaker Title

December 2022

About Silvaco

Silvaco delivers innovative electronic design automation (EDA) solutions and semiconductor intellectual property (SIP)

For over 30 years, Silvaco has enabled its customers to deliver advanced processes and products for display, power, memories and systems-on-a-chip (SoC)

Atoms to Systems

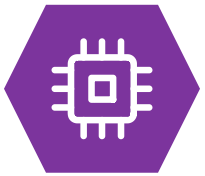# Silvaco at a Glance

600+
Customers Worldwide

200+
University Customers Worldwide

250+
Employees
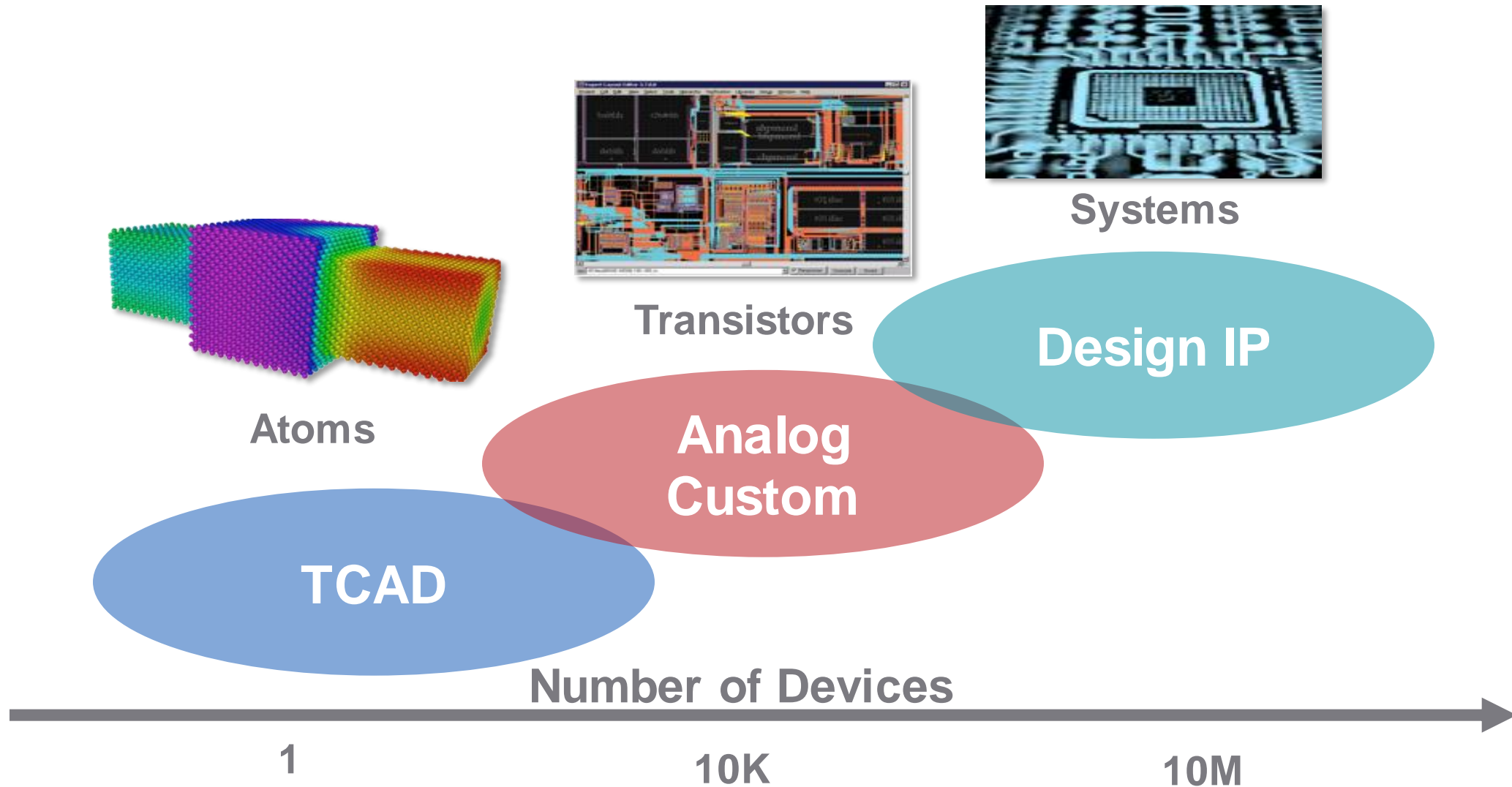
#1
TCAD and Modeling for **Flat Panel, Power**

Solutions for
**Display, EV Power, SoC, IoT, Fab Process Optimization**

Targeted academic research and sponsorships

Silvaco's Solution Spectrum

Atoms

Transistors

Systems

Design IP

Analog Custom

TCAD

Number of Devices

→

1

10K

10M

A Proven Technology Portfolio

- Leading TCAD Solution
  - Complete 2D/3D process, device, atomistic simulation
  - Power, advanced CMOS, Display and Optoelectronics
  - Advanced Fab Design-of-Experiments with ML

- Superior IC Analysis & Verification Tools
  - Leading parasitic reduction and analysis
  - Advanced modeling utilizing Machine Learning
  - Variation analysis
  - Sign-off accepted physical verification tools

- One-stop Shop for Analog/Custom IC Design
  - Complete flow from Schematic to Foundry (GDSII)
  - Complements TCAD flow for co-optimization
  - Unique solution for Flat Panel Display simulation

- Design IP, and Management
  - Large IP portfolio: Automotive, IoT, Memory
  - Enterprise IP management products

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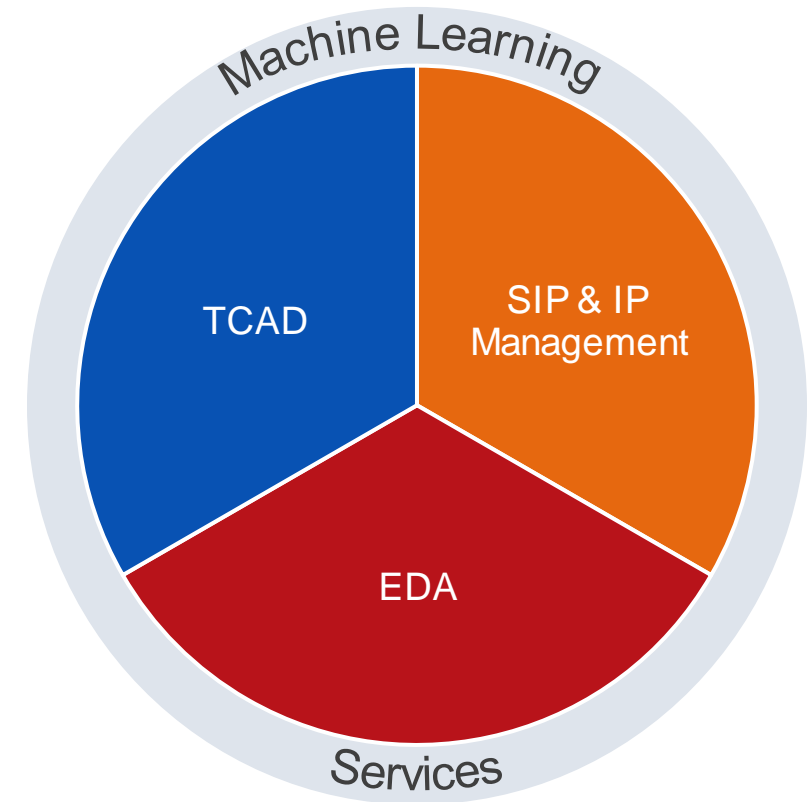
A Strong, Diversified Global Presence

Headquarters &
Development Center
Silicon Valley, USA

- 🔴 Sales Offices
- 🔵 R&D Centers
- 🔴🔵 Sales/R&D Centers

World-Class Companies Leveraging Our Solutions
Enabling semiconductor and photonics businesses from atoms to systems

Top 10 Semiconductor Companies by $

Rank	Location	TCAD	IP	IC Design
1	Korea	✓	✓	✓
2	U.S.		✓	✓
3	Taiwan	✓		✓
4	Korea			✓
5	U.S.	✓		
6	U.S.		✓	✓
7	U.S.			✓
8	U.S.			
9	Taiwan			✓
10	U.S.		✓	

*Source: IC insights Ranking 2021 Forecast

Leading Power Devices Companies by $

	Location	TCAD
1	Europe	✓
2	Japan	✓
3	Europe	
4	U.S.	✓
5	Japan	
6	Japan	
7	U.S.	
8	Europe	✓
9	U.S.	
10	Japan	

*Source: Allied Market Research

Top 10 Display Companies by $

Rank	Location	TCAD	IC Design
1	China		✓
2	Korea	✓	✓
3	Koreas	✓	✓
4	China	✓	
5	Japan	✓	✓
6	Taiwan	✓	
7	China	✓	
8	China	✓	✓
9	Japan	✓	✓
10	China		

*Source: Display supply chain consultants

Strategic Acquisitions Expanding Solutions Portfolio (2015 to 2021)

	2015	2016	2017	2018	2020	2021
TCAD				Atomistic TCAD **PURDUE** RESEARCH FOUNDATION		
IP		Enter IP market **IPextreme**	Broaden IP portfolio SoC Solutions	Foundation IP creation and characterization NANGATE	Memory compiler DOLPHIN INTEGRATION	
EDA	Variation aware design infiniscale Power integrity sign-off INvarian	SPICE netlist analysis & reduction edXact			Silicon substrate analysis CWS	Physical verification POLYTEDA CLOUD

Victory TCAD Solution

Process		Device		Model
Process Simulation Solid Modeling		**Device Simulation**		**Modeling & Simulation**
Victory Process		**Victory Device**		**Utmost IV** — SPICE Model Generation
Victory Mesh — Meshing, Solid Meshing		**Victory Atomistic** — Nanotech Modeling (PURDUE RESEARCH FOUNDATION)		**Hipex and Victory RCx Pro** — Parasitics Extraction
				SmartSpice

DTCO

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Analog Custom IC Design Solution
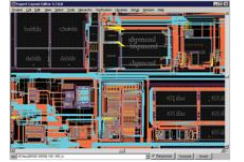
Design Capture and Layout

Gateway
Schematic Editor

Expert
Layout Editor

SmartDRC/LVS
Physical Verification

Hipex
Parasitic Extraction

Simulation and Analysis

SmartSpice
Simulation

SmartView
Waveform

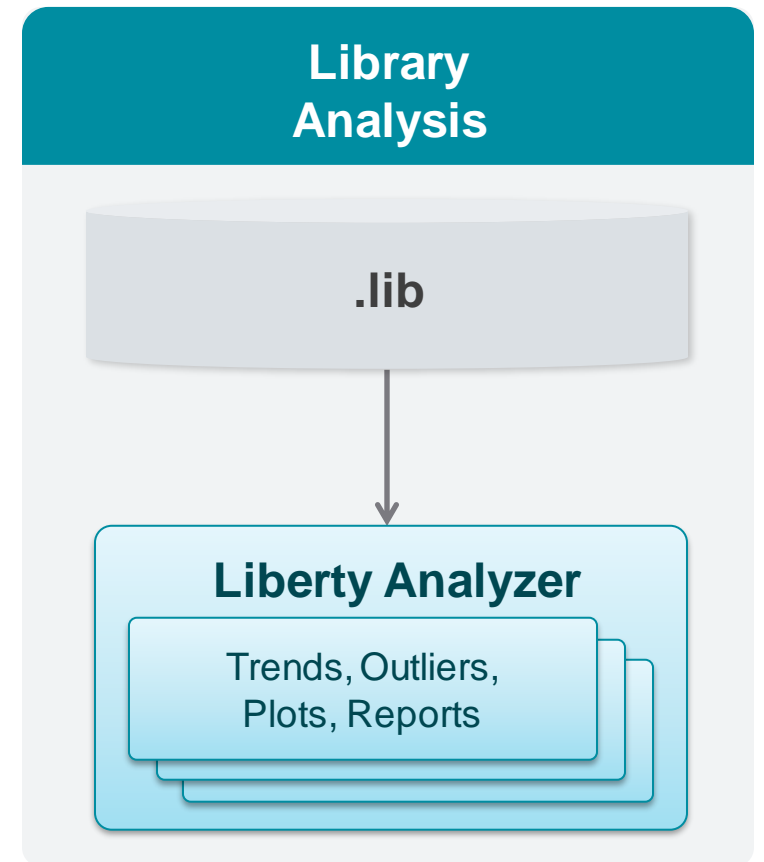### Jivaro
Parasitic Reduction
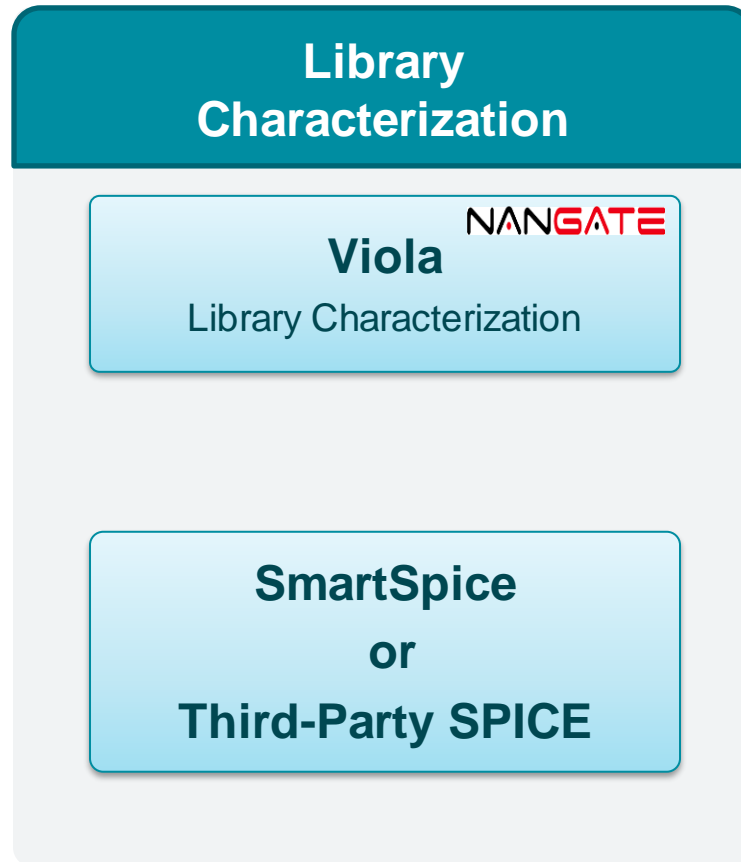
Viso, Belledonne
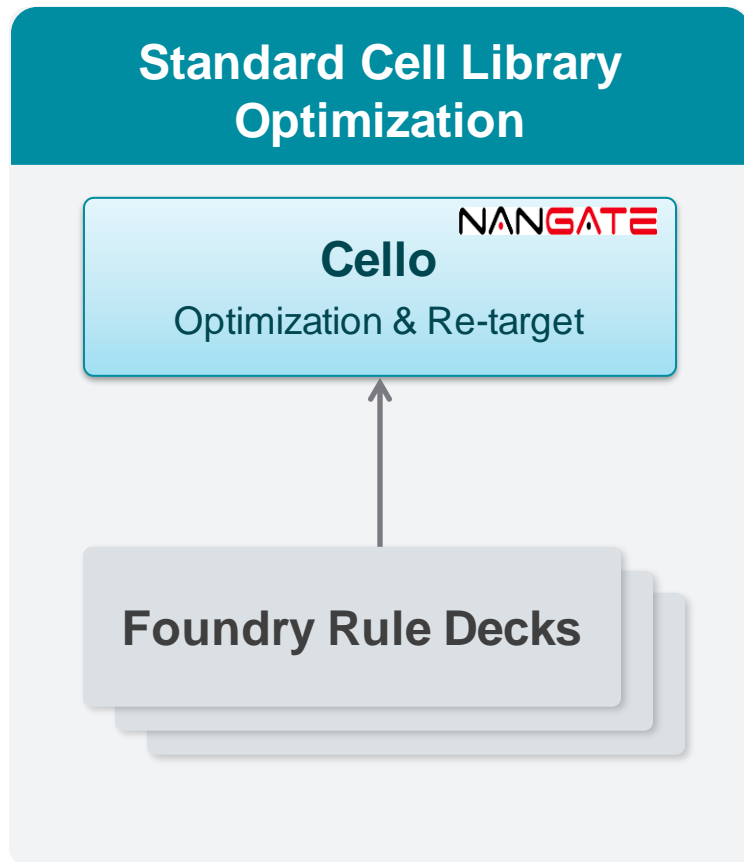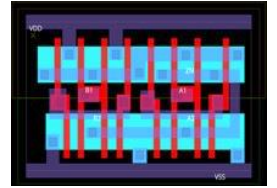Parasitic Analysis

VarMan
Statistical Variation and Yield Analysis

Utmost IV
SPICE Model Generation

Library Optimization, Characterization

Standard Cell Library Optimization	Library Characterization	Library Analysis
Cello NANGATE Optimization & Re-target	**Viola** NANGATE Library Characterization	**.lib**
Foundry Rule Decks	**SmartSpice** **or** **Third-Party SPICE**	**Liberty Analyzer** Trends, Outliers, Plots, Reports

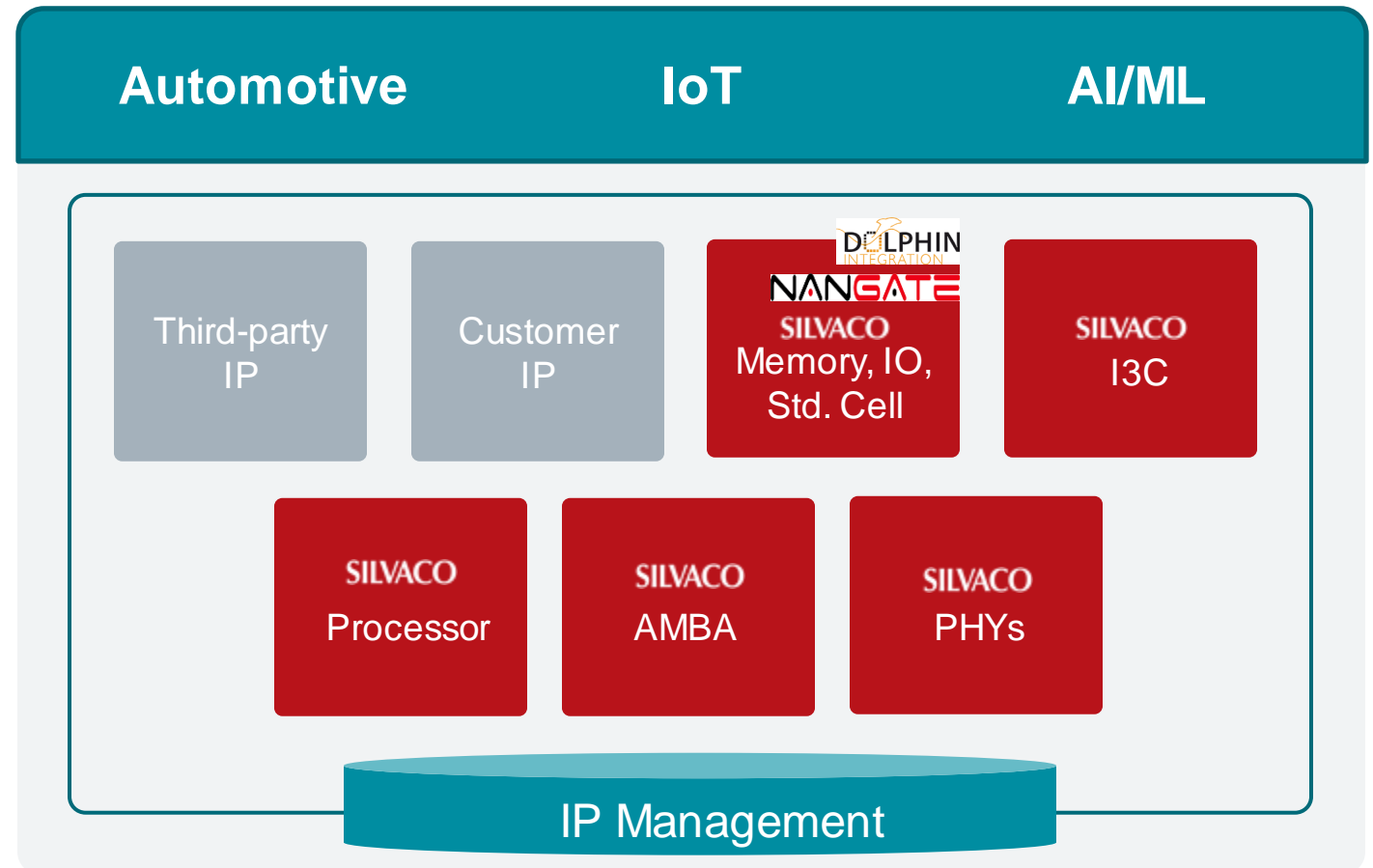**SILVACO**

Broad IP Portfolio and IP Management

- Licensor for NXP IP

- AMBA peripherals and bus fabric

- High-performance IOs

- Ultra-low power, high-density memory compilers

- IP Management Tool: Enterprise/ Cloud level, IP authentication

ARM AMBA
Interconnect standards

Automotive	IoT	AI/ML

Third-party IP

Customer IP

SILVACO Memory, IO, Std. Cell

SILVACO I3C

DELPHIN INTEGRATION

NANGATE

SILVACO Processor

SILVACO AMBA

**SILVACO** PHYs

IP Management

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Why Customers Choose Silvaco

- Best-in-class full solution for Display technology development

- Leading TCAD solution for SiC, GaN Power Devices

- Unique point tools complementing existing IC design flows

- Production and market proven design IPs for auto/consumer

- Tools for foundation IPs, embedded memories & IO

- Patented IP Finger Printing & Chip DNA analysis

- Agility to respond to customers' unmet needs (R&D, Support)
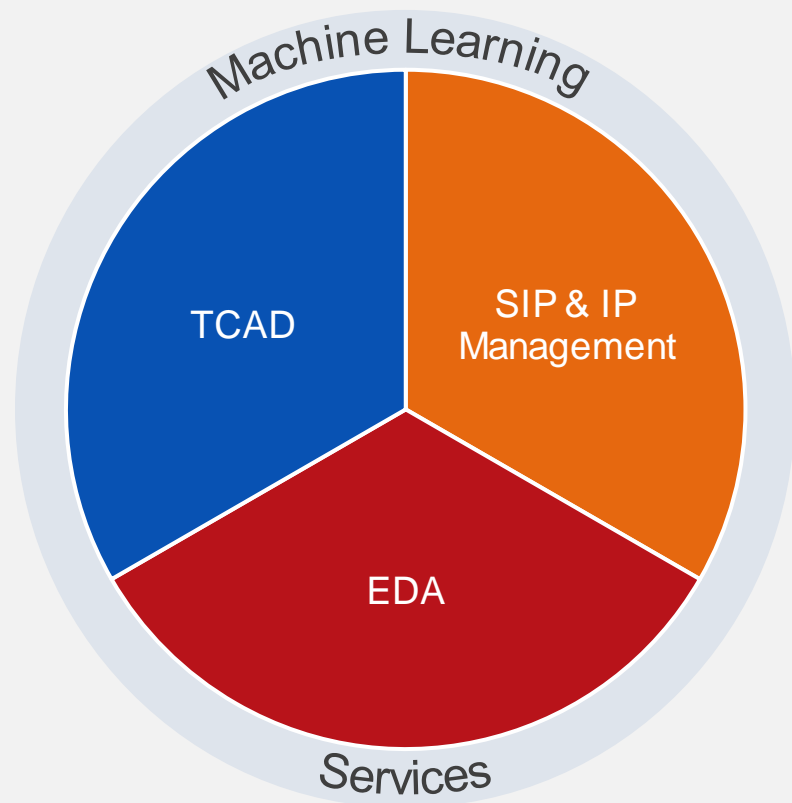
Summary

- We enable understanding of new technologies

- Our expertise spans from Atomistic to System-level IP

- Our solutions have been used in production flows for the past 3 decades

- 1000's of devices successfully designed with our tools

- We provide competitive solutions and services

- Customer success is our highest priority

Thank you. | SILVACO

Leadership

Babak Taheri, PhD
CEO and Board Member

Bob McMullan
Chief Financial Officer

Raul Camposano, PhD
Chief Technical Officer

Ian Chen
Senior VP Revenue

Thomas Yih
Head of Legal

Brian Bradburn
VP of Operations

Carrie Allegretti
VP of HR