

The Next Generation of Silicon Design Engineering: A Deloitte Perspective

The semiconductor industry is transforming:

- "By 2024, 60% of all leading-edge chip design will be done in the cloud, up from less than 5% in 2019." - Gartner, 2021
- "The complexity of (semi) designs with heterogenous compute have increased more than 100X from 2016 to 2021." - Semiengineering, 2021
- "There can be up to 1,400 process steps in the manufacturing of semiconductor wafers alone." - Supplyframe, 2021
- "OEMs will increasingly design their own system-level [chips] and then go direct to the foundry to have the parts made..." - TechMonitor, 2021

Cloud is poised to disrupt Silicon Design Engineering.

In the Electronics Design Automation (EDA), Cloud will improve collaboration and performance, while reducing cost and risk, enabling teams to deliver innovation to market more quickly. Deloitte accelerates the transition:

Developing a Cloud Strategy for semi design (EDA) workloads

Business case and decision making (CSPs, EDA Tools, etc.) support

Implementation and PMO services specific to EDA on Cloud

EDA on Cloud and Analytics Platform Managed Services



The semiconductor design to product path is lengthy and complex:

The Semiconductor Industry has many players across a diverse set of geographies with complex interactions, leading to multi-year gestation periods before chips can be brought to market.

Deloitte leverages deep experience in semiconductor design and Cloud technology to provide support at any stage of the transformation journey:

Cloud Strategy and Readiness
Strategy and Operating Models, Organizational Readiness, etc.

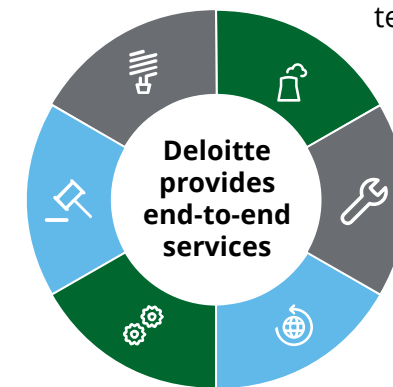
End to End Migration
Strategy and business case development, readiness planning, testing and cutover, etc.

EDA POC Execution and Proving
Collaboration with CSPs and EDA Vendors, Infrastructure Planning, TCO Calculations

Migrate EDA Workloads
Identifying workloads and landing zones, Customized cloud environments

SaaS Transformation of Tools
Cloud Native App. Architecture Development, Orchestration and Automation, DevOps, etc.

Cloud Managed Services
Deloitte Managed Analytics Platform, Cloud Financial Management, etc.



IC Design

- Multiple IC designs at once
- 3rd Party IP Integration
- Diverse EDA toolset
- Outsourced engineering teams

Wafer Fabrication

- Multiple wafer sources
- Once IC can have multiple grades or bins
- Wafer 'starts' need to be triggered months in advance

IC Assembly

- Many geographically dispersed providers
- Facility selected based on package capability
- Multiple assembly flows or BOMs

IC Test

- Many geographically dispersed providers
- Facility selected based on test capability or equipment
- Throughput is IC-specific

Distribution & Assembly

- Diverse distribution strategies and locations
- Captive to OEM or contract manufacturers
- Co-located near ODM/OEM, or target end-markets

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Deloitte's solution will improve the speed, scale, and quality of electronic design automation outputs:



Accelerate

Cloud accelerates the speed at which architects, engineers, designers, and manufacturers can collaborate and build.



Scale

Cloud enabled EDA can scale across the hundreds of systems used in legacy electronic design processes, helping enterprises to realize value quickly.



Analyze

Cloud infrastructure enables enterprises to run advanced analytics on the design process, improving the quality of electronic design over time.

Multiple semi-design workloads are potential candidates for migration to cloud:

- Verification and Validation**
Verification, Simulation and Emulation, RTL Regressions
- Synthesis and Timing**
DFT Insertion (SCAN and BIST), Layout, Logical Synthesis
- Physical Design**
Place and Route, Floor Planning, Power Integrity / Signal Integrity Analysis
- Physical Verification**
Verification, LVS/DRC, Physical sign off, Extraction, Static Timing Analysis
- Post Silicon Validation**
Chip testing, wafer testing

Cloud Service Providers (CSP) are engaging across the Semi industry to enable use cases beyond Electronic Design Automation:

- Yield Analysis
- Supply Chain and materials management
- Data analytics (AI/ML models) on fab data
- MES / PLM Systems

Deloitte Semiconductor Overview:

- 1,000+ resources with semiconductor industry experience
- A global footprint with centers of excellence in **Silicon Valley, Seoul, Tokyo, Taipei, Singapore, and Malaysia**
- Deloitte currently serves:
 - Top 3 fabless and IDM compute device makers
 - 2 of the top 3 foundries
 - 3 of the top 4 equipment companies
 - All 3 top memory devices makers
 - The top ASIC companies

in GLOBAL M&A CONSULTING	in TECHNOLOGY TRANSFORMATION
in GLOBAL SUPPLY CHAIN MANAGEMENT CONSULTING	#1 in BUSINESS TRANSFORMATION
in CHANGE MANAGEMENT	in STRATEGY CONSULTING
	in PRICING & PROFITABILITY MGMT

Deloitte Cloud Overview:



Legend
 ● Global Delivery Centers
 ◆ Cloud Delivery Centers

Advanced Consulting Partners

Enterprise Ready Solutions

Certified Solution Architects

Dedicated Team of Deep Cloud Expertise

20,000+ Cloud Practitioners Globally	10,000+ Cloud Certified Globally	26 Global Delivery Centers	2,200+ Unique Clients	13,200+ Unique Projects
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Let's talk

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Start the conversation. To learn more, visit <https://www2.deloitte.com/us/en/pages/technology-media-and-telecommunications/solutions/semiconductor-industry-services.html>