

Why semiconductor-enabled products and systems are demanding AI-infused solutions



As opportunity expands, so does complexity... Compounding **exponential growth** in multiple domains create **scaling challenges** using traditional approaches, resulting in a **growing resource gap**

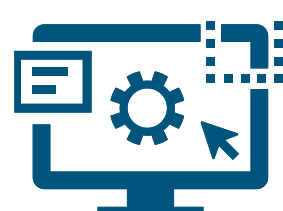
Physical Complexity
New nodes, 3D IC, etc.



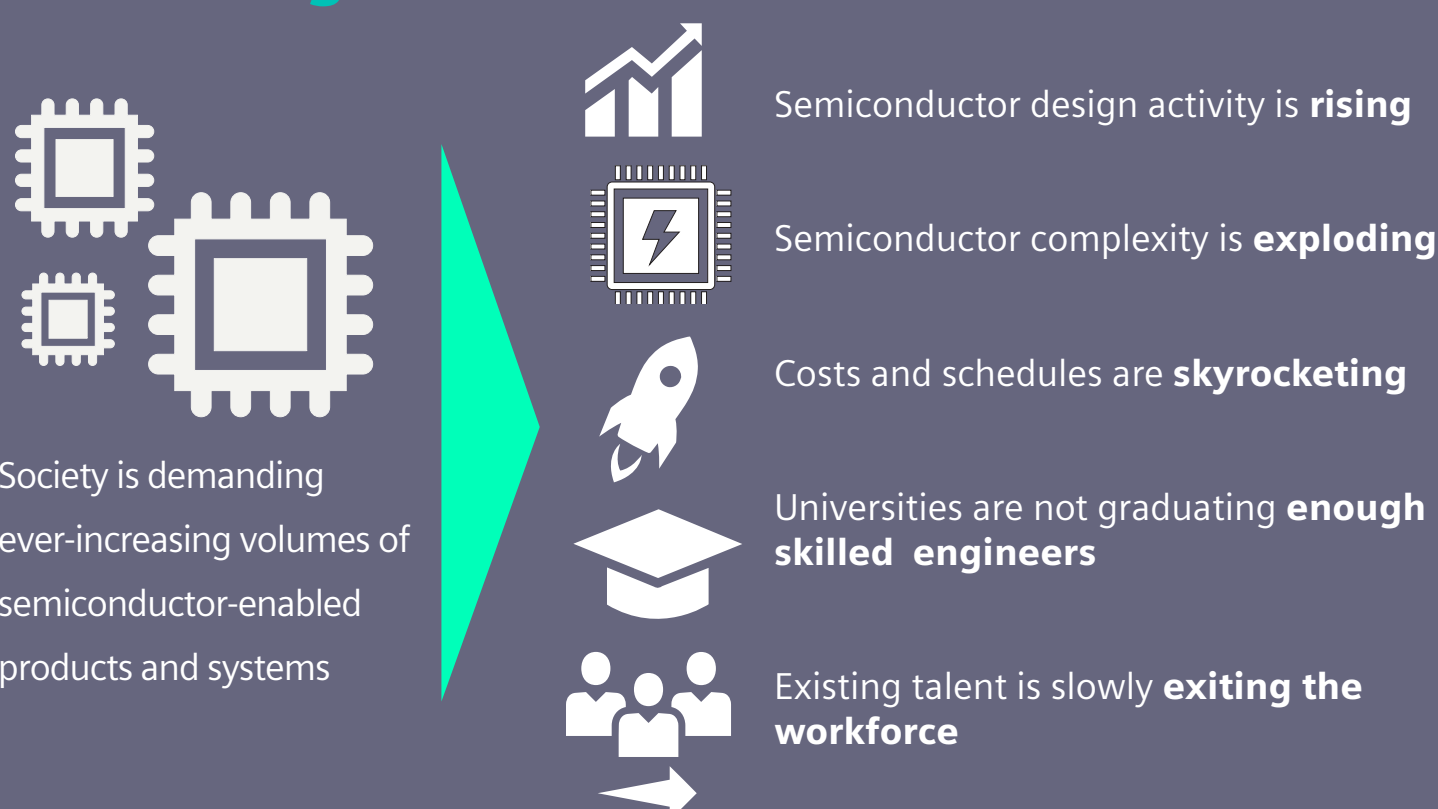
End Application Complexity
Algorithm performance, HW/SW, etc.



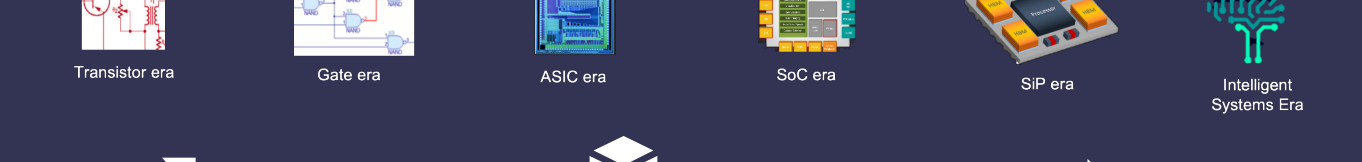
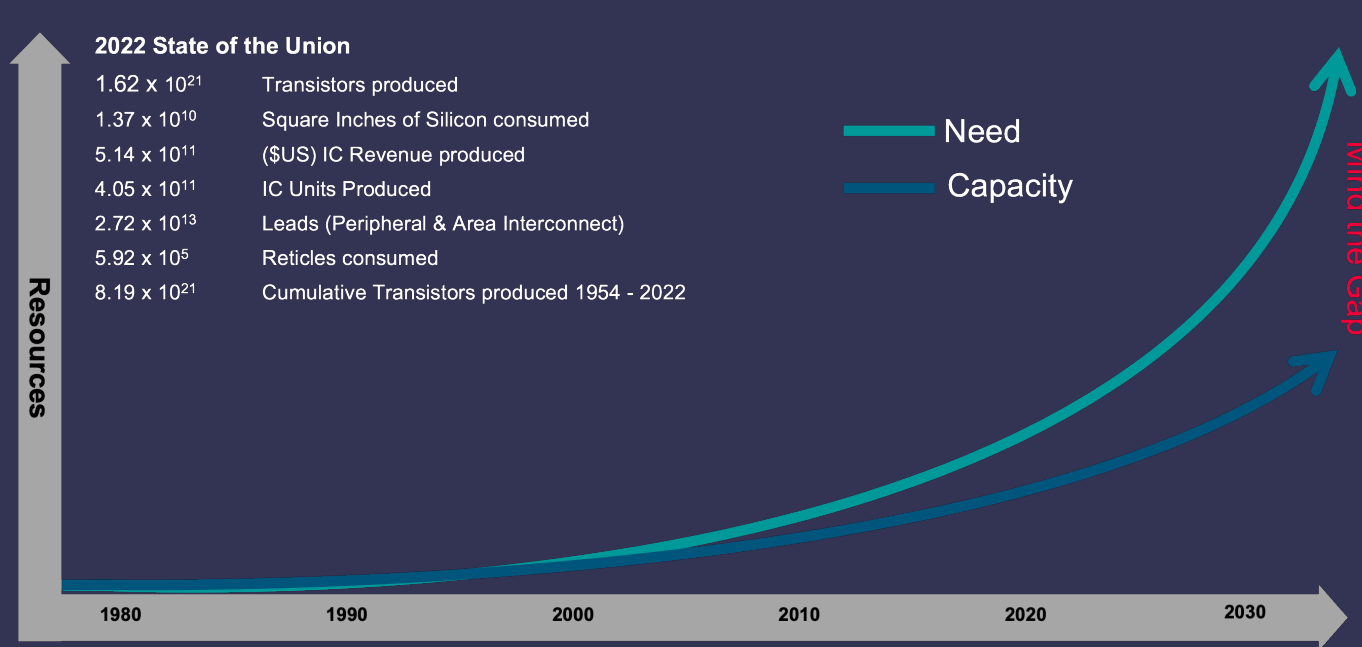
System Complexity
Domains, control, power, etc.



The scaling dilemma



The resource gap is accelerating



A gap is growing between what is needed and what is possible

Solutions need to deliver orders of magnitude improvement not percentages

AI is closing this gap reducing the needed resources and increasing available capacity

How does AI impact the complexity problem?

Shifting the resource burden from man to machine

e.g.: Improving results through intelligent parameter exploration and optimization over a large number of runs to deliver better PPA potentially at the cost of higher compute needs

Reduce the overall resource burden

e.g.: Eliminating unnecessary verification and automatically identifying underlying root cause of issues to drastically reduce compute needs and debug time

How is AI changing the nature of design, and by extension - designers themselves?

Requires tools for AI algorithm design and implementation

- Virtually all new semiconductor-enabled systems will involve AI
- Needs design techniques built with an AI and algorithm-first approach

System and algorithm-level optimization is needed

- Systems need to be optimized across the complete design
- Drives the need for comprehensive digital twin and model-based systems engineering

AI is empowering generalists with specialist knowledge

- Shifting workforce demographics means new tooling required
- Generalist engineers (HW or SW) leveraging AI-based systems will need to perform many specialist tasks

What's next?

Discover how **AI-infused EDA solutions** deliver new levels of productivity and capability.

Learn more

Design Technology

Enabling algorithm and system first design approach powered by the comprehensive digital twin

Advanced Analysis

Work with increasing large data sets to better understand and analyze advanced designs

Performance

Deliver orders of magnitude improvement with predictive models and by eliminating redundant work

Deep Insights

Gaining new insights and guiding designers to find the root-cause in a fraction of time of traditional techniques