

The SDC 'Root-of-Trust' Problem, and How We Solve It  
Dr. Sam Appleton, CEO of Ausdia

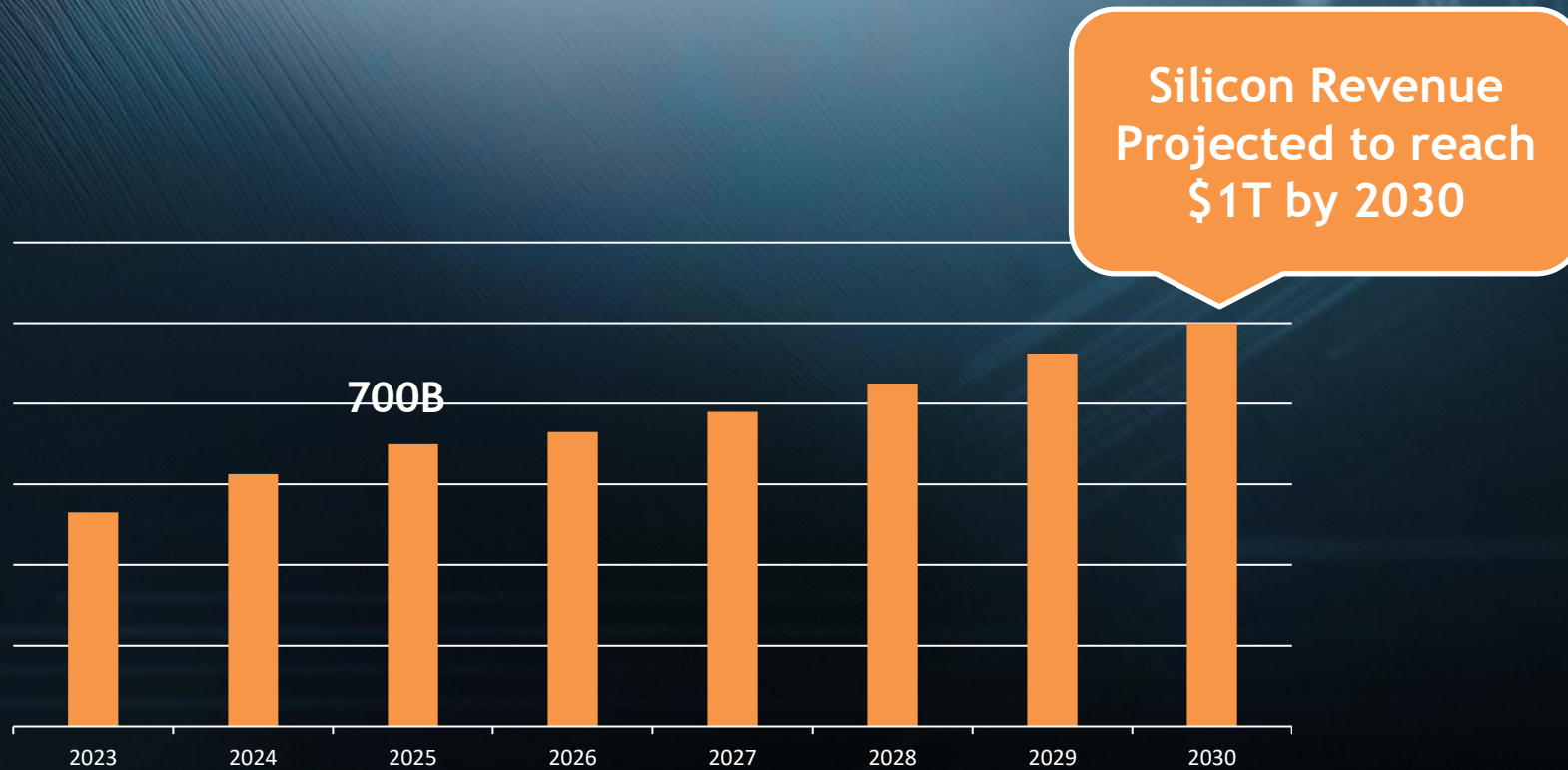




# SDC “Root of Trust”

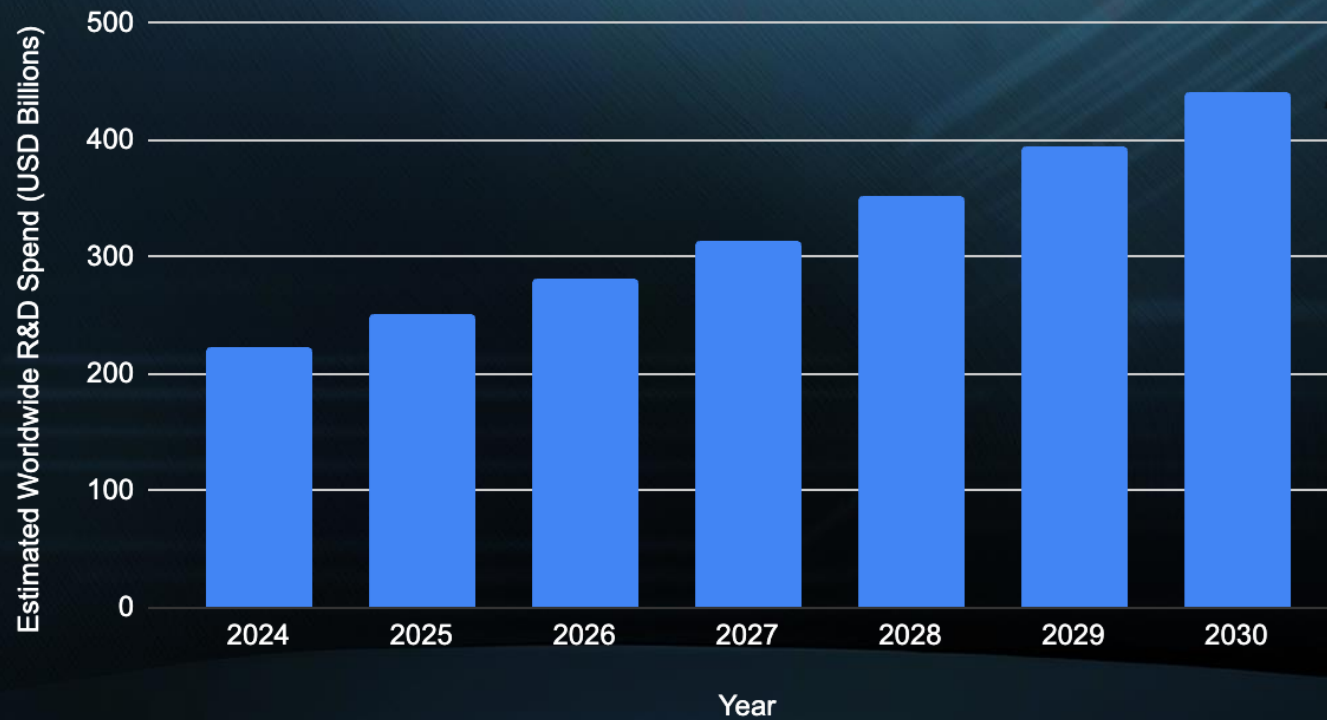
- A (very) new problem in SOC Design
- Rethinking in terms of trust
- Establishing trust in the timing flow

# Exciting Times - Semi Growth



# Semi R&D

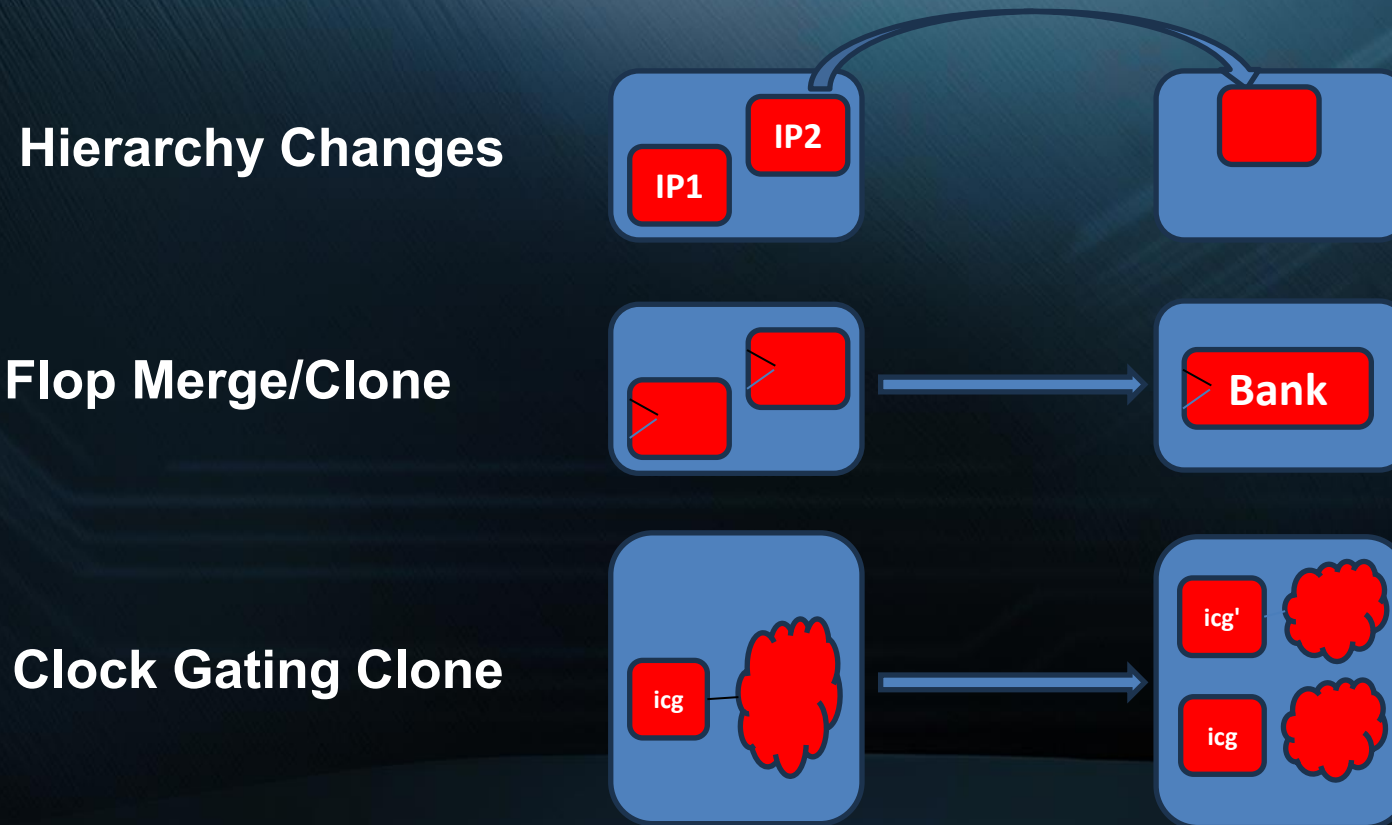
Estimated Worldwide R&D Spend (USD Billions) vs. Year



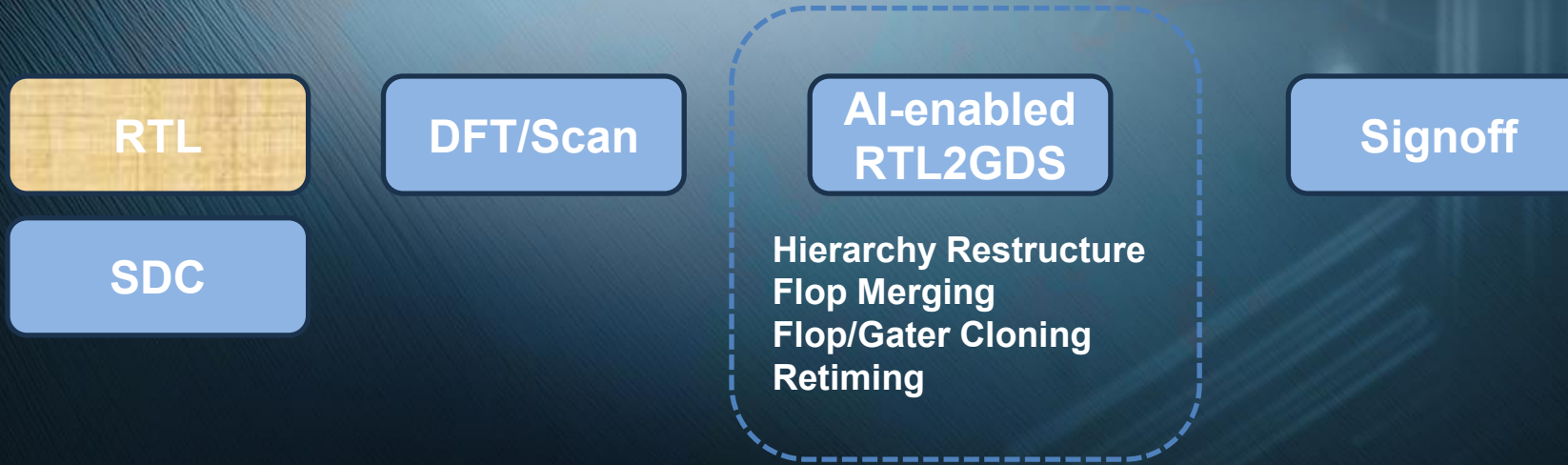
Semi Industry R&D Spend Projected to reach >\$400M by 2030

# AI-driven RTL2GDS Tools

- Significantly Improved PPA
- Design structure significantly transformed



# AI-RTL2GDS & Timing Constraints



**Shift Left**  
All constraints must applied for best PPA

**“Miss Right”**  
RTL constraints only partially map to optimized design



# Trust

- Is design timed consistently?
- Any impacts designer intent
- How to integrate to SOC level ?

I guess,  
Maybe?

Can we tapeout?  
Which SDC did we use?  
Do we know it matches RTL?  
...



### SGI Team Slashes SoC Layout Time with FlexRoute

As a major player in the highly competitive world of high-performance workstations, servers and supercomputers, SGI is continually looking for ways to improve its products. As part of this ongoing effort, a team of SGI engineers was given the task of significantly boosting the performance of the graphics and system interface functions of a system on a chip (SoC) in the company's line of NT workstations. But in the fast-paced world of high-performance graphics workstation market is paramount. So when they faced the challenges of SoC design, they decided to examine every phase of the design process to meet strict market windows.

I've been  
there



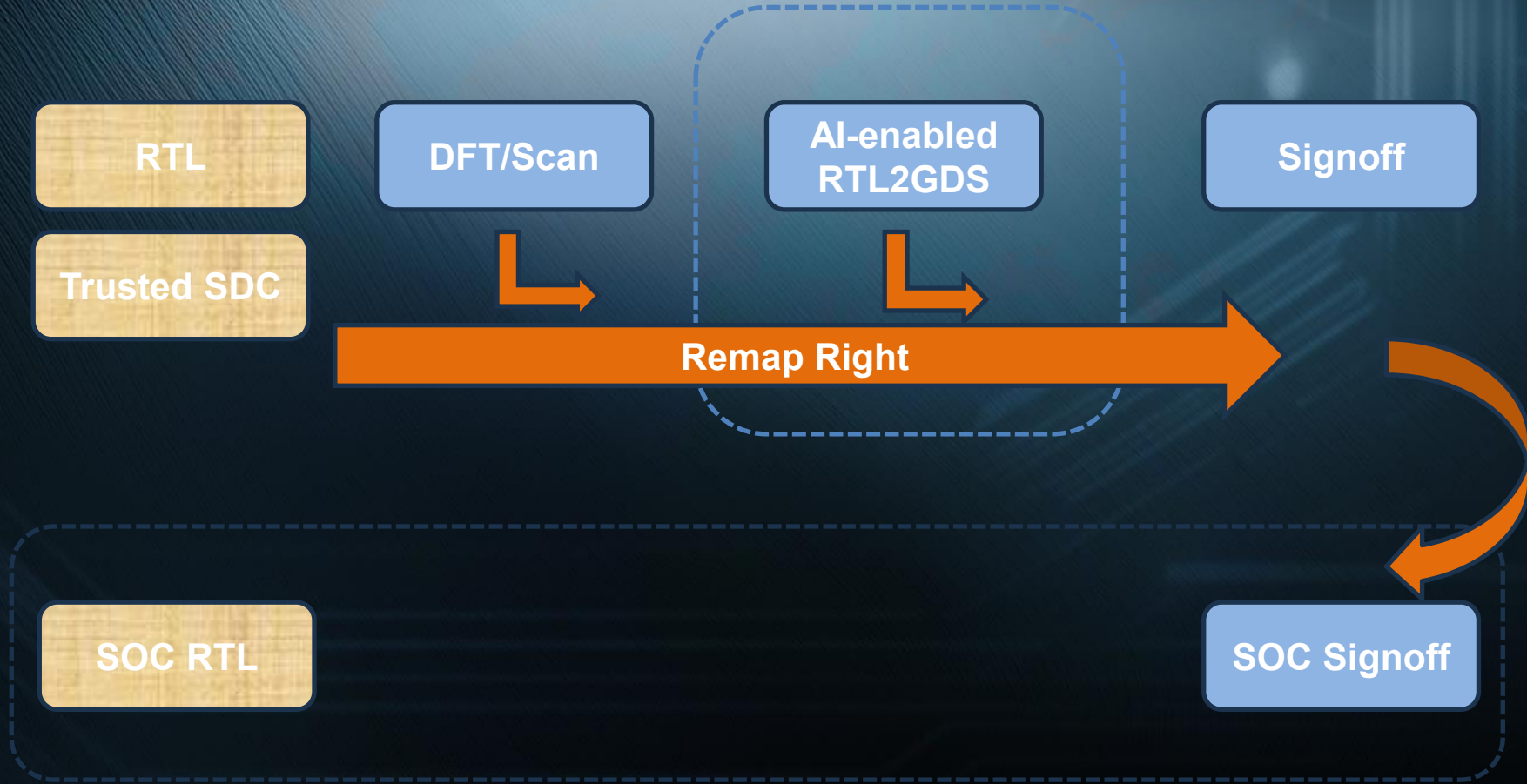
**Dashboards are green!  
Everything matched up!  
Verification Passes!**





*Root of Trust for Timing  
Closest to Designer Intent*





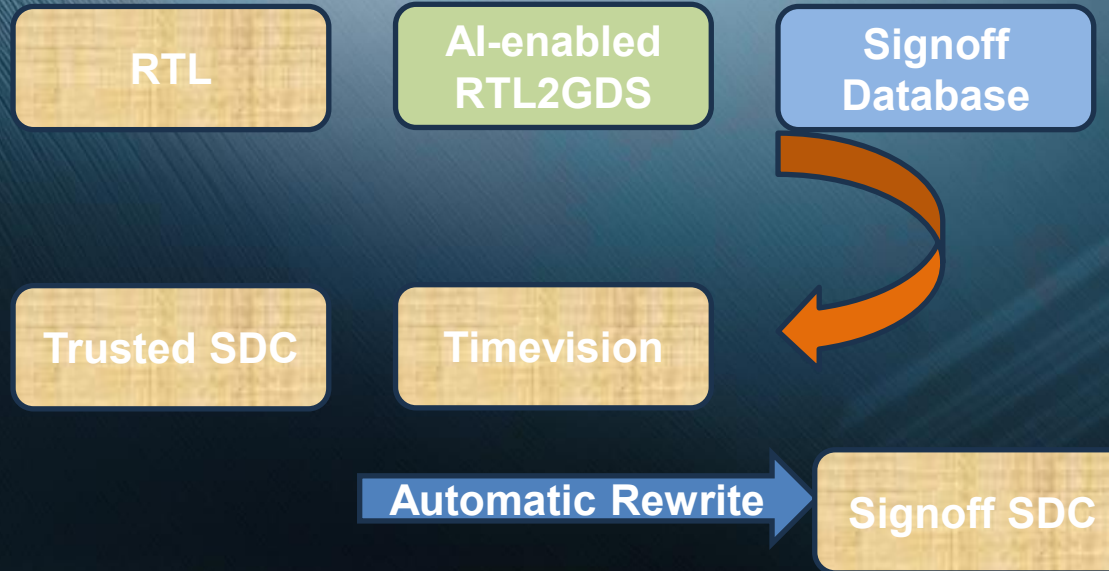
Reuse Block "Trusted SDC"  
At SOC Signoff

# Solving with Available Tools



- Manually find correct new objects
- Grep logfiles for errors & warnings – debug
- Hope everything is found
- No check that timing is equivalent

# OneSource



- LEC and input-mapping
- Automated rewrite of Trusted SDC
- Verification of timing equivalence

# Closing the Trust Gap

AI & new optimizations significantly improve PPA

Opens up a trust-gap for timing consistency and signoff

We can close this gap together

