



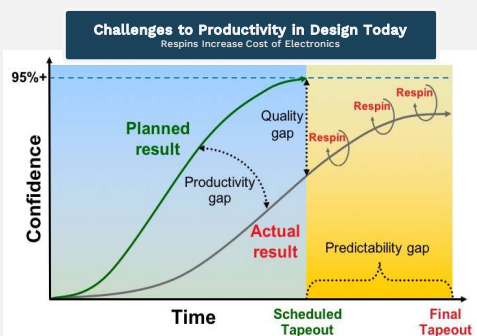
MAGESTIC: Machine Learning Driven Automatic Generation of Electronic Systems Through Intelligent Collaboration

David White PI, Joe Cole Co-PI, Taylor Hogan (PCB lead), Elias Fallon (Analog lead), Rege Colwell, Lucas Zhang, Joydeep Mitra, Namita Rane and Hua Luo

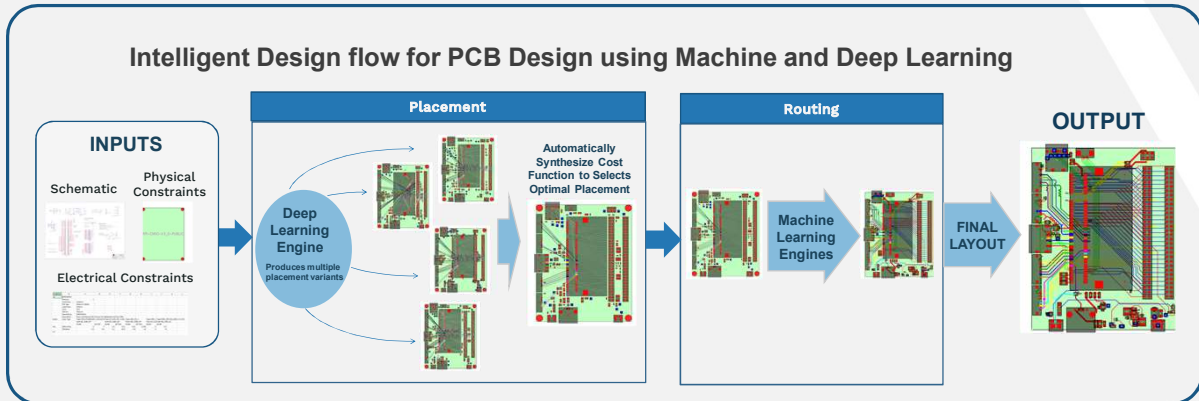
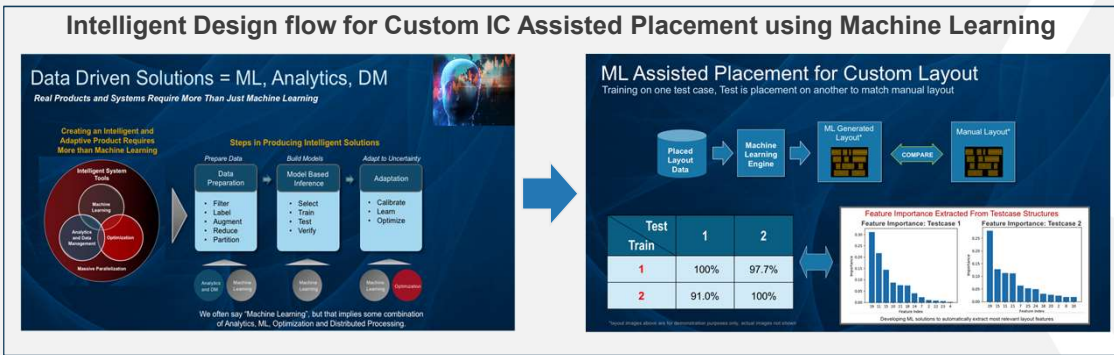
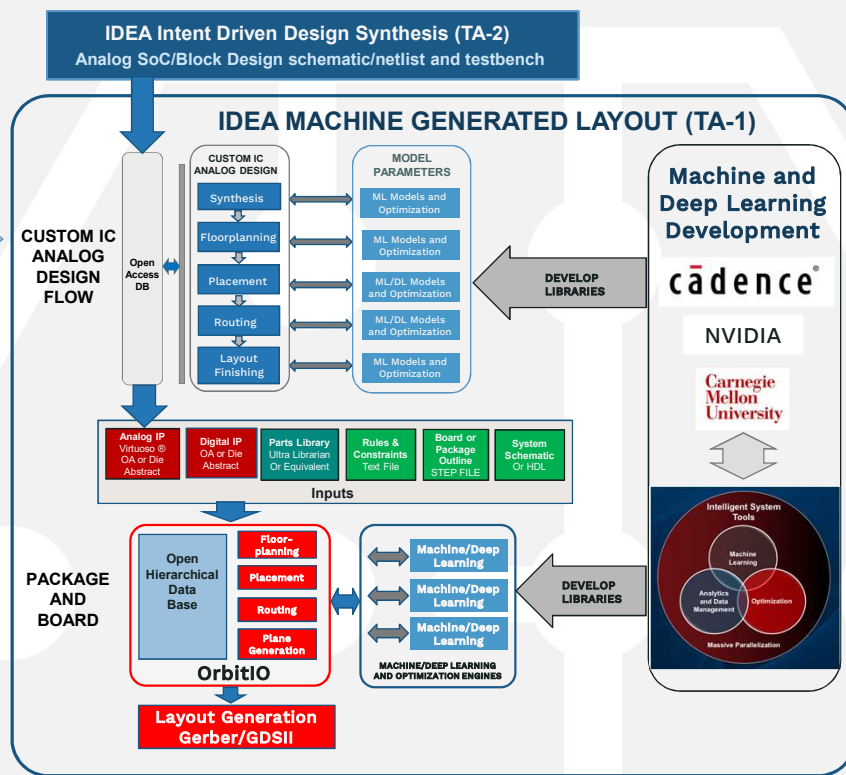
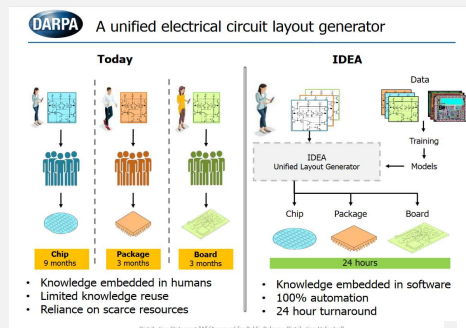
Custom Product Group, Cadence Design Systems

Designs Thrust: Intelligent Design of Electronic Assets (IDEA)

Problem:



Solution:



DARPA MAGESTIC PROGRAM: Key Points

- MAGESTIC**: Machine-learning Driven Automatic Generation of Electronic Systems Through Intelligent Collaboration
- Intelligent Electronics Design from Chip through Package and Board
 - Identify Design Approaches and Intent and Synthesize Cost Functions
 - Model Design Decisions and Trends from Netlist to Completed Layout
 - Use Optimization Methods to Drive Designs to Meet Intent
 - Automated, Physical Design with 24 Hour TAT in Cloud
- Leverages Virtuoso In-Design Verification and Partial Layout Simulation
- Innovative Claims
 - Characterizing Design Type/Intent to Enable More Optimal Place and Route
 - Developing Real-time Learning of IC and Board Design Preferences
 - Learning Shape Related Proxies for 3D Layout Geometries
 - ML based Optimization to Improve Routing QoR and Electrical Performance
- Collaborative R&D Partnership with Cadence, CMU and Nvidia

cadence, Carnegie Mellon University, NVIDIA

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