Electric VLSI Design System™

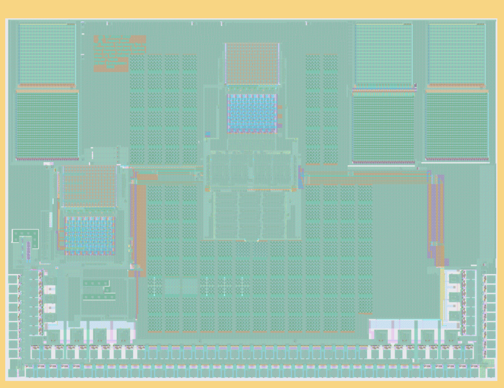
A Custom Integrated-Circuit Design System, written in Java

Features

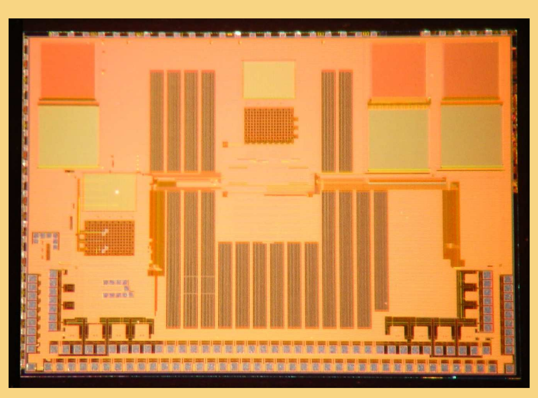
- A Java open-source circuit-design system
  - Platform for ongoing projects in Sun Labs' VLSI group, Sun's CAD group and the open-source community
  - Framework to engage academia in VLSI research
- Thread-safe database
- Elegant way of incorporating different design environments
  - Has both schematic capture and IC layout features
  - Constraint system further enhances design

Benefits at Sun

Test Chip: Treasure Island (6mm x 4mm)



Foundry input generated by Electric



Foundry Output

- Fully supported in-house CAD tool to generate test chips
- Research platform for full custom design flow; provides competitive advantage for asynchronous circuit designs
- Facilitate Proximity Communication and On-Chip Communication research

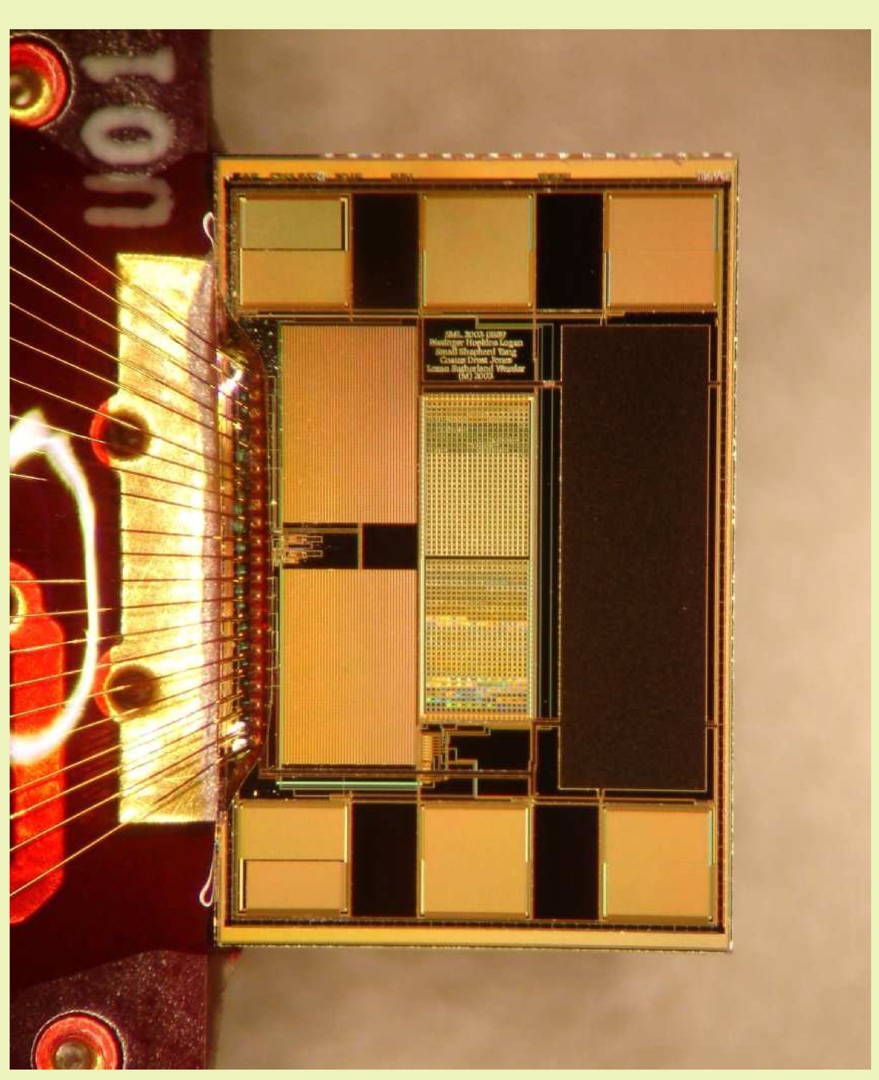
VLSI CAD Research

Challenges

- Design sizes
- Acceptable performance
- Hierarchical representation
- Shrinking technologies

Research Topics

- Handling of large data set
- Geometrical algorithms
- Visualization
- Collaboration

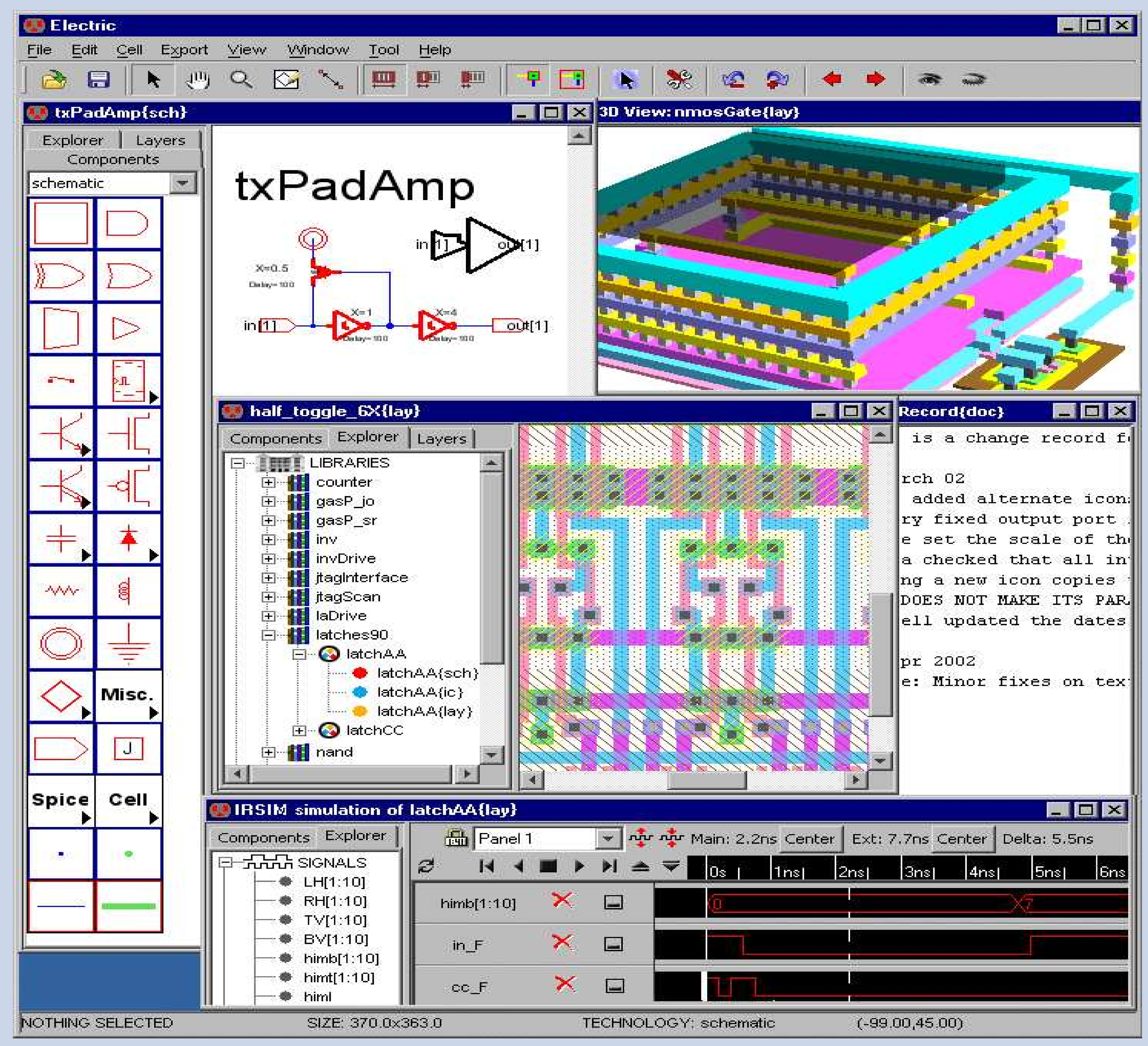


Collaboration with Harvey Mudd

Next Generation CAD Database

- Thread-safe database built with immutable objects
- Seamlessly integrates any design operation
- Extensible database allows tools to store private information persistently
- Lazy construction of data structures
- Enables collaborative design via server/client decomposition

Synthesis and Analysis



Framework

- Schematic capture
- IC Layout
- Simulation waveforms
- 3D Views
- Text editing
- "Explorer tree" for selection

Tools

- Transistor Sizing (LE)
- Network Consistency Checker (LVS)
- Design Rules Checker (DRC)
- Electrical Rules Checker (ERC)
- Placement and Routing
- Automatic gate generator
- Automatic fill generator
- Simulation