

Cadabra

Automates the Creation of Standard Cell Layouts

Overview

Library developers are facing increasing challenges at 65-nm and 45-nm nodes, including increasing design rule complexity, time-to-market pressures, library richness, and late design rule changes. Manual layout is becoming increasingly impractical and expensive. Cadabra® offers a fully automated tool for the creation of standard-cell layouts from SPICE netlists, and for migration of existing standard-cell layouts to new design rules or architectures. With easy-to-use graphical interfaces and results that rival hand-crafted, Cadabra is the market leader in automated standard-cell layout.

Design Rule Complexity

With advanced manufacturing processes, the number of design rules that must be enforced for each layer is increasing rapidly. Moreover, many of the newer design rules are complex rules that are difficult to visualize, forcing manual layout designers into an iterative flow of layout, design rule checking and correction. Cadabra supports a wide range of advanced rules, including common run and/or width-dependant rules, edge-length rules, and table-based rules.

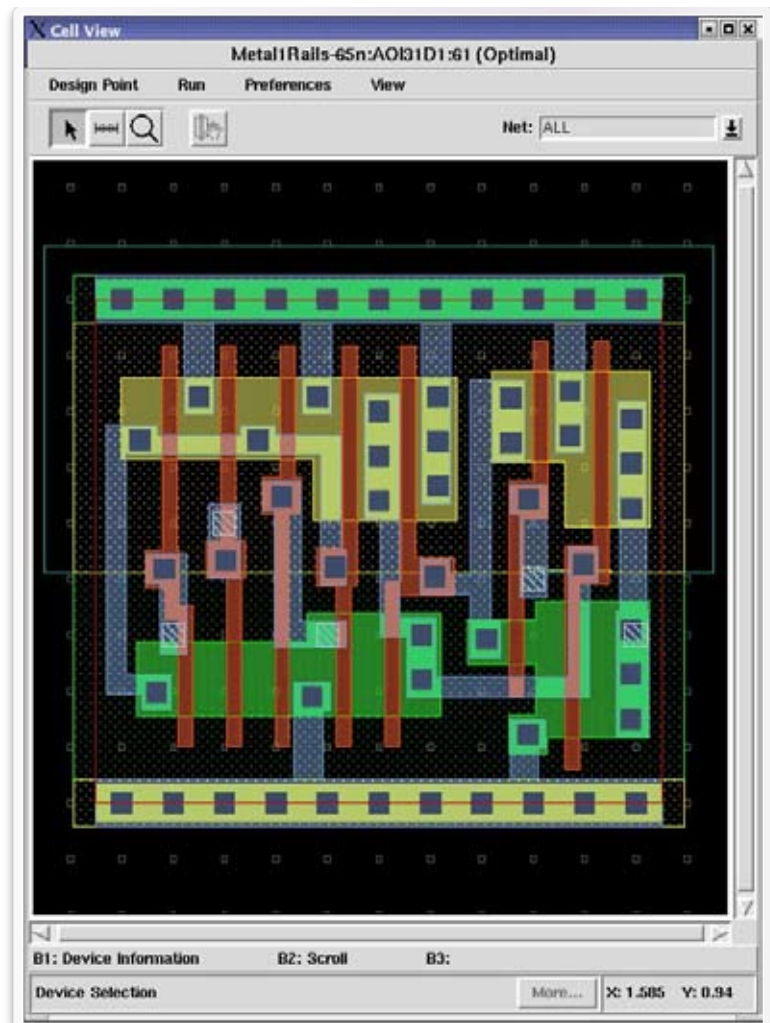


Figure 1: Cadabra automates standard-cell layout creation

Cadabra also offers a wide range of capabilities for improving the manufacturability and robustness of standard-cell libraries. Preferred rules are natively supported, making optimal use of slack space in the cell layout to improve robustness without sacrificing density. Automatic corner minimization facilitates optical proximity correction (OPC) processing and reduces data volume. Electromigration robustness is also handled automatically, with widths increased and redundant contacts placed on high-current paths.

Time-to-Market

As library design challenges are increasing, manual layout becomes the bottleneck and is no longer a viable solution. Layout automation is the key to meet time-to-market requirements and remove the library from the critical path to access a new process technology.

Cadabra is optimized for parallel batch processing on a network of computers to allow rapid turnaround time and can interface with many popular job management systems.

Library Richness

To get the most from a manufacturing process, it is common to create two or more libraries at each process node to address different design goals (high speed, low power, etc). Furthermore, synthesis tools benefit from a richer selection of functions and drive strengths. This demand for more and larger libraries puts additional pressure on library development teams and heightens the need for layout automation.

Late Design Rule Changes

As manufacturing technologies advance, it is becoming increasingly common for design rules to be updated after library development has started, or even after it has finished. Cadabra's migration technology allows design rule changes to be incorporated quickly and easily, even in layouts which have been manually optimized.

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