Custom Compiler

Layout Editor
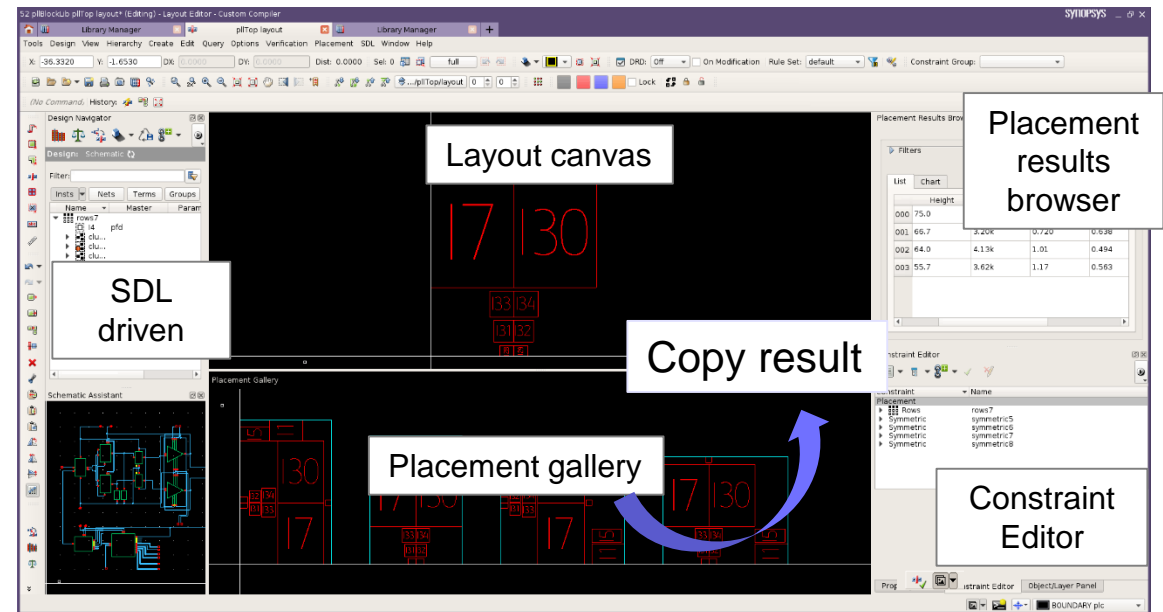
Block Placer

O-2018.09

Outline

- **Block Placement Introduction**

- **Placement Assistant Overview**

- **Supported Use Models**

- **Pin Placement Options GUI**

- **Pin Placement Usage Flowchart**

Block Placement Introduction

- **Placement Assistant supports constraints to place non-device level instances/Blocks**

- **Instance/Block placement is supported through 3 types of constraints: Arrangement, Enclosure and Intents**

- **Arrangement Constraints like Row, Column, Cluster and standard cells enable connectivity weighted two-dimensional placement**

- **Enclosure constraints like Halo, Guard Rings, Enclosing Shape enable isolation of blocks from other blocks**

- **Intents like Symmetric, Alignment are decorators to enable placement relations between blocks.**
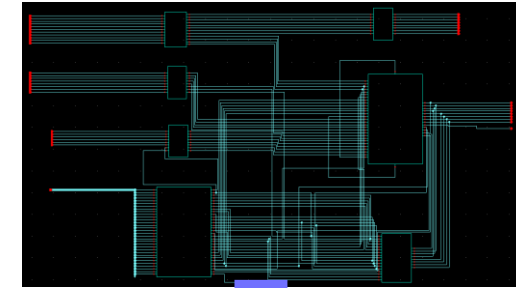
Placement Assistant Overview

- **Reads Technology database information**

- **SDL driven**

- **Simplified constraint entry through GUI (only if needed)**

- **Supported use models**
  - Design exploration
    - Topology based auto constraint extraction
  - Iterative refinement
    - Incremental placement
    - Preserve the content in layout
  - Result preview in gallery
    - Placement result variants can be examine in the gallery
    - Desired result, or a portion of the result can be selectively copied into layout

- **Placement results are deterministic. Same input combo leads to the same output**

Layout canvas

Placement results browser

SDL driven

Copy result
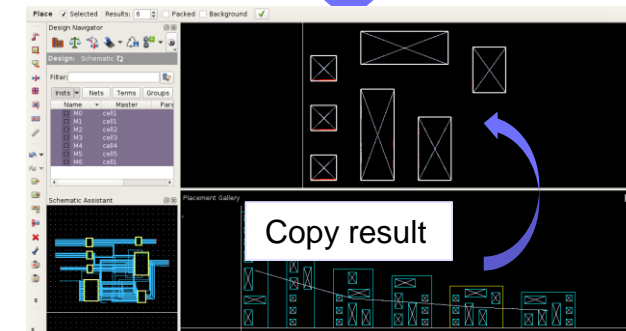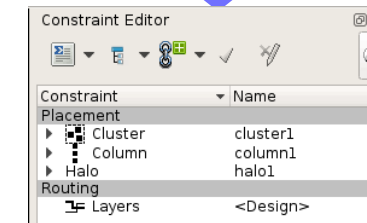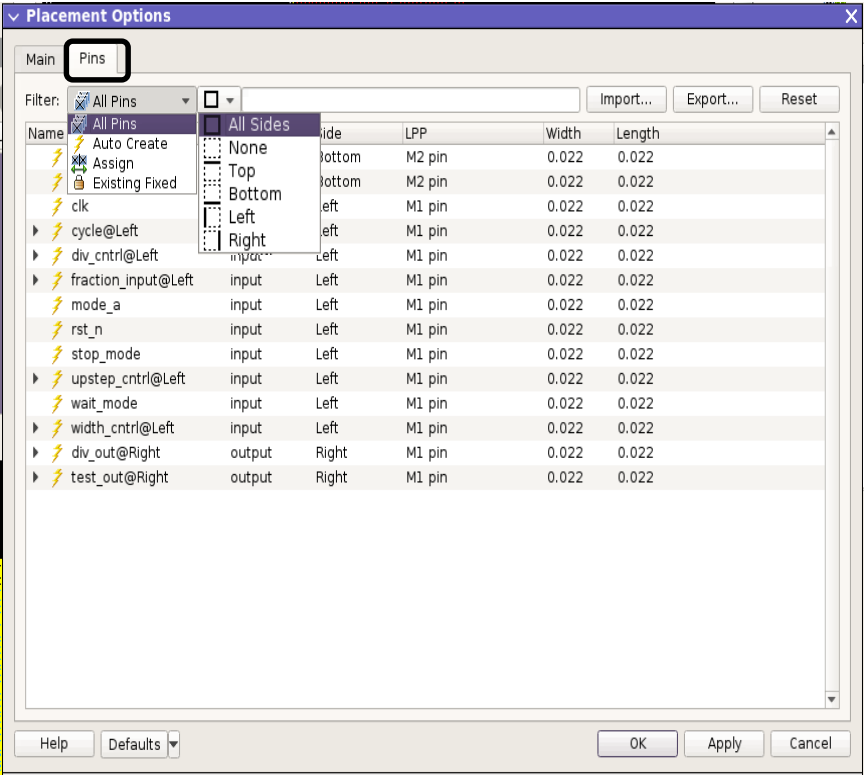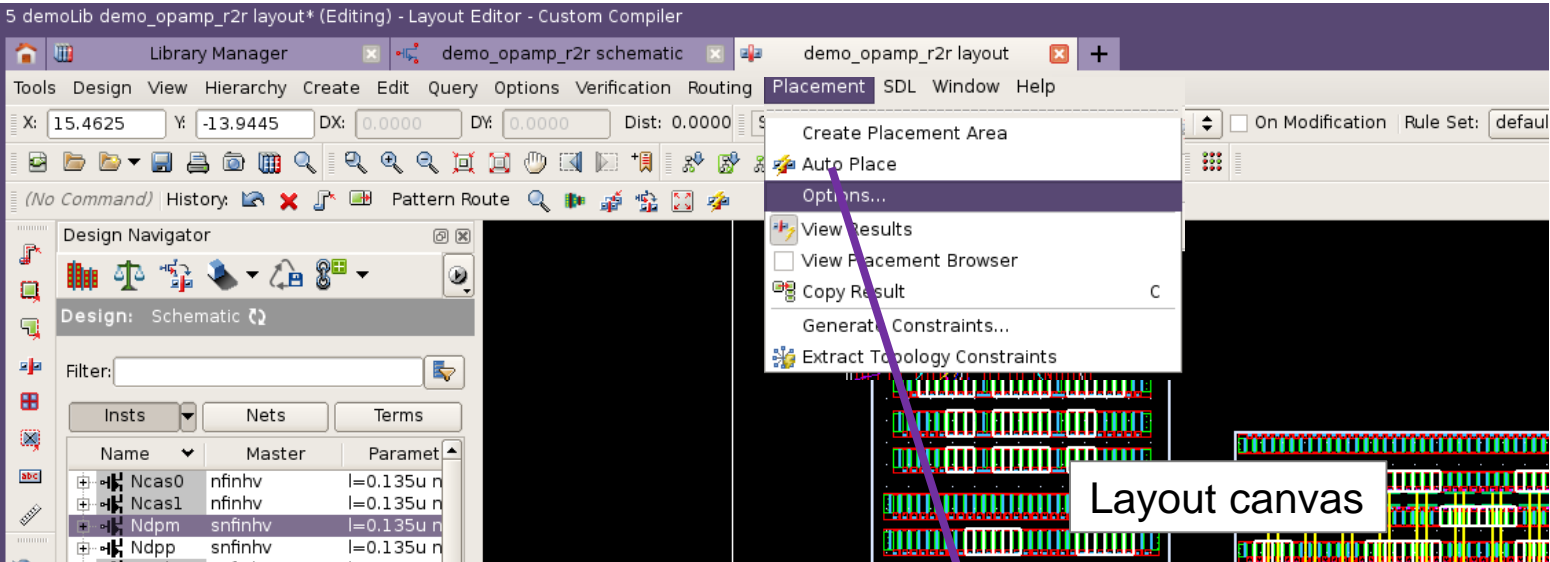
Placement gallery

Constraint Editor

Use Model

- **Having the design constrained before placing is required**
  - Garbage in, garbage out otherwise
  - No constraints can lead to high runtimes as ALL possible combinations is explored
  - Recommend to limit to total of 10 unconstrained placement entities (constraint groups or instances) at any level of constraint hierarchy
- **Create Constraints**
  - Open design in SDL
  - Select instance/instances in Design Navigator(DN)/Layout canvas
  - Constraint appears in the Constraint Editor
  - Edit constraint options and parameters
- **Set Pin Placement Options (Optional)**
- **Use Place or Place Selected command to place the design/selected instances**
- **Review candidates in Placement Gallery**
- **Copy desired result into layout using Copy Result**

Create Placement Constraints

Copy result

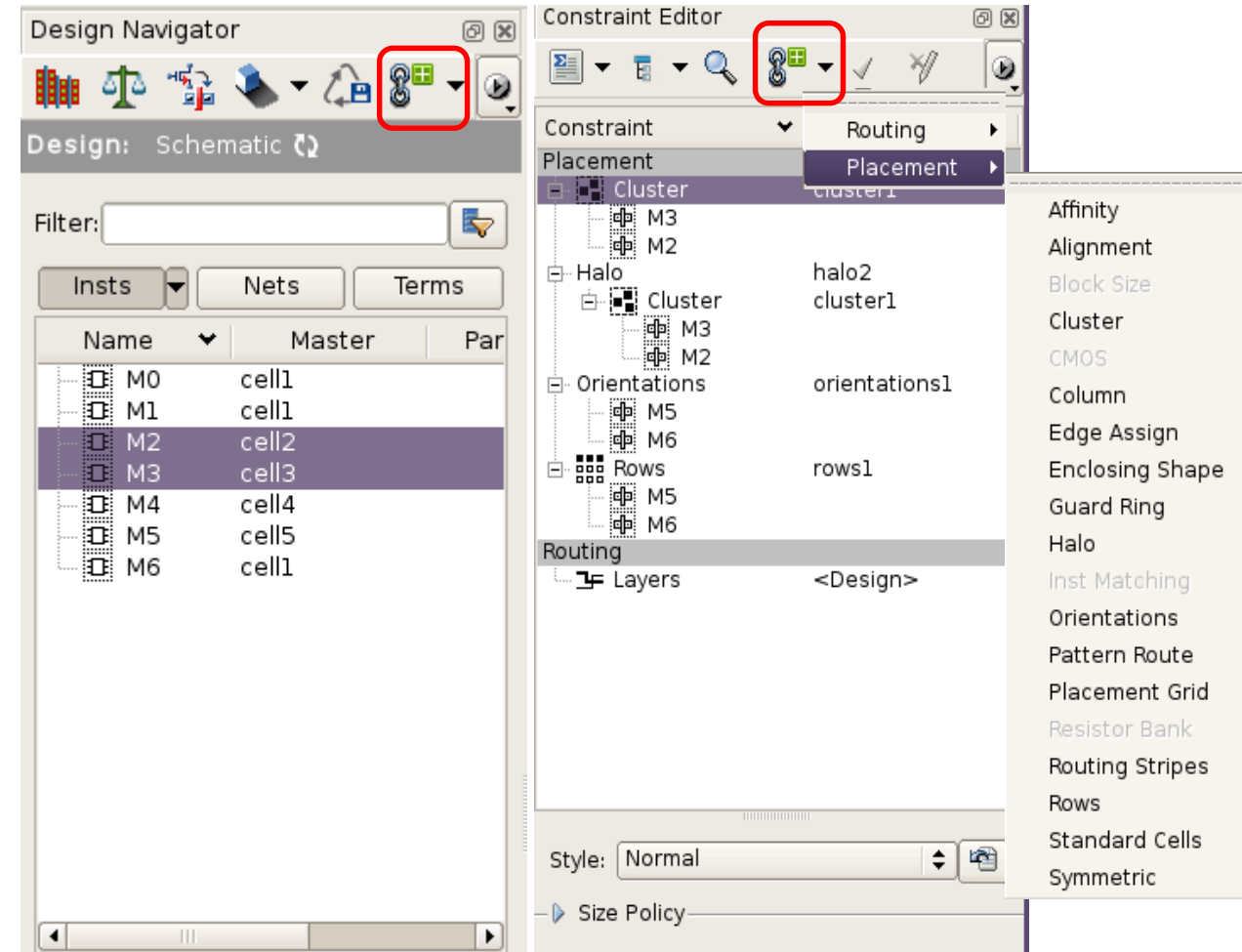# Pin Placement Interface Overview

Layout canvas

Placement Toolbar

Placement Options Dialog
(Pins Tab)

Placement Constraints

- **Placement Constraints are defined on instances/groups of instances to direct the Placer for generating user defined results**

- **Placement Constraints are created, viewed and edited in multiple ways**
  - Design Navigator Constraint Menu for all supported constraints for selected objects
  - Constraint Editor Constraint Menu for all supported constraints for Selected Objects

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Typical Block Placement Flow

Open Design in SDL

Create Constraints on Instances

Constraint Groups created in DN

Create constraints on Constraint groups created

Place All/Selected

Logic Devices
SED(Chaining)
CMOS