

A structured way of communication in layout design flow through Virtuoso Design Intent



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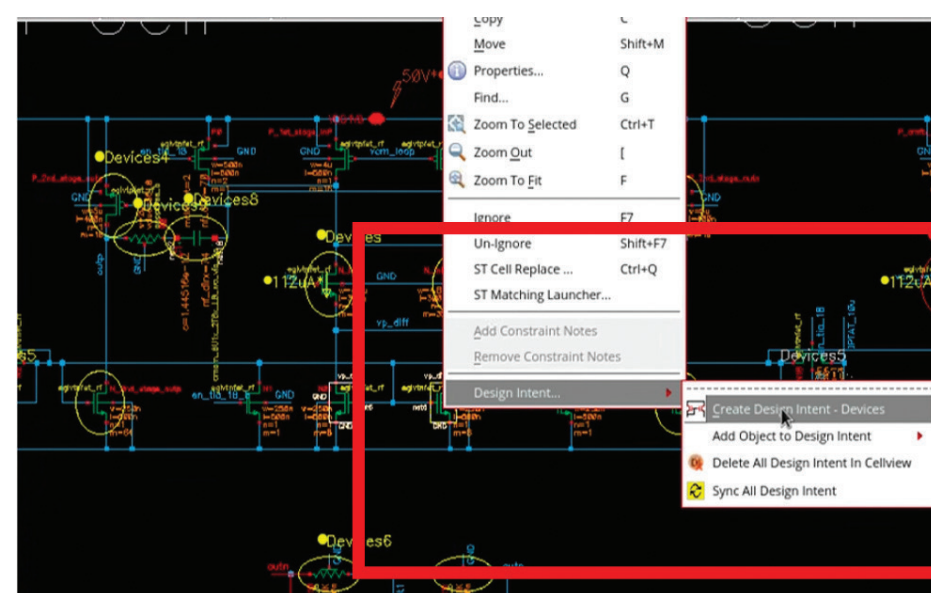
1. INTRODUCTION

- Traditionally, design goals for layout implementation are communicated through informal means like text markers in schematic views, messages in emails, etc.
- With informal communication, there are high chances to miss a guideline in the implementation, and reviewing large layouts can be time consuming for design managers.
- Design Intent (DI) offers a structured way to communicate between schematic and layout designers without creating constraints or taking separate storage.

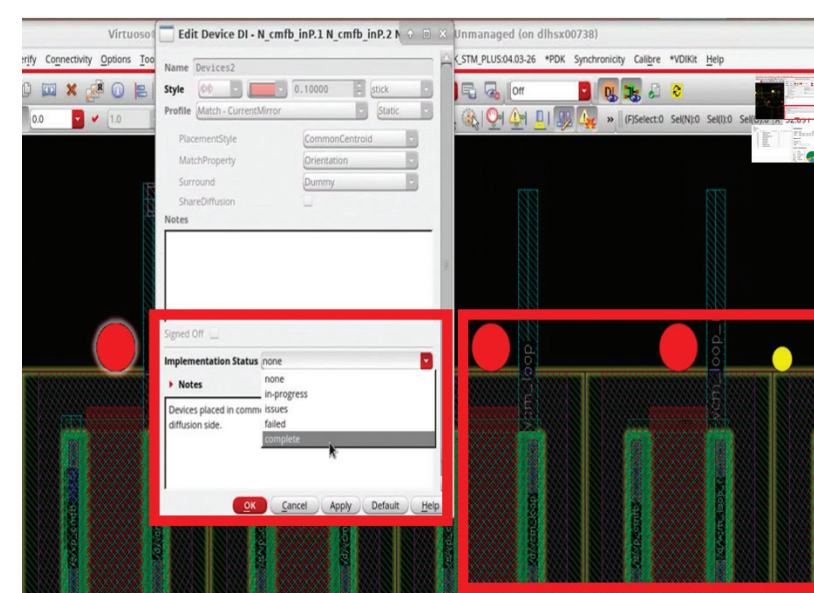
2. DESIGN INTENT (DI)

Design Intent is an in-built feature in Virtuoso XL to define design goals in transistor-level schematics.

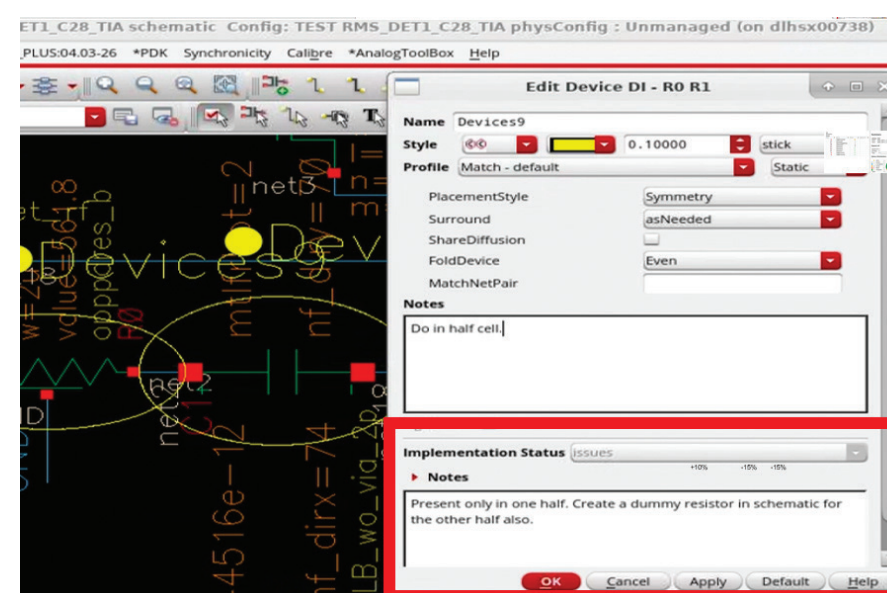
1. Capture DI in schematic view through the options described in section 3.



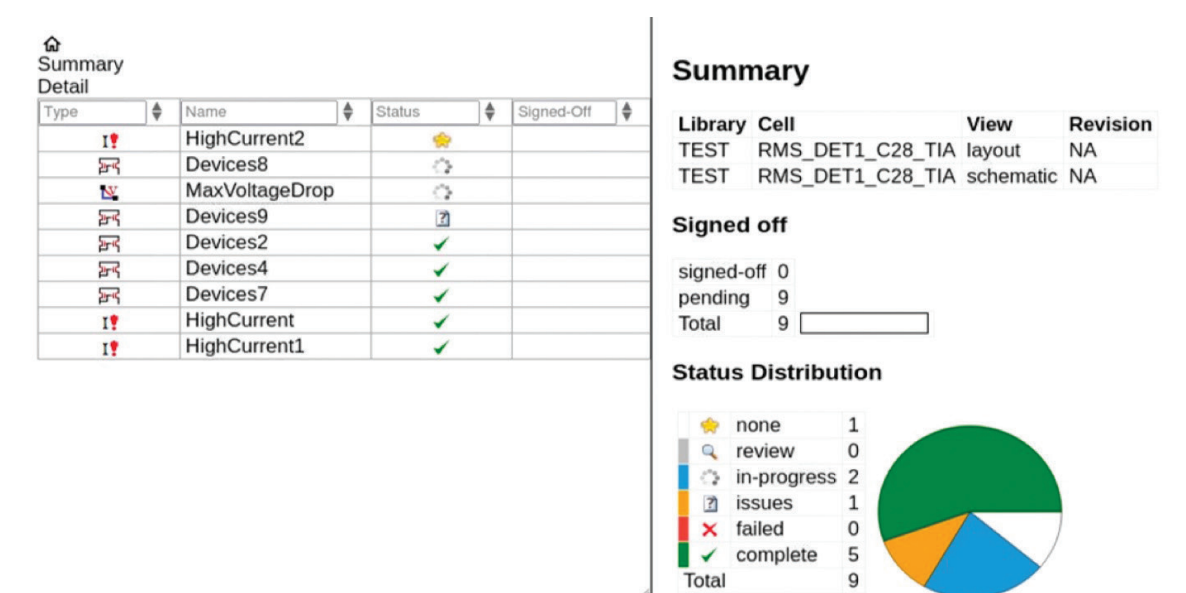
2. Transfer/sync DI to layout.



3. Implement layout with suggestive DI notes.

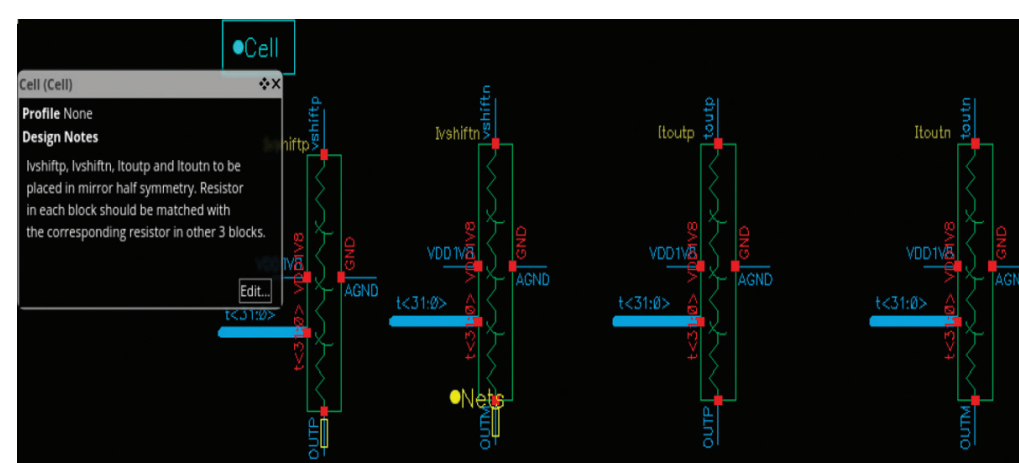
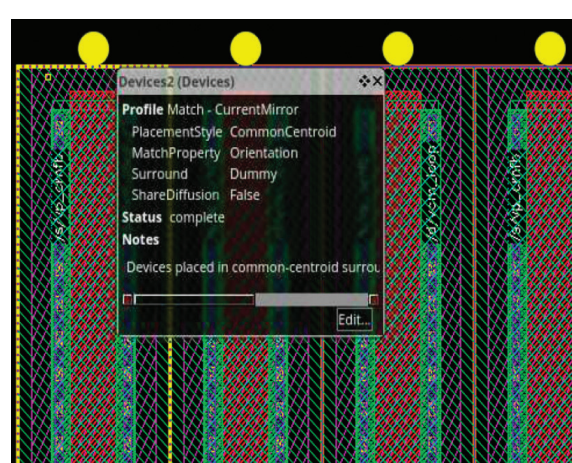
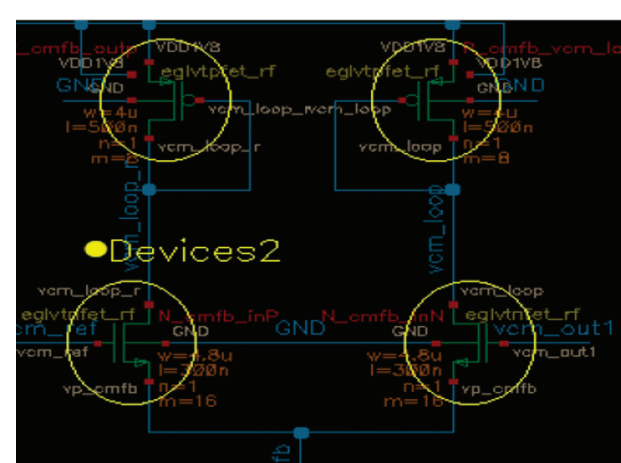


4. Sync implementation status back to schematic.



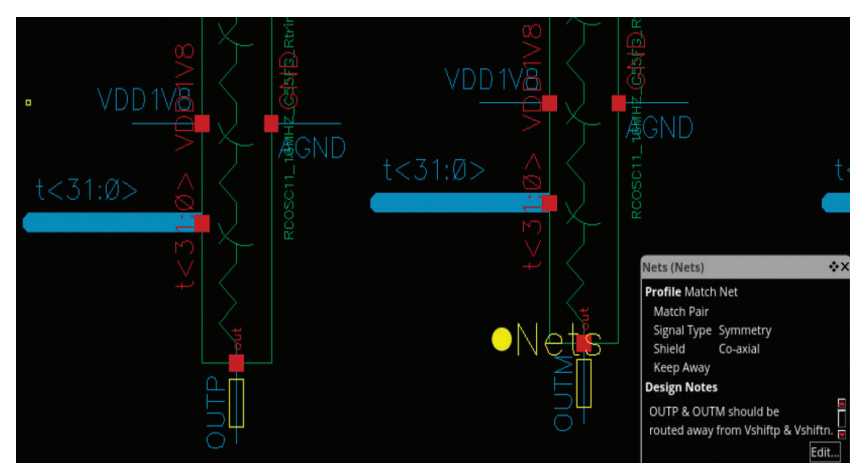
5. Generate DI HTML report for quick review.

3. MAIN FEATURES OF DI



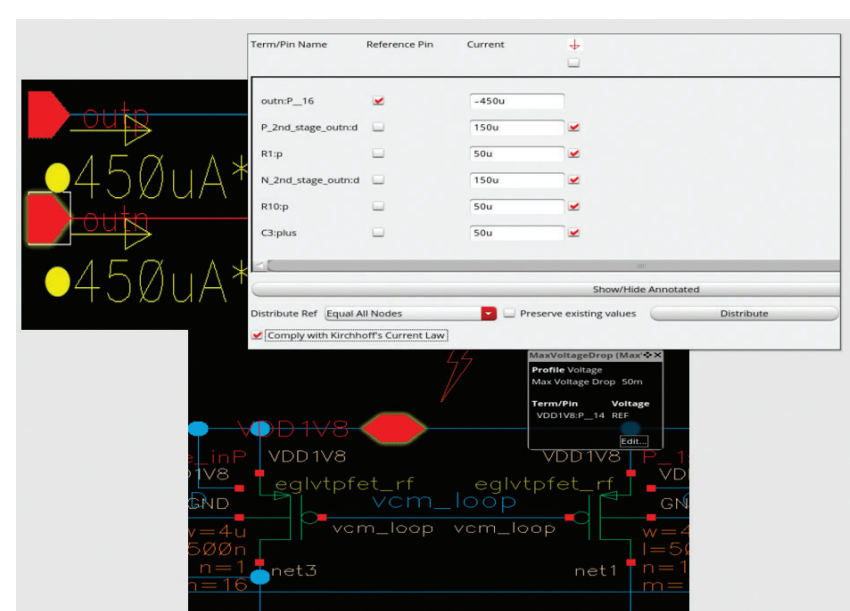
DI on matched devices

- All guidelines put in one place for matched devices (differential pair, current mirror).
- Placement style can be specified – common centroid, interdigitate.
- Features like dummies, guard ring.



DI for nets

- Instructions for matching and type of shielding can be conveyed – coaxial, parallel.
- Nets can be stated as static or dynamic signal.



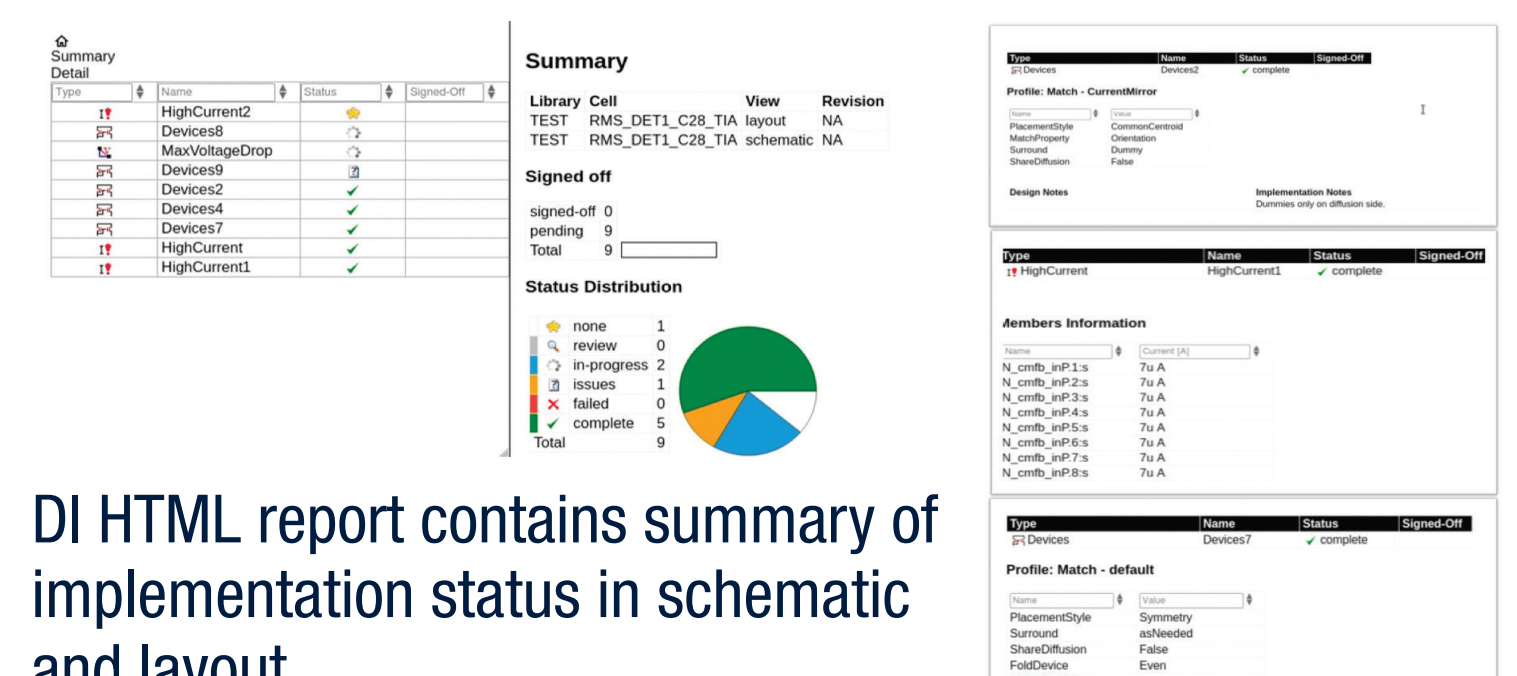
DI on high current & max voltage drop

- Colored annotations on a pin/net provide quick visual aid for current and IR drop.
- Flexibility for current distribution in branches through Kirchhoff's Current Law.

4. HIGHLIGHTS

- A transparent and structured way to convey design guidelines through on-canvas editing.
- Clear visualization using glyphs on schematic and layout makes it easy to understand and implement DI.
- With different colors available to create multiple DI, it makes for comfort viewing.
- Profiles and properties can also be added/customized based on user requirements.
- DI can be ported along with schematic across different technology platforms.
- The detailed HTML report serves as a brief checklist to verify all guidelines are met.
- It is effective in tracking and reporting real-time implementation status.

5. SUMMARY



DI HTML report contains summary of implementation status in schematic and layout.

As design goals are clearly present on both schematic and layout sides, there are fewer iterations, helping us with a shorter design cycle. With DI, an overall 20% productivity gain was observed in the test case used.

