YELO
Yield Enhancing Layout Optimizer

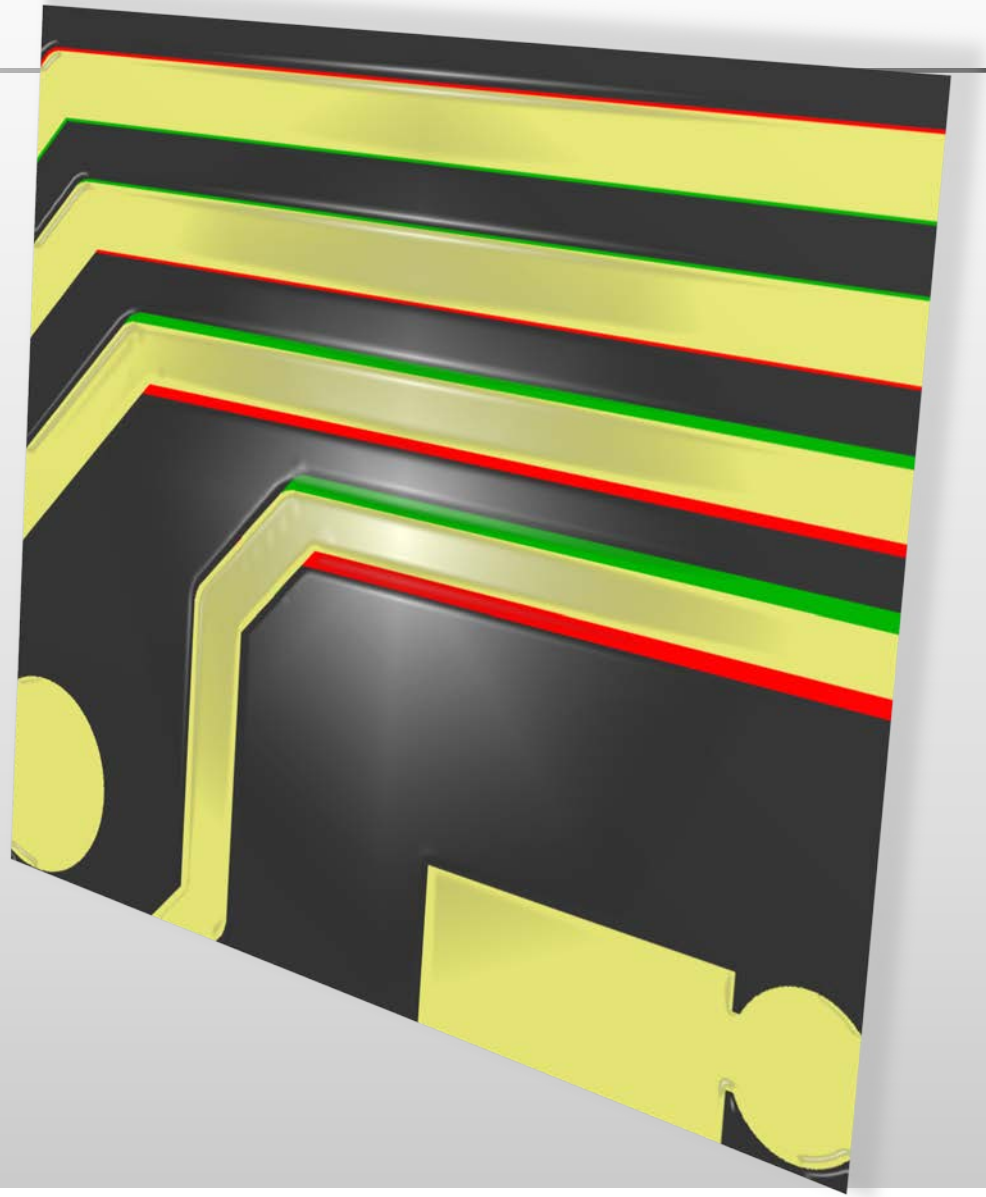
Yelo (Yield Enhancing Layout Optimizer)

YELO – What is it?

Imagine you could…

- Improve board layouts in minutes
- Cut your CAM time by up to 30%
- Archive superior production yields
- Deliver more reliable PCBs
- Slash production cost on every batch

Well actually, with ***YELO*** now you can …



Yelo (Yield Enhancing Layout Optimizer)

What is it?

YELO – **Y**ield-**E**nhancing **L**ayout **O**ptimizers

- Brand new suite of software modules for automated PCB layout optimization
- Optimizing layouts for superior production yields
- Highly automated, integrated and industrialized workflow
- With unparalleled throughput
- And uncompromising results

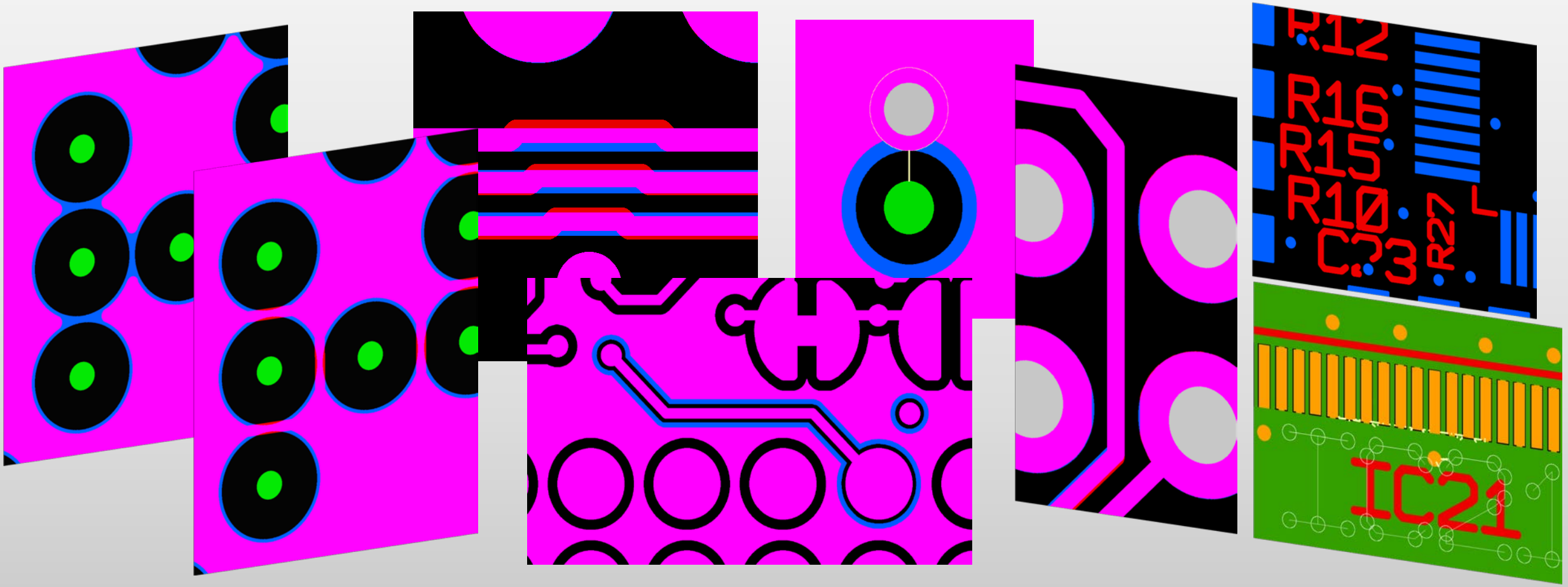
YELO consists of:

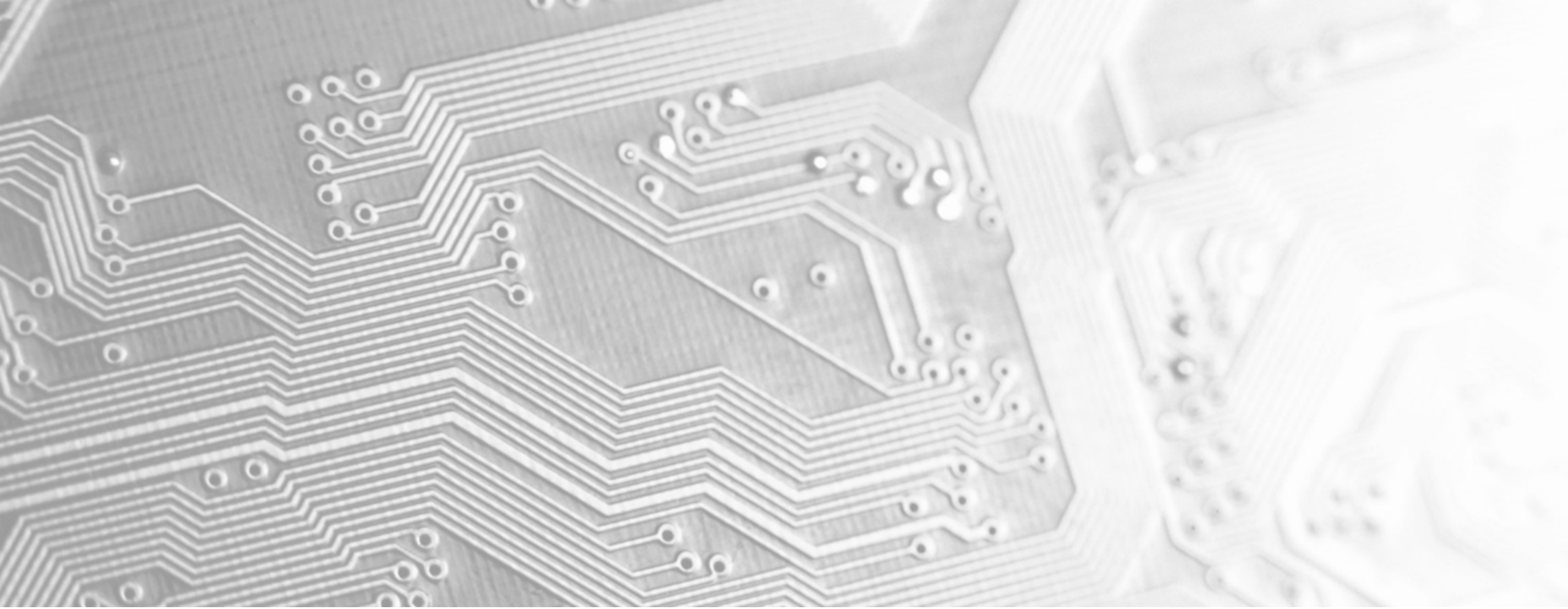
Copper Adjuster, Legend Adjuster

Yelo (Yield Enhancing Layout Optimizer)

YELO – What is it?

Find out what Copper Adjuster – Signal, Copper Adjuster – Plane and Legend Adjuster can do for you…





Copper Adjuster

- Signal
- Plane

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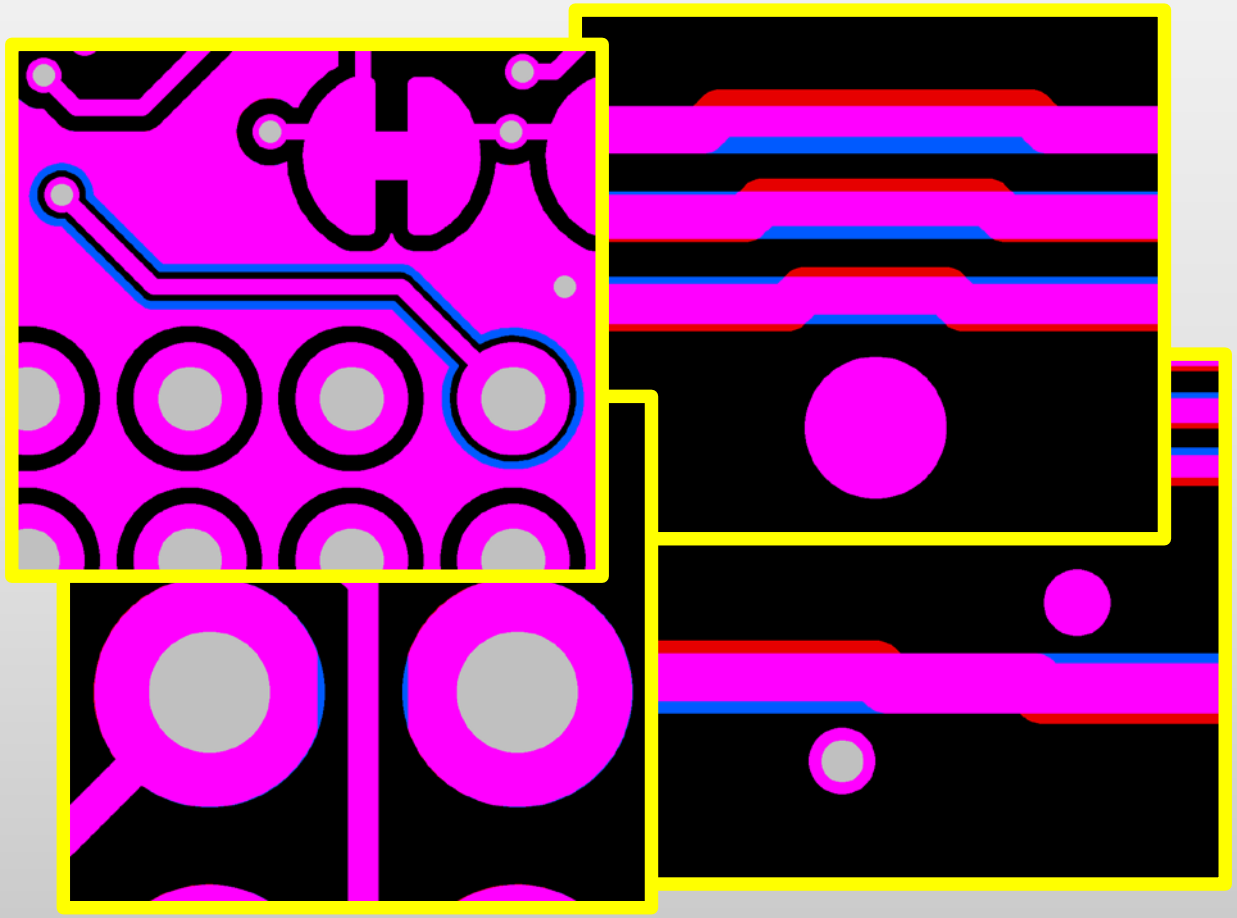
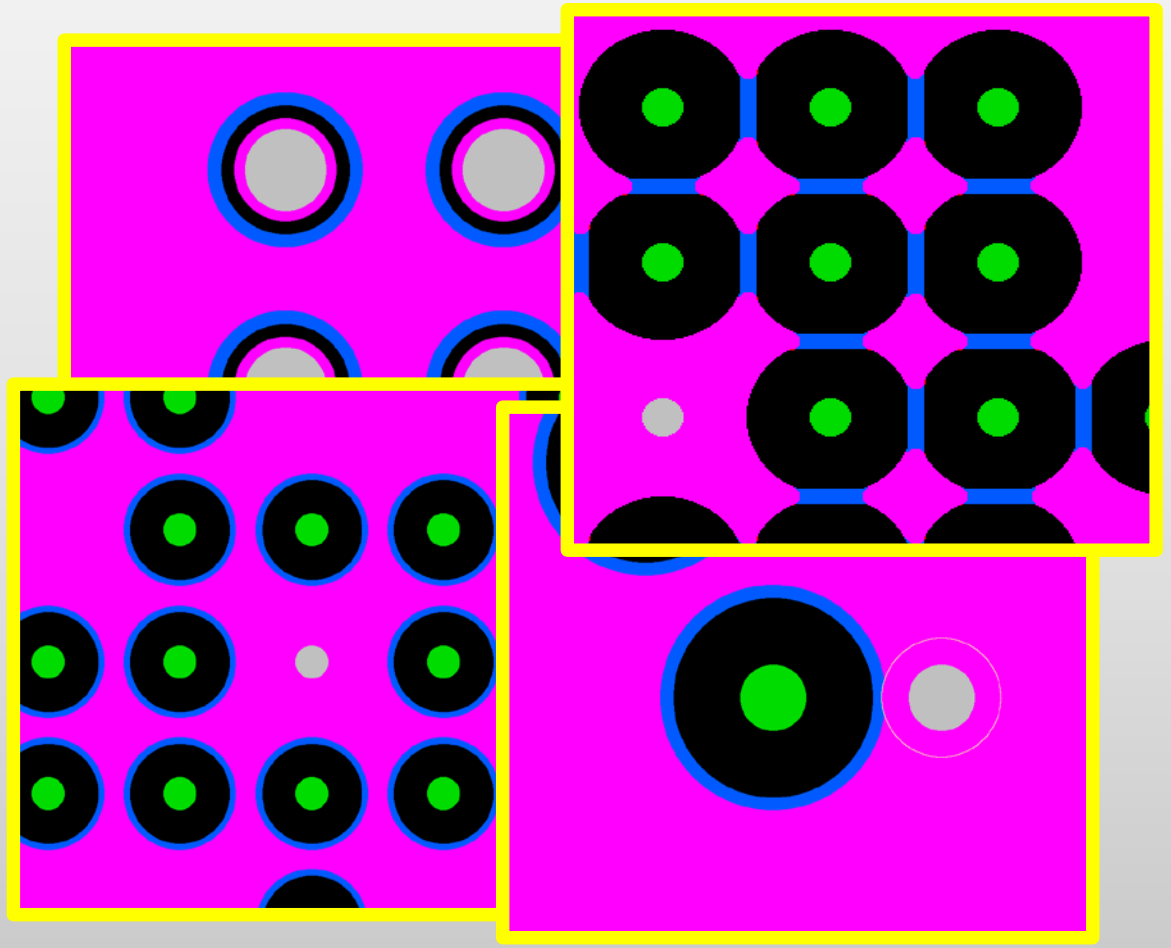
Copper Adjuster (CAJ)

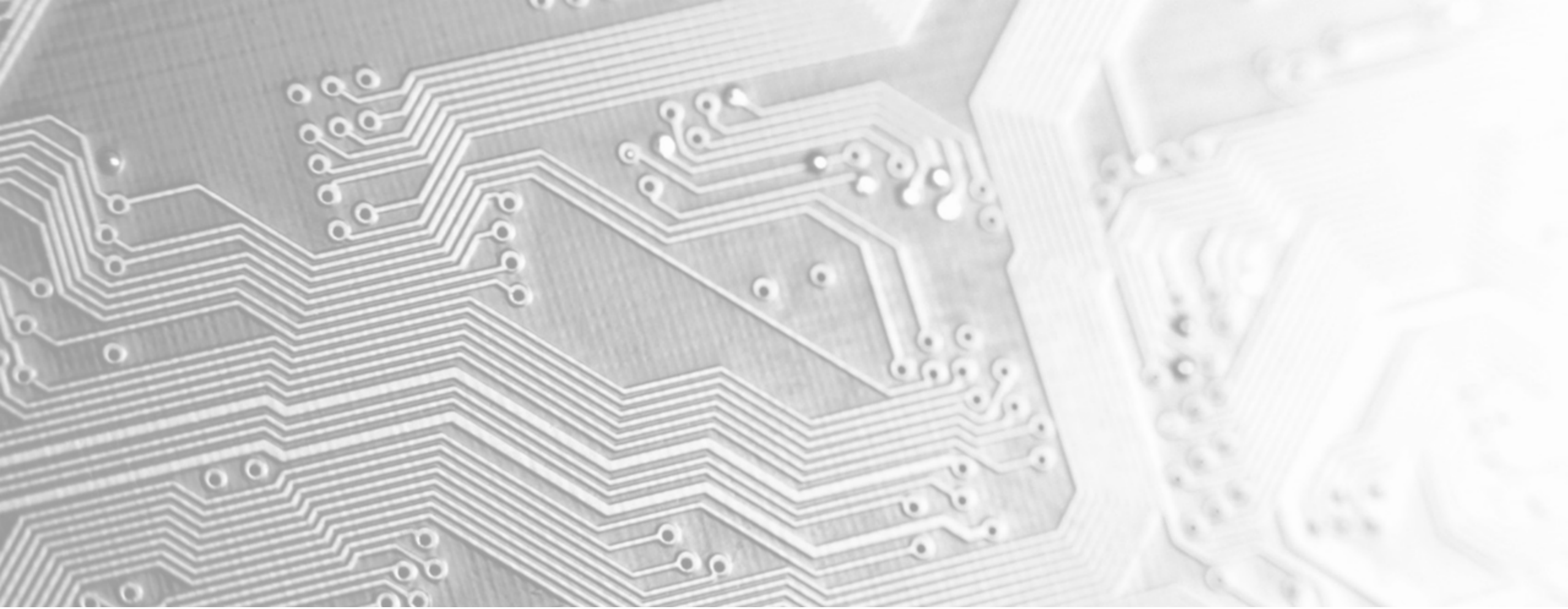
Copper Adjuster consists of 2 modules:

Copper Adjuster (CAJ) - Signal



Copper Adjuster (CAJ) - Plane



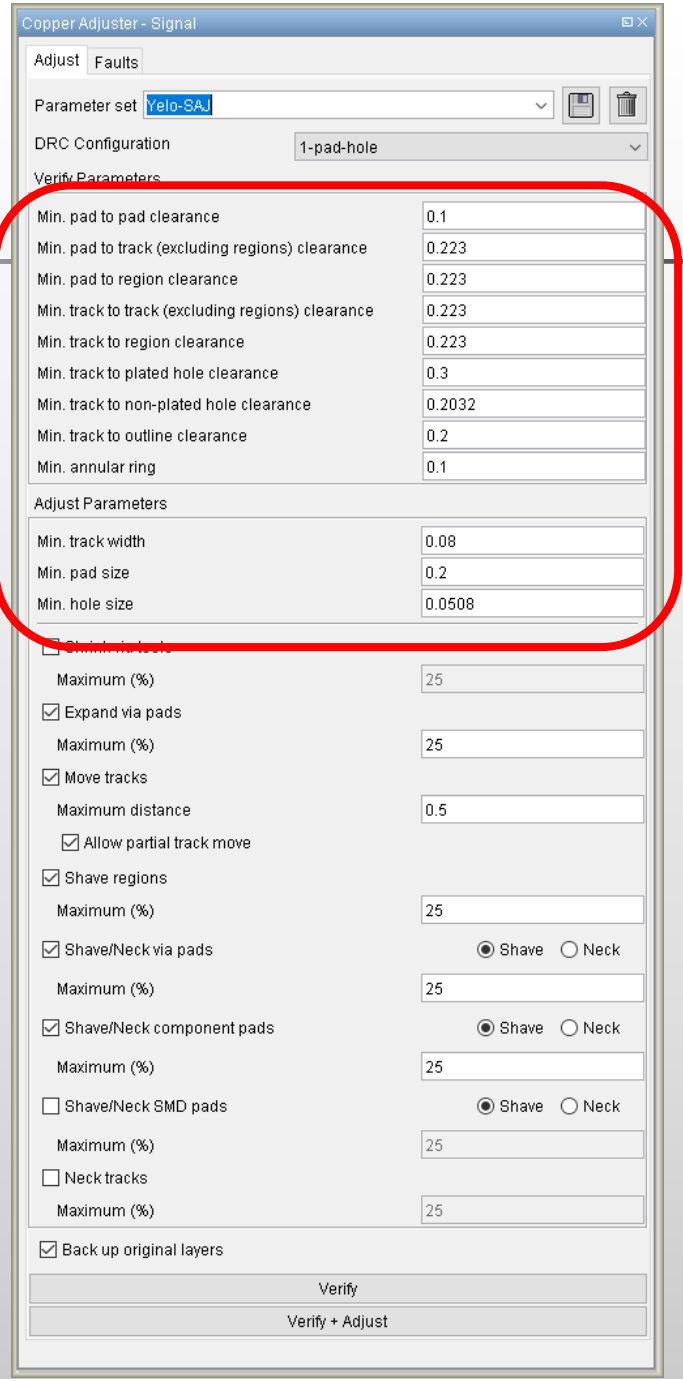


Copper Adjuster (CAJ) - Signal

Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Signal

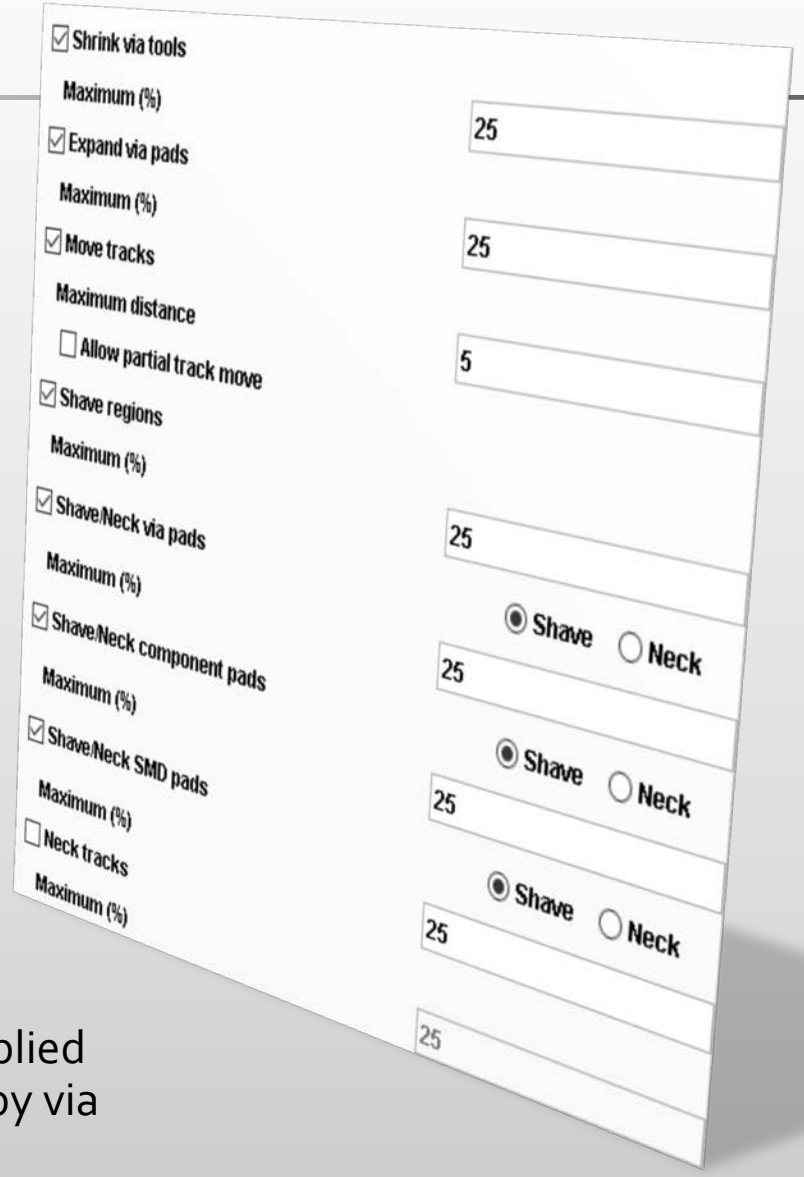
- All-in-one, fully-automatic *YELO* module
- Adjusts signal layers to meet the fabrication requirements
- Fully automatic
- All parameters entered from a single central user interface
- Parameters storable in parameter sets for easy re-use
- Parameters loadable from existing DRC configuration files
  - ties in seamlessly with the existing CAM workflow



Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Signal

- Vast arsenal of adjustment methods to achieve the requested clearances and annular rings
  - Shrink via tools
  - Expand via pads
  - Move tracks – single or multiple - full or partial traces
  - Shave regions
  - Shave/Neck via pads
  - Shave/Neck component pads
  - Shave/Neck SMD pads
  - Neck tracks



- To suit individual customer requirements
  - Each adjustment can be enabled or disabled
  - Each adjustment can be limited in magnitude

- Adjustment precedence. Adjustments lower in the GUI are only applied when absolutely needed to meet spec. E.g. if the spec can be met by via shrinks and track moves alone, regions or pads will not be shaved.

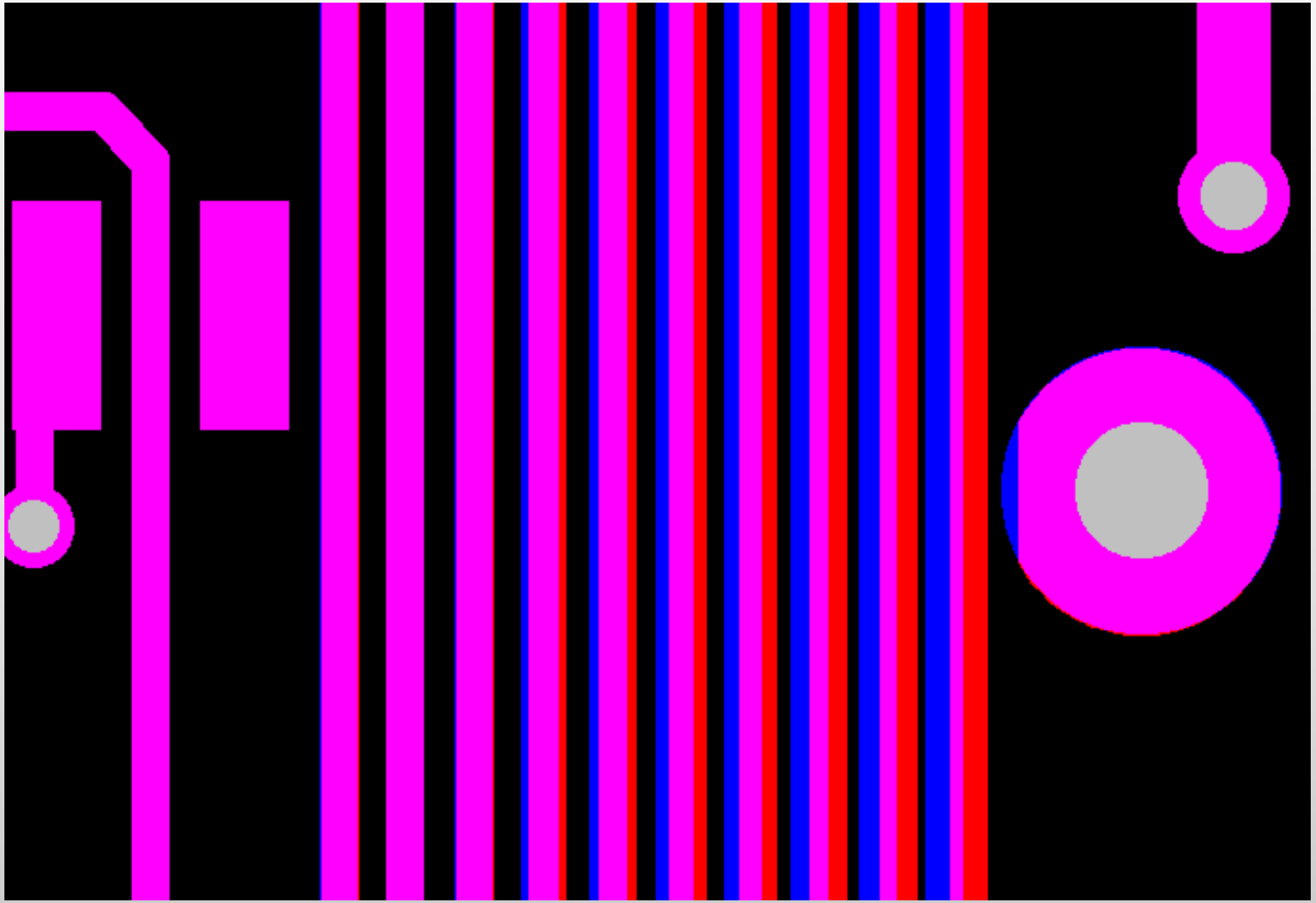
Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Signal

Precedence Example 1:

A track bundle with internal clearance issues is squeezed between an SMD pad (left) and a via pad (right). There is no room to spread out the tracks without shaving one of the pads.

The bundle is spread towards the right, toward the via pad, because shaving a via pad has precedence over shaving a SMD pad.



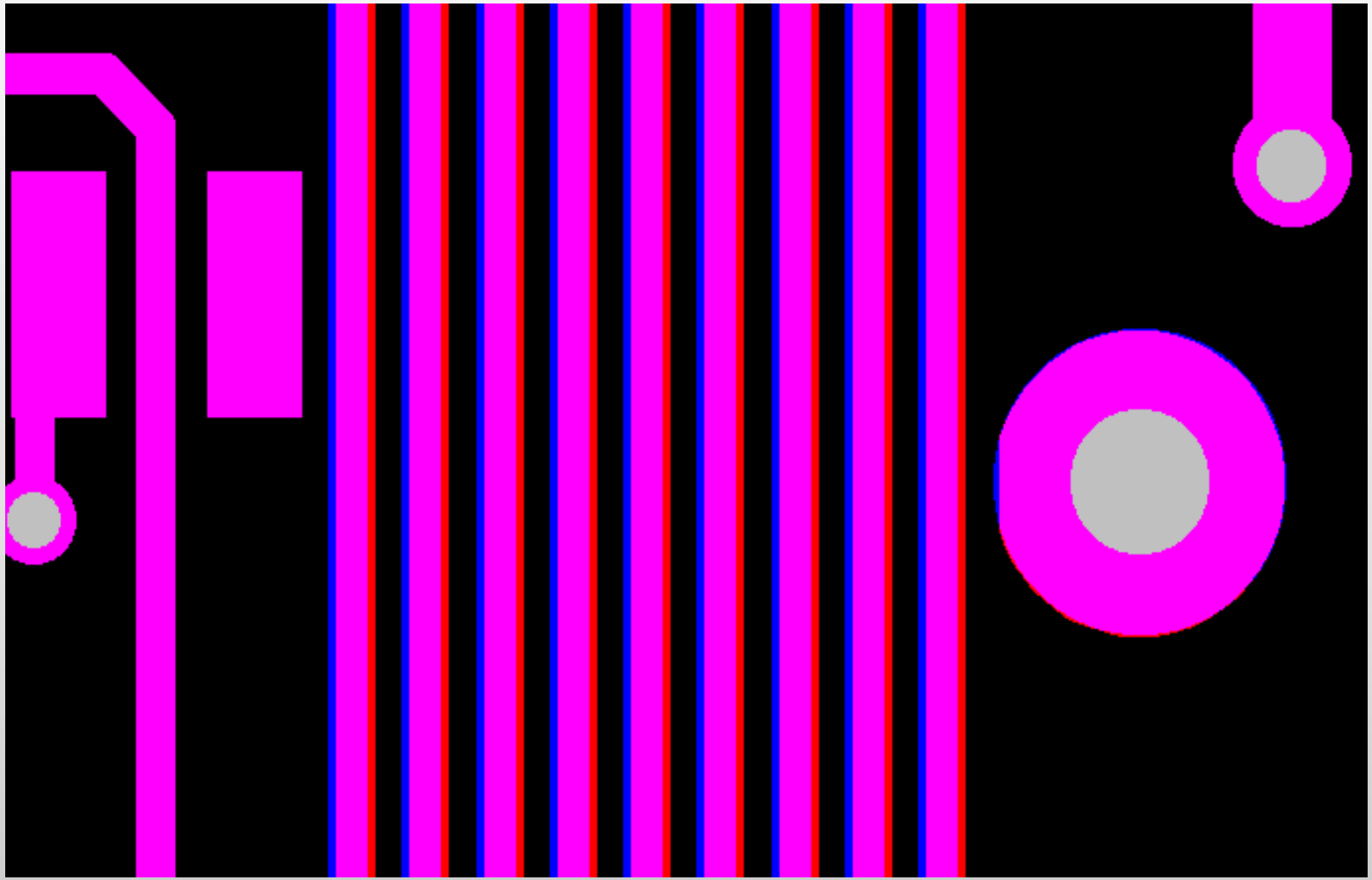
Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Signal

Precedence Example 2:

Now track bundle has no internal clearance issues, but it is too close to the SMD pad.

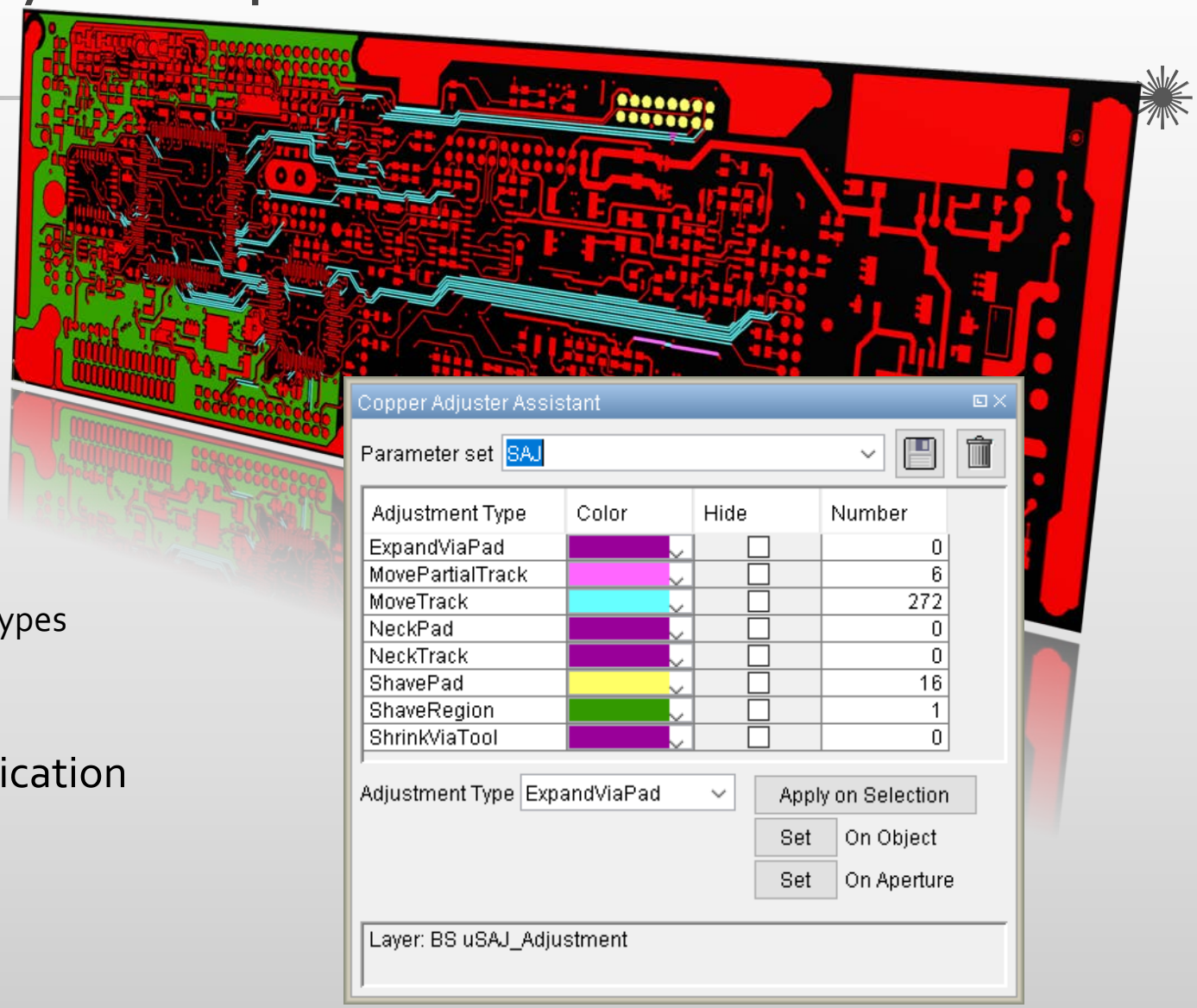
Instead of shaving the SMD pad the whole bundle is moved towards the via pad, which is shaved to make room for the bundle.



Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Signal

- Full traceability of all layout changes via
  - Before/After information is added to the DPF data
    - stored persistently in the DPF file
    - easy to consult during the entire CAM process
  - Copper Adjuster Assistant function to:
    - highlight a selection of applied adjustment
    - different colors to display different adjustment types
  - Automatic back-up of original layers
- Full security thanks to an integrated netlist verification

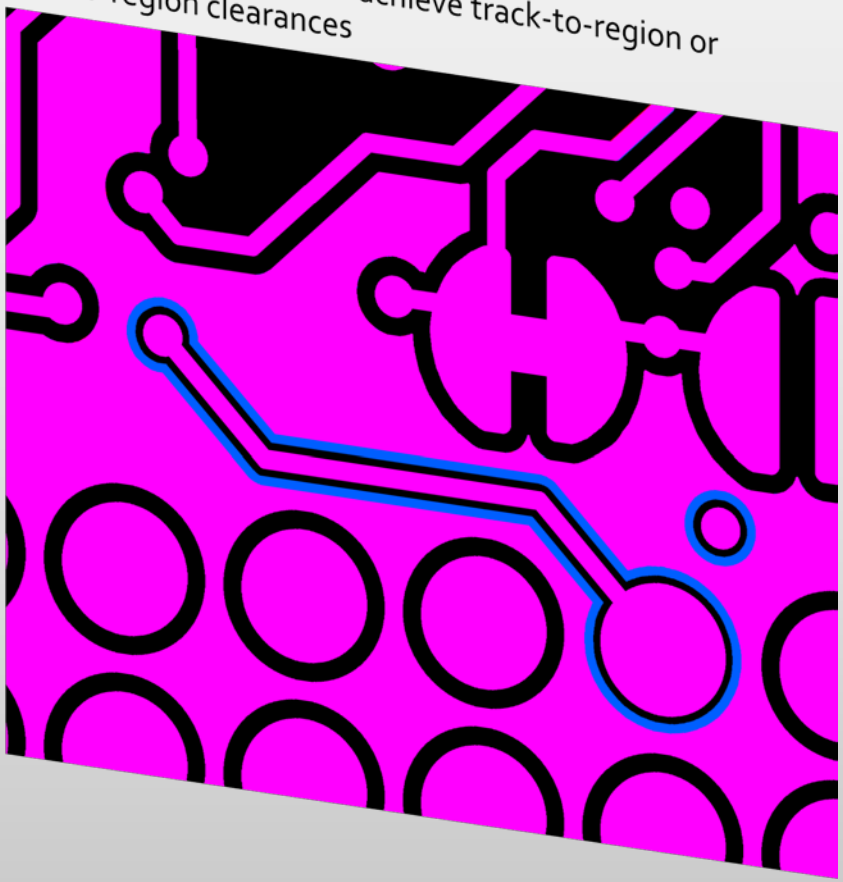


Yelo (Yield Enhancing Layout Optimizer)

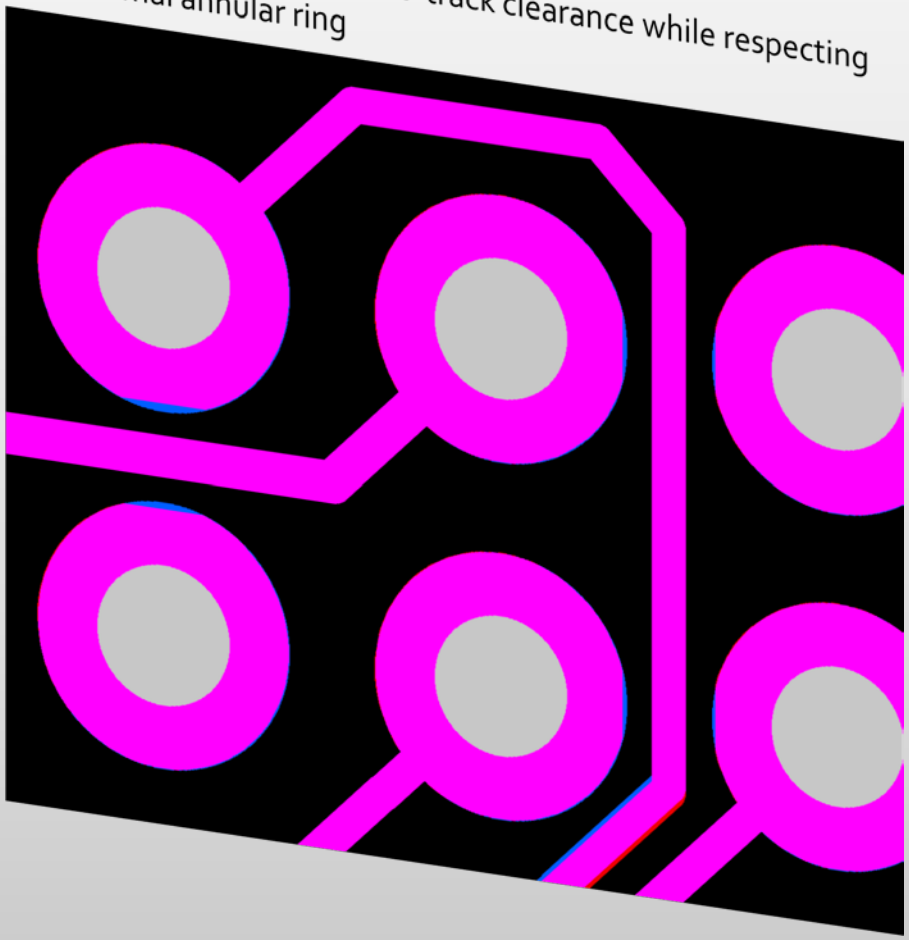
Copper Adjuster (CAJ) - Signal

- Examples what Copper Adjuster can do for you…

Cut back copper pours to achieve track-to-region or pad-to-region clearances



Shave pads to achieve pad-to-track clearance while respecting the minimal annular ring



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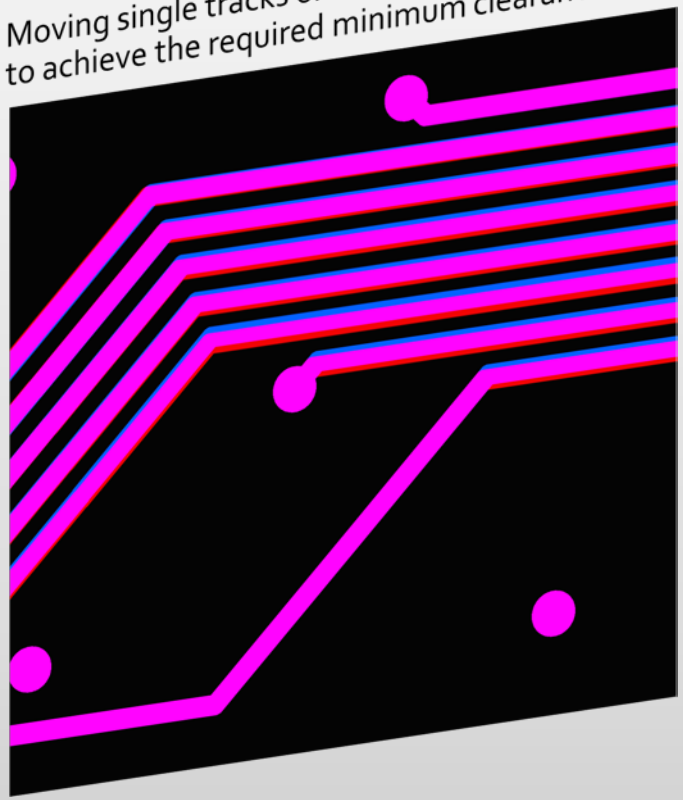
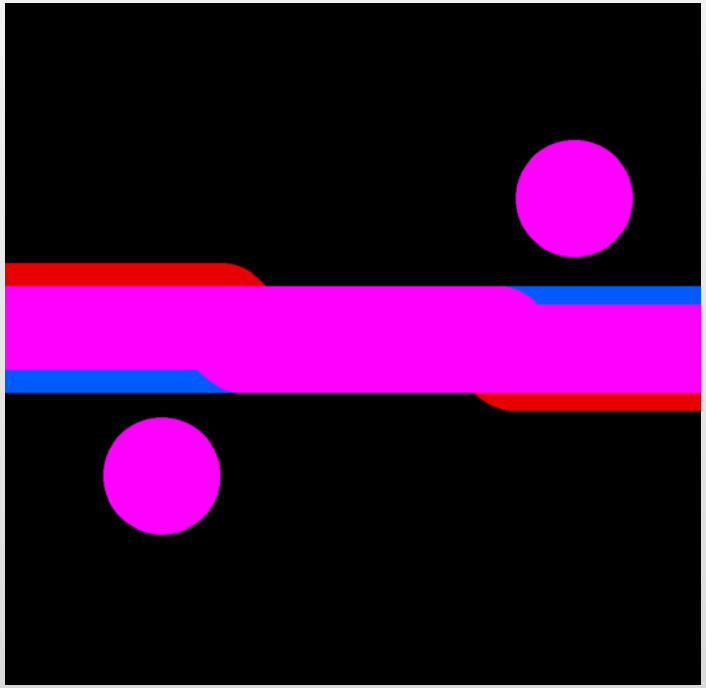
Copper Adjuster (CAJ) - Signal

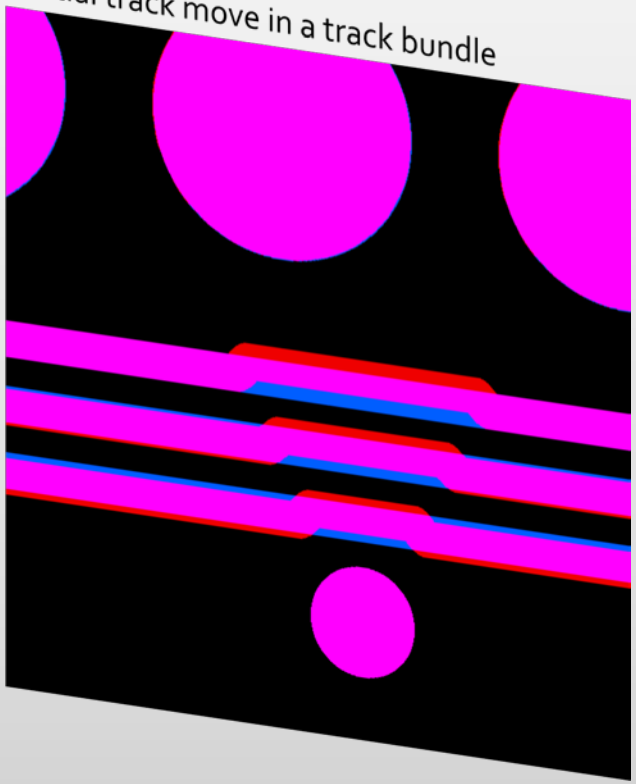
Moving single tracks or complete track bundles to achieve the required minimum clearance



Partial track move



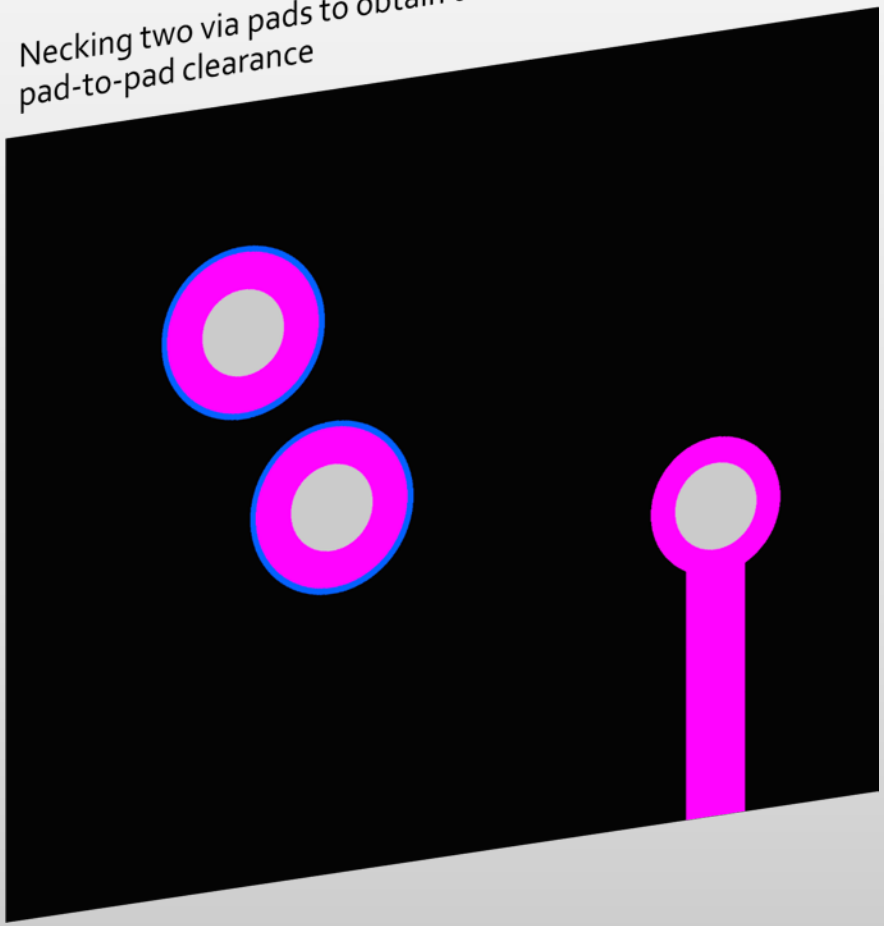
Partial track move in a track bundle



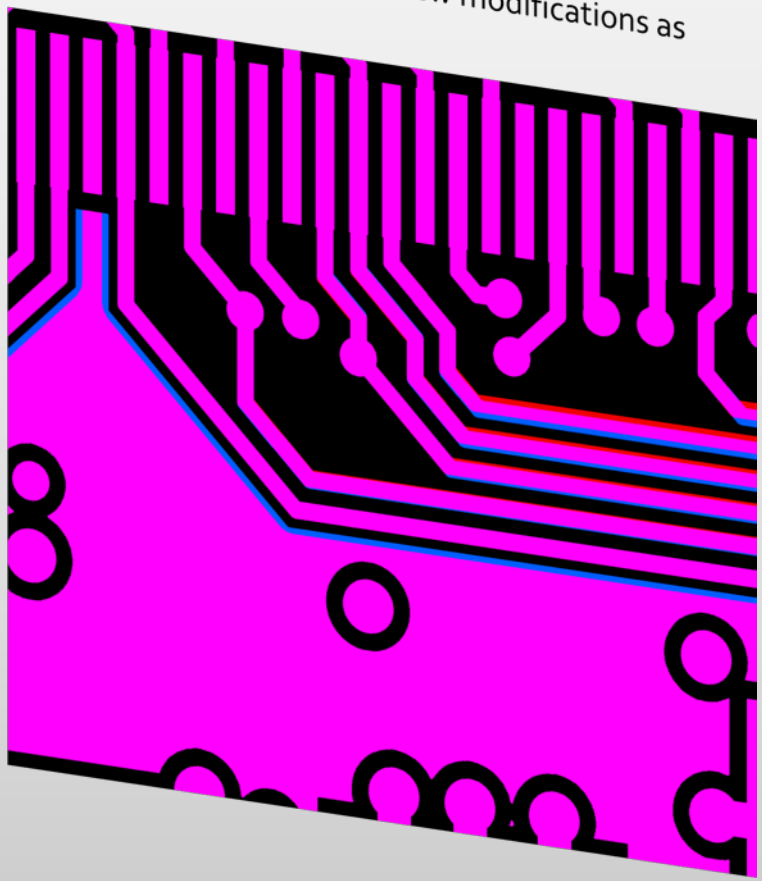
Yelo (Yield Enhancing Layout Optimizer)

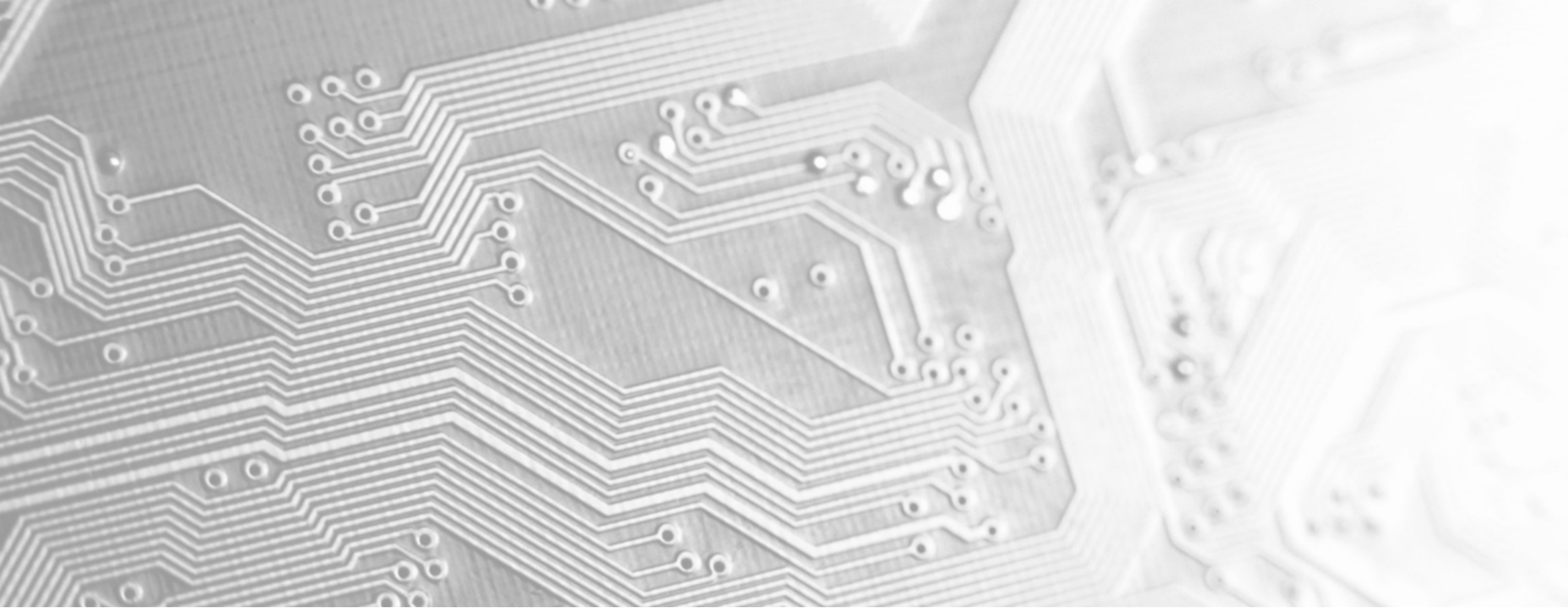
Copper Adjuster (CAJ) - Signal

Necking two via pads to obtain the desired pad-to-pad clearance



Combining adjustment functions to achieve the required clearances with as few modifications as possible



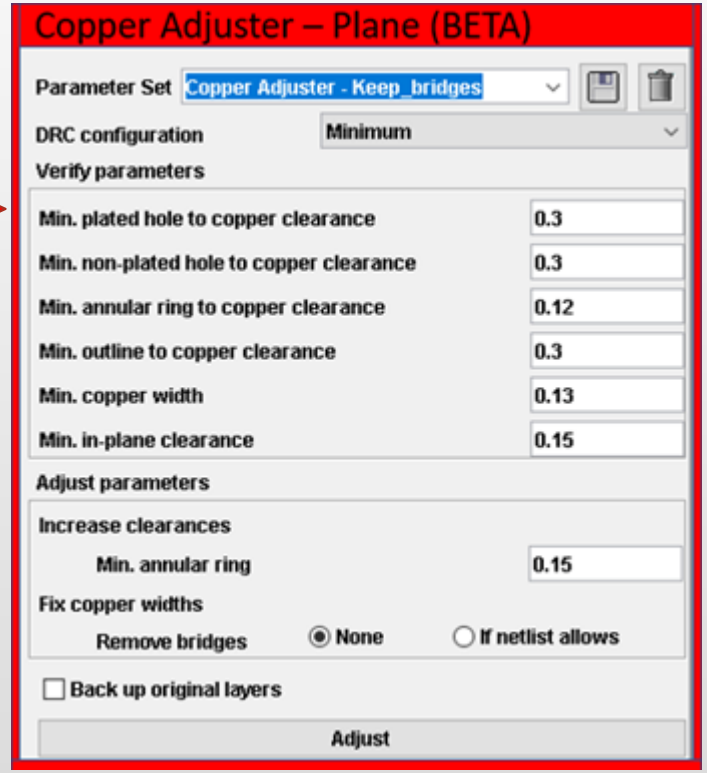


Copper Adjuster - Plane (Beta version)

Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Plane

- All-in-one, fully-automatic *YELO* module
- Adjust plane areas to meet specified fabrication requirements on plane or mixed layers
- Fully automatically
- All parameters entered from a single central user interface
- Parameters storable in parameter sets for easy re-use
- Parameters loadable from existing DRC configuration files
  - ties in seamlessly with the existing CAM workflow

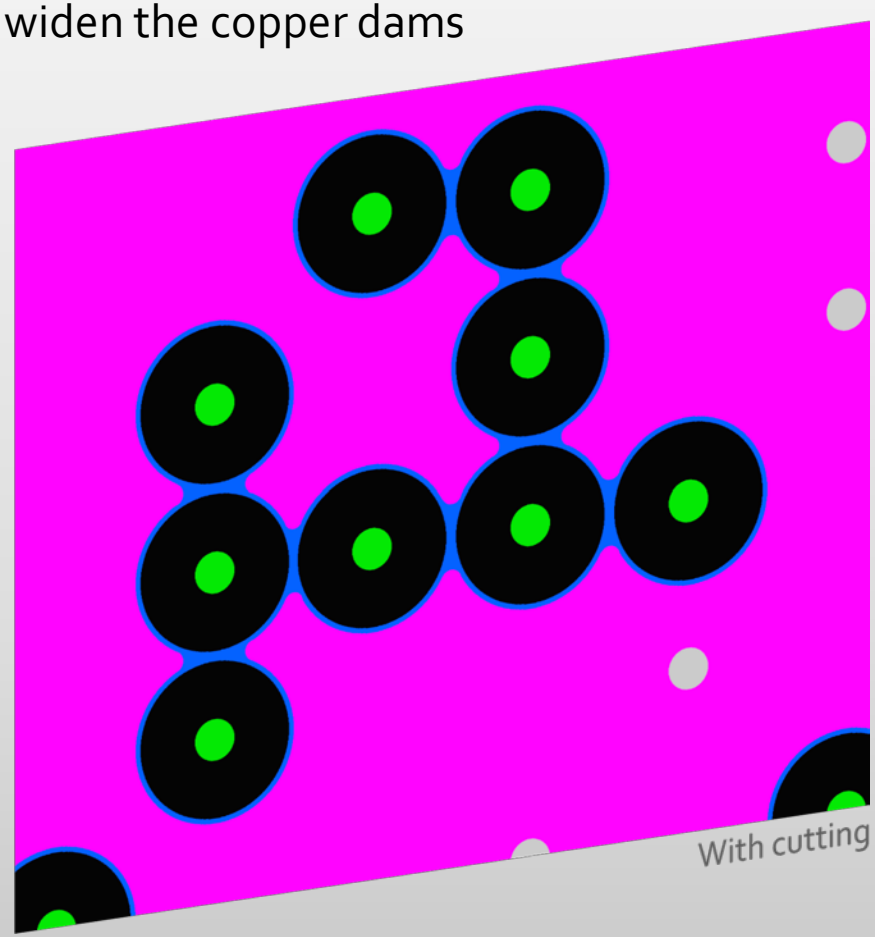


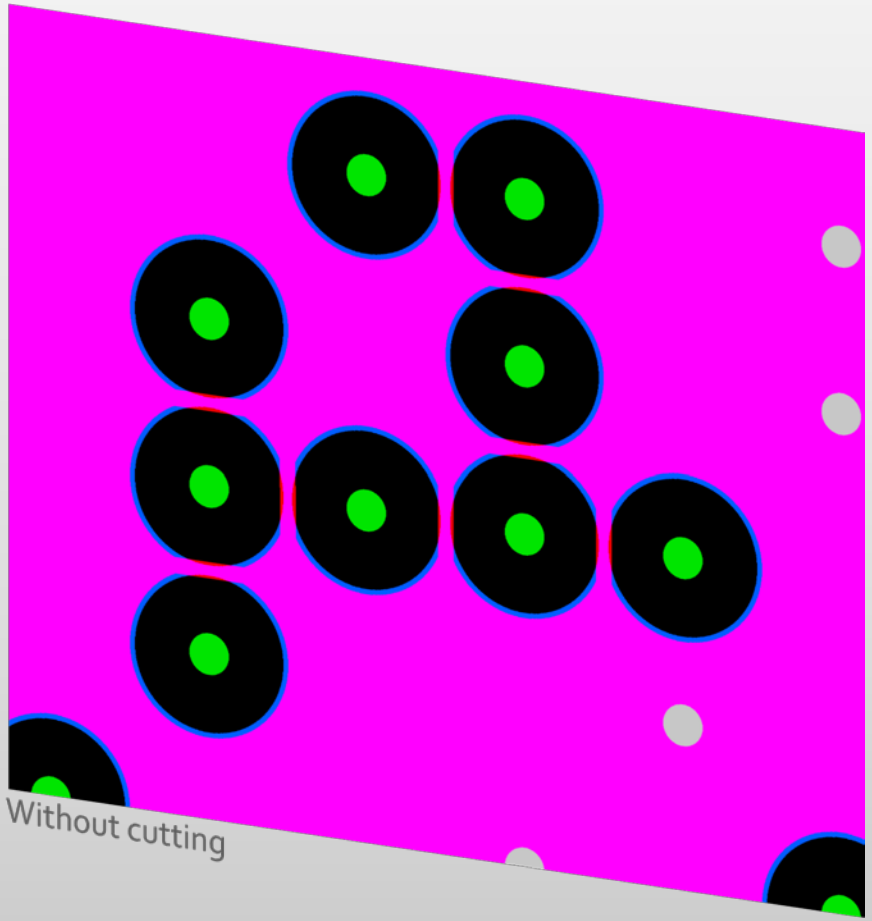
Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Plane (Beta version)

Remove bridges offers the choice to handle too-narrow copper dams by

- cutting the copper dams (with smooth corners)
- widen the copper dams

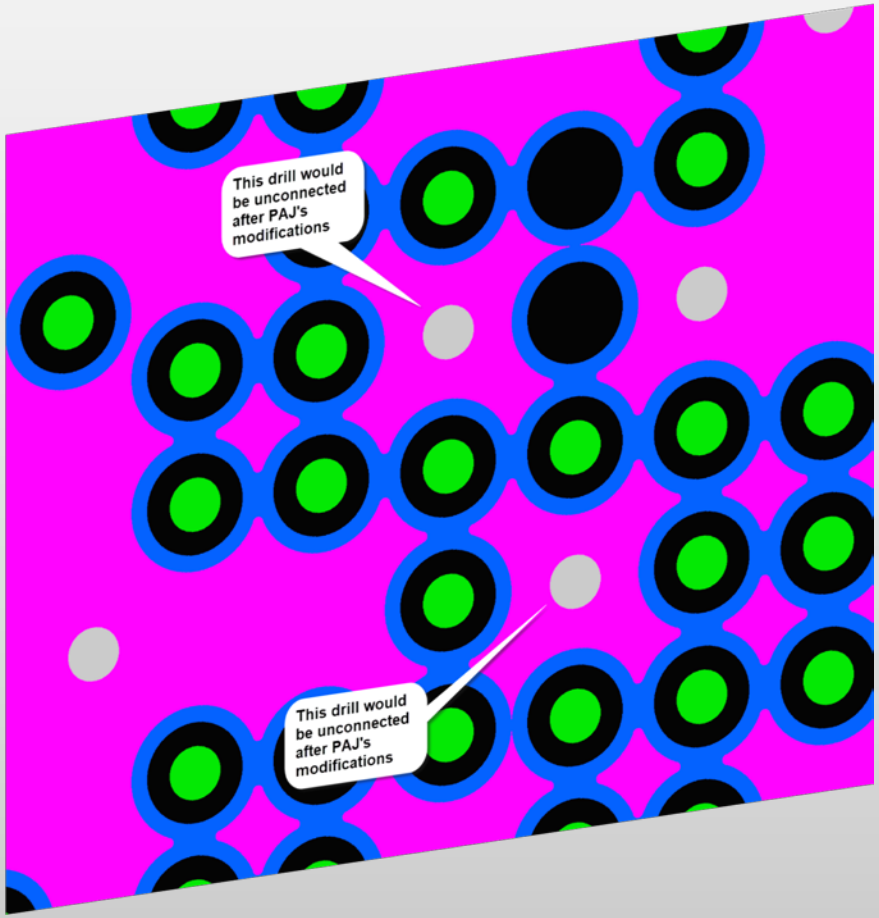


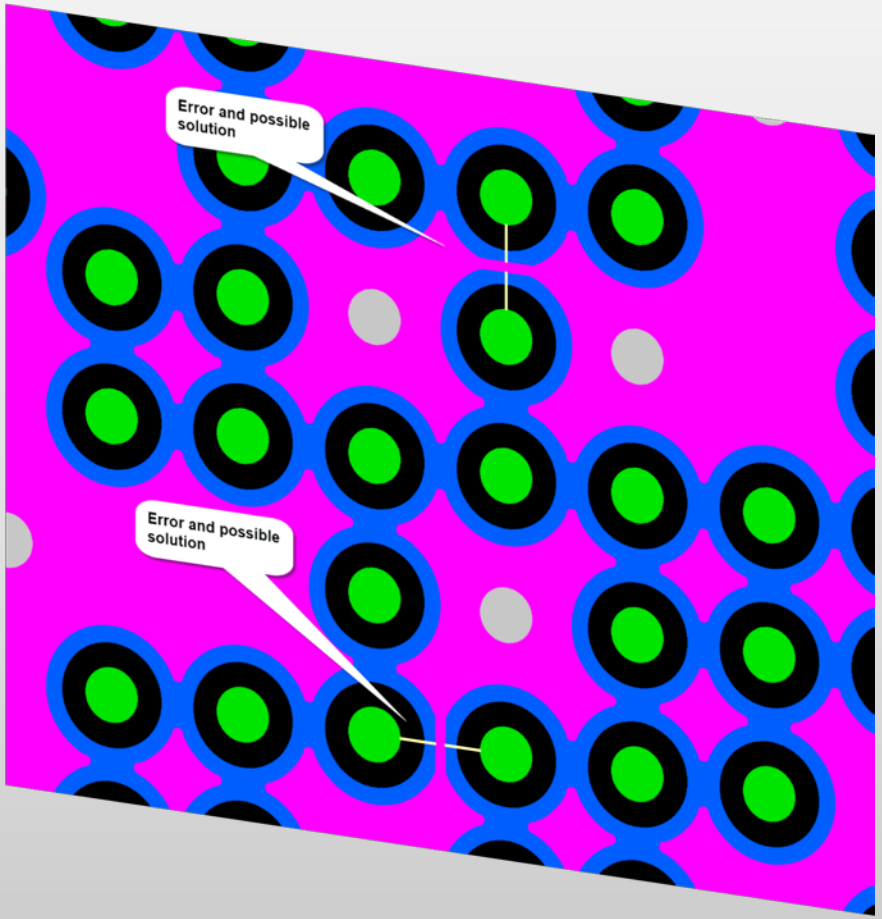


Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Plane (Beta version)

Where cutting away all copper dams starves pads or drills, Copper Adjuster gives a warning and keeps one dam to maintain netlist integrity. Netlist integrity trumps achieving the drc values.

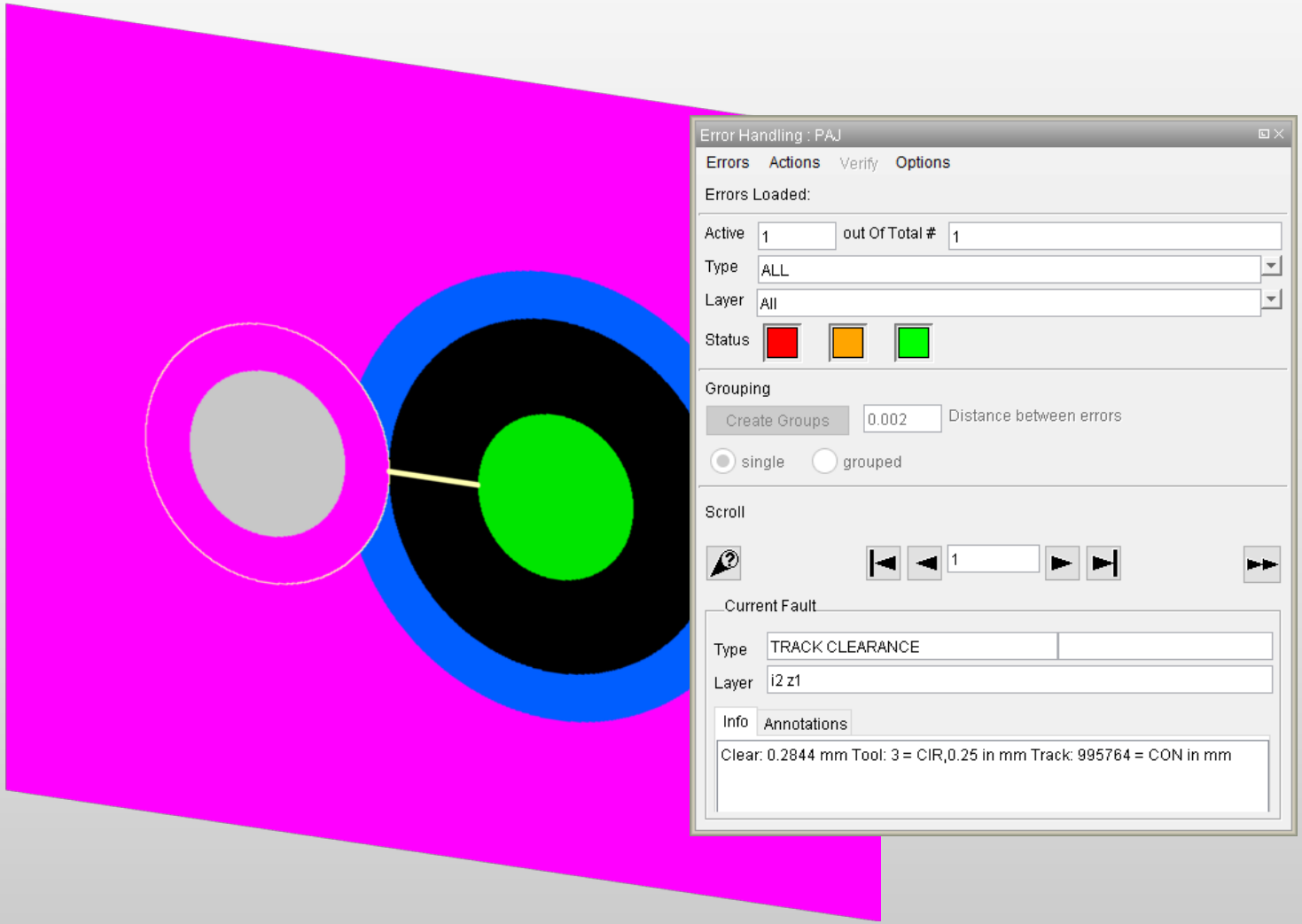


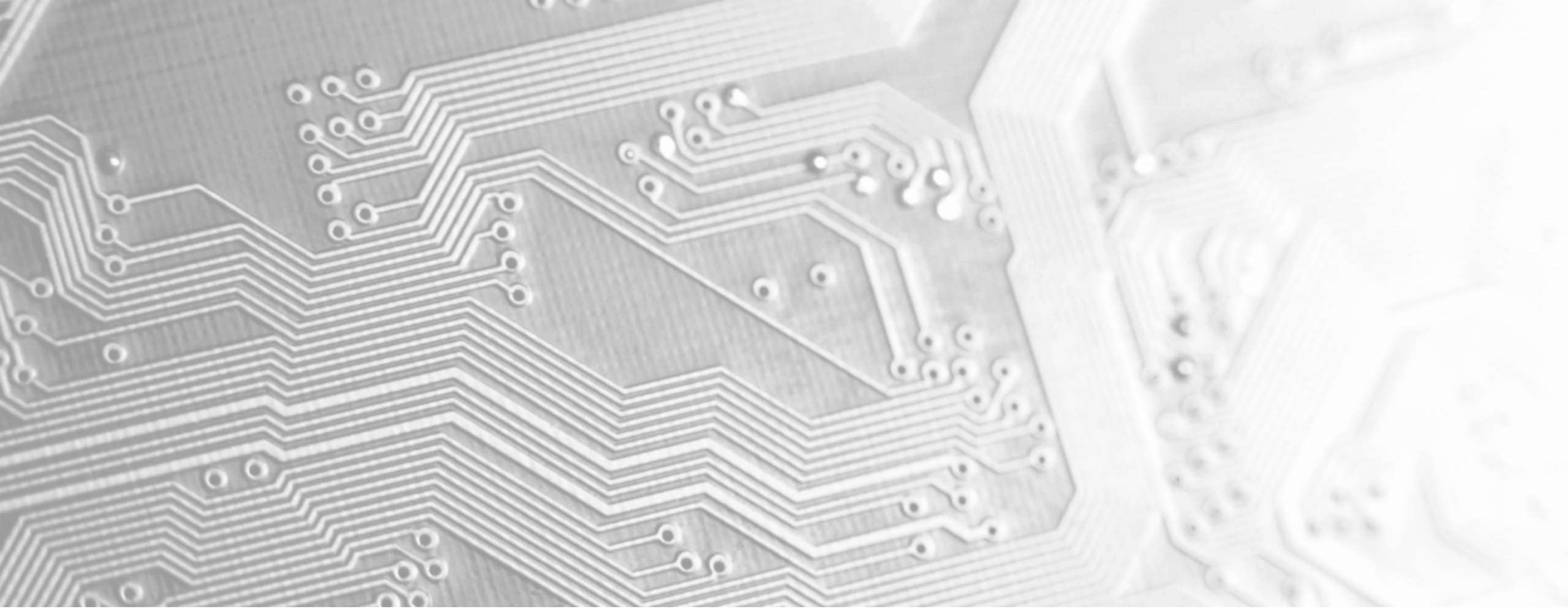


Yelo (Yield Enhancing Layout Optimizer)

Copper Adjuster (CAJ) - Plane (Beta version)

Where the annular ring and the clearance requirements are in conflict, Copper Adjuster gives a warning and safeguards the ring, sacrificing the clearance. Rings trump clearances.





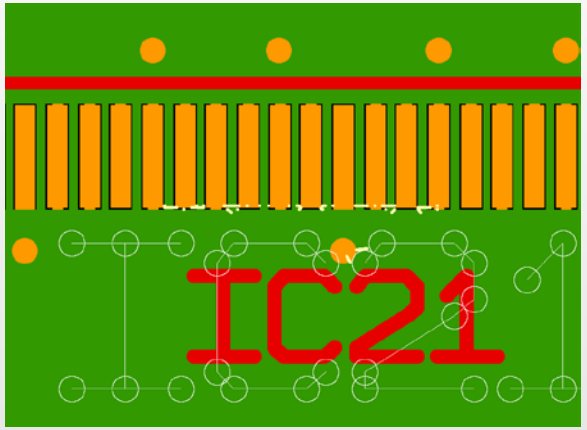
Legend Adjuster (LAJ)

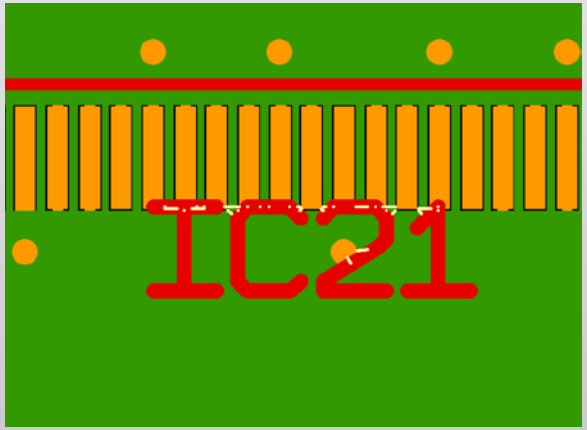
Yelo (Yield Enhancing Layout Optimizer)

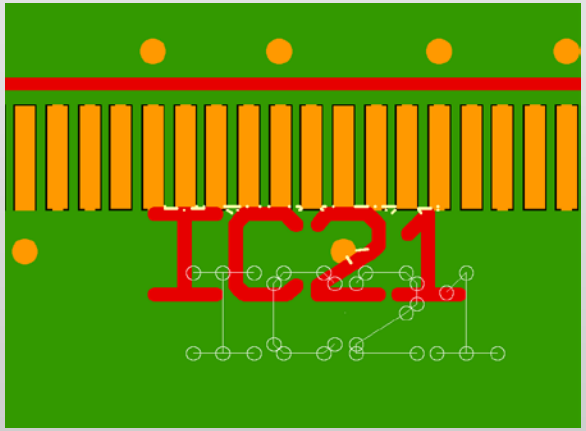
Legend Adjuster (LAJ)

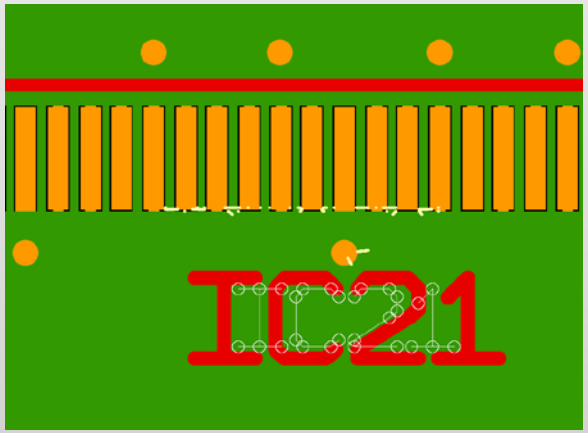
Legend Adjuster

- Dedicated, easy-to-use tools to adjust the size and the position of texts
- Automatic identification of text blocks
- Comprehensive text placement checks





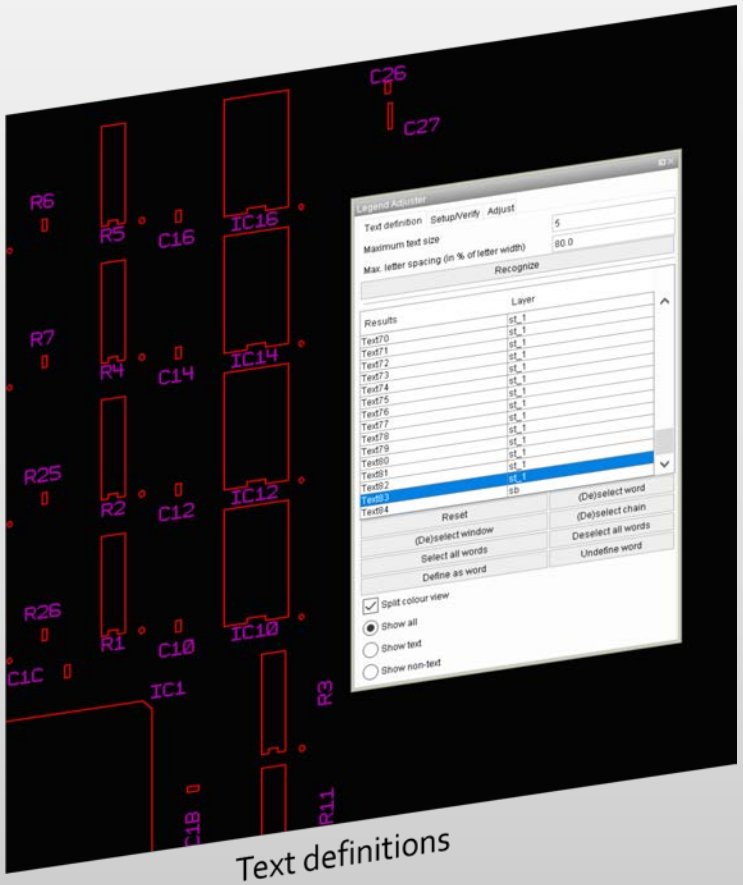




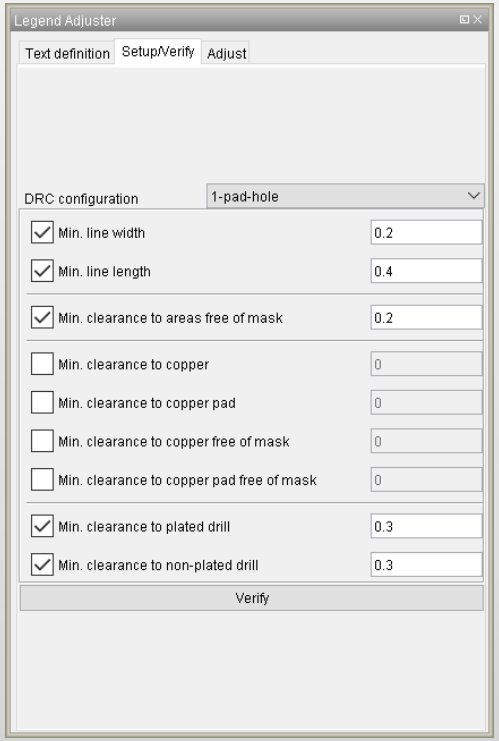
Yelo (Yield Enhancing Layout Optimizer)

Legend Adjuster (LAJ)

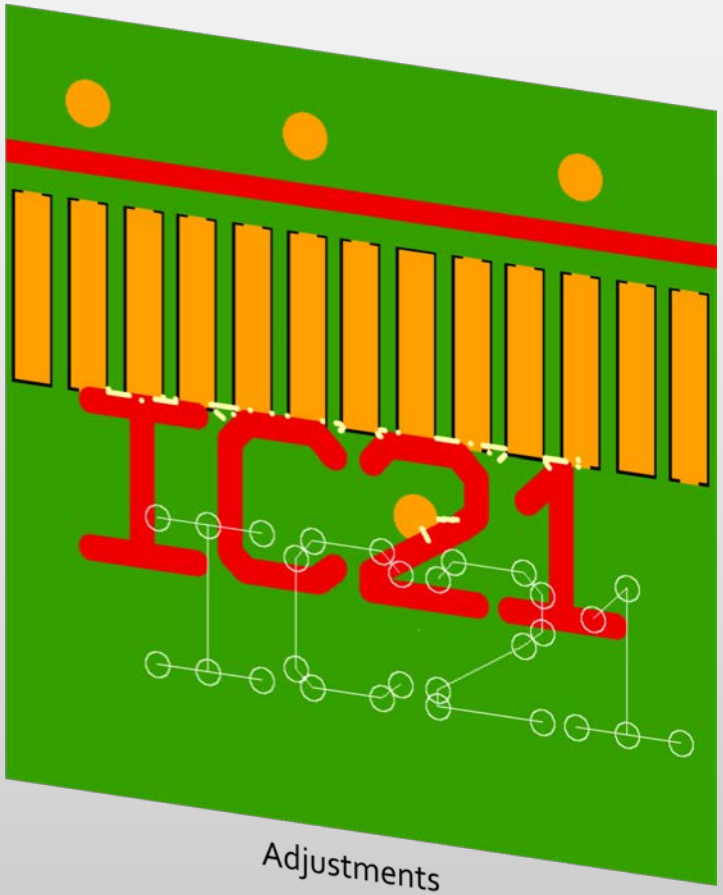
Legend Adjuster allows to move, resize and clip each text block individually, within constraints.
It finds text blocks automatically.



Text definitions



Setup / Verify



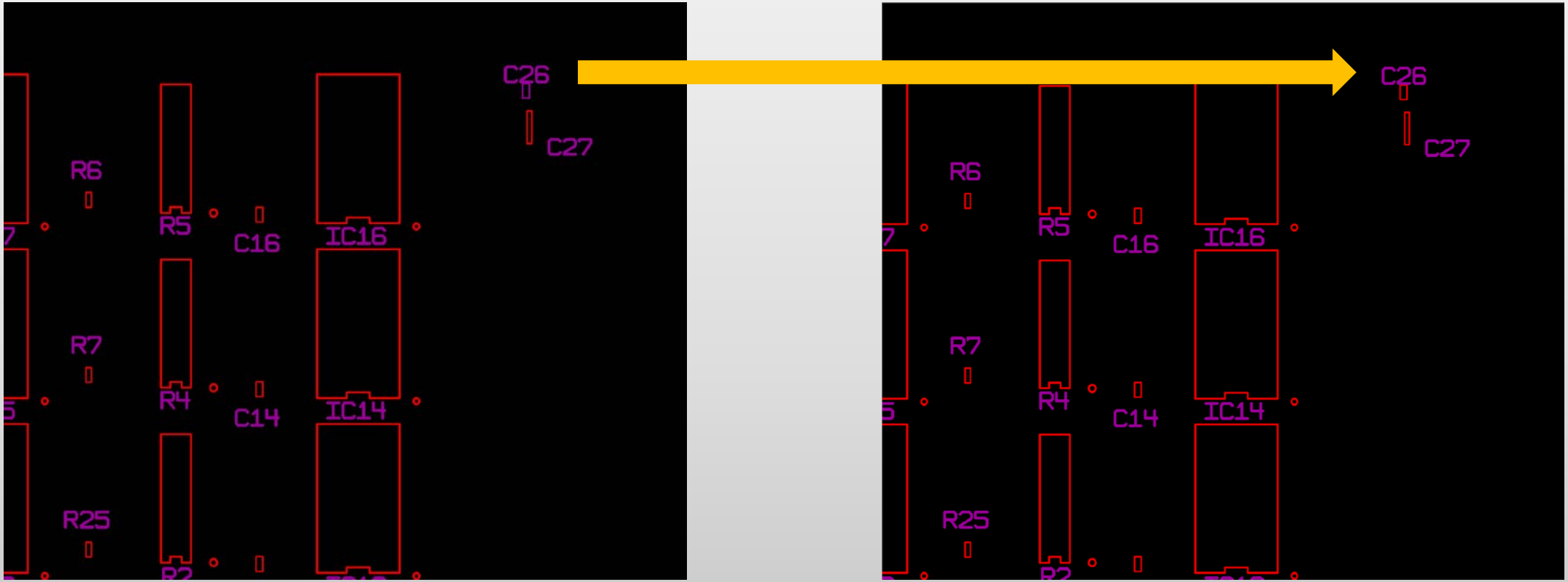
Adjustments

Yelo (Yield Enhancing Layout Optimizer)

Legend Adjuster (LAJ)

In „Split color view" text defined by LAJ can be highlighted and easily reviewed:

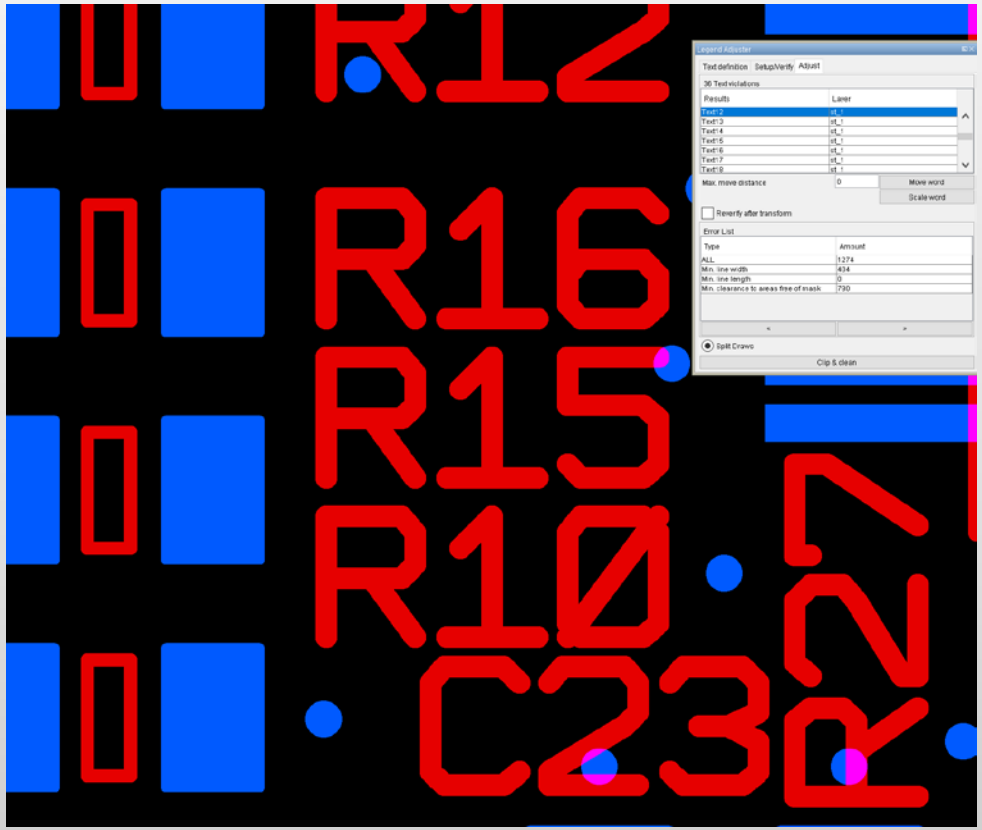
Possible misclassifications are easily detected and corrected.

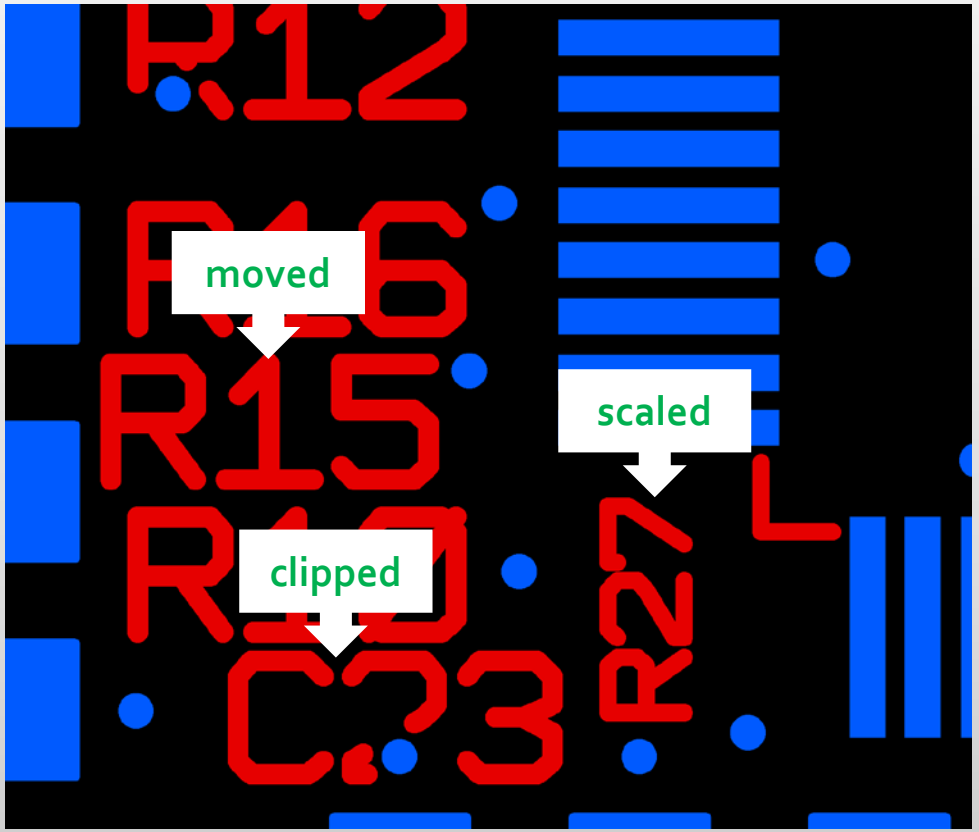


Yelo (Yield Enhancing Layout Optimizer)

Legend Adjuster (LAJ)

- All violations are shown and one can quickly decide to *move*, *scale* or *clip* text.

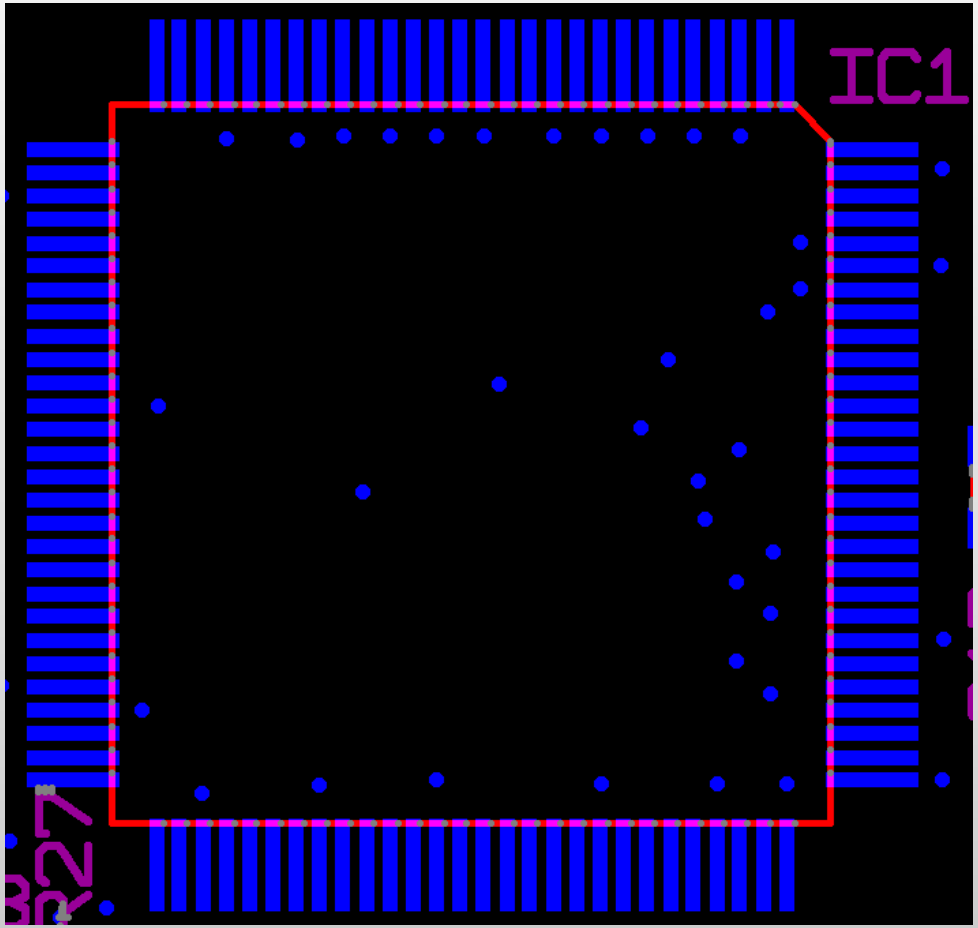


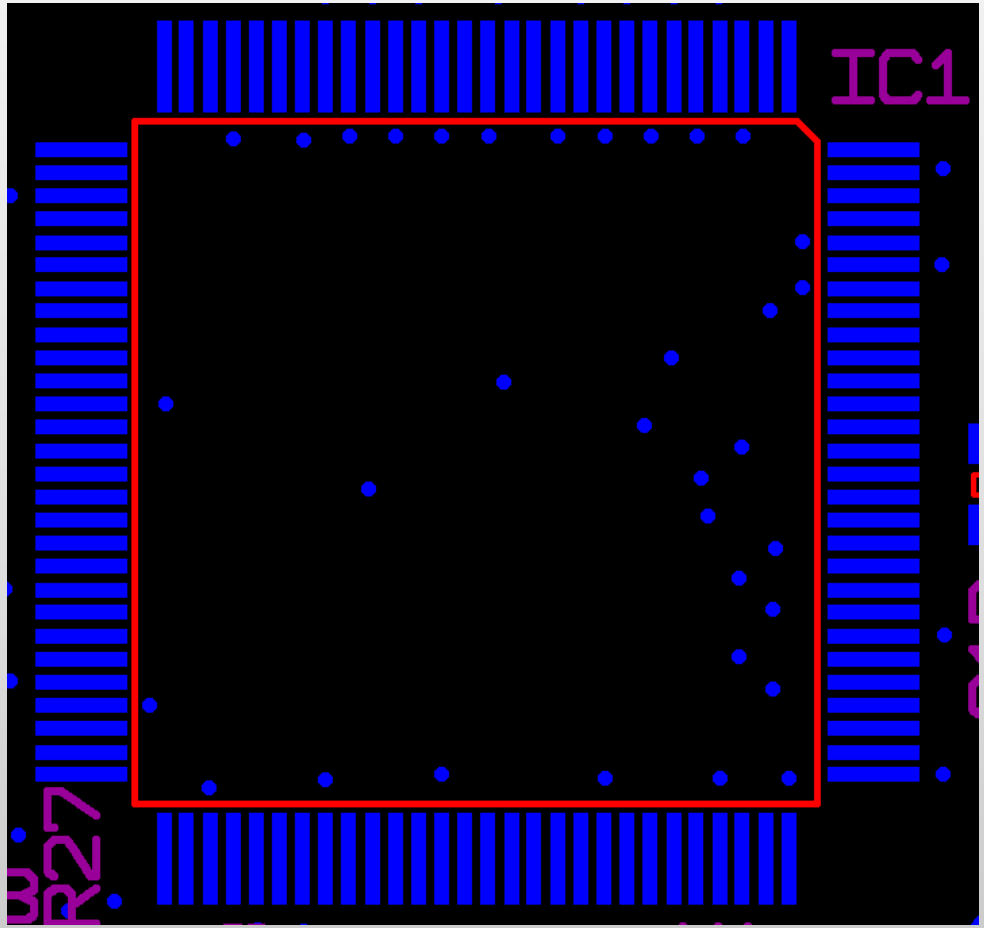


Yelo (Yield Enhancing Layout Optimizer)

Legend Adjuster (LAJ)

Automatic expansion or shrinkage of component frames.





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