

# From Specs to Masks...

## Automated Mask Data Preparation GOTmdp

### AUTOMATION

End-to-end automation from specs to mask layout eliminates error prone manual operations and cuts MDP process from days to hours.

### OPTIMIZATION

Increases silicon usage and yield across all levels – chip, frame, wafer, with 10 to 15% gain for production MPWs.

### INTEGRATION

Unifies workflow between all modules with reusable specs and templates, and parameterized processes.

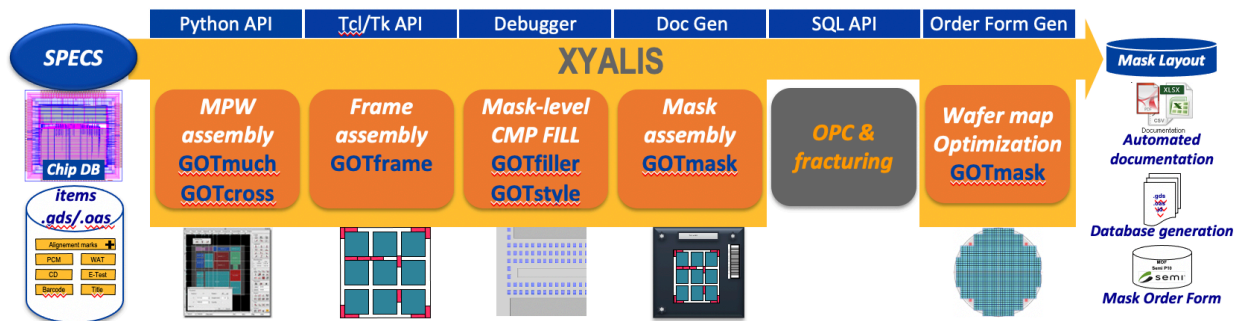
### VERIFICATION

Consistent built-in specs checking and correct by construction mask layout ensure manufacturability throughout workflow.

### CUSTOMIZATION

Adapts user experience to fit existing customer flows with minimum disruption and maximum efficiency.

- Multi-chip assembly and optimization
- Automated frame generation and reticle optimization
- Mask and field editing with step plan and wafer map optimization
- Mask manufacturability verification
- Automatic documentation and SEMI-P10 mask order form generation
- Customizable with Python API and SQL support



Advanced manufacturing, packaging, and inspection technologies - 3D-IC, Stitching, MPWs, PCMs, Multi-Patterning, density management... - create disruptions, bottlenecks, and inefficiencies in existing Mask Data Preparation flows, highlighting the need for innovative solutions automating processes **from specs to masks**.

XYALIS transforms Mask Data Preparation with end-to-end automation and reduces engineering time by up to 40-70% while improving quality and cutting silicon usage by 10-15%.

*"XYALIS customizable solution addressed bottlenecks and inefficiencies in our existing MDP flow with their specialized engines and domain expertise".*

XYALIS tightly integrated Mask Data Preparation suite **automates** the repetitive and time-consuming tasks between design and manufacturing: multi-chip assembly, frame generation, mask set layout, wafer map and step plan optimization, wafer level dummy fill, mask manufacturability verification, automatic documentation and SEMI-P10 mask order form generation for error-free hand-off to mask shops, manufacturing and inspection teams..



# Features and Benefits

## ESSENTIAL COMPANION TOOLBOX

Set of layout processing tools provide a safe transfer to silicon for the most complex SOC designs.

## STANDARDS SUPPORT

XYALIS Mask Data Preparation solution supports standard layout and job deck formats: GDSII, OASIS®, OASIS.MASK, MALY, MEBES.

## SYSTEM REQUIREMENTS

Runs on any Linux workstation with RedHat 7 to 9. Management of multi-core is automatic.

### MULTI-CHIP ASSEMBLY AND OPTIMIZATION

GOTmuch provides automation in an intuitive framework to build multi-chip assemblies, while GOTcross automated placement engine considers manufacturing production optimization criteria: silicon area, number of cut sets, production delivery to provide an optimized assembly... Field-wide dummy fill into empty areas guarantees higher manufacturing yield.

### AUTOMATIC SCRIBE LINE AND RETICLE OPTIMIZATION

GOTframe automates the placement of process and mask specific items into scribe lines, while minimizing the field area. It builds correct by construction fields, for multi-chip assemblies and regular array of dies, that meets customer requirements captured in reusable specs.

### MASK AND FIELD EDITING WITH STEP PLAN AND WAFER MAP OPTIMIZATION

GOTmask speeds up the creation of complete mask sets with user-defined templates, ensuring consistency between masks. It supports the newest technologies, including 3D-IC masks, multi-layer reticles, and multi-field mask. A special full wafer mask (1X) flow offers the possibility to mix different chips, including very large scale dies and provides wafer-wide dummy fill. Stitching for large scale image sensors is also supported. Step plans and wafer maps are automatically calculated and optimized for usable chip output or manufacturing time.

### MASK MANUFACTURABILITY VERIFICATION

Correct by construction generated field and mask assemblies meet customer specs, while an input layout integrity checker verifies all inputs. Special checks are carried out to ensure that the final mask set database can be handled with no problem by any mask shop, manufacturing, and inspections tool.

### AUTOMATIC DOCUMENTATION AND SEMI-P10 MASK ORDER FORM GENERATION

User documentation, generated by the click of a button, is fully customizable for use by mask shops, manufacturing, and inspection teams. A SEMI-P10 mask order form ensures seamless hand-off to the mask shop and warrants interoperability between mask suppliers.

### CUSTOMIZABLE WITH PYTHON API AND SQL SUPPORT

XYALIS MDP solution is fully scriptable, with Tcl/Tk or Python API, and includes a built-in SQL connector to any DB, for easy inclusion in any existing customer flow.

### GOT ENGINE

Handles the largest designs with maximum performance and minimum memory requirements thanks to the GDS & OASIS (GOT) data representation engine, tailored to leverage native OASIS.MASK optimizations.

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