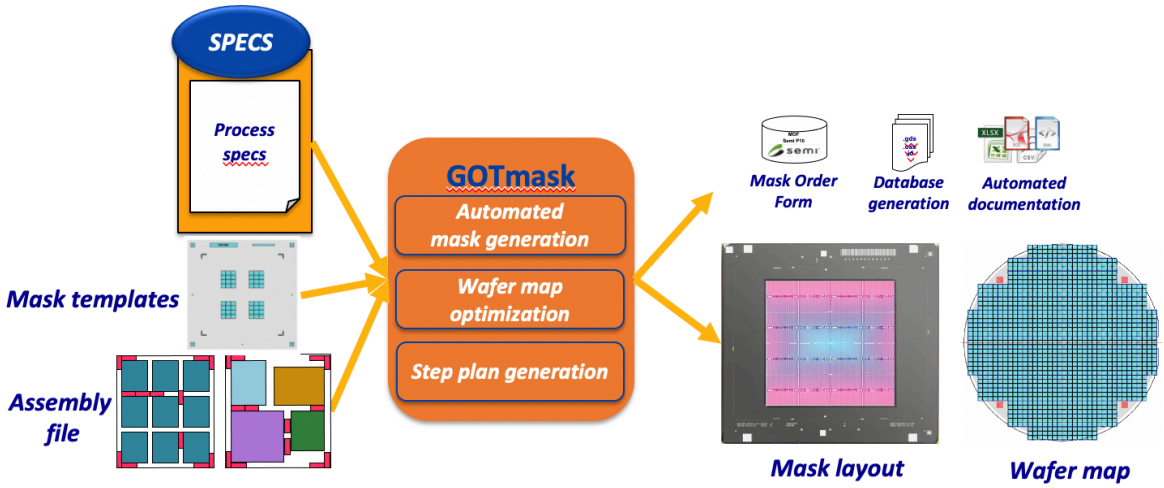
From Specs to Masks…

Automated Mask Set Generation
GOTmask

- Automated field placement with reusable templates
- Creation of compatible and optimized step plans and wafer maps
- Support for multi-layer reticles and multi-scan technologies
- Optimized 1X mask flow
- Support for 3D-ICs and mask stitching
- Mask manufacturability verification
- Automatic documentation and SEMI-P10 mask order form generation
- Customizable with Python API and SQL support



AUTOMATION

Automates mask floorplan creation with use of reusable templates. Generates compatible step plans for all the masks in the mask set.

OPTIMIZATION

Calculates optimized step plans so chip production is increased and / or manufacturing shots are minimized.

VERIFICATION

Verifies consistency between masks in the mask set and presence of all layers needed for the order form.

CUSTOMIZATION

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

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".

GOTmask automates mask set assembly, supporting new technologies such as Multi-Layer Reticles, Multi-Scan masks, 3D-ICs, 1X masks, and mask stitching, independently of the targeted mask shop or mask making equipment. It ensures that all masks in the mask set are compatible and optimizes the step plans and wafer maps.

By automating a repetitive process and by verifying the manufacturability of the resulting mask set, **GOTmask** increases the productivity of the Mask Data Preparation team, avoids costly delays at the mask shop, and prevents the manufacturing of faulty mask sets.

XYALIS

Features and Benefits

AUTOMATED FIELD PLACEMENT WITH REUSABLE TEMPLATES

The different elements constituting the mask: fields, alignment and inspection marks, barcodes…are assembled onto the mask with reusable templates, using a dedicated graphical environment or automated scripts.

CREATION OF COMPATIBLE AND OPTIMIZED STEP PLANS AND WAFER MAPS

GOTmask automates the creation of a step plan for each mask of the set. It optimizes the reticle placement to maximize silicon usage or minimize manufacturing time, while considering protected zones on the wafer. A Mix & Match function ensures that all step plans and the wafer map are fully compatible.

SUPPORTS FOR MULTI-LAYER RETICLE AND MULTI-SCAN TECHNOLOGIES

New mask manufacturing technologies, aiming at reducing the cost of mask sets by using a single mask for printing several reticules are fully supported, with automatic positioning of the fields.

OPTIMIZED 1X FLOW

GOTmask supports full wafer masks (or 1X masks), optimizing the field placement and accommodates multi-chip masks where different fields are instantiated on the full wafer mask, including chips larger than the field. Wafer wide dummy fill insertion is available to reduce density variation and increase yield.

SUPPORT FOR 3D-IC MASKS AND STITCHING

Specialized flows are proposed for 3D-IC masks, back-to-back or stacked, and for generating step plans allowing stitching to produce large arrays such as CMOS image sensors.

MASK MANUFACTURABILITY VERIFICATION

Generated mask assemblies are correct by construction and 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.

ESSENTIAL COMPANION TOOLBOX

Set of layout processing tools provides 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.

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