From Specs to Masks…

Automated Frame Generation
GOTframe

AUTOMATION

Accelerates frame generation workflow with automated process-specific items placement.

OPTIMIZATION

Reduces silicon waste through automatic scribe line width minimization and optimal reticle placement.

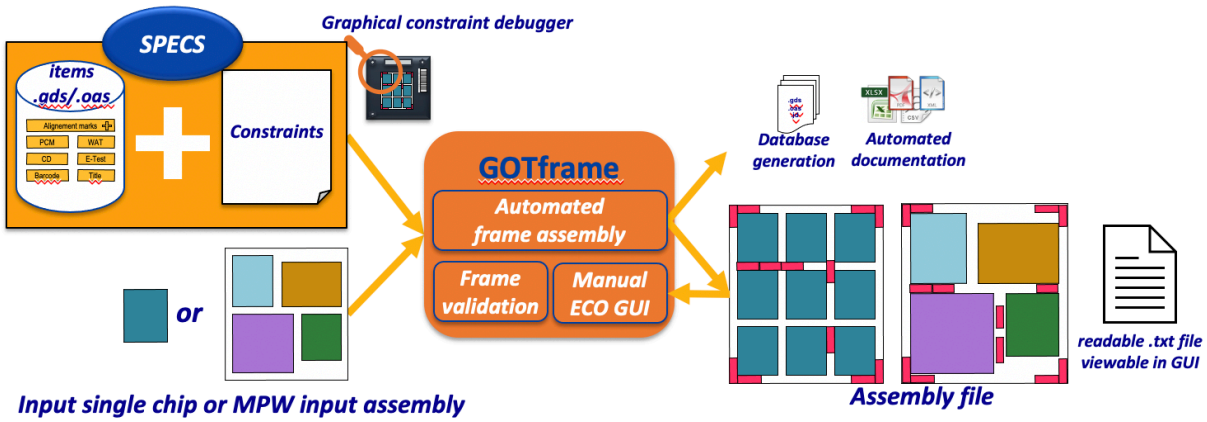
VERIFICATION

Prevents errors through comprehensive specs checking and correct by construction frame layout generation.

CUSTOMIZATION

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

- Reusable specs file per process
- Automatic scribe line and reticle optimization
- Graphical environment for spec file development and debugging
- Specs compatibility verification of manual modifications
- Support for 3D-IC flow
- Mask manufacturability verification
- Automatic documentation 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".

GOTframe automates the insertion of all process specific items: alignment marks, test structures… inside scribe lines. A reusable specification describes all items required by the technology, manufacturing, and inspection teams, along with their placement constraints. The placement engine finds an optimal solution, meeting the constraints, while minimizing the scribe line width. Dummy fill can be inserted into the scribe lines for increased yield.

By automating a repetitive process, **GOTframe** increases productivity with a powerful placement engine, enables maximum reuse of item definition and constraints, avoids costly errors due to manual operations, and maximizes silicon by proposing an optimum reticle placement for arrays of chips and multi-chip assemblies.

XYALIS

Features and Benefits

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.

REUSABLE SPECS FILE PER PROCESS

A reusable specs file describes the process-specific items and their associated constraints: location, transformation, placement order, advanced conditional constraints… and can be parameterized for increased reusability. The specs file applies to both regular arrays of dies and multi-chip assemblies.

AUTOMATIC SCRIBE LINE AND RETICLE OPTIMIZATION

GOTframe selects the optimum chip rotation to increase the number of dies in the frame. If mandatory items cannot be placed in the initial reticule, GOTframe computes the minimum scribe line expansion necessary to fit all items.

GRAPHICAL ENVIRONMENT FOR SPECS FILE DEVELOPMENT AND DEBUGGING

The specs file is an intuitive, human readable description of the process-specific constraints. It can easily be created and updated with any text editor, or with a dedicated graphical user interface (for basic features) to speed up ramp-up time. A graphical debugger helps identify incompatible constraints before deployment of the specs file to end users.

SPECS COMPATIBILITY VERIFICATION OF MANUAL MODIFICATIONS

GOTframe generated frames can be manually modified within XYALIS environment and checked against the specs file for compatibility.

SUPPORT FOR 3D-IC FLOW

A special flow leveraging specs files, supports defining and applying constraints between multiple frames, chips, and process technologies, allowing for generating frames for 3D-ICs, stacked and/or mirrored.

MASK MANUFACTURABILITY VERIFICATION

GOTframe generates correct by construction frame, 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 GENERATION

User documentation, generated by the click of a button, is fully customizable for use by mask shops, manufacturing, and inspection teams.

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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