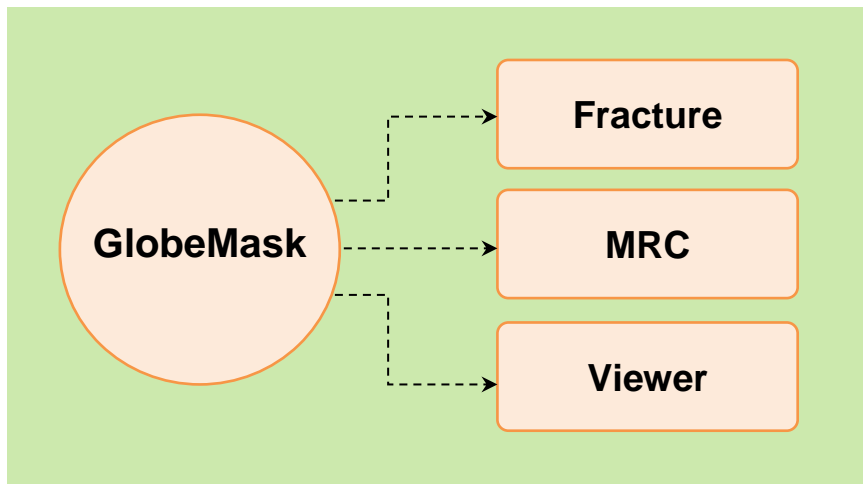


## GlobeMask

Mask Data Processing, Verification and Analysis Platform

### OVERVIEW

GlobeMask is a mask data processing, verification and analysis platform that includes three tools: GlobeMask Fracture (GlobeFracturing), GlobeMask MRC (GlobeMRC) and GlobeMask Viewer (GlobeView). It provides a powerful tool suite for layout data fracturing and format conversion, mask data verification, viewing and analysis, etc.



GlobeMask

### Features and Benefits

#### GlobeFracturing

- Layout data fracturing and conversion
- Generation mask data in MEBES format
- Unary and binary operations
- Coordinate transformation
- Data XOR analysis
- Distributed processing mode

#### GlobeMRC

- Mask rule checking
  - Width/Space, Notch, Point distance, etc.
- Logical operations among multiple layers
- Distributed processing mode

#### GlobeView

- Mask and layout data Viewing
- Manual and automatic measurement
- Mask data comparison and analysis
- Density calculation

GlobeFracturing is able to convert layout data into formats recognized by various mask exposure equipment, offering an accurate and fast solution for layout data fracturing and format conversion. The input file types that can be supported include GDS, OASIS and MEBES, while the output files are MEBES, etc.. During the format conversion process, it can perform unary operations, binary operations, and transformation operations simultaneously. In addition, it also supports the XOR function to verify the accuracy of data conversion.

GlobeMRC provides a mask rule checking solution to ensure that these patterns on the mask can be adapted to mask manufacturing processes. This tool can check single-layer or multi-layer mask patterns for width/space, notch, point distance, etc., and also supports logical operations among multiple layers.

GlobeView is a convenient tool for viewing and analyzing mask data. This tool supports fast loading, viewing and analysis of mask data, with flexible automatic measurement functions for patterns, as well as analysis capabilities such as pattern density calculation, mask data comparison, and chip overlap checking. GlobeView is mainly used for pre-production mask data checking and analyzing, which can generate reference data in the reticle inspection stage, providing a complete and efficient solution for reticle data analysis.

## Functionality

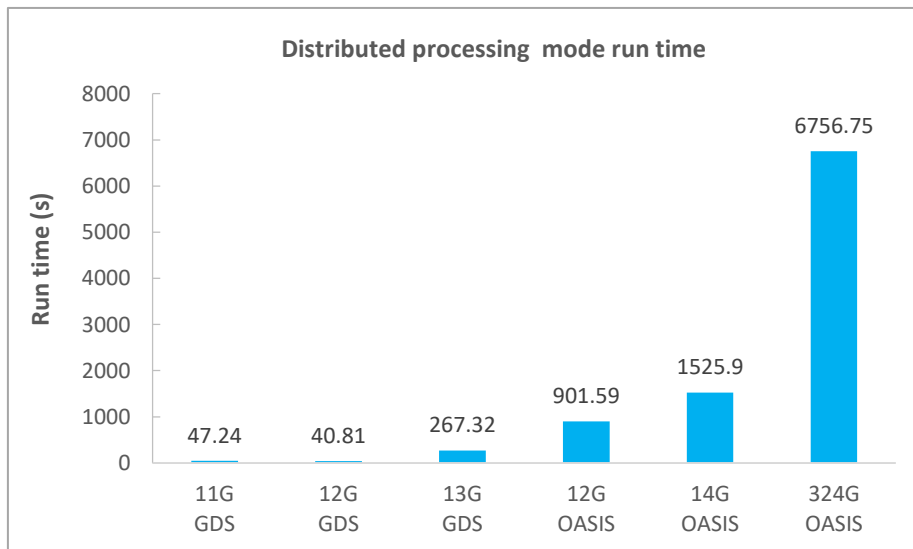
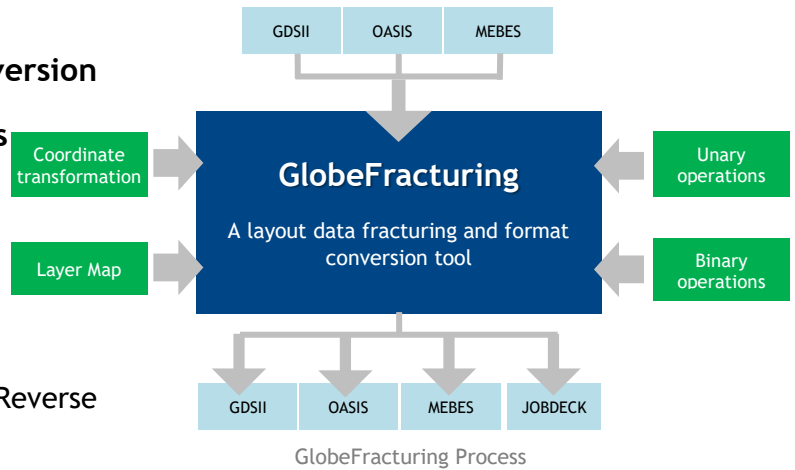
As a mask data processing, verification and analysis platform, GlobeMask provides accurate and effective methods for layout data conversion, mask data rule verification and mask data viewing and analysis.

### ❑ GlobeFracturing

As an accurate and efficient tool for layout data fracturing and format conversion, GlobeFracturing can output layout data in a format recognized by mask exposure machines.

#### Main Functions

- Layout data fracturing and conversion
- Various data format generations
  - MEBES/JOBDECK
- Coordinate transformation
  - Offset/Rotate/Align/Scale
- Unary and binary operations
  - Size/Size2/Scale/Shift/Cut/Reverse
  - AND/OR/NOT/XOR
- Distributed processing mode ~2X faster

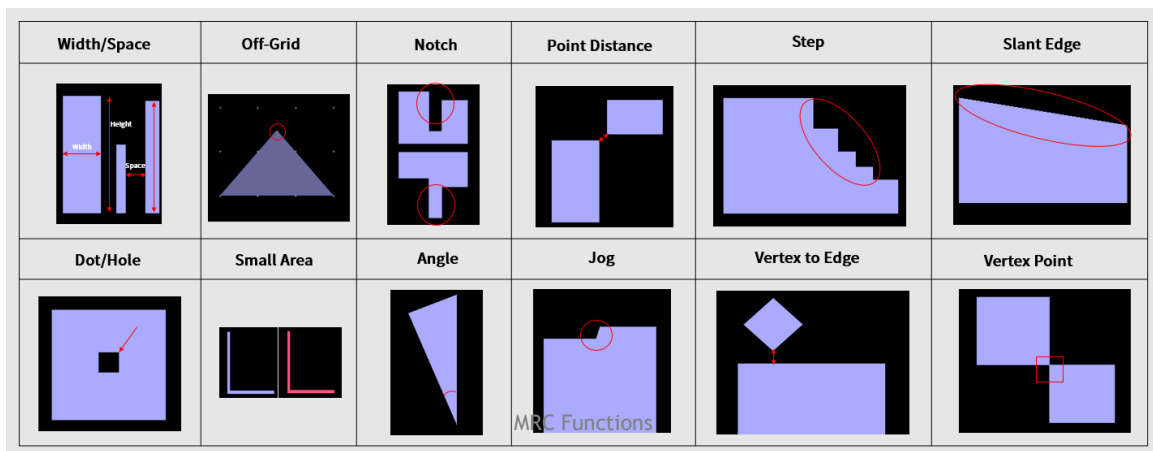


## ☐ GlobeMRC

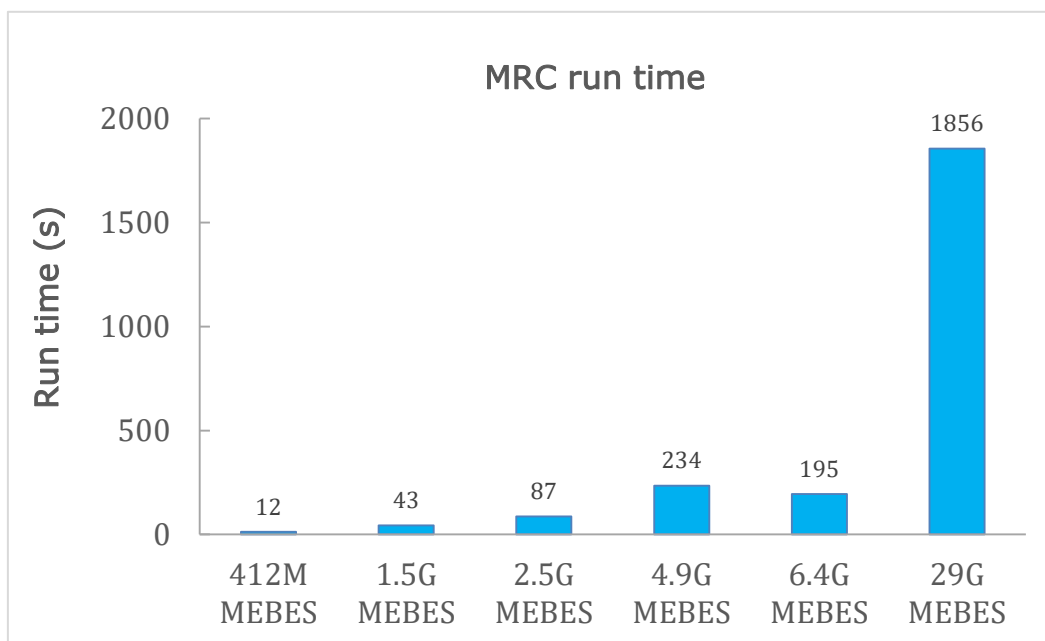
GlobeMRC provides a comprehensive and accurate mask rule checking solution. This tool can check mask data rules to ensure that the patterns on the mask are adapted to the mask manufacturing processes.

### Main Functions

- Mask rule checking
  - Width/Space/Off-grid/Notch/Point distance/Step, etc.
- Logical operations among multiple layers
- Distributed processing mode



Run time ~2X faster

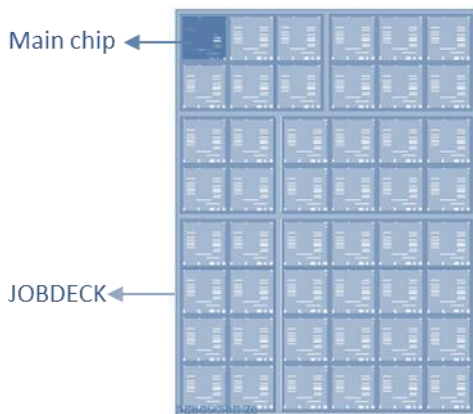


## ❑ GlobeView

GlobeView provides convenient mask and layout data viewing and analysis functions.

- **Mask and layout data Viewing**

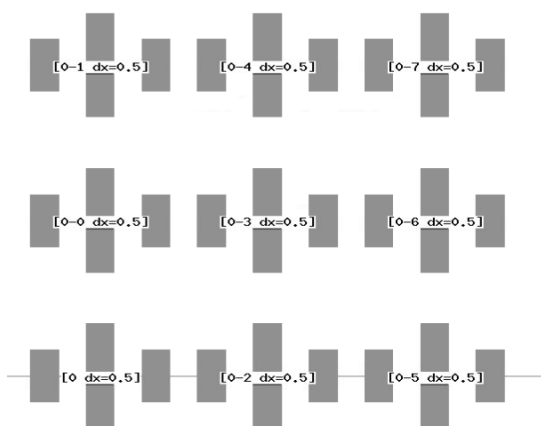
- Fast loading of mask data ~2X faster
- Overlay viewing of layout data
- Combine JOBDECK shot to shot
- Coordinate transformation



Overlay viewing of layout data and JOBDECK

- **Measurement functions**

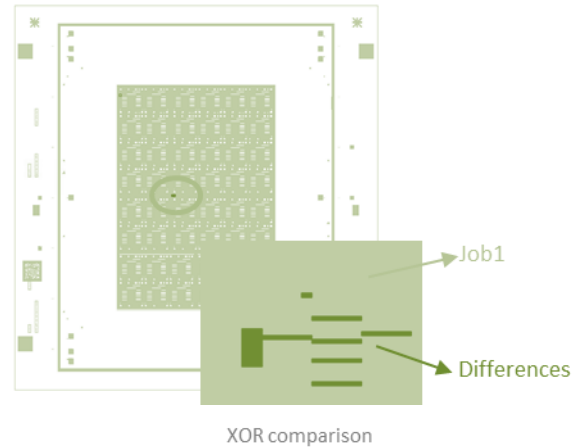
- Automatic and manual measurement
- Measurement at any angle
- Multiple measurement modes: auto, width, space, and array pitch



Automatic measurement

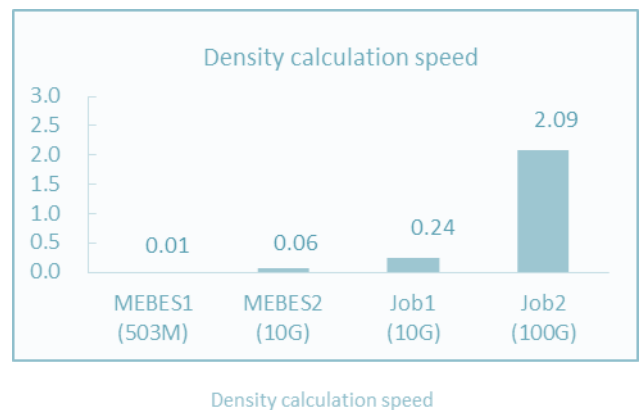
- **Data comparison**

- Different comparison mode
  - ◆ Job vs. Job
  - ◆ MEBES vs. MEBES
  - ◆ MEBES vs. Layout
- Transformation operation of input data
- Selecting region to compare
- Filtering differences



- **High-performance density calculation**

- Calculating JOBDECK/MEBES density ~30-100X faster
- Calculating density in specified areas



## Platform supported

- X86 64-bit  
Red Hat Enterprise V6 and V7