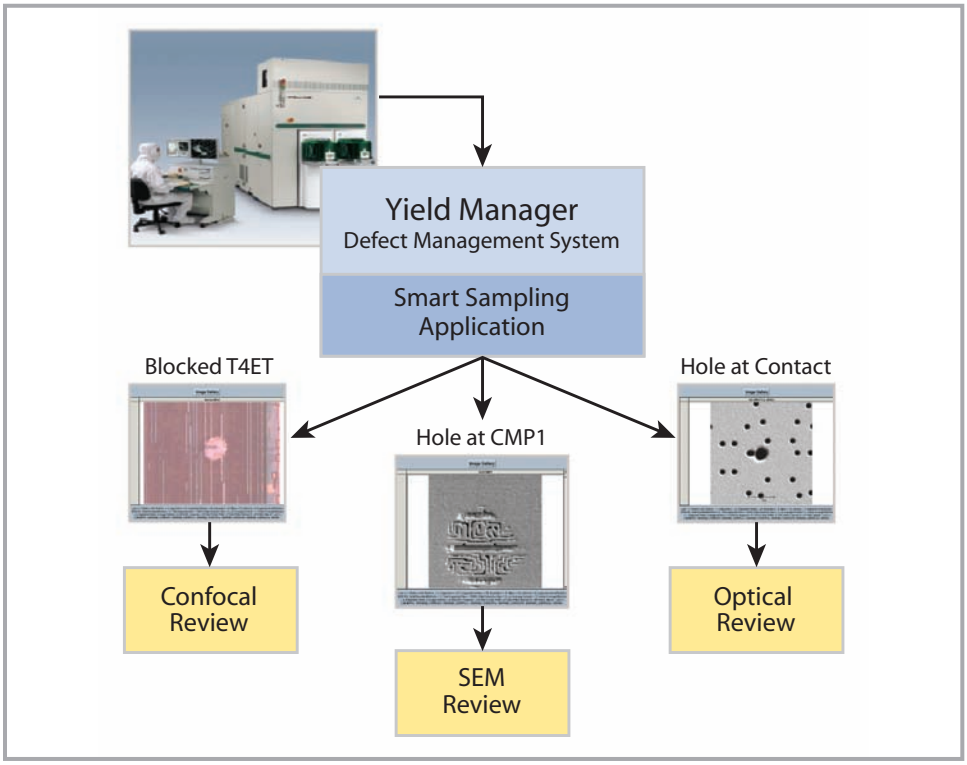
MAGMA DESIGN AUTOMATION

Knights Smart Sampling

- Allows users to focus review resources on high-impact issues.
- More tightly balances known issues and easily investigates new ones.
- Generates multiple samples and sample types for different review toolsets.
- Automates sampling that is typically done manually.
- Stores easy-to-use recipes in user-configurable XML files.
- Defines sampling at a global level or for specific products and inspection processes.
- Defines multiple sampling rules and filters can be defined per sampling recipe.
- Restricts defects to be reviewed by the combined use of filter function and sampling functions.

Knights Smart Sampling is a highly efficient automated method for inline defect sampling of wafer inspection data in conjunction with inline review tools within the semiconductor manufacturing environment. Smart Sampling is an enabling technology that utilizes a company's manufacturing data to determine which tool type is best suited to review and classify particular defects. It improves utilization of inline review tools and reduces human error involved in the decision-making process.

Smart Sampling allows users to automatically generate a sample file, based on a user-defined sampling recipe, that matches the relevant product and inspection process, thus filtering and preparing the data of the defects to be reviewed. Smart Sampling also enables fab engineers to focus on defects of specific interest, saving considerable review time.



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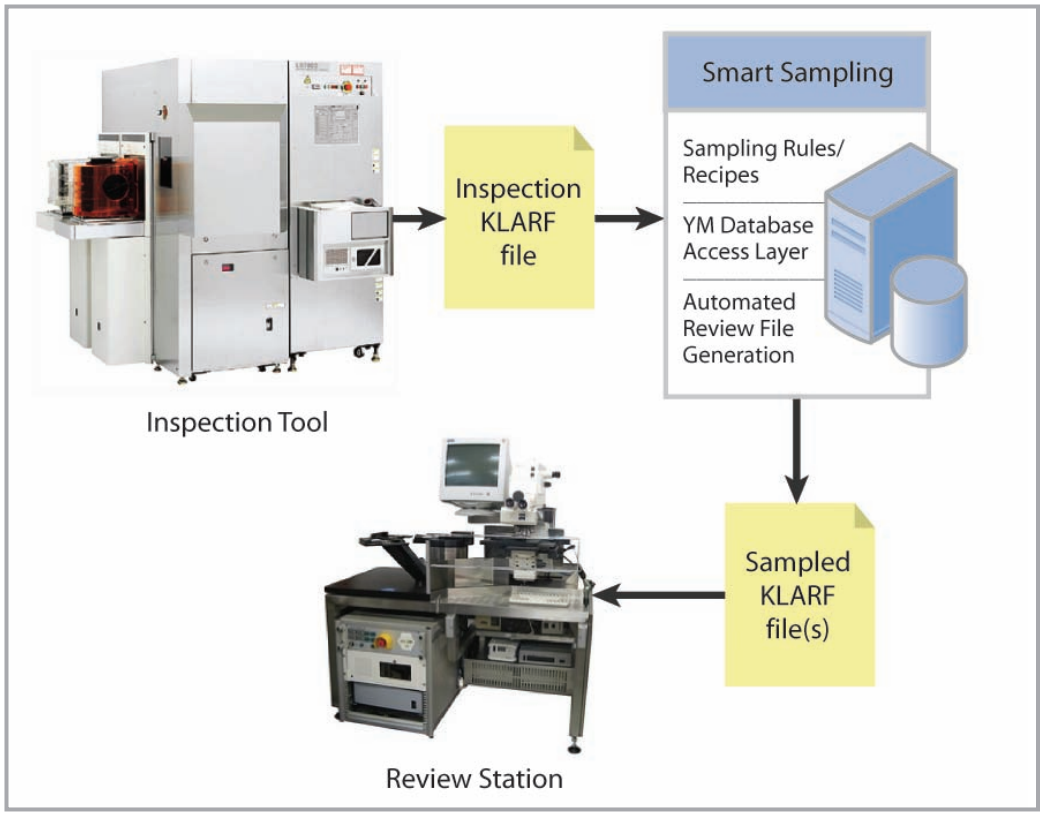

Smart Sampling's defect classification generation process.

TECHNOLOGY FEATURES:

- Classification filter: Defects to be reviewed are selected based on the information categorized by ADC function with the inspection tool, manual classification or rough bin classification.
- Defect size filter: Defects to be reviewed are selected according to a defect size detected with inspection tool.
- Cluster defects: Defects to be reviewed are selected based on cluster data detected either by tools or retrieving data from the YieldManager® database. User can also define the number of sample defects and how many defects to output from a cluster of defects.
- Partition filter: Defects to be reviewed are selected based on partition results and whether to review cumulative defects or adder defects.
- Smart Sampling supports defect grouping:
  - Extensions to YieldManager allow users to configure specific groups of defects based on any property or combination of properties. This allows the system to isolate sets of defects based on:
  - Classification or set of classifications
  - Position on wafer or within die
  - Repeater, cluster, adder
  - Image or number of images
  - Size, X, Y, dsize or any combination
- Graphical interface to easily configure sampling rules/filters.
- Smart Sampling runs as an independent product complement to YieldManager on an automation platform.
- Smart Sampling is YieldManager version independent.
- It is a modular analysis system that can be rapidly customized and configurable by field application engineers.
- Hardware/OS independent and works on Unix (Linux, HP, Sun, SolarisX86)/Windows platform.

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