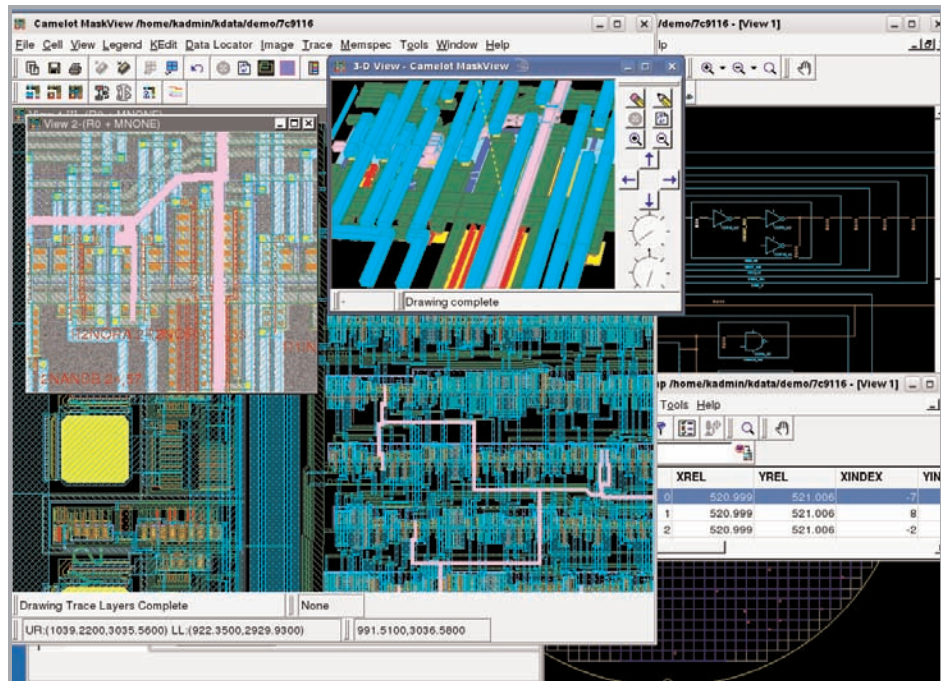


MAGMA DESIGN AUTOMATION

# Knights Camelot™

- Reduces design cycle time, improving time to market.
- Increases fab productivity by providing a general software platform for interfaces with all types of hardware.
- Supports all major layout versus schematic (LVS) tools.
- Provides essential core information database for FA.
- Offers a growing number of add-on features critical for tracking down potential failures and determining the origin of killer defects.
- Client/server solution for Linux, Solaris, Windows 2000, Windows NT or XP Operating Systems users.
- Seamless integration with existing Merlin™ databases and conversion tools is included.

Camelot is a next-generation CAD navigation system and key component of Magma's Fab Analysis product line.



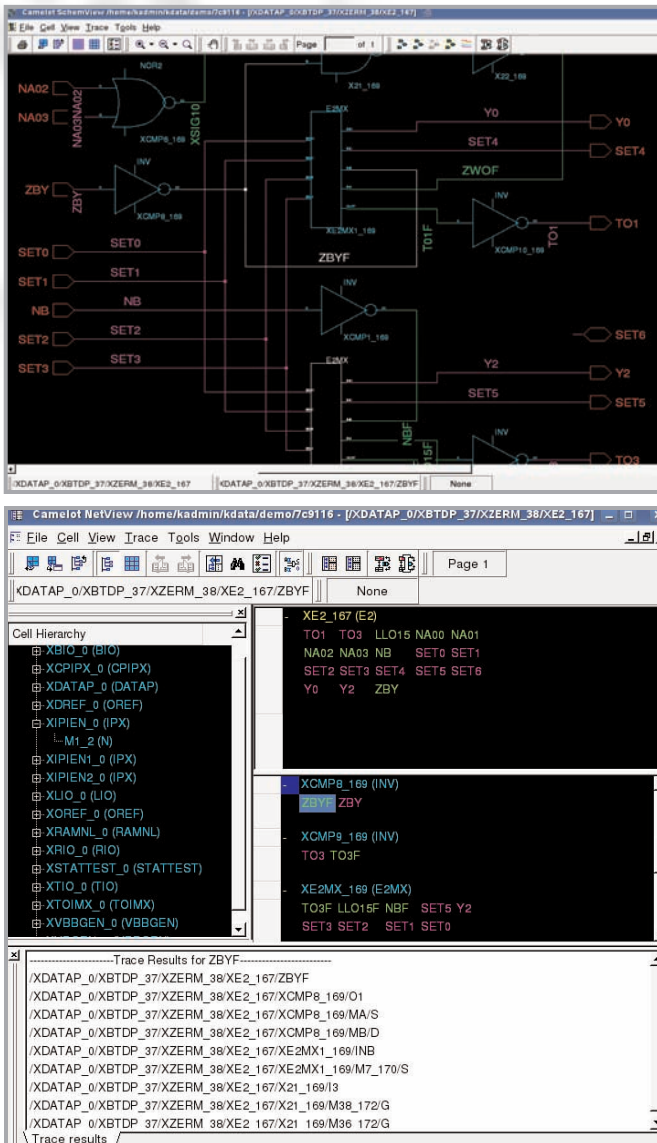
*Camelot CAD-navigation system integrating layout, schematic and fab defect data.*

Magma's Camelot software system is the next-generation CAD navigation standard for failure analysis, design debug and low-yield analysis. Camelot optimizes the equipment and personnel resources of design and semiconductor failure analysis (FA) labs by providing computer interfaces and navigation capabilities for more than 50 different types of analysis and test equipment. Its application tools, features, options and networking capability provide a complete, integrated system for fast and efficient investigation and resolution of inspection, test and analysis jobs. In addition, Camelot enables closer collaboration between product and design groups with FA labs, thus dramatically improving time to yield and market.

Camelot has the ability to import CAD design data from all the key LVS packages and several user-proprietary formats and provides visual representations of circuits that can be manipulated, rotated, exploded, searched and linked with ease.

A single tool converts layout, netlist and schematic data and establishes cross-mapping links between each data entity. Camelot speeds problem solving by cross-mapping between device nodes so that exact locations can be viewed by all three domains (layout, netlist and schematic) simultaneously.

# Knights Camelot



Camelot SchemView and NetView provide an easy way to navigate inside circuit schematics.

## Supporting all CAD Design Data

Magma is committed to remaining the dominant provider of software solutions that link all CAD design data. Camelot is a comprehensive package that reads all EDA tools and design data from verification systems and several user-proprietary formats. The Camelot database is designed to interface with all key LVS packages. In the past, many companies used Dracula in design verification. Today, there are more EDA developers and more verification package choices; Magma is the only company that supports all of them.

- Netlist Conversion: SPICE, EDIF, TEGAS, Verilog, Hercules
- Layout Conversion: GDSII, CIF, Dracula
- LVS Conversions: Cadence (Dracula, DIVA, Assura), Mentor Graphics (CheckMate, Calibre), Synopsys (Hercules)

Camelot users' highest priorities are data access and database capability. Camelot provides the optimal solution to the continually expanding needs of the FA lab and design debug team.

Ensuring data consistency is one of the key capabilities of Magma CAD navigation software. The unique design of the internal database structures guarantees that decades-old databases are still readable. This is an indispensable feature for all failure analysis, QA and manufacturing organizations, especially in the automotive industry.

## Providing Critical Analysis Functions

In addition to its CAD navigation and database capabilities, Camelot's analysis features have become indispensable to the FA lab. Different viewing options are critical in tracking potential failures and determining the source and origin of killer defects. Camelot includes special schematic capabilities and layout add-on features that are invaluable to FA engineers as they debug chips manufactured using new processes. The list below details some of the most popular software options.

**Defect Wafer Map** integrates defect inspection data with the device CAD design using the defect coordinates to navigate an equipment stage and pinpoint the defect for closer inspection and characterization. Camelot sorts defects by size, location or class, as well as layout location and allows the user to define custom wafer maps. Additionally, users can classify defects, attach images and write updated information to the defect files.

**SchemView** provides tracking of potential failures through visualization of the chip logic. Cross-mapped to the device layout and netlist, SchemView helps determine the source and origin of chip failures. The entire design is displayed in cell hierarchy format, allowing push-down to a transistor level. K-Bitmap identifies physical location of bit addresses in memory devices.

**I-Schem** (Interactive Schematic) creates a schematic from a netlist in a net-oriented format allowing forward and backward tracking to locate a fault. Features like Add Driver or Add Input Cone allow for quick analysis and verification of diagnostic results in scan chains.

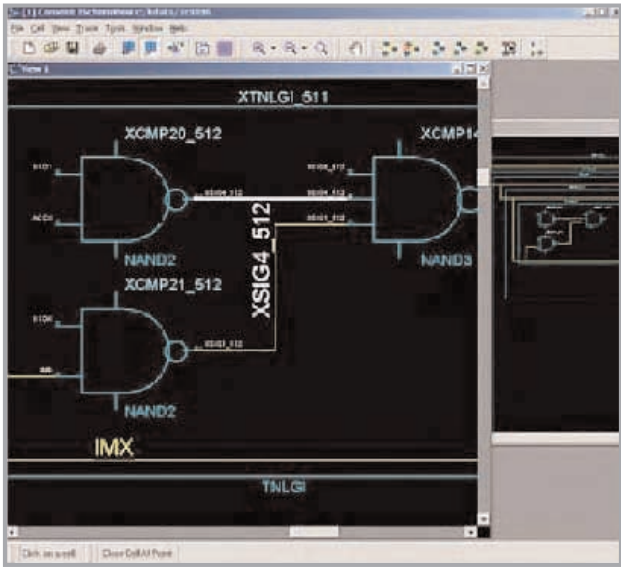
**K-Bitmap** allows equipment CAD navigation when analyzing memory chips by identifying the physical location of failing memory cells. It eliminates tedious screen counting by converting the logical addresses or row and column coordinates, to the physical location.

**3D Small-Area Analysis Option** provides a three-dimensional cross-section capability to FA engineers, enabling faster localization of circuit failures to accelerate IC manufacturing yield improvement.

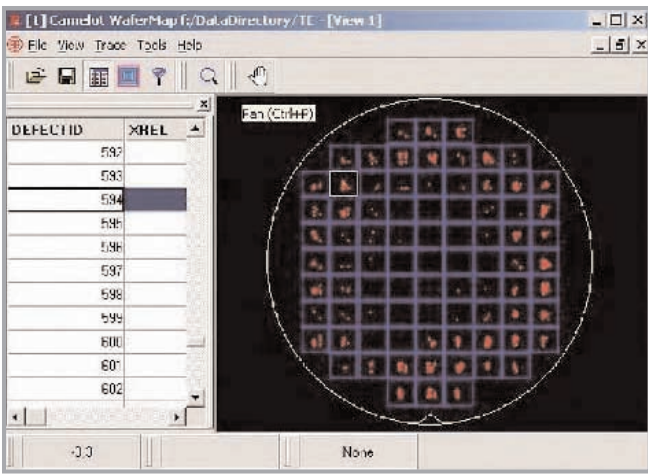
**Hot-Spot Analyzer Option** allows user to draw regions on the layout that correspond to hot-spot regions (emission spots) to detect the crucial nets. Counts of the number of nets in each hot-spot region and number of hot spots for each net are displayed.

**On-Line Search Analyzer Option** allows users to search a small area of a die for unique polygon features, repeated features or lack of features. Applications include, but are not limited to, FIB-able regions, repeaters, pattern fidelity and lithographic applications.

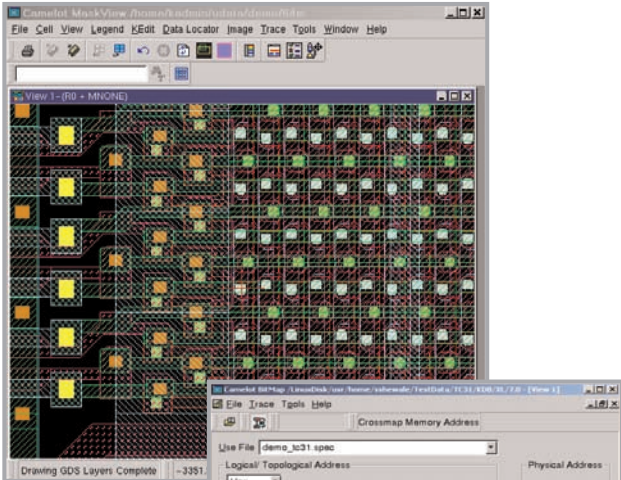
**Passive Voltage Contrast Checker (PVC) Option** quickly and accurately validates the integrity of a circuit's conductivity and provides detailed information for identifying suspect faults at via or metal traces.



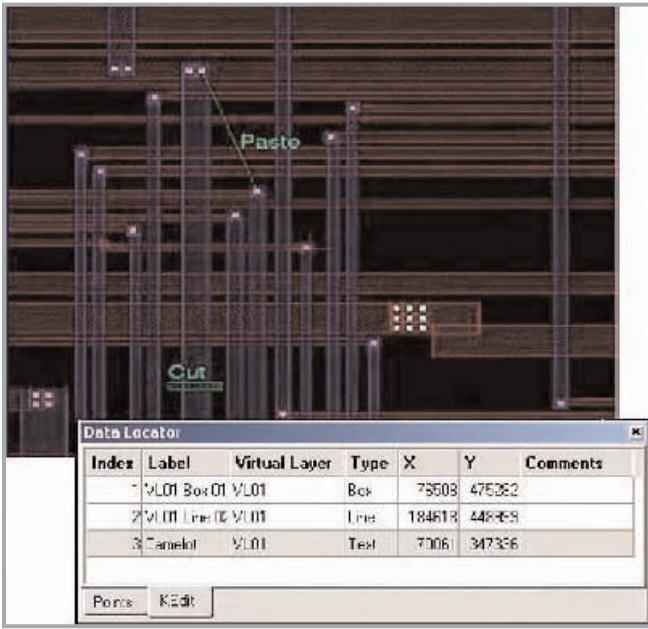
*I-Schem creates a schematic from a netlist*



*Defect Waver Map pinpoints defects for closer inspection and characterization*



*K-Bitmap identifies the physical location of bit addresses in memory devices*

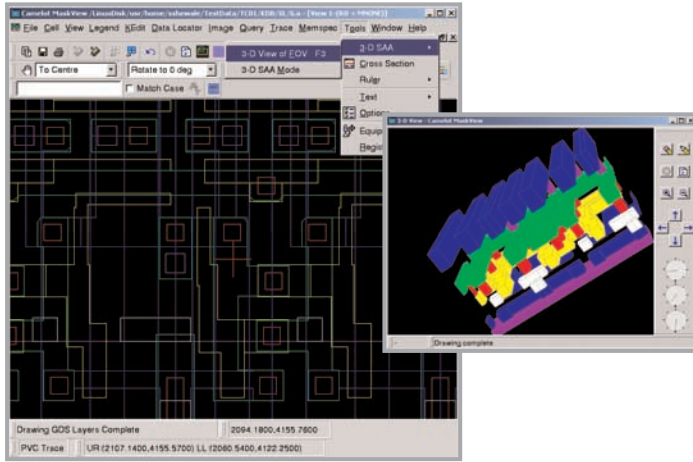


*K-Edit allows collaboration between design, fab and lab*

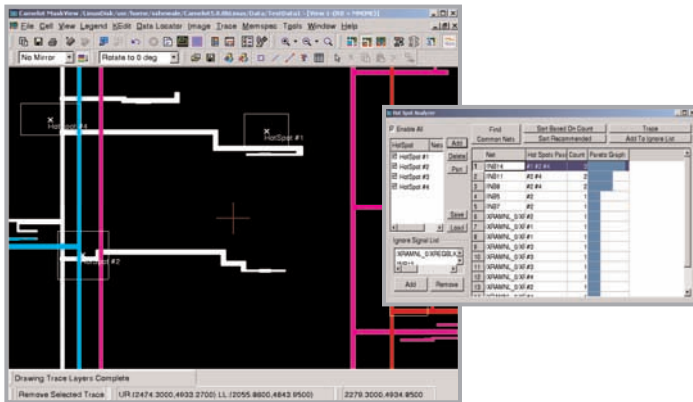


*Passive Voltage Contrast (PVC) Checker identifies suspect vias or metal traces*

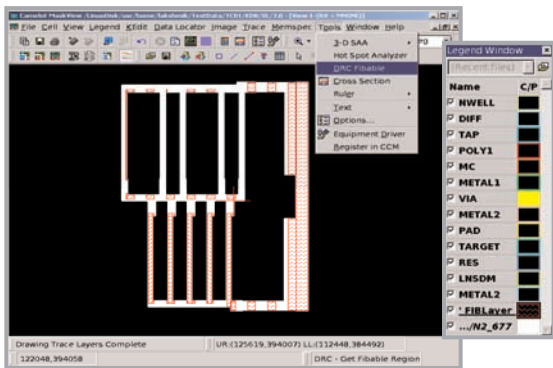
# Knights Camelot



3D Small-Area Analysis enables faster localization of circuit failures



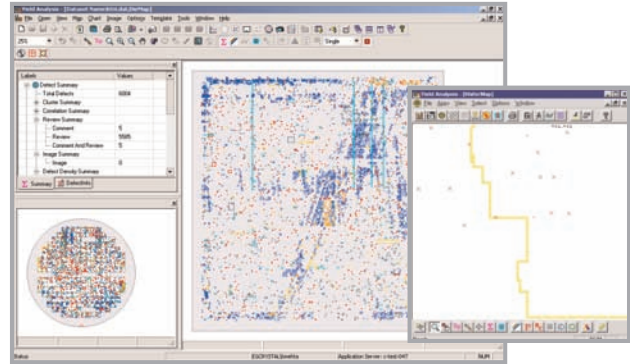
Hot-Spot Analyzer displays number of nets in a hot spot



On-Line Search Analyzer finds easy-to-access traces

## Tools Currently Supported by Camelot

- Analytical Probe Stations
- Atomic Force Microscopes
- E-Beam Probers
- IR Imaging
- Mechanical Stage Controllers
- Emission Microscopes
- Microanalysis Systems
- FIB Workstation
- Laser Probe
- LSM
- EDA LVS
- Microchemical Lasers
- OBIC Instruments
- Optical Review
- SEM Tools



Camelot's open architecture integrates with Magma's YieldManager (left) and LogicMap

## Camelot Server Solution

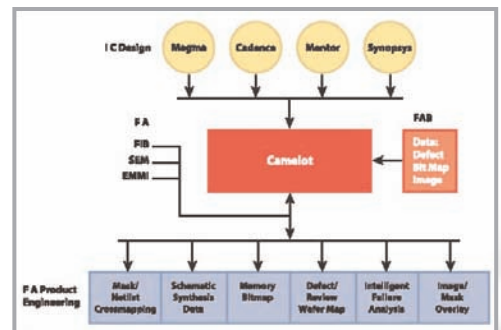
Magma's Camelot server solution brings all the advantages of enterprise-wide computing to chip FA and design modification. Camelot is a client/server, open architecture system that connects users over local and wide area networks for seamless integration and database sharing. Instrument integration throughout the fab and other locations throughout the enterprise enables viewing, modifying, characterizing and testing the same wafer location with different instruments, or the same location on wafers at different facilities using the same chip design.

Magma provides the industry's first commercially available solution for logic devices. Integration with Magma's LogicMap™ allows Camelot to overlay and correlate defect locations to failed net traces within a logic device. Integration with Magma's YieldManager® extends Camelot's yield enhancement ability to tie design to fab process, and to parametric and defect analysis, enabling true design for manufacturability collaboration.

## Complete, Up-to-Date Library of FA Tool Drivers

Camelot provides navigation for over 50 types of equipment.

With a continued commitment to supporting drivers for all types of test and analysis equipment, Magma will continue to develop driver interfaces for new tools as they are introduced to the market, as well as next-generations of existing tools.



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