![KLA+ logo]

Frontline InShop®

CAM-based analytics using machine learning and AI.

Frontline InShop®

Frontline InShop is a game-changing, CAM-based, analytics software solution that empowers ICS and PCB manufacturers to transform untapped production line and inspection equipment data into actionable insights through machine learning and artificial intelligence – improving quality and accelerating time to market.
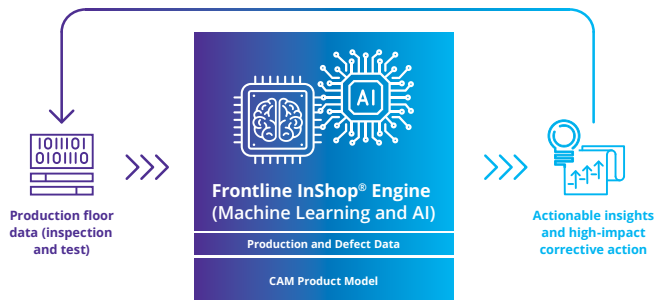
CAM-based analytics using machine learning and AI

Building on KLA Frontline's vast experience in semiconductors, ICS front-end manufacturing processes and CAM reference technology, Frontline InShop puts visual analytics at your fingertips – enabling high-impact corrective action that shortens new product introduction, increases yield and reduces your total cost of ownership.

Shorten NPI TTM

**Maximize Yield in Mass Production**

Reduce TCO

Data analytics within the context of your product

As the only analytics solution to perform analytics within the context of the product, Frontline InShop flags the data that most impacts your business and correlates production data to the end product, delivering a unique contextual awareness for driving effective problem-solving.

Production floor data (inspection and test)

Frontline InShop® Engine (Machine Learning and AI)

Production and Defect Data

CAM Product Model

Actionable insights and high-impact corrective action

- Advanced CAM-based data analytics within the real context of your product.
- AI and machine learning-based actionable insights to proactively address quality issues.
- Targets end-to-end processes and focuses on the end of the line.
- Yield-based prioritization of corrective actions.

Cross-departmental and CAM data analytics

AOI

AOS

CAM

VRS

Electrical Testing

Frontline InShop® Engine
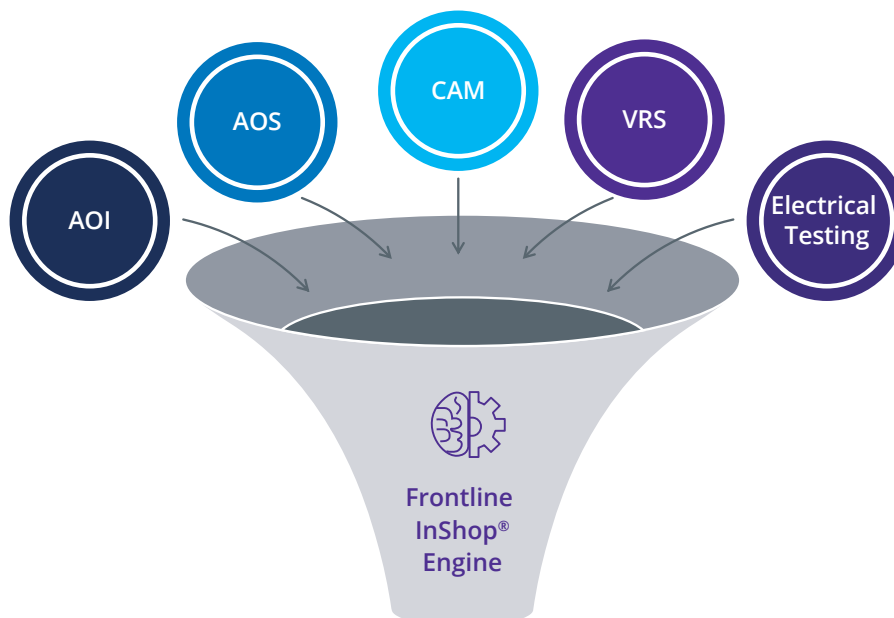
Why Frontline InShop®?

Data analytics with end-product context CAM reference

The only solution that performs data analytics with end-product context CAM reference to help solve yield problems.

Powerful cross-departmental analytics

Merges cross-departmental data and CAM-based analytics, offering insights that are accurate and actionable.

Harness best practices of advanced PCB manufacturing

Enabled by our vast experience in semiconductors, ICS front-end manufacturing processes and CAM reference technology.

Machine learning and AI algorithms

Our CAM-based Electrical Testing and AOI data analytics is based on machine learning and AI algorithms, enabling advanced data exploration capabilities.

Seamless connectivity to machines and vendors

Seamless connectivity to multiple machines and vendors, with numerous sites and hundreds of connected machines.

Fully-scalable big data infrastructure

Big data infrastructure stores massive, versatile data over time.

A One-stop Solution for Electrical Testing and AOI

Electrical Testing

Electrical Testing Homepage

Quickly identify the most problematic lots (defects and nets), the relative success of the current lot in comparison to previous ones, and the relative performance of the Electrical Testing department in general.

Electrical Testing Job Inspection

View panel, array, jig and unit-level Electrical Testing failure unit heat maps. Zoom in on failures and nets. On unit-level heat maps, select the net to highlight the required net pattern on related layers. Job Inspection shows AOI defects on the net pattern by unit level.

AOI

AOI Job Inspection

CAM-based analysis

View comparative data to identify potential root causes. Show defects on the selected CAM feature (line, drill) to make analysis easier.

Interactive defect gallery

See defect distribution on high-resolution CAM images: large-sized album of video and gray-level images.

Defect heat map and distribution view

See the distribution of repeated defects and the number of repetitions; view repeating defects on multiple panels.
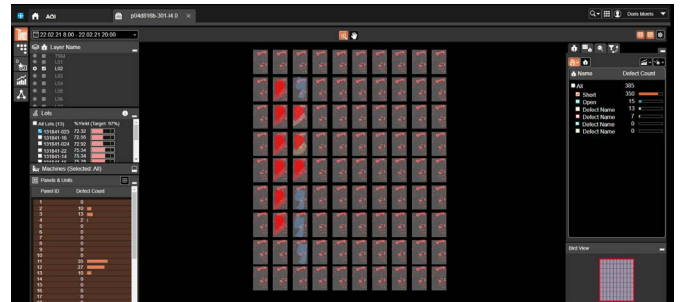
General

Yield Center

- Keep track of yield and identify quality reduction.
- See yield status for internal and external customers (OEMs).
- Get aggregated yield calculation to save engineering time.
- Automate data collection and analysis processes as part of OEM line certification.
- X-out yield calculation customers' personalized needs.

Data Sharing

- Transfer data by schedule or request; transfer AOI defect data and images.
- Generate DFF and DEF reports.
- Enable data exchange to third-party software.

Dashboards

Intuitive defects pareto charts help locate the defects to prioritize. Trend analysis charts show defect trends over time.

InShop® Workflow

1 Identify Yield Problem >>>>> **2** Root Cause Exploration >>>>> **3** Track Resolution and Results

 Identify yield issue

 Search problematic panels and defects by lot, layer or panel

Percentage by defect types

 Check heatmap defects and failing nets

 Check defect and net failure distribution

 AOI, VRS, RMIV Pro and AOS images

 Advanced analytics

 Time-based dashboards

 End-customer and designer reports

Ongoing reporting