

Single-device assembly traceability without ECIDs - connected directly to **manufacturing analytics**.



Assembly Traceability & Analytics Platform

Exensio® Assembly Operations delivers **SEMI E142-compliant single-device traceability** through assembly and packaging without ECIDs, feeding process and yield data directly into **manufacturing analytics** for rapid root cause analysis.

Problem with **Status Quo**

Teams rely on lot-level tracking or ECID-based approaches — missing **die-level failures**, triggering costly **full-lot recalls**, with no direct data path from assembly equipment to **yield analytics**.

Solution Highlights



Trace every device through assembly **without ECIDs**



Isolate failures to **specific devices** at any stage



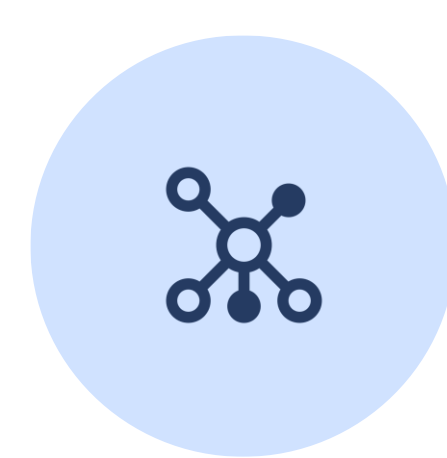
Connect assembly data directly to **yield analytics**

Components



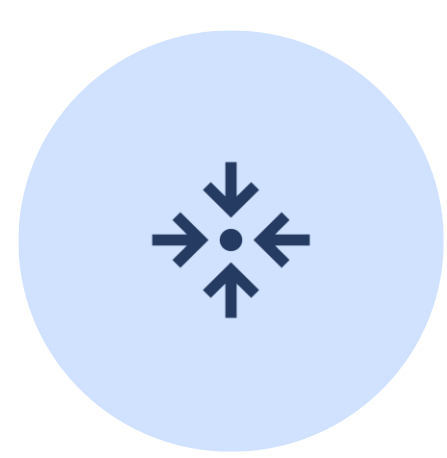
Single Device Tracking

Maps **individual die from wafer to package** without ECIDs via **SEMI E142**.



Bin Code Mapping

Tracks **bin codes** at each step to **block defect progression** through packaging.



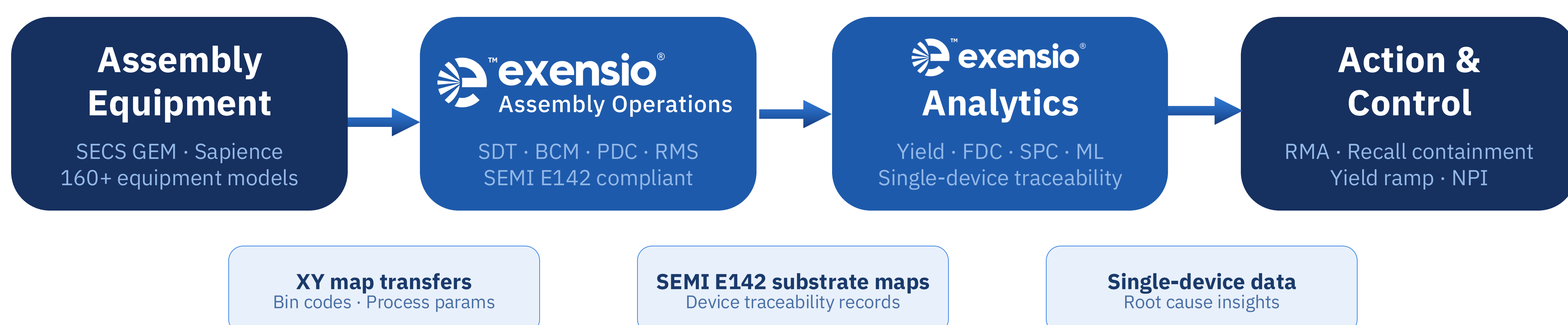
Process Data Collection

Captures **process conditions and consumables** per tool event to enable **FDC and SPC**.



Equipment Integration

Connects to assembly equipment via **SECS GEM and Sapience** for **real-time data capture**.



Foundation: SEMI E142 Standard (E40 · E90 · E120 · E142) — Exensio DB stores all traceability records in real time

Use Cases

MCM Die Matching Without ECIDs

A mobile OEM deployed **Exensio® Assembly Operations** across primary assembly and supply chain sites to enable **parametric die matching** in multi-chip modules where no die supported ECID.

Single-device tracking fed wafer test parameters forward to final test, unlocking yield previously unachievable.



Challenge

Die matching at final test required **per-device wafer parametric data**, but none of the die in the MCM supported ECID.



Result

Single-device traceability across sub-contractors enabled **parametric die matching** and target package yield.



Challenge

Lot-level tracking on 5,000+ unit lots meant any device failure required **full scrap or recall** — costing ~\$25M per incident.



Result

Root cause isolated to **100–200 devices per incident**; customer achieved full ROI in under one year.

MCM Recall Containment

A medical device OEM deployed **Exensio Assembly Operations** at their OSAT facility to trace six-die MCMs **without ECIDs**.

Single-device tracking confined failures to 100–200 units per incident, converting costly full-lot recalls into **targeted containment** with ROI under one year.

5x

faster RMA response

10x

fewer recall units

10%

reduction in yield loss

results based on typical Exensio customers

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