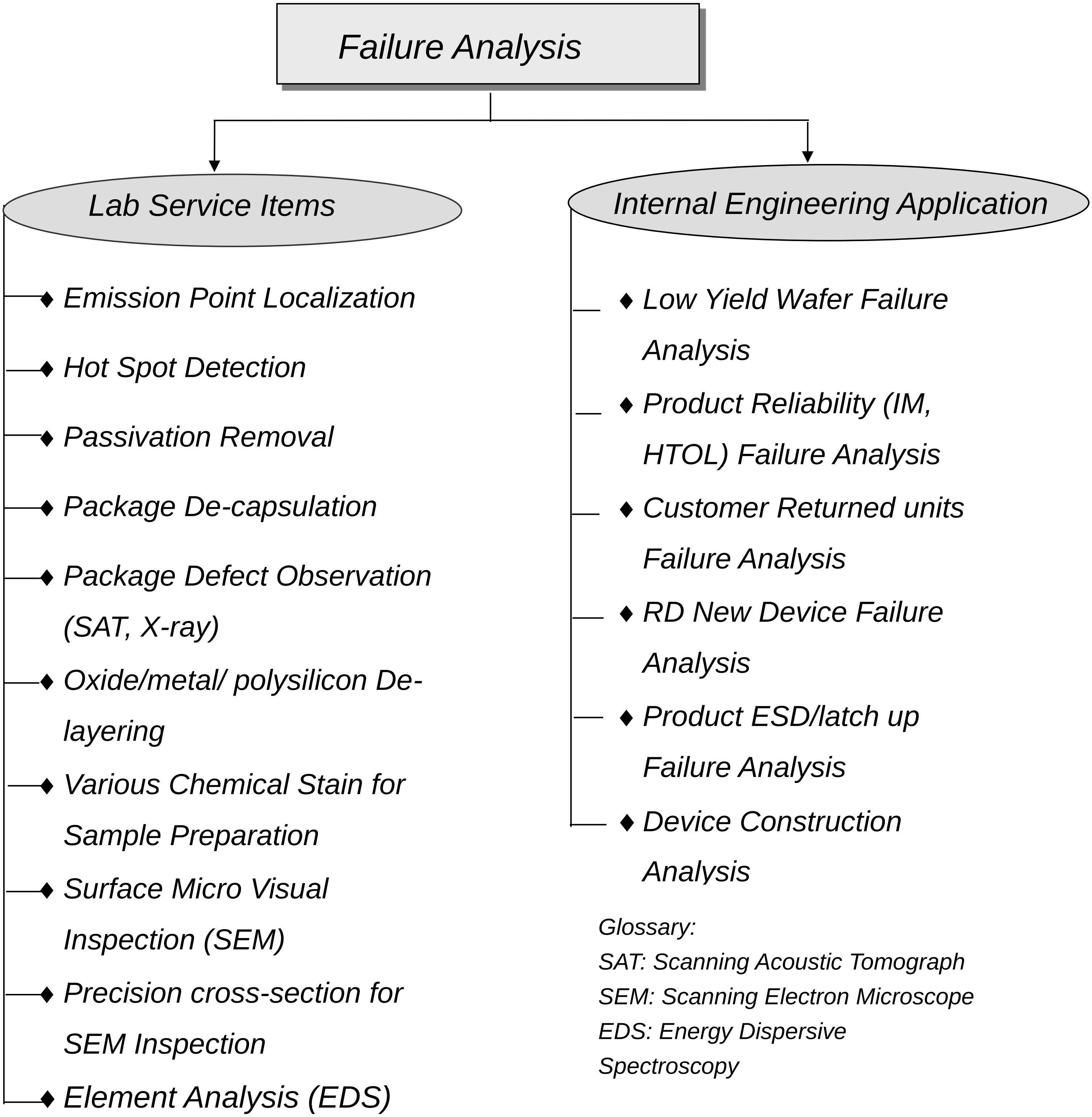
Failure Analysis Function

The failure analysis function can be divided into two major categories. One is “Lab Service Items ” and the other is “Internal Engineering Application”. The detailed contents are listed in Figure 1.



Failure Analysis

Lab Service Items

- *Emission Point Localization*
- *Hot Spot Detection*
- *Passivation Removal*
- *Package De-capsulation*
- *Package Defect Observation (SAT, X-ray)*
- *Oxide/metal/ polysilicon De-layering*
- *Various Chemical Stain for Sample Preparation*
- *Surface Micro Visual Inspection (SEM)*
- *Precision cross-section for SEM Inspection*
- *Element Analysis (EDS)*

Internal Engineering Application

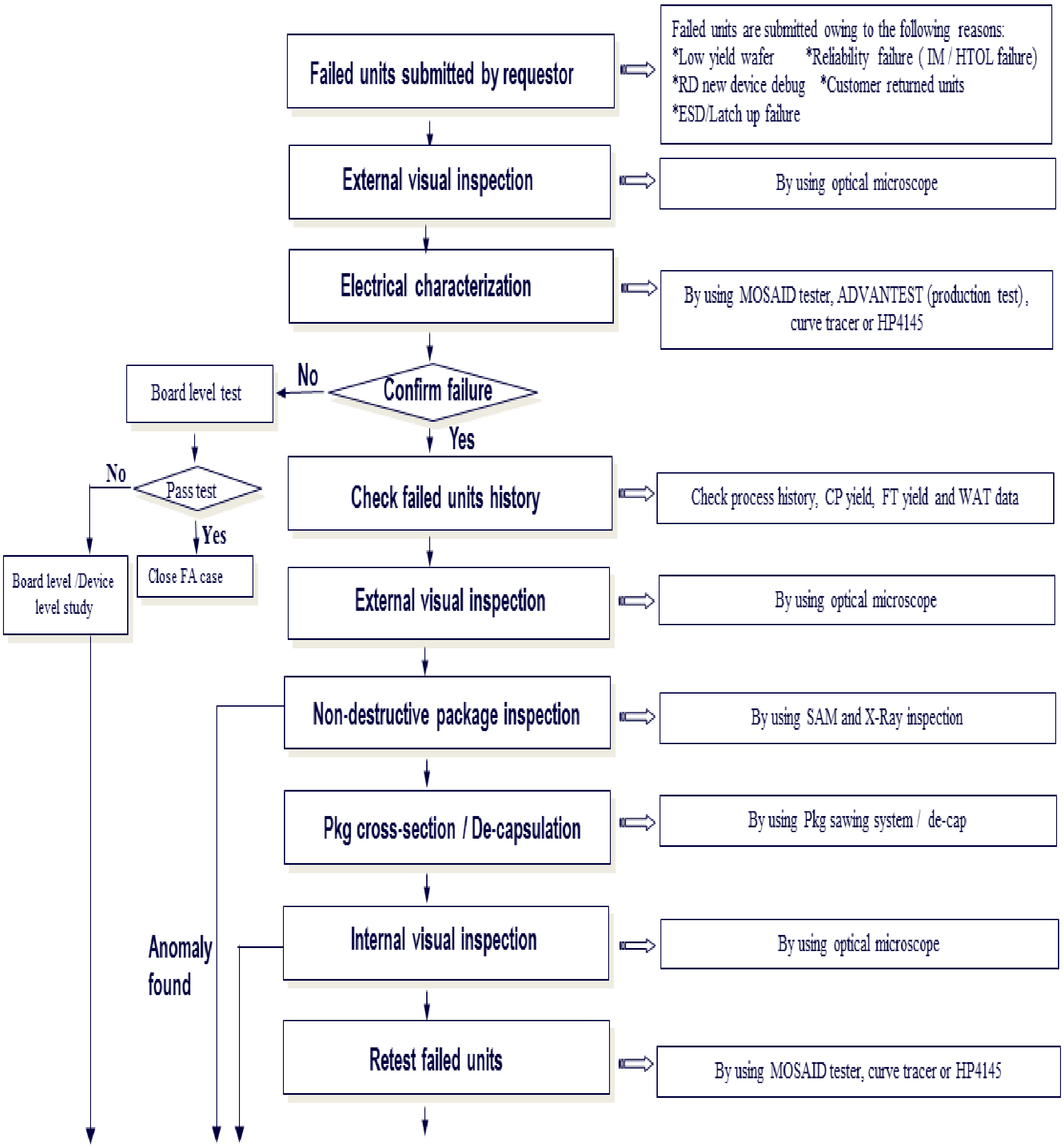
- *Low Yield Wafer Failure Analysis*
- *Product Reliability (IM, HTOL) Failure Analysis*
- *Customer Returned units Failure Analysis*
- *RD New Device Failure Analysis*
- *Product ESD/latch up Failure Analysis*
- *Device Construction Analysis*

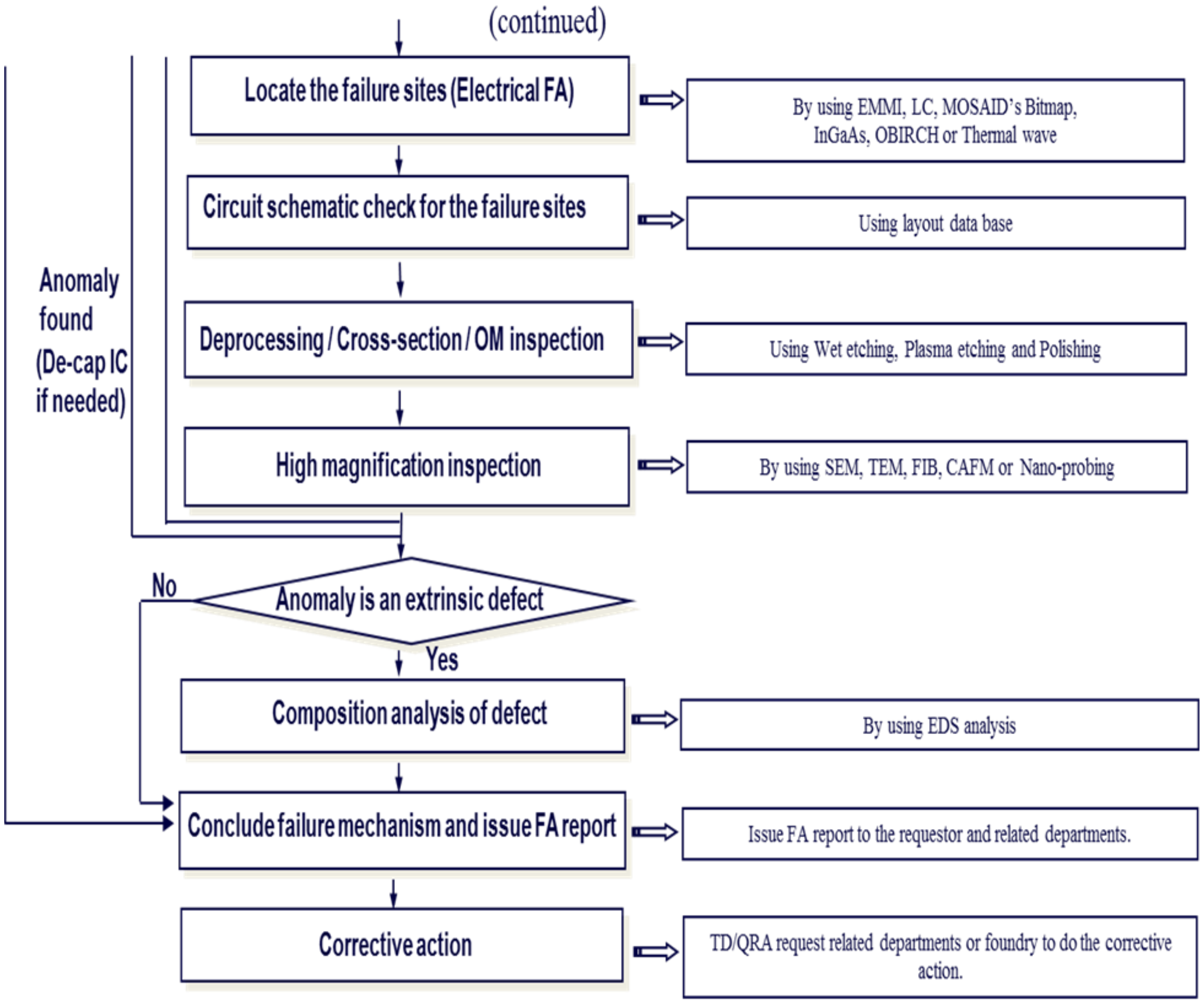
Glossary:
SAT: Scanning Acoustic Tomograph
SEM: Scanning Electron Microscope
EDS: Energy Dispersive Spectroscopy

Figure 1 Failure Analysis Function

Failure Analysis Flow

A general failure analysis procedure is shown in Figure 2. The method demonstrated in the flow chart is utilized for all failure analyses.





GLOSSARY:

SAM: Scanning Acoustic Microscope
EMMI: Emission Microscope with Si detector
LC: Liquid Crystal
InGaAs: Emission Microscope with InGaAs detector
OBIRCH: Optical Beam Induced Resistance Change
CAFM: Conductive Atomic Force Microscope

OM: Optical Microscope
SEM: Scanning Electron Microscope
TEM: Transmission Electron Microscope
FIB: Focus Ion Beam
EDS: Energy Dispersive Spectroscopy
FA: Failure Analysis

Figure 2 Failure Analysis Flow