TABLE 1. Issues relating to reliability modeling.

AREA OF CONCERN	ISSUES	DRIVER (PRODUCT SECTOR)
Solder joint life under thermal and vibration loading	■ Failure method, criterion under field condition ■ Lead-free complexity ■ Microstructure dependency of small joints on fatigue life prediction	All
Drop / impact simulations	■ Fast transients ■ No experimental database ■ Complex system-level formulation ■ Customer handling conditions	Portable/ consumer
Interfacial delamination	■ Poor predictability ■ Temperature-dependent properties ■ Research in crack nucleation & propagation needed	All
Material property characterization	■ Thin films ■ Lead-free solders	All
Moisture diffusion modeling	■ Availability of diffusion modeling tools ■ Analysis of hydro/thermo/mechanical combination capability ■ Transient/dynamic analysis ■ Linkage with delamination	All