

# **Bridging the Reliability Chasm: Applying AI-Driven Predictive Forensics to Qualify Electronics for Military & Space Environments**

Eisuke Tsuyuzaki

Bayflex Solutions

[etsuyuzaki@bayflectechnologies.com](mailto:etsuyuzaki@bayflectechnologies.com)

Military and space applications increasingly utilize COTS components and novel flexible hybrid electronics (FHE). Traditional pass/fail testing is insufficient for scaling production reliability because it provides no trend data on material degradation (micro-fissures, delamination) or solder joint fatigue on rigid PCBs. This presentation introduces an AI-integrated platform that shifts from reactive testing to predictive durability. We adapt "Agentic AI" modules for advanced anomaly detection and standardized protocols. This framework ensures forensic-grade mass reliability for non-hermetic components and COTS parts, enabling confident technology insertion into mission-critical systems and helping manufacturers cross the chasm from experimental designs to trusted, high-volume production.