RAICS™
Security for Microelectronics

Microelectronics are the heart of most critical assets. Vulnerabilities in the microelectronics global supply chain pose a threat to national security and public safety. Many mission critical systems rely on commercial off-the-shelf (COTS) components and printed circuit boards (PCBs).

PCBs host COTS devices from hundreds of authorized and non-authorized distributors worldwide. This poses a real risk to being compromised by tampering, modification, or counterfeit elements before installation into government assets.

To fully evaluate a mission critical PCB for potential risks and ensure security and trust, each PCB must be inspected. Currently, this can take hours of tedious inspection for each device and produces unorganized risk profiles subject to human error.

Battelle has developed a technology solution to this problem, the RAPID ASSEMBLY INSPECTION FOR COTS SECURITY or RAICS.

Battelle RAICS

RAICS is the first automated, non-destructive, hardware and software solution to quantify the trust and assurance of COTS PCB assemblies and enable direct integration the PCB supply chain into locations such as PCB manufacturing facilities, repair depots, and test and integration facilities.

Reduce time and cost in your supply chain security inspections and verification.

RAICS utilizes a data-driven, in-line test approach to quantify the cyber risk of PCB assemblies, enables a direct integration into logistics depots and platform assembly locations, and supports the needs of emerging zero trust cyber supply chain requirements.
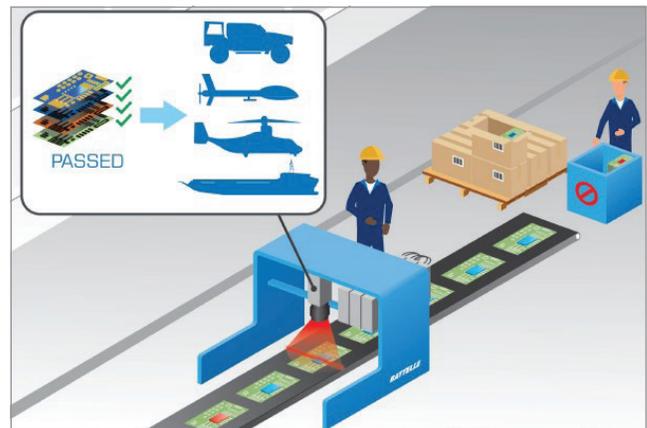
RAICS provides assembly line and depot analysis of PCBs to increase supply chain velocity of assured electronics components

As an integrated hardware and software solution, RAICS is designed specifically to assess PCB trust and assurance, minimize the search space for threats, reduce the inspection time from hours to minutes, and standardize the risk reporting process with bill-of-material (BOM) generation and quantified anomaly maps.

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HOW IT WORKS

Battelle RAICS tests and verifies COTS boards and applies sensor fusion to a myriad of sensing modalities to create a unique multimodal signature of a printed PCB assembly. This signature includes the individual components, architectural relationships, manufacturer markings and other identifying characteristics. The future state of the system is planned to scale up to accommodate larger assemblies, an in-line conveyor configuration, and additional analysis software plugins.

The digital signature enables identification of a compromised or anomalous device among its duplicates. By comparing the signature to a database of known device components, we can identify probable anomalies and counterfeit boards and components, even in the absence of a "golden reference" sample for comparison.

Data is stored on a secure, scalable database of known devices and microelectronic components, and outputs are accessible via a custom API and integrated with your supply chain tools and supply chain risk models.

Why Battelle RAICS

RAICS is an automated, repeatable, and scalable solution to inspect and verify third-party PCBs after production and before they are integrated into mission-critical systems.

This leading-edge technology provides security and peace of mind. It quantifies your supply chain risk with our multimodal system and automates analytics for reliable verification you can depend on.
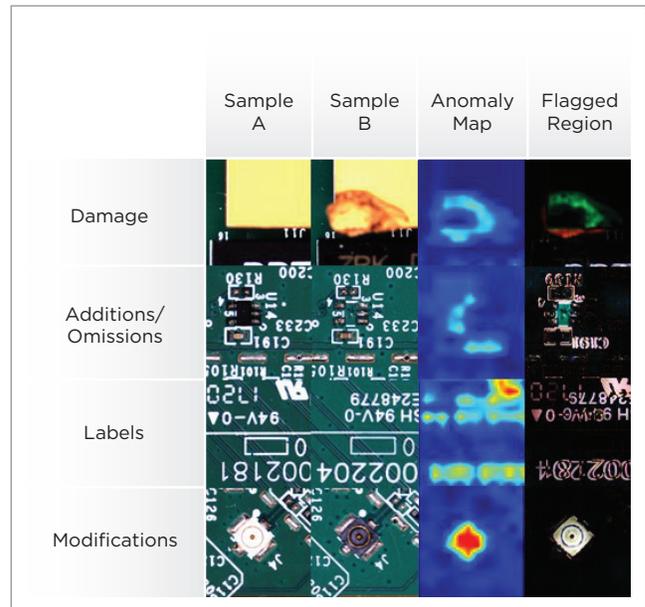
Table showing example anomalies detected by RAICS with the general anomaly category along the left and the data type above.

RAICS captures images of samples A and B, then produces the anomaly map and flagged region images to minimize the search space for supply chain threats and optimize inspection throughput

Contact us to learn about our IP licensing opportunities today.
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Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio since its founding in 1929, Battelle serves the national security, health and life sciences, and energy and environmental industries. For more information, visit www.battelle.org.

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It can be done