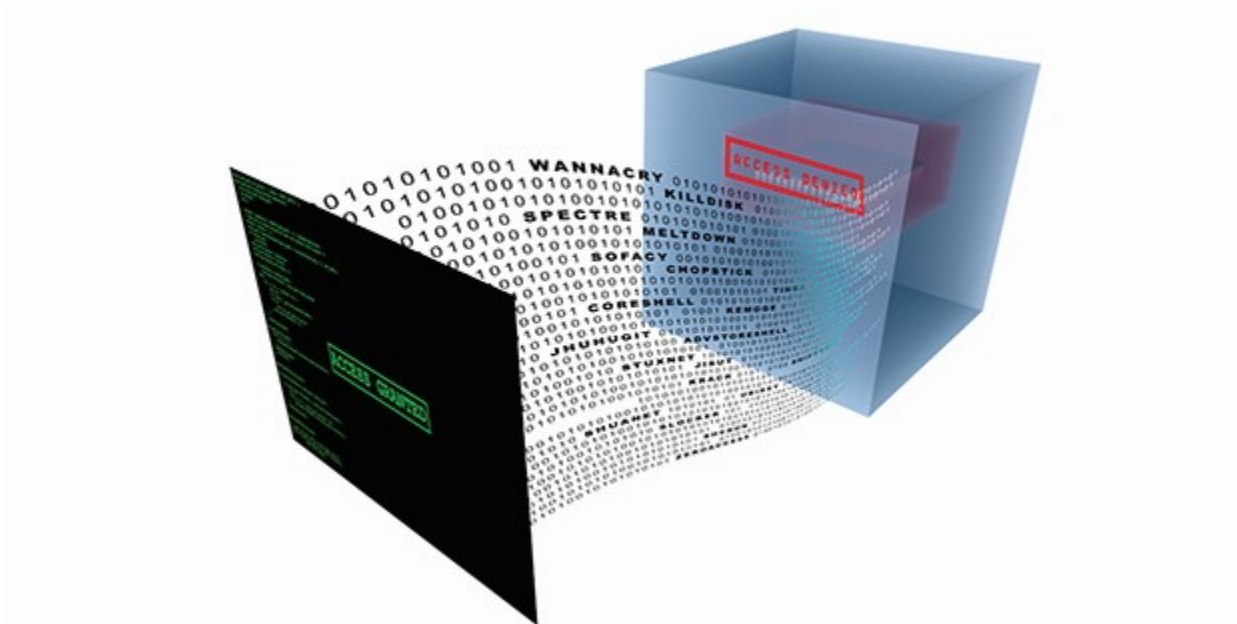


System Security Integration Through Hardware and Firmware (SSITH)

[Mr. Keith Rebello](#)



Electronic system security has become an increasingly critical area of concern for the DoD and more broadly for security of the U.S. as a whole. Current efforts to provide electronic security largely rely on robust software development and integration. Present responses to hardware vulnerability attacks typically consist of developing and deploying patches to the software firewall without identifying or addressing the underlying hardware vulnerability. As a result, while a specific attack or vulnerability instance is defeated, creative programmers can develop new methods to exploit the remaining hardware vulnerability and a continuous cycle of exploitation, patching, and subsequent exploitations ensues.

The System Security Integration Through Hardware and Firmware (SSITH) program seeks to break this cycle of vulnerability exploitation by developing hardware security architectures and associated design tools to protect systems against classes of hardware vulnerabilities exploited through software, not just vulnerability instances. Areas of exploration that are targeted by SSITH include anomalous state detection, meta-data tagging, and churning of the electronic attack surface. The goal of the program is to develop ideas and design tools that will enable system-on-chip (SoC) designers to

safeguard hardware against all known classes of hardware vulnerabilities that can be exploited through software, such as exploitation of permissions and privilege in the system architectures, memory errors, information leakage, and code injection. To accomplish its goal, SSITH seeks to encourage collaboration between research teams, commercial teams, and traditional DoD performers to provide robust and flexible solutions applicable to both DoD and commercial electronic systems.

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