

Software Assurance Concept of Operations: Advancing Software Assurance in the Modern Age – Part 1

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Software-Enabled Systems Are Today's Strategic Resource



Dr. Bill Scherlis*

“Software is the building material for modern society”

Software



Oil



Steam



Water



Manual Labor

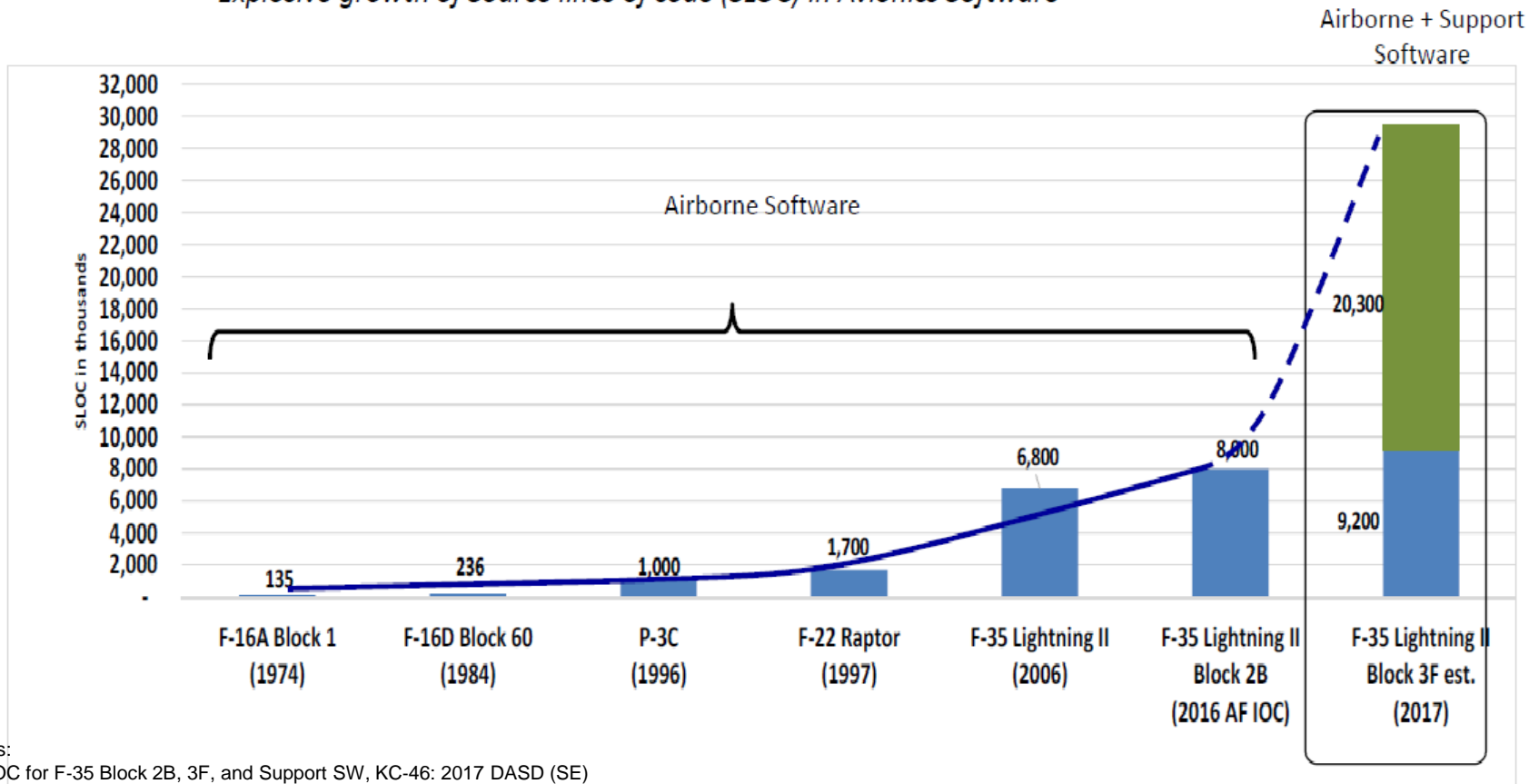


Increasing Globalization, Productivity, and Complexity



DoD Software Growth

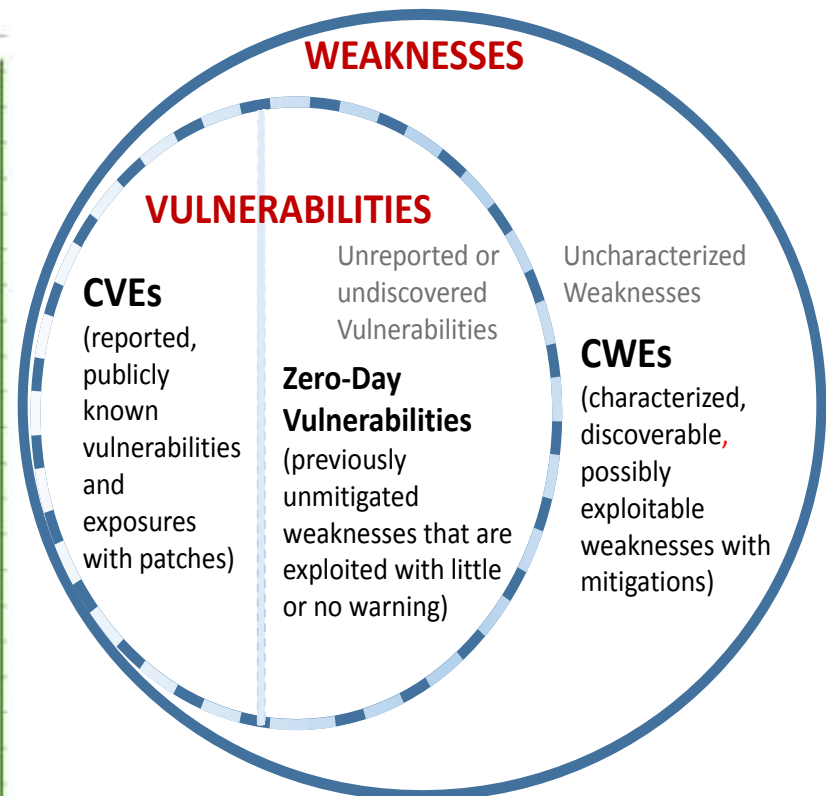
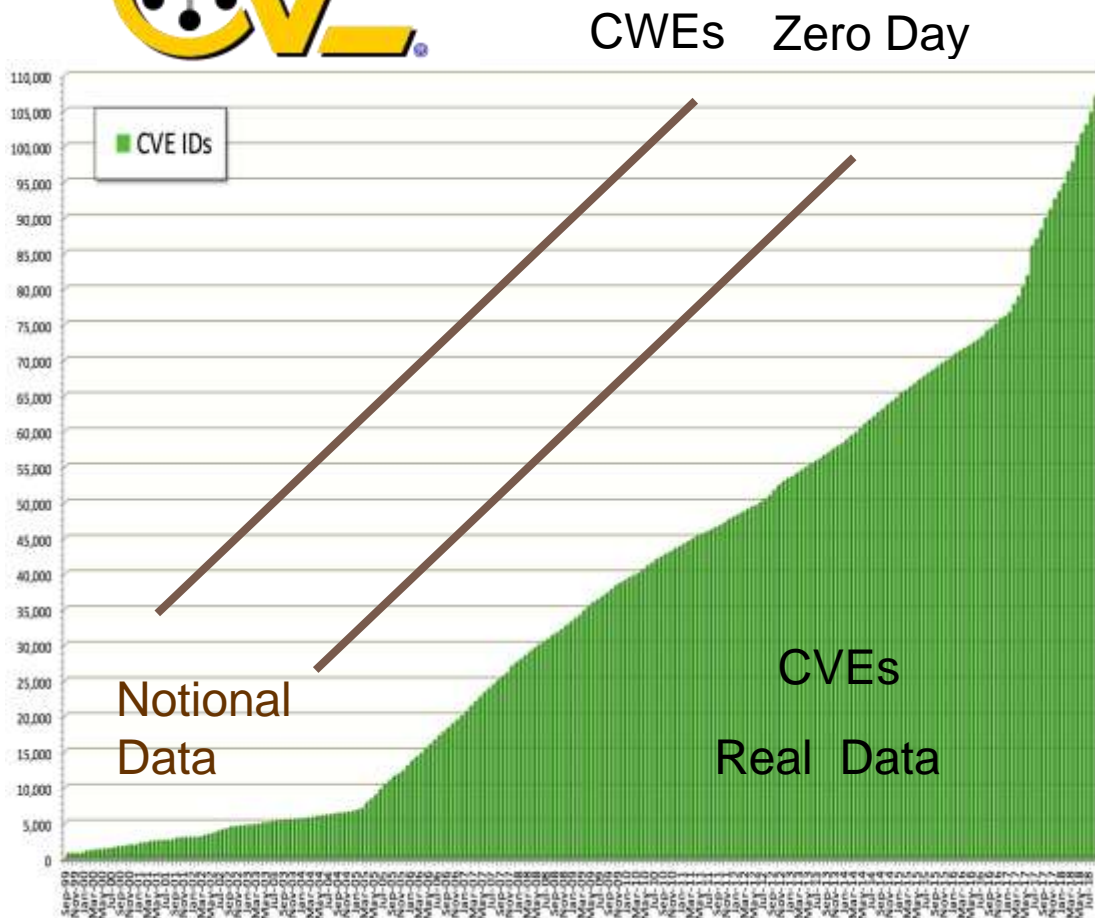
- DoD Software complexity and size rapidly growing
Explosive growth of Source lines of code (SLOC) in Avionics Software



Sources:

- SLOC for F-35 Block 2B, 3F, and Support SW, KC-46: 2017 DASD (SE)
- SLOC for F-16 and F-22 are at first operation flight: C. Hagen et al. (2012). *Software: The Brains Behind US Defense Systems*. Chicago, IL: A. T. Kearney.
- P. A. Judas & Lorraine E. Prokop. (2011). A historical compilation of software metrics with applicability to NASA's Orion spacecraft flight software sizing. *Innovations in Systems and Software Engineering*, 7(3), 161-170.
- DoD Defense Science Board. (2018). *Study Design and Acquisition of Software for Defense Systems*. Washington, DC: OSD R&E.

CVE 1999 to 2018: Reported Common Vulnerabilities and Exposures (CVE)



Source: Dr. Robert A. Martin, MITRE Corporation, August 2018

PM's and Developer's Guidebook for Software Assurance*



- Identifies PM software assurance responsibilities critical in defending software-intensive systems
- Presents actions a PM must take to ensure that software assurance is effectively addressed throughout the acquisition lifecycle.
- Aligns with the Software Assurance Concept of Operations



- Helps software developers understand expectations for software assurance.
- Summarizes standards and requirements that affect software assurance decisions and provides pointers to key resources that developers should consult.

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