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Information technology — Cybersecurity — Secure software development framework

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ISO copyright office
CP 401 • CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
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Foreword (This foreword is not part of American National Standard INICTS 585-2025.)

The Secure Software Development Framework describes a core set of high-level secure software development practices that can be integrated into any software development life cycle (SDLC) implementation. Following such practices should help software producers reduce the number of vulnerabilities in released software, reduce the potential impact of the exploitation of undetected or unaddressed vulnerabilities, and address the root causes of vulnerabilities to prevent future recurrences. Because the framework provides a common vocabulary for secure software development, software acquirers can also use it to foster communications with suppliers in acquisition processes and other management activities. This standard was developed by Technical Committee Cybersecurity and Privacy of Accredited Standards Committee INCITS during 2023-2024. The standards approval process started in 2023.

Requests for interpretation, suggestions for improvements or addenda, or defect reports are welcome. They should be sent to the INCITS Secretariat, Information Technology Industry Council, 700 K St NW, Suite 600, Washington, DC 20001.

This standard was processed and approved for submittal to ANSI by the InterNational Committee for Information Technology Standards (INCITS).

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Introduction

A software development life cycle (SDLC) is a formal or informal methodology for designing, creating, and maintaining software (including code built into hardware). There are many models for SDLCs, including waterfall, spiral, agile, and agile combined with software development and IT operations (DevOps) practices. Regardless of which SDLC model is used, secure software development practices should be integrated throughout it for three reasons: to reduce the number of vulnerabilities in released software, to reduce the potential impact of the exploitation of undetected or unaddressed vulnerabilities, and to address the root causes of vulnerabilities to prevent recurrences. Vulnerabilities include not just bugs caused by coding flaws, but also weaknesses caused by security configuration settings, incorrect trust assumptions, and outdated risk analysis.

Most aspects of security can be addressed multiple times within an SDLC, but in general, the earlier in the SDLC that security is addressed, the less effort and cost is ultimately required to achieve the same level of security. This principle, known as shifting left, is critically important regardless of the SDLC model. Shifting left minimizes any technical debt that would require remediating early security flaws late in development or after the software is in production. Shifting left can also result in software with stronger security and resiliency.

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Information technology — Cybersecurity — Secure software development framework

1 Scope

This document provides a framework for secure software development practices.

2 Normative references

There are no normative references in this document.

3 Terms and definitions and abbreviations

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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3.1
artifact
piece of evidence

Note 1 to entry: Artifacts provide records of secure software development practices.

3.2
environment
context determining the setting and circumstances of all influences upon a system

[SOURCE: ISO/IEC/IEEE 42010:2011]

3.3
provenance
information on the place and time of origin, derivation or generation of a data set, proof of authenticity of the data set, or a record of past and present ownership of the data set

[SOURCE: ISO/IEC 11179-33:2023. 3.11, modified – references to the definition of data set have been removed.]

3.4
secure software development framework
high-level practices based on established standards, guidance, and secure software development practice documents

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