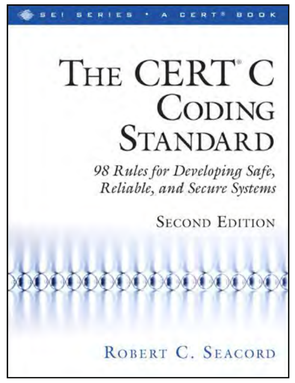
# Increasing Adoption of Secure Coding

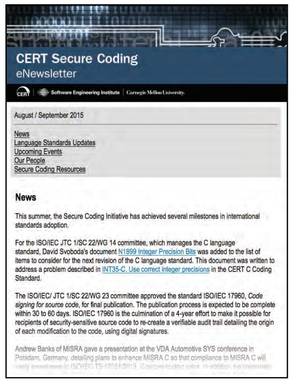
**Coding standards are an integral part of the secure software development lifecycle and increasingly a requirement. Proper coding results in fewer weakness, fewer vulnerabilities, and reduced costs for cyber protection. This research provides the foundational prescriptive rules as well as practical support for putting the rules into practice.**

**The Definitive Reference for C Programs**




The definitive reference for prescriptive guidance in writing C programs

**CERT Bimonthly Secure Coding eNewsletter**




Over 1,600 contributors provide input and updates to the coding rules wiki.

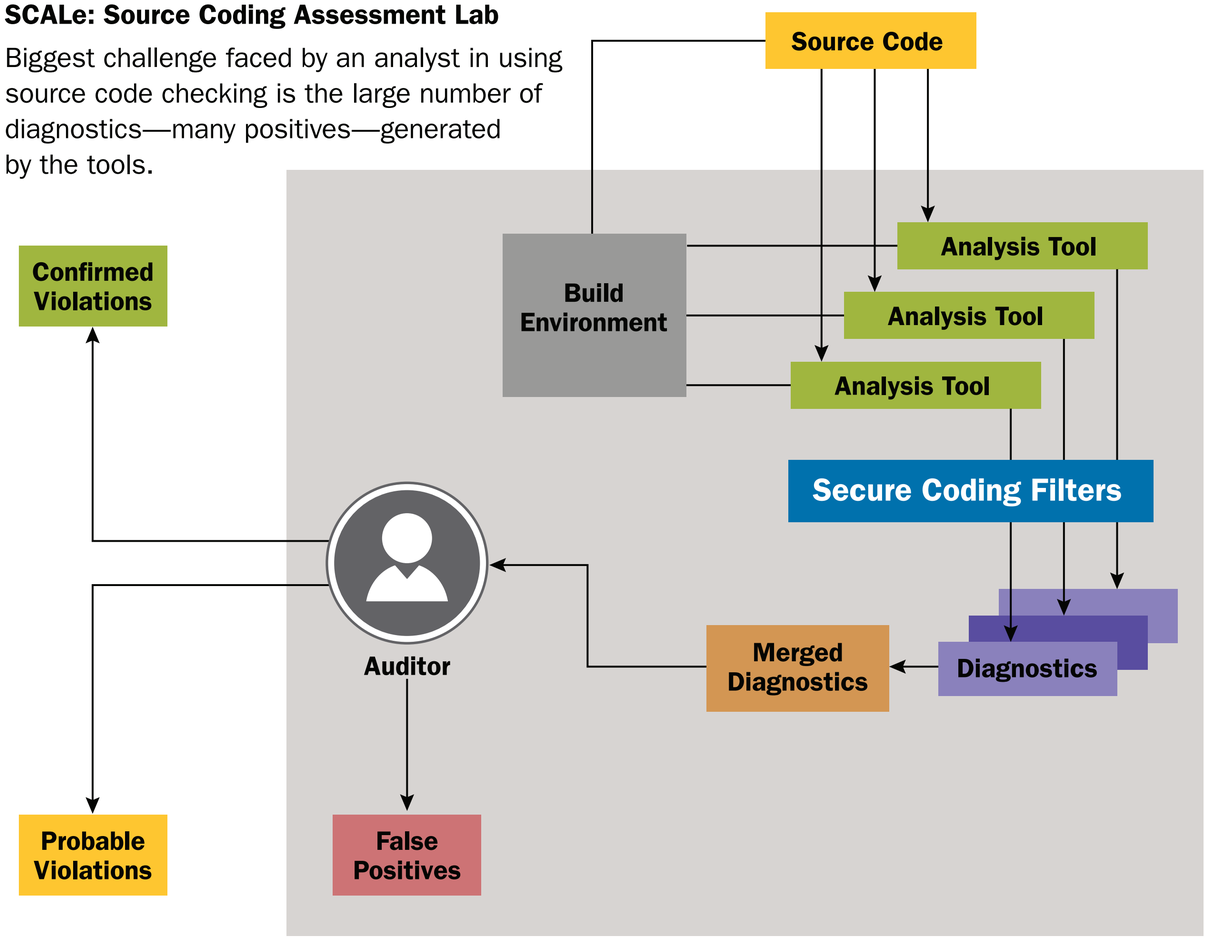
**Providing the foundational rules for coding.** The project's research has provided foundational rules for programming in C and Java.

The current project extends the rules to encompass new programming models—threads—and the updated C/C++ language:

- 25 new rules in FY15 specifying C and C++ weaknesses
- 99 rules dedicated to C-specific weaknesses
- 74 rules dedicated to C++-specific weaknesses (148 total rules when including overlapping C rules)
- 9 new unspecified behaviors in C threads

## SCALe: Source Coding Assessment Lab

Biggest challenge faced by an analyst in using source code checking is the large number of diagnostics—many positives—generated by the tools.




SCALe makes expert review more productive by focusing on high priority violations out of the volume of diagnostics provided by tools.

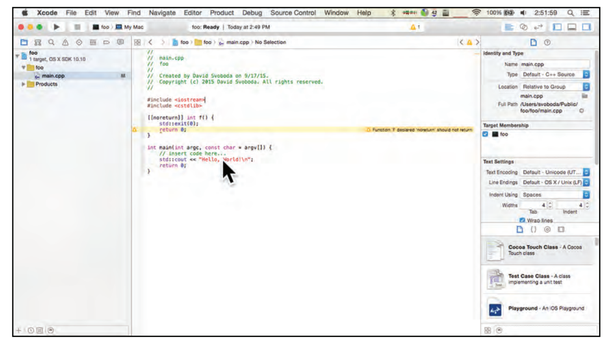
- Filter select secure coding rule violations
- Eliminate irrelevant diagnostics
- Convert to common CERT Secure Coding rule labeling
- Provide single view into code and all diagnostics

SCALe maintains a record of decisions so that results about a review are maintained as code is changed and not revisited.

**Integrating checkers into Integrated Development Environments (IDE)**
Providing immediate feedback to developers about weaknesses in programs as code is being developed encourages secure coding without generating vast collections of diagnostics later in the SDLC.

**Checking C/C++ rule violations**
- Exception
- Evaluation ordering
- Function return
- Constructor
- Assertion

**Checking Java rule violations**
- Override
- I/O



New rules for threaded programs and C++ form a more secure underpinning for object-oriented software deployed on multithreaded architectures. New checkers can locate potential vulnerabilities, and, when integrated into IDEs, provide immediate and effective feedback to developers.

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