Benefits of Automated Code Review

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01 What is code review?

Code Review

- A process that reviews code using a predefined set of rules /standards

- Primary goals
  - Identify errors
  - Follow best practices
  - Maintain code standards
  - Capture security issues

How is your time spent?

~$85 Billion

Global GDP loss from developer time spent on bad code annually

Sources: Evans Data Corp., CIA Factbook, Stripe research

02 Automated vs Manual

Manual Code Review

- Manual code review is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.

- Often done by a peer or a QA team
  - Developers submit their code for review and issues are sent back
- Generally run through a checklist to identify issues
- Feedback can be personal
- Conversations should focus on how code is written
  - Code logic
  - Can this be written more effectively?
  - Understandable

Automated Code Review

- A process that reviews your code **without** manual input using a predefined set of rules

- Automated vs manual code review
  - Time spent reviewing
    - limited capacity of a human vs code volume
  - Time spent waiting
    - team workflows and time zones
  - Human error
    - personal biases and interpersonal communications
  - Quality Assurance
    - Human vs machine capacity

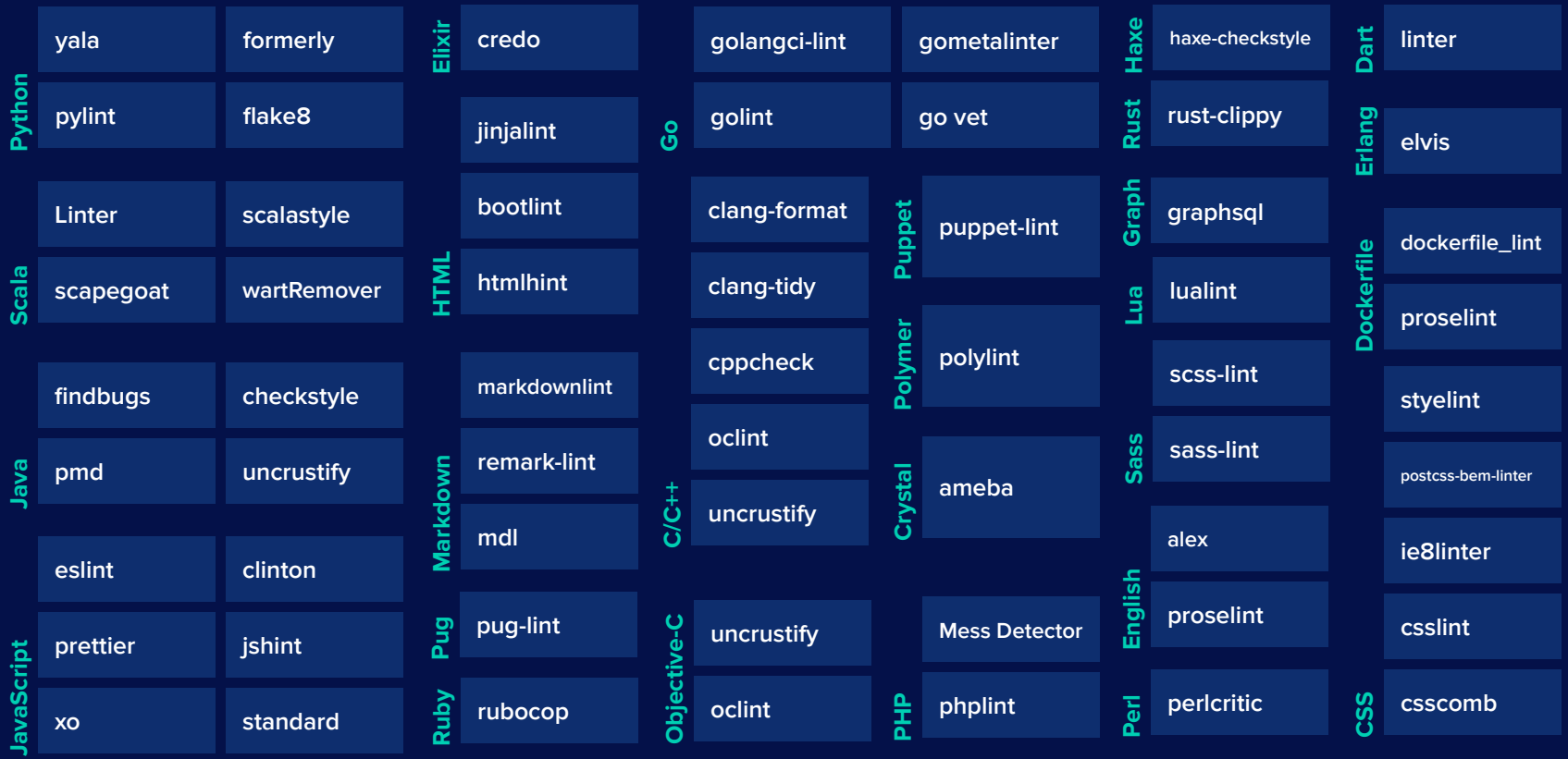
01 What is Static Code Analysis?

Static Code Analysis

- A way to review your code that **does not** execute any code

- Linters are technically SCA tools, but **do not offer**:
  - Technical debt avoidance / planning
  - Security screening
  - Duplication avoidance
  - Complexity metrics
  - Coverage integration
  - Compliancy
  - Education on best practices
  - Automatic maintenance of rules

Open source SCA tools



Tools in the code review ecosystem

- Continuous Integration tools (like Jenkins or CircleCI)
  - With OS linters
  - Or coverage reports

- Pure code coverage tools (Clover, CodeCov, Coveralls)

- Project management tools that aid manual code review

Using multiple tools leads to inefficiency

- Team members spend time configuring tools rather than coding
- Costs are multiplied across multiple tools
- Tools may not all integrate with each other
- Constant maintenance of standards required
- Context switching for developers reduces efficiency

03 Use a code review suite

Organizational Benefits

- **Efficiency**: Tools like Codacy shows managers what to prioritize. Less time reviewing means more time coding.
- **Code quality standardization**: These tools provide preset, customizable standards that can be enforced.
- **Code quality predictability**: Duplication and complexity metrics can tell you where problems might develop before they actually do.
- **Team management**: A suite provides easily-accessible metrics for non-technical and management-level reports.
- **Proactive**: PRs that will have a detrimental impact on code quality can be blocked

04 Codacy Demo