UNIVERSITAS SCIENTIARUM SZEGEDIENSIS
UNIVERSITY OF SZEGED
Department of Software Engineering

The Security History of the WebKit Browser Engine

Renáta Hodován

Outline

- Motivation
- Background
- Analyzing the statistics
- Future work

WebKit

- Web browser engine
- Powers several desktop browsers...
  - Apple Safari
  - Google Chrome
  - Etc.
- … and mobiles
  - iPhone
  - Android
  - MeeGo

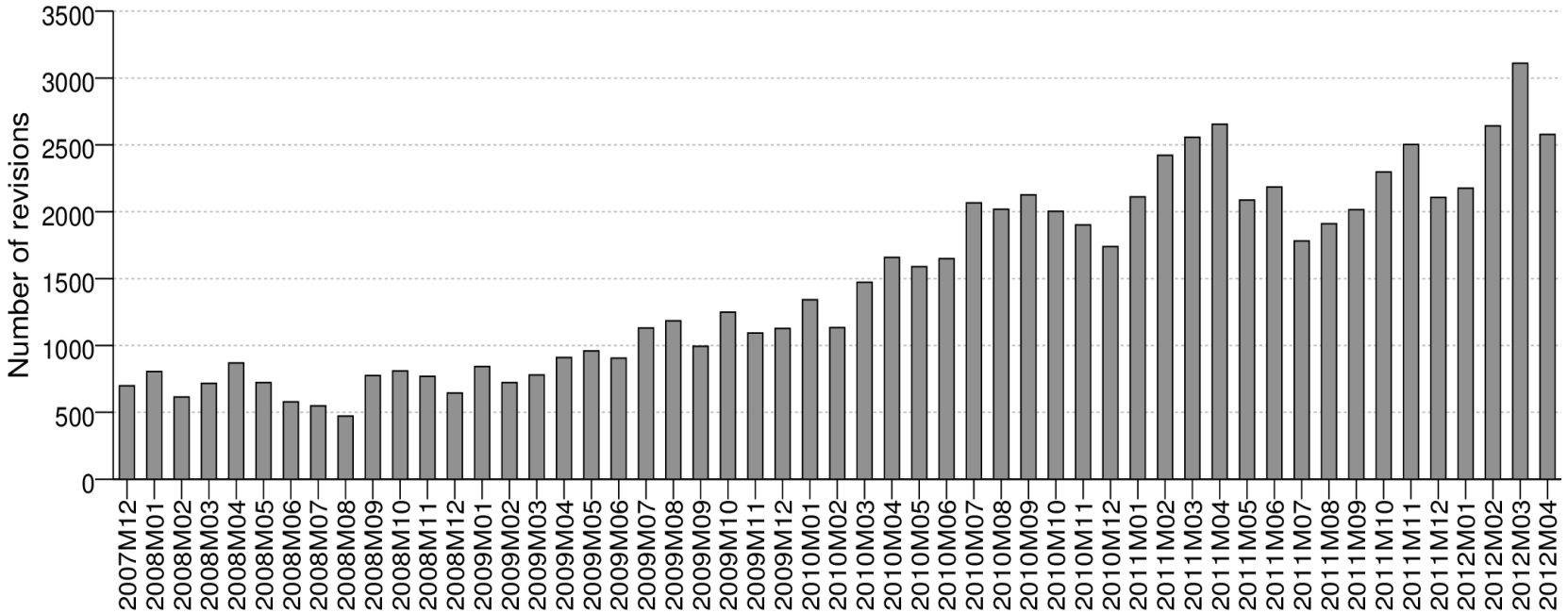
WebKit

- Open Source Project
- Bugs and requests are logged in a public Bugzilla
- Three types of bugs:
  - WebKit
  - Inspector
  - Security

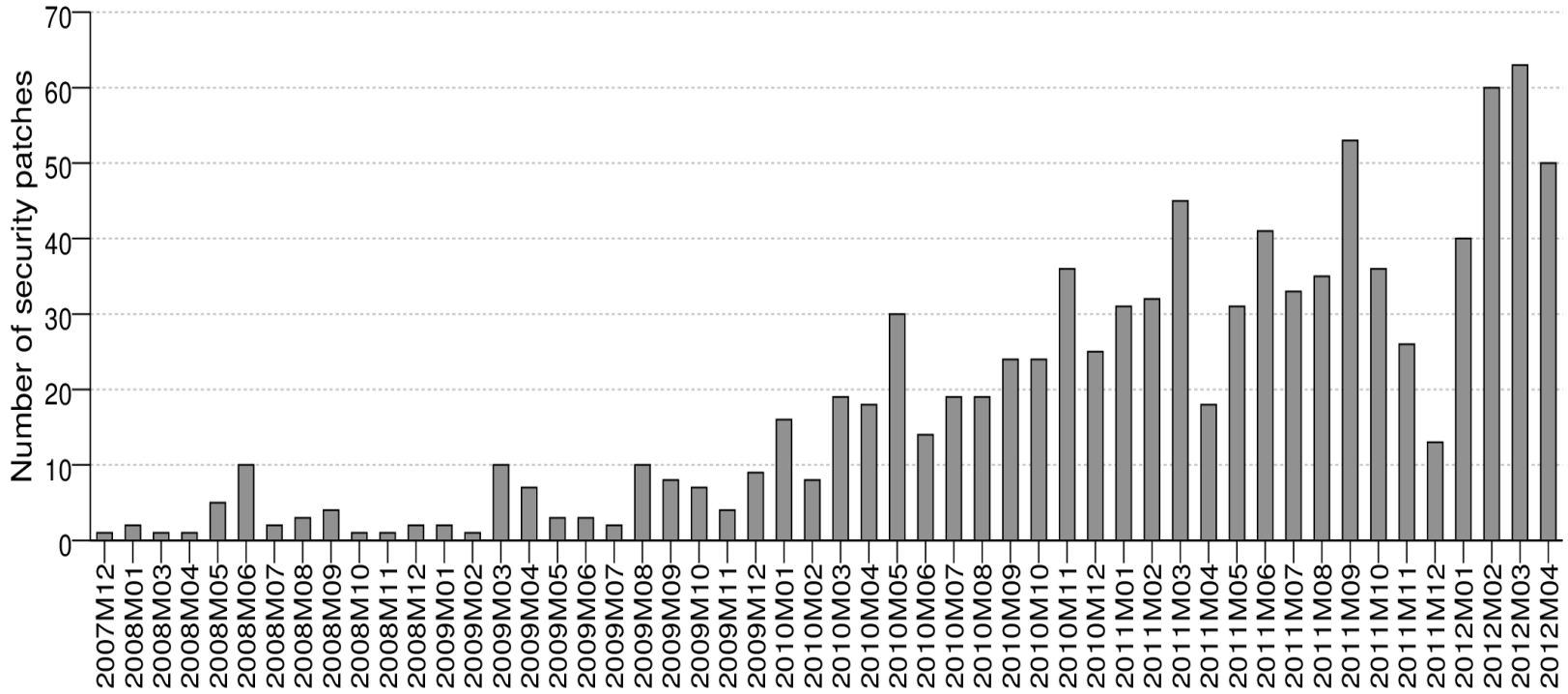
Security Bugs

- Officially: not publicly accessible
- In practice: the fixed bugs are deducible
  - Not violating any rules
  - Publishing the method would be still unethical
  - Presenting the statistical summary is permitted

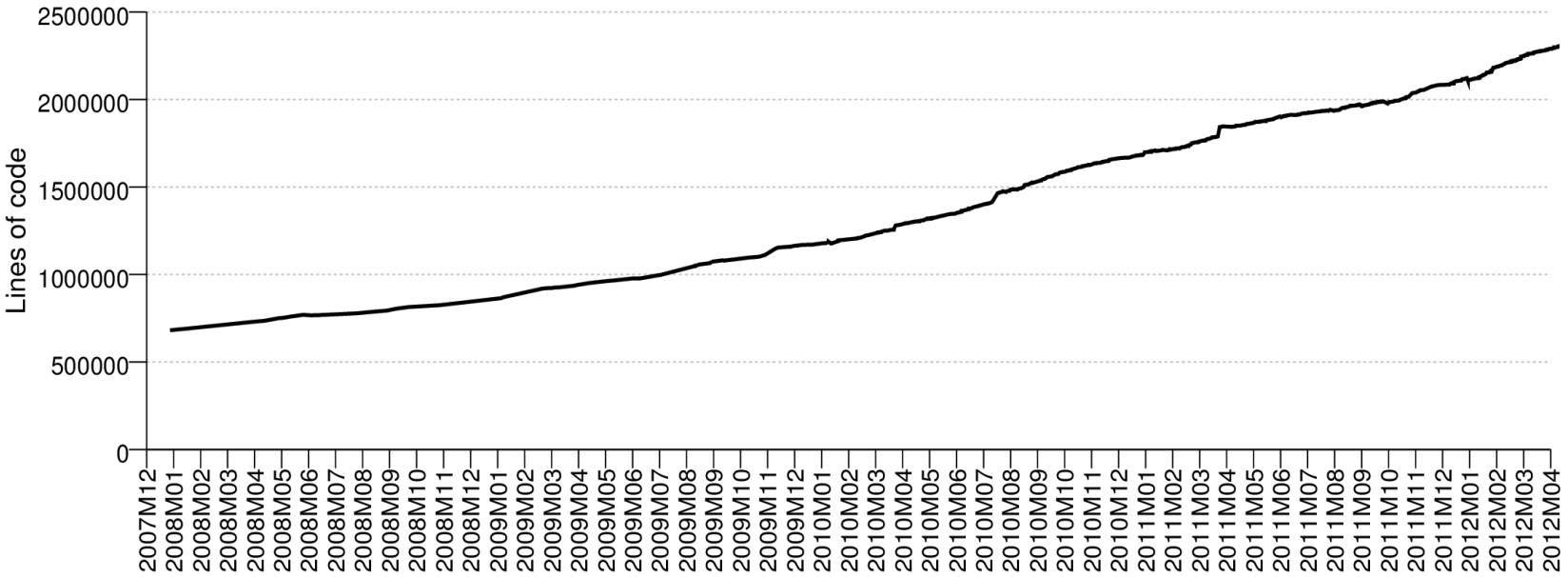
All Committed Revisions



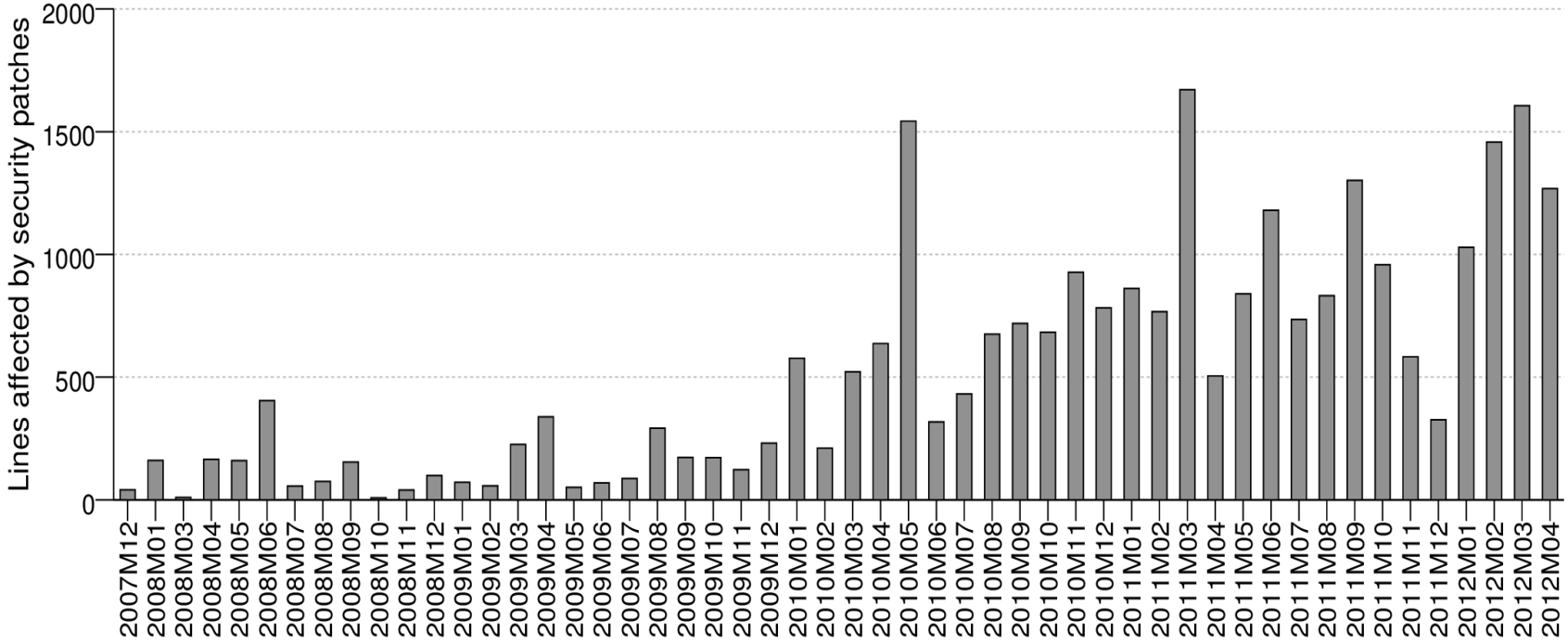
Committed Security Bug Fixes



Code Size Over Time



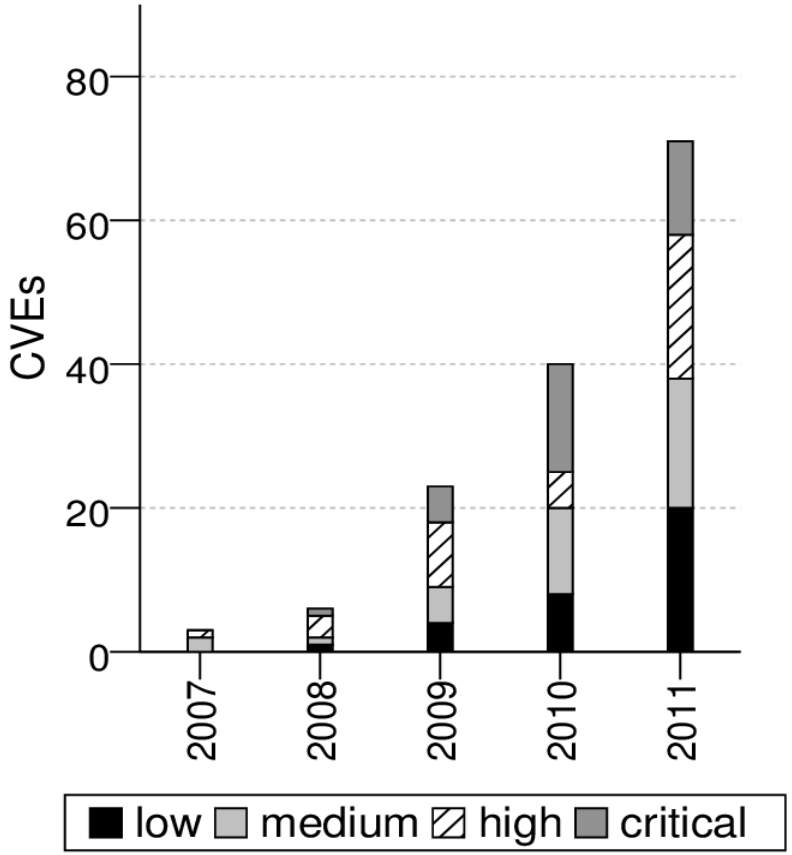
Changed Lines In Security Revisions



CVE

- Common Vulnerabilities and Exposures
- Provides a reference-method for publicly known information-security vulnerabilities.
- Maintained by MITRE Corporation
- Easy to filter for target
- Contains entries about WebKit from 2007

WebKit CVEs



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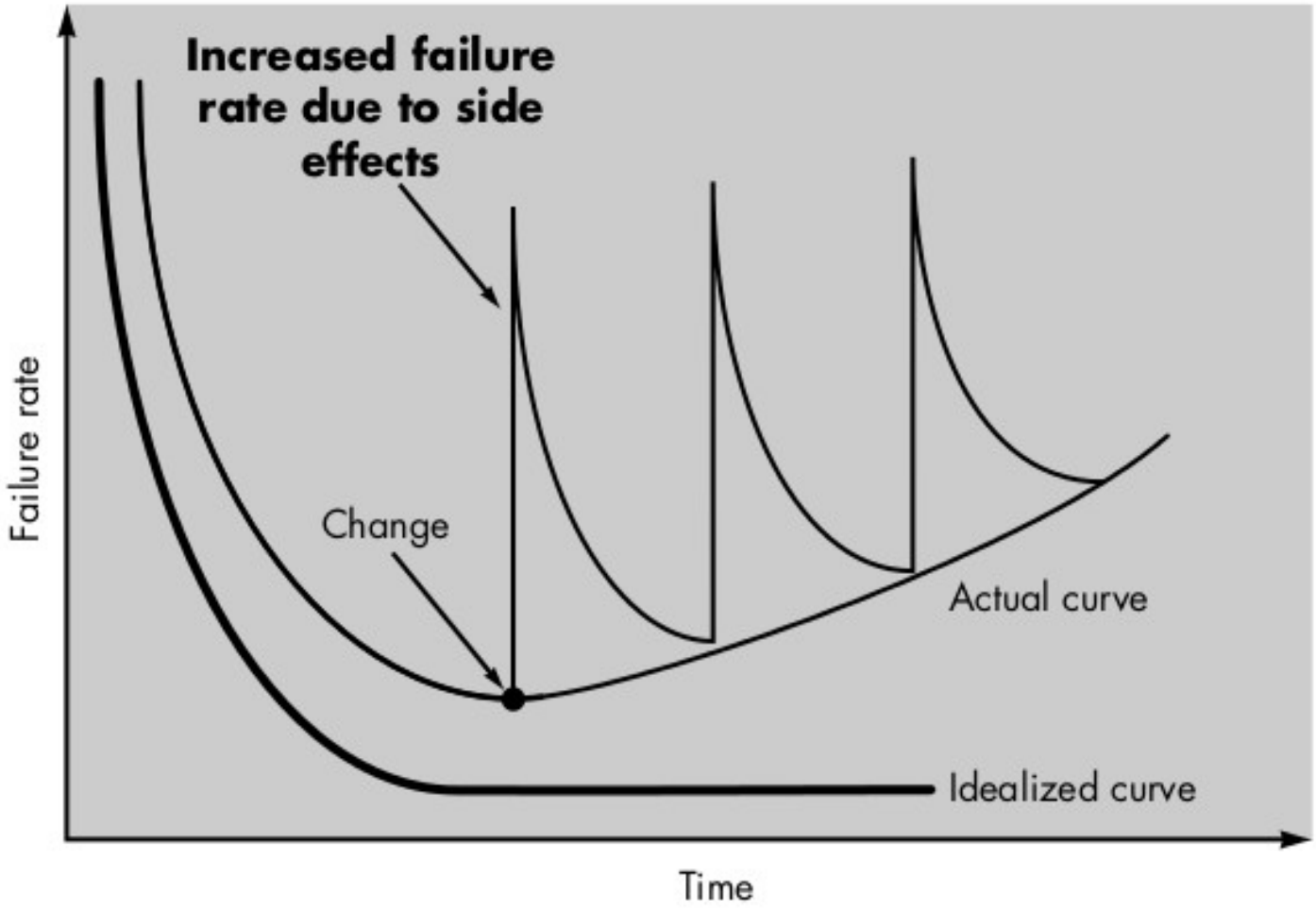
Aging of a Software



Roger S. Pressman, Ph.D., Software Engineering A Practitioner's Approach

Summary

- Given a relatively big database of security bugs (~1000 entry)
- Relation between:
  - Speed of development
  - The size or the complexity of the code
  - The needed security fixes
- The determined trends are alarming

Future work

- Further analysis of the database
  - Looking for “Bad Smells”
- Defining “attack surface” for web browsers
- Applying these metrics for different browsers or revisions
- Sandboxing
  - SUID
  - seccomp filter

Thank you for your attention!

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