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# Bug Reopening: Impact of Process and Design Variables

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## Bug reopening

When a bug fix is inappropriate, the corresponding bug report is reopened.

## Reopening is a problem

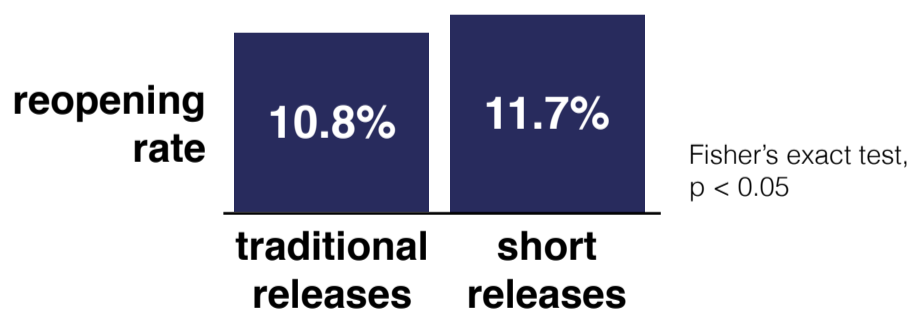
Reopened bugs ⇒ **rework**

	Eclipse	Firefox	NetBeans
Reopening rate	6.0%	7.2%	8.9%
A bug is reopened every...	1.6 days	7.6 days	5.8 days

Source: analysis of bug reports from Eclipse Platform, Firefox for Android, and NetBeans Platform.

## Reopening rate is higher under shorter releases

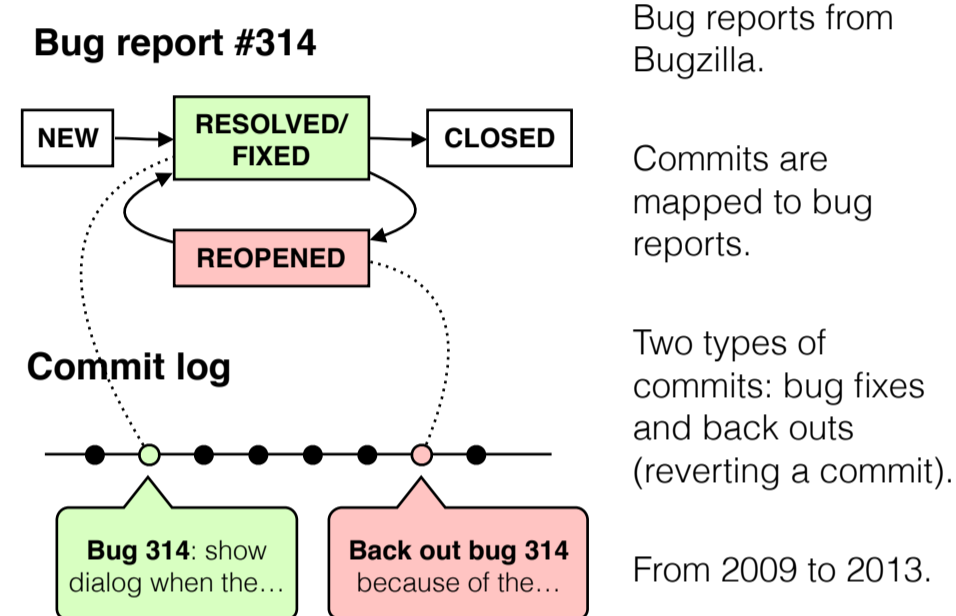
In 2011, Mozilla reduced Firefox's release cycle from 12–18 months to 6 weeks.



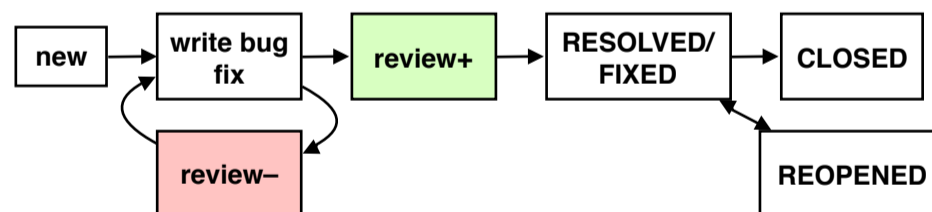
## Related publications

- SOUZA, Rodrigo ; CHAVEZ, Christina ; BITTENCOURT, R. A. **Do Rapid Releases Affect Bug Reopening? A Case Study of Firefox**. In: SBES: Simpósio Brasileiro de Engenharia de Software, 2014, Maceió.
- SOUZA, Rodrigo ; CHAVEZ, Christina ; BITTENCOURT, R. A. **Patterns for Cleaning Up Bug Data**. In: DAPSE: Workshop on Data Analysis Patterns in Software Engineering, 2013, San Francisco.
- SOUZA, Rodrigo ; CHAVEZ, Christina ; BITTENCOURT, R. A. **Patterns for Extracting High Level Information from Bug Reports**. In: DAPSE: Workshop on Data Analysis Patterns in Software Engineering, 2013, San Francisco.
- SOUZA, Rodrigo ; CHAVEZ, Christina. **Characterizing Verification of Bug Fixes in Two Open Source IDEs**. In: 9th Working Conference on Mining Software Repositories (MSR 2012), 2012, Zurich. Proc. of the 9th Working Conference on Mining Software Repositories, 2012. p. 70-73.

## Data (Mozilla Firefox)



## Bug fixes that receive a negative code review...



are 53% more likely to induce reopening (accounting for patch size)

Cochran-Mantel-Haenszel test,  $p < 0.05$

## What's next

Bug fixes in code that violates architecture are more likely to reopen.

Data from Eclipse API Tools: architectural rules, such as...

- X cannot extend Y
- X cannot instantiate Y...

