

On Rapid Releases and Software Testing



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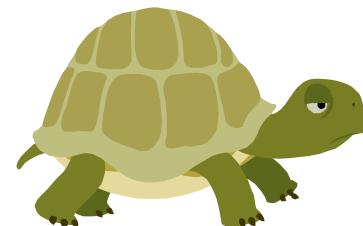
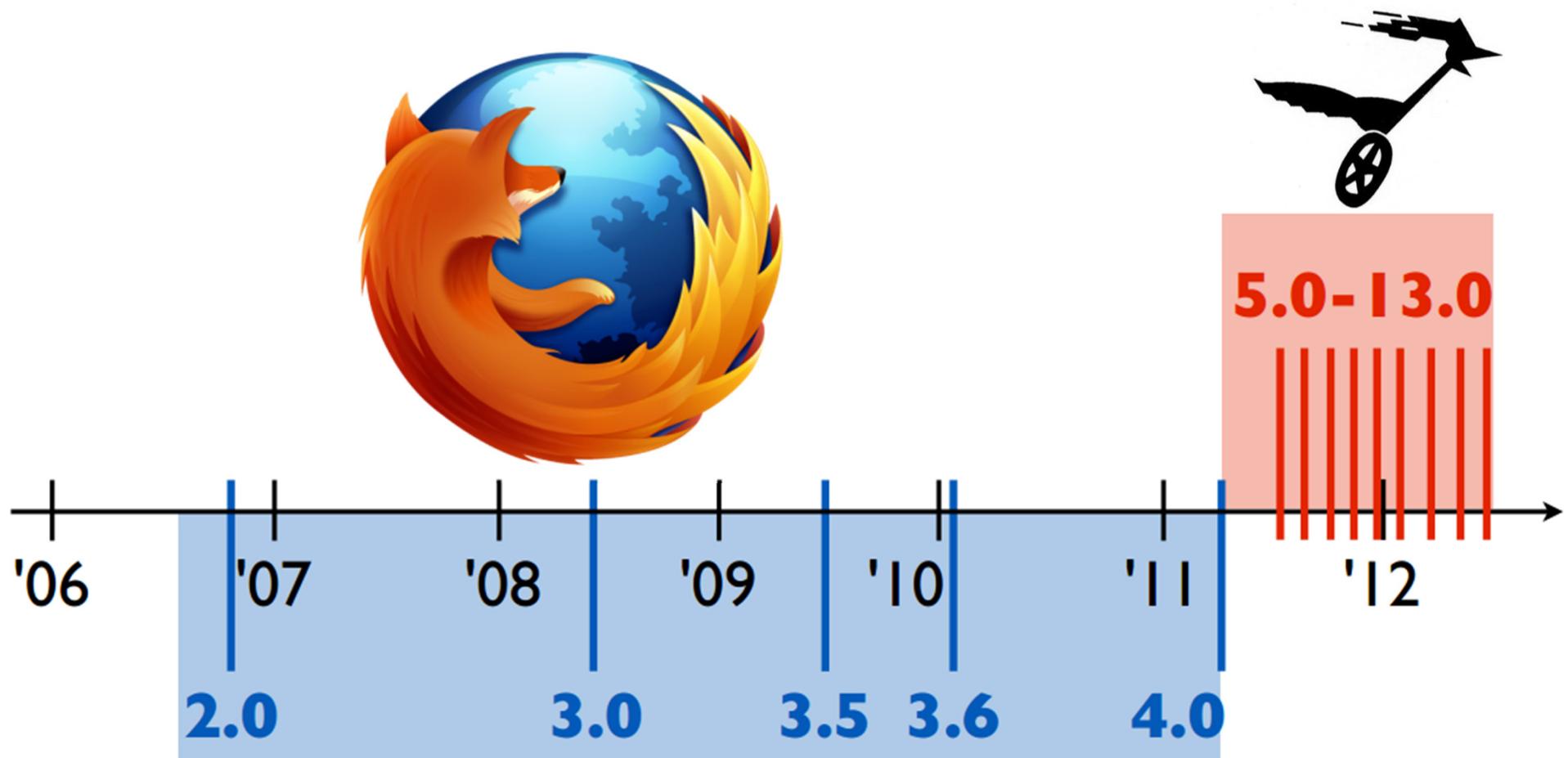
Need for rapid releases?



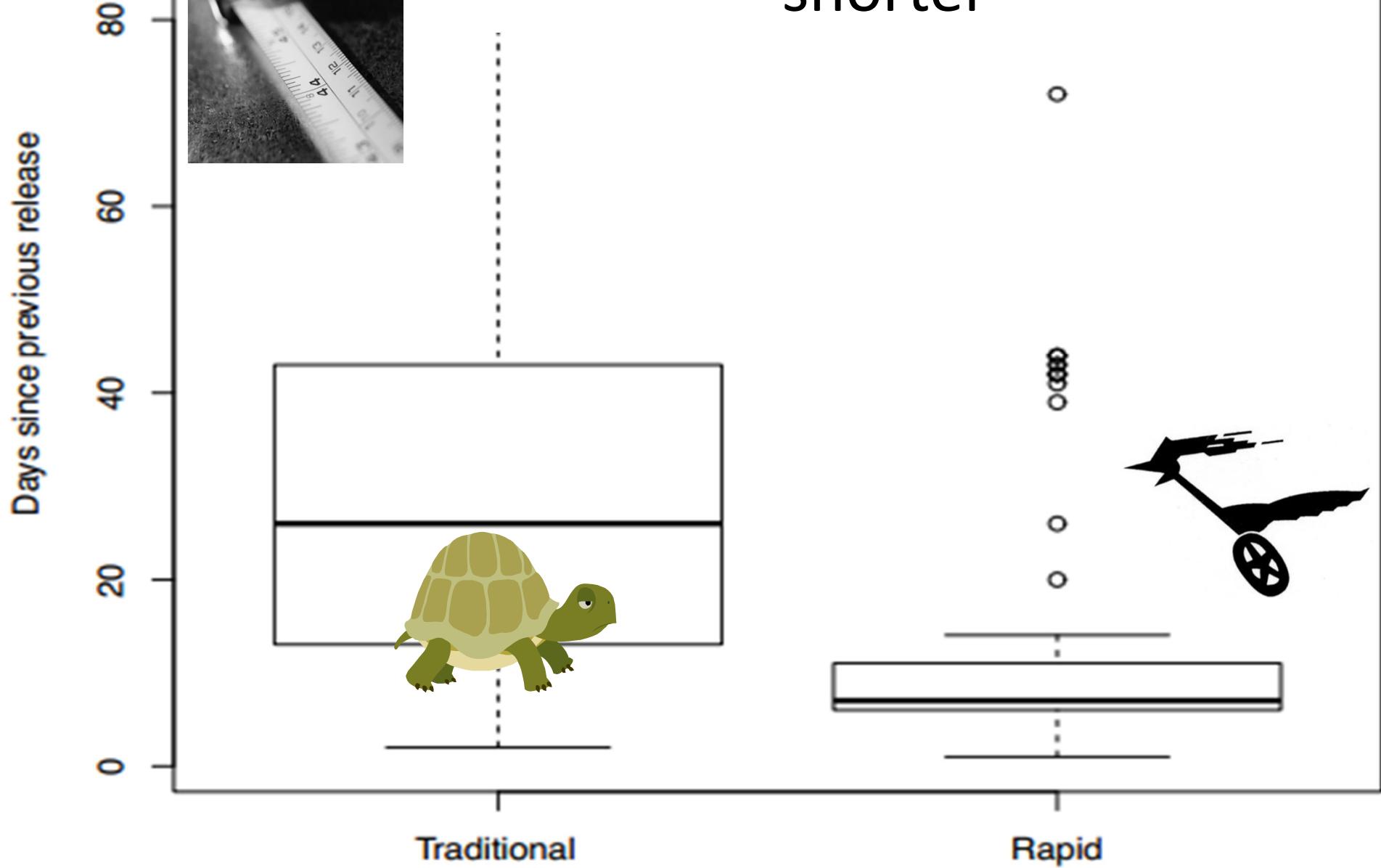
- Jack Welch: "*If you are not moving at the speed of the marketplace you're already dead – you just haven't stopped breathing yet*"
- Jan Bosch: "*Increasing SPEED trumps ANY other improvement software R&D can provide to the company*"



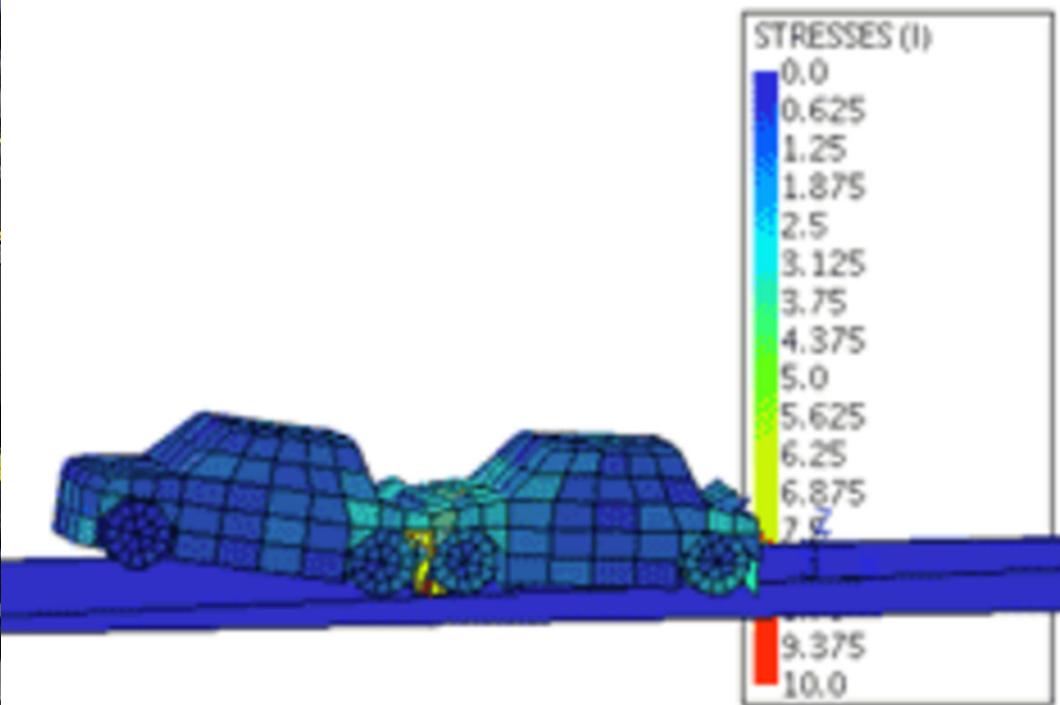
An example: Firefox



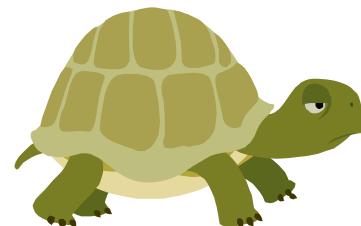
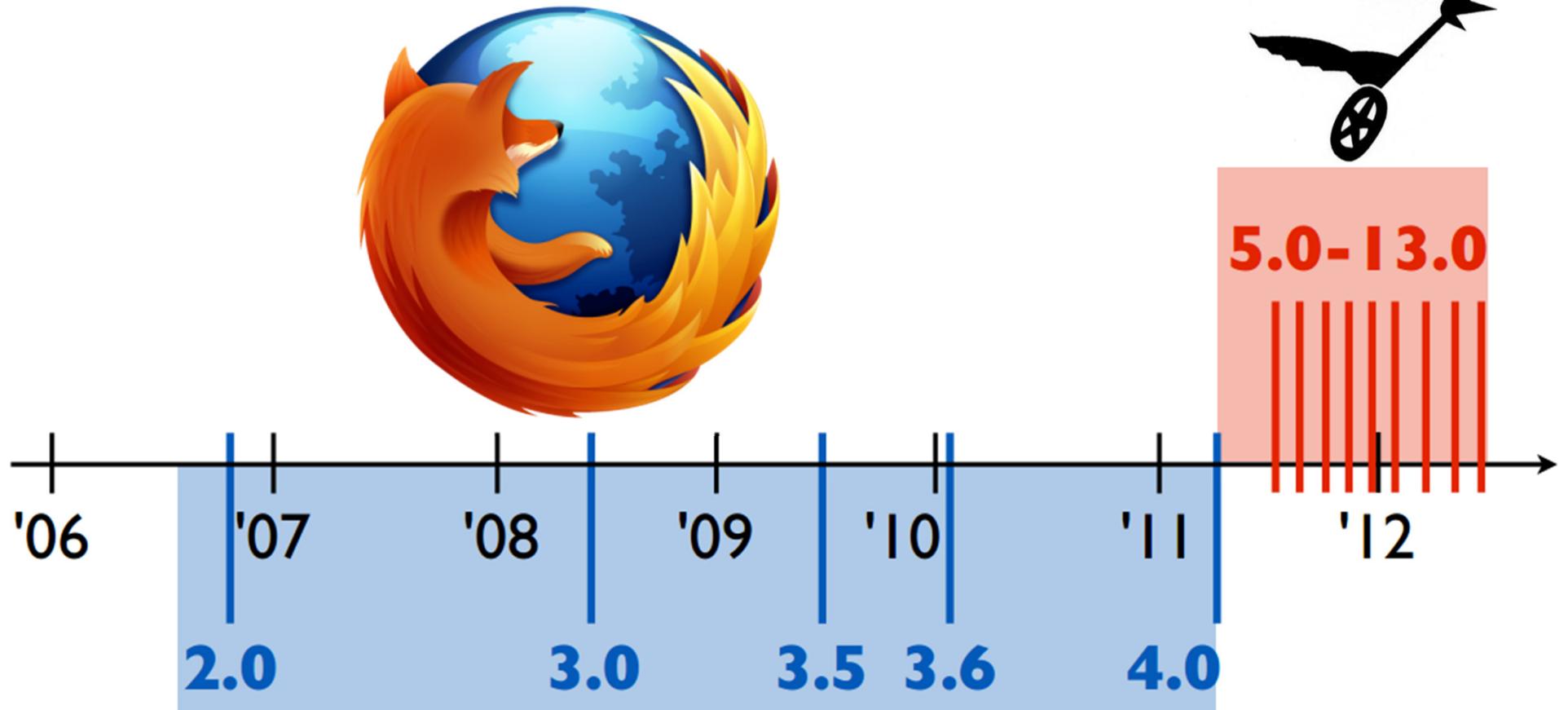
Releases cycle significantly shorter



At the expense of ...?



Do rapid releases impact software testing?



Litmus

welcome log in

get testing!
run tests
view/search tests

reporting
search results
advanced search
testdays
test runs
statistics

help
litmus tutorial
litmus wiki

System Test Results

testcase id #8410 - all tab options unchecked

Testcase ID #: 8410
Summary: All Tab options unchecked
Product: Firefox
Branch: 3.6 Branch
Regression Bug ID #: None specified
Enabled?
Community Enabled?

System test case and expected results

Steps to Perform:

1. Open Tool | Options (Preferences) | Tabs. Make sure all check boxes are unchecked.

Expected Results:

- Confirm that all four preferences do not work, since they are disabled:
- A new window is opened instead of a new tab.
 - You will not be warned when closing multiple tabs.
 - You will not be warned when opening multiple tabs (>15 at once, e.g. the default RSS folder in the toolbar).
 - The tab bar is not shown when only one tab is open.
 - Opening a link in a new tab will open it in the background.

Testgroup(s)

3.6 Full Functional Tests (FFTs) (137)

Subgroup(s)

FX 3.6 FFT - Tabbed Browsing (1242)

recent test results for testcase id #8410 - all tab options unchecked

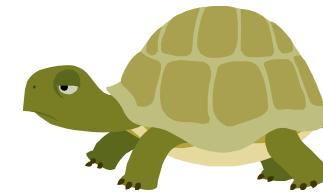
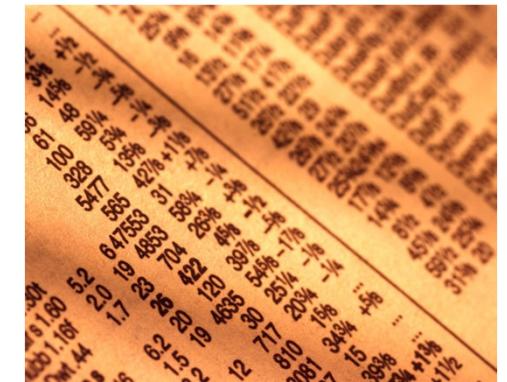
submission date	result id#	testcase id#: summary	product	platform	branch	locale
2010-11-02 02:16:00	336691	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2010-07-07 10:07:17	279135	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2010-05-12 11:20:12	257854	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2010-01-17 02:21:29	232877	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2010-01-11 20:56:35	230165	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2010-01-07 10:50:21	228669	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US
2009-10-22 03:22:31	213485	8410: All Tab options unchecked	Firefox		3.6 Branch	en-US

search test results: recent failures | recently unclear | most common failures | testcases most frequently marked as unclear | testgroup popularity | results with comments

search testcases: testcases needed! | recently added | recently changed | by id:

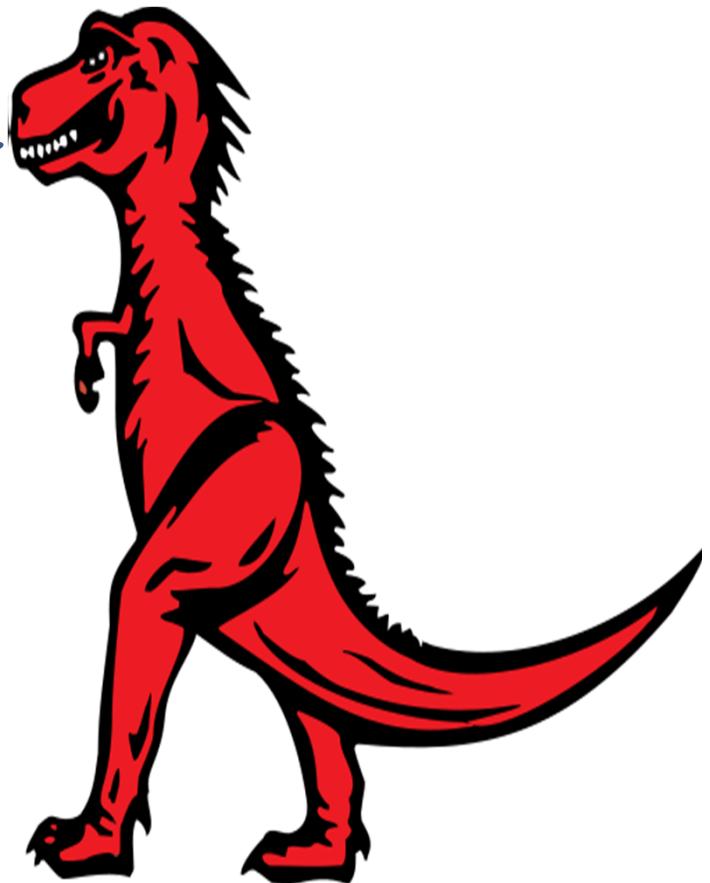
Mining Results

- Descriptive numbers
 - 1,547 unique test cases (roughly 10% of them are automated)
 - 312,502 test case executions
 - 6 years of testing
 - 6,058 individuals
 - 2,009 software builds
 - 22 operating system versions
 - 78 locales
- 5 major TR versions with 147 smaller releases
- 9 major RR versions with 89 smaller releases



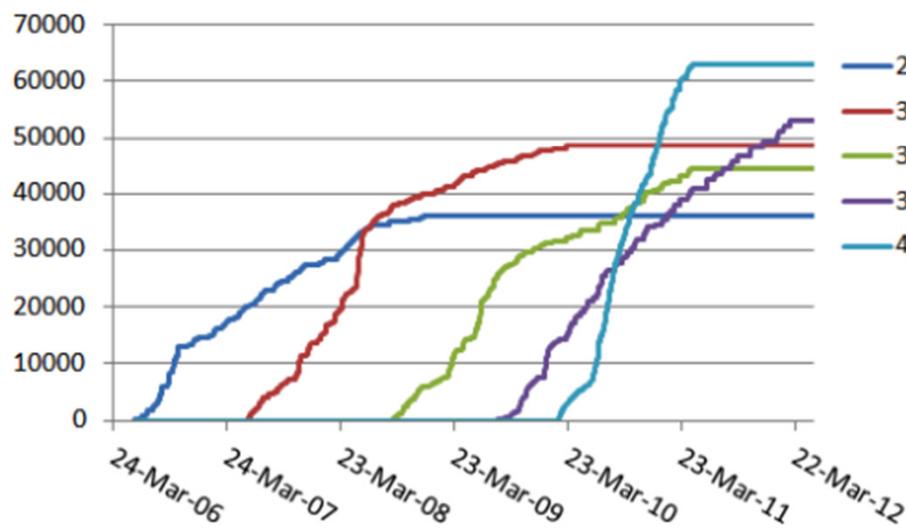
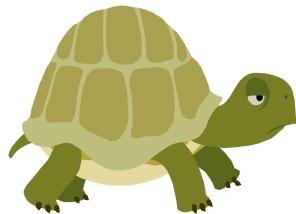
To triangulate:

An email interview with
a Mozilla QA engineer
who has been working
on Firefox QA for 5
years

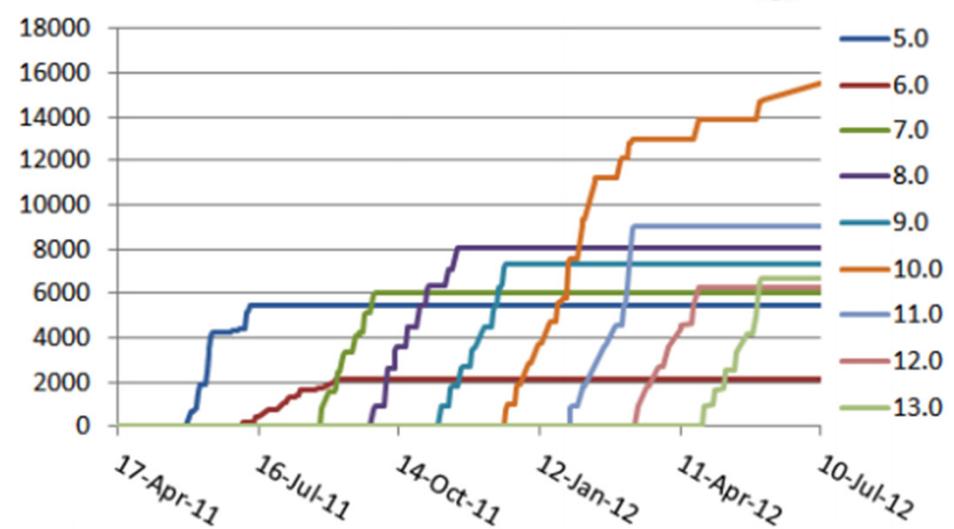


Less test executions

**35,000-55,000
executions/release**

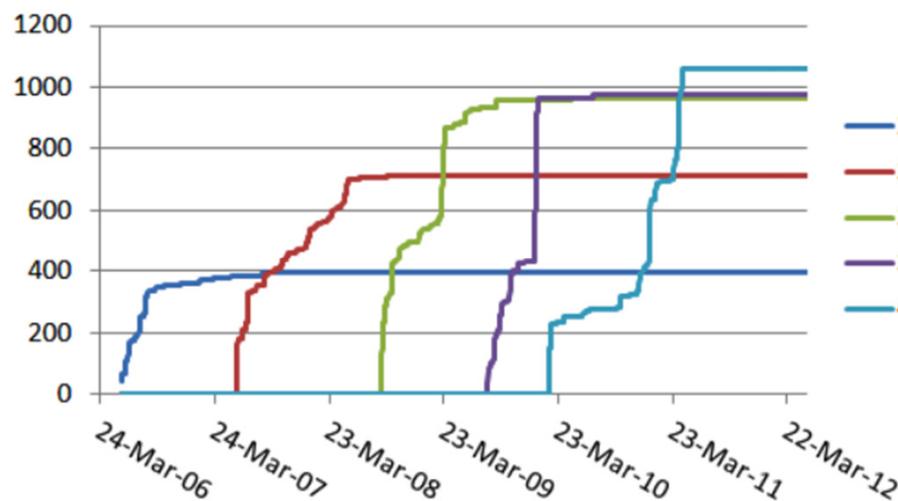
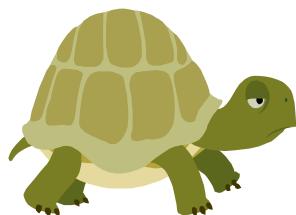


**6,000-9,000
executions/release**

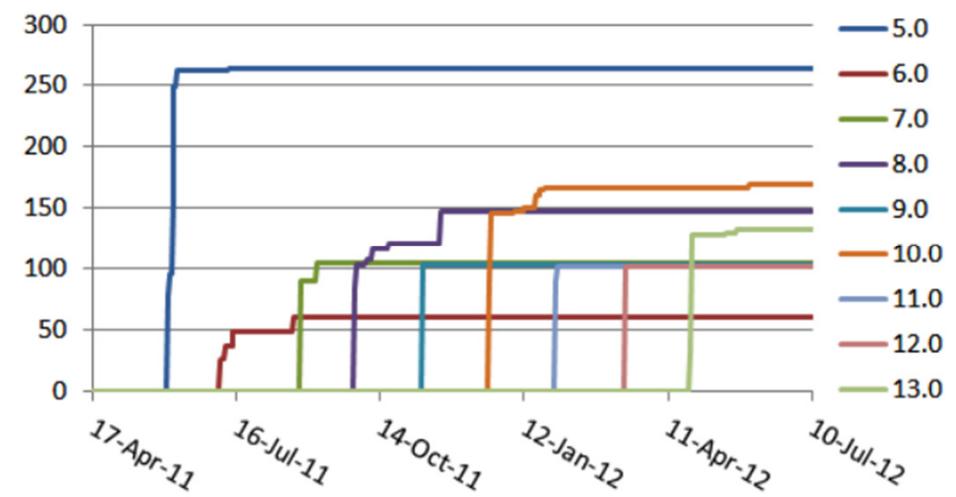


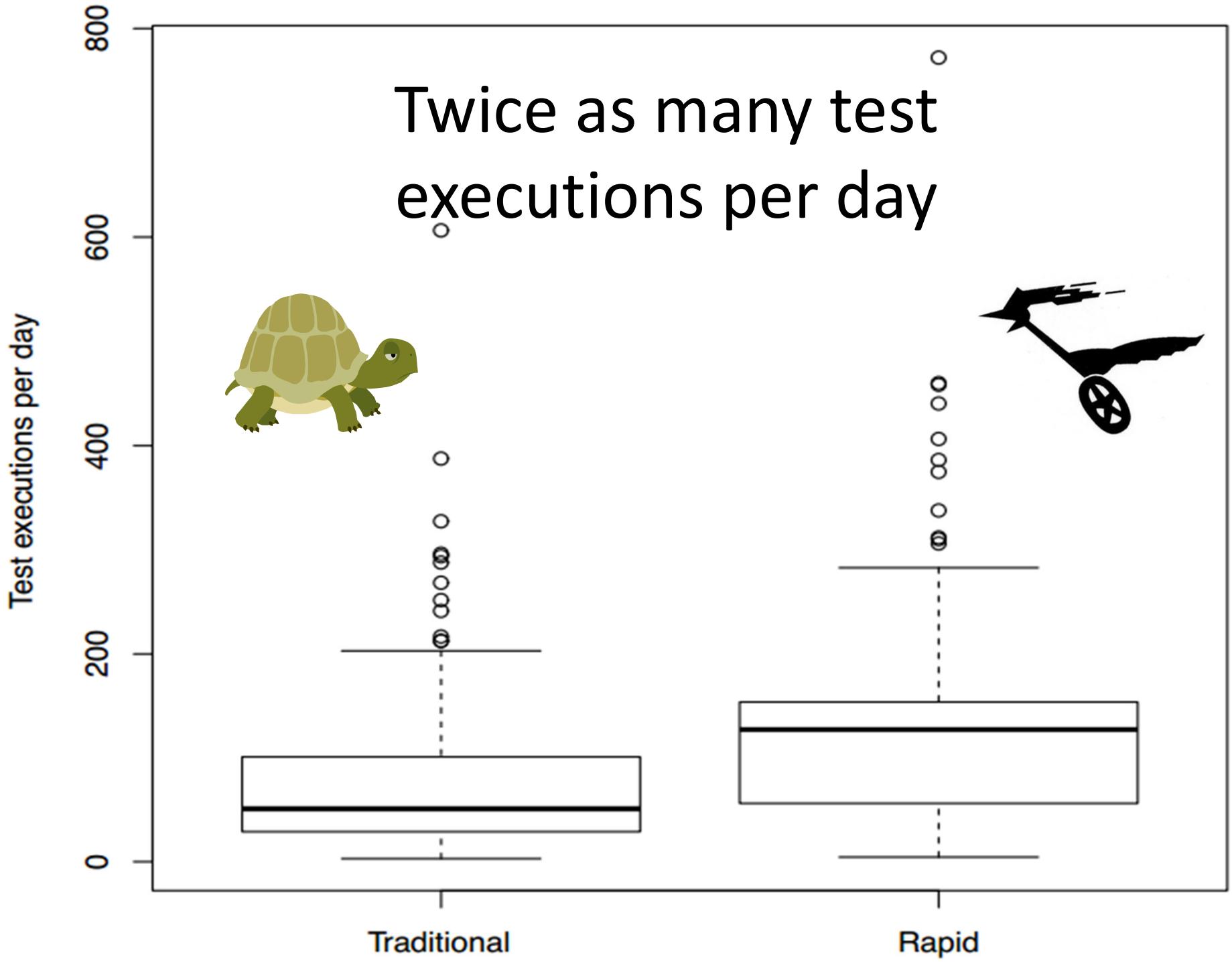
Smaller test coverage

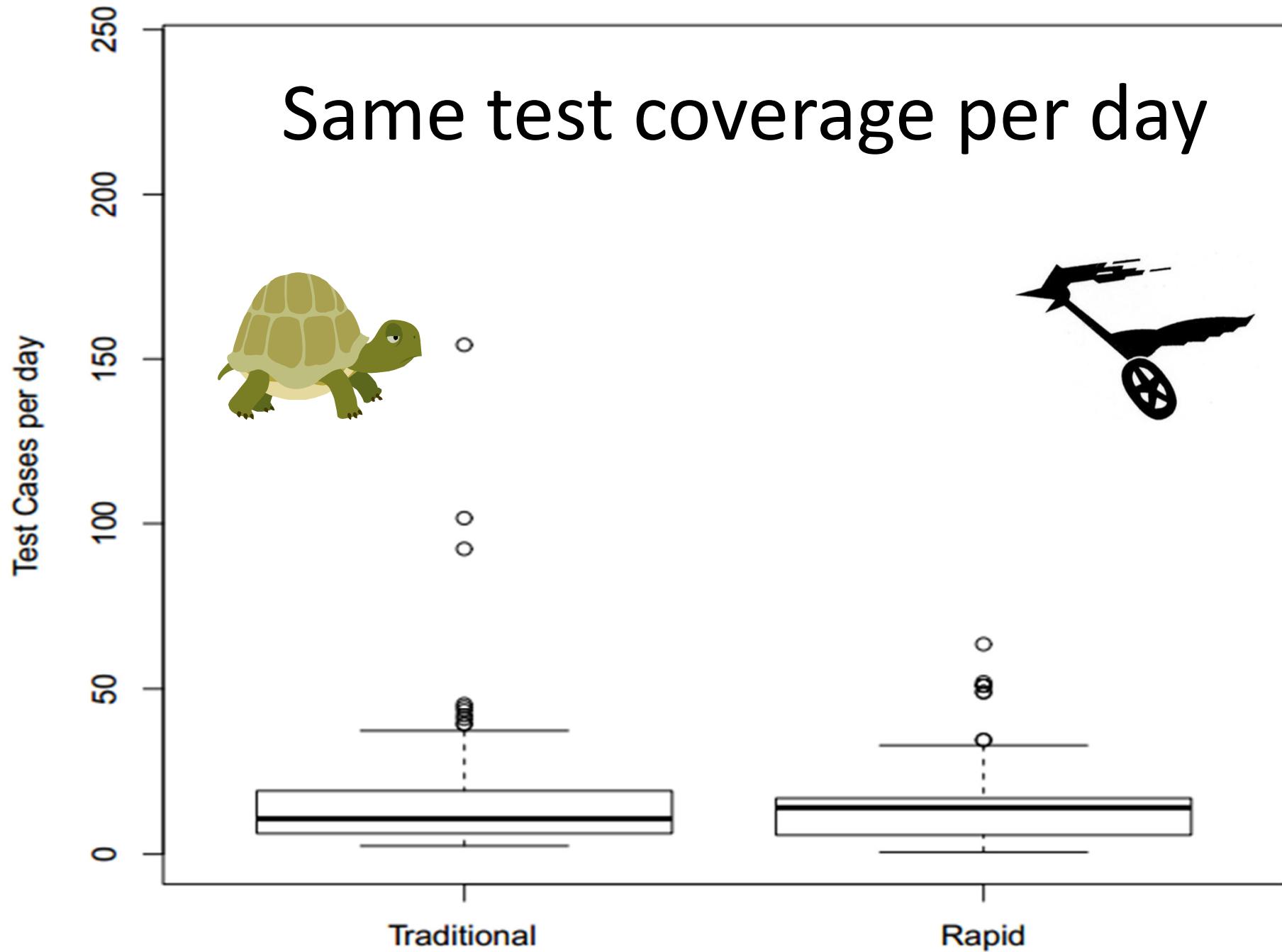
400-1,050 unique test case executions/release



60-260 unique test case executions/release







*To survive ... we've had to **cut the fat** and focus on ... areas ... prone to failure, less on ... legacy support*

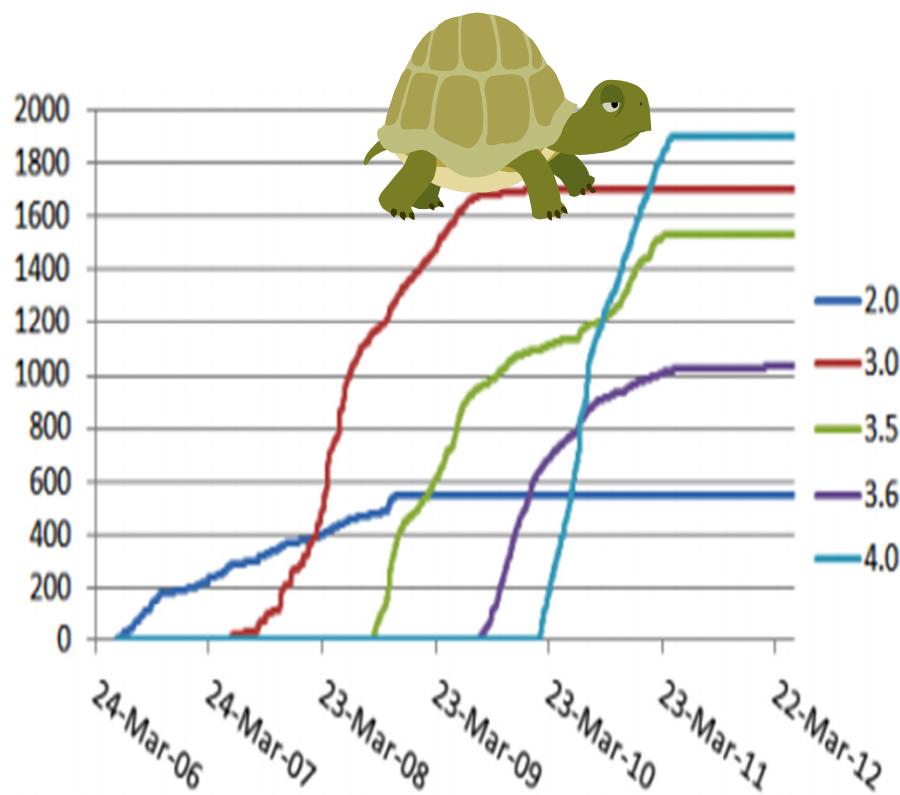
*The greatest strength is that ... we can **focus all of our energy on deep diving into a few areas***

*A fixed set of tests for areas prone to regression ...**dynamically changing set of tests to ... high risk features***



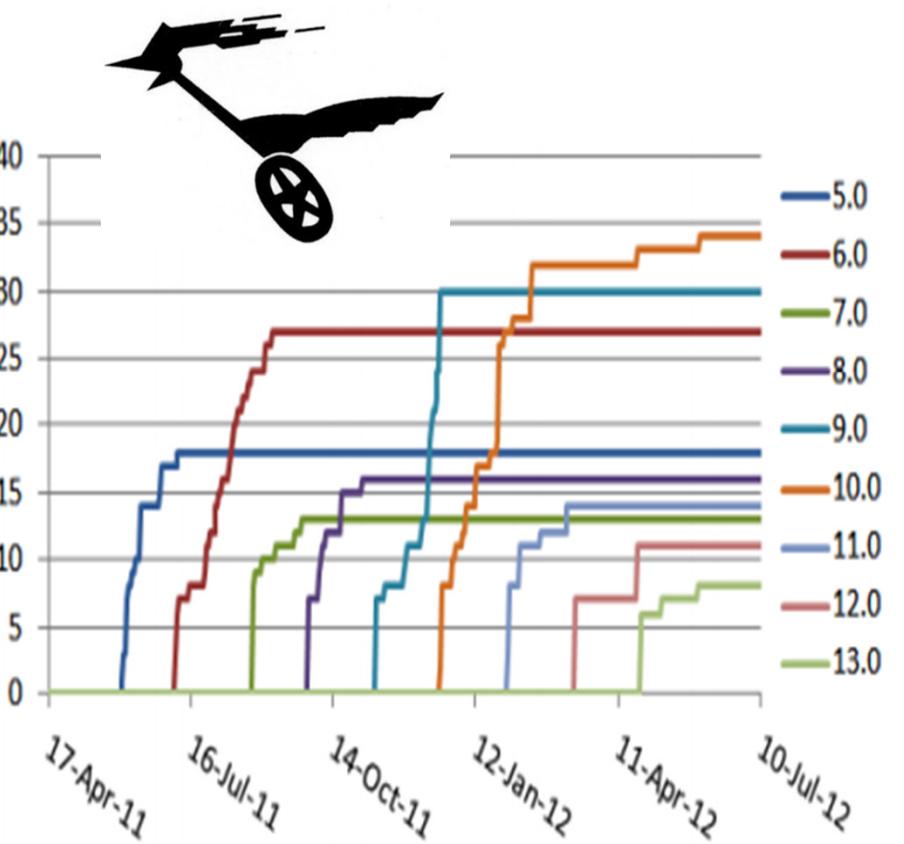
Less testers

600-1,900 testers/release

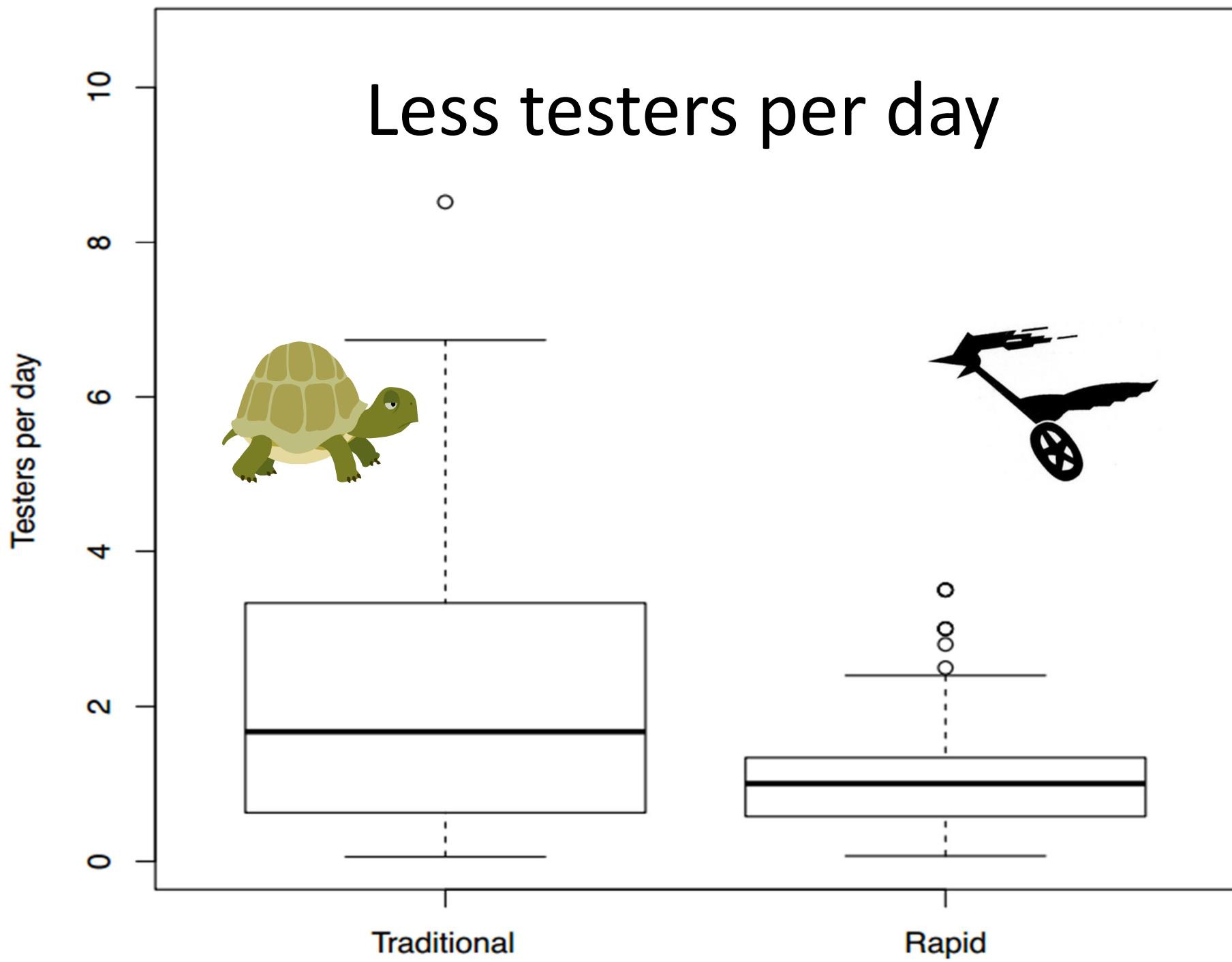


(a)

7-34 testers / release



(b)



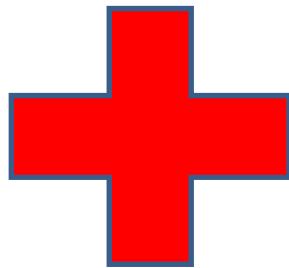
...it's harder to develop a large community

However, in the transition: 1) the core team ...unchanged 2) the contract team has nearly doubled . . . We can scale up our team much faster through contractors

fracturing of testing resources to different [Mozilla]projects



Move to Rapid Releases correlates with

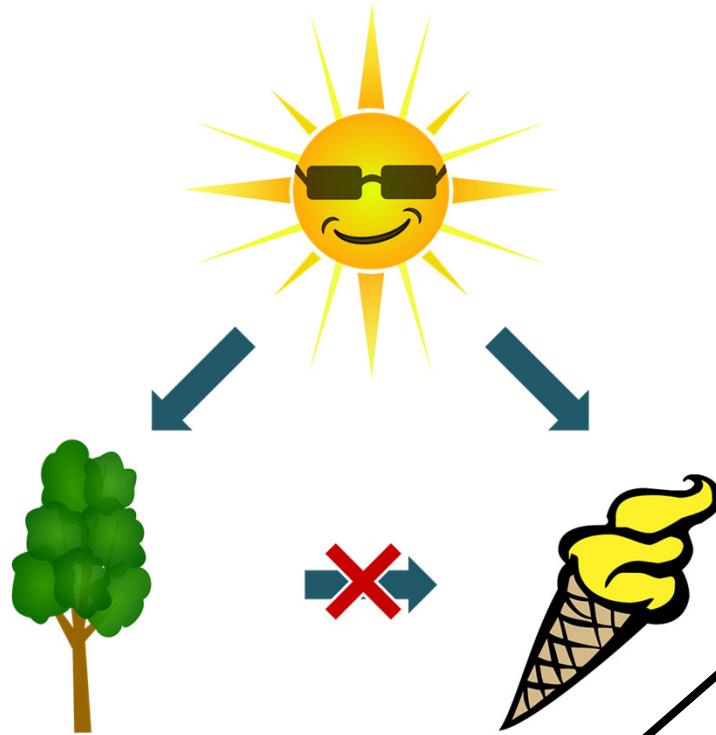


**Test executions,
Operating systems**

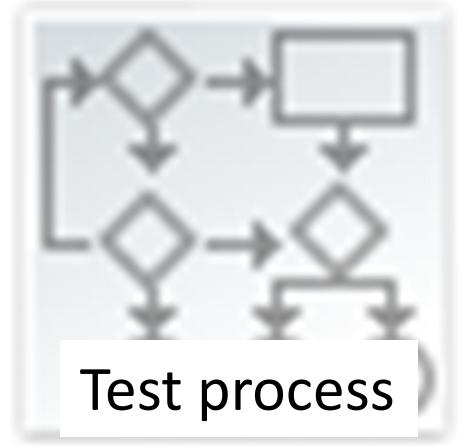
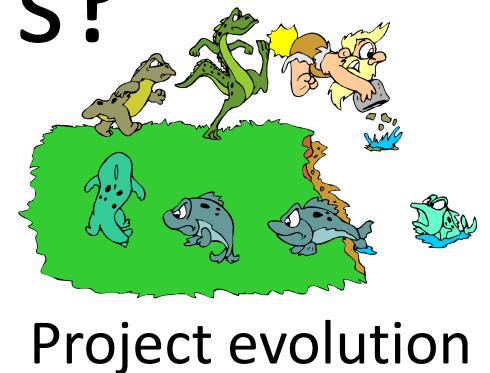
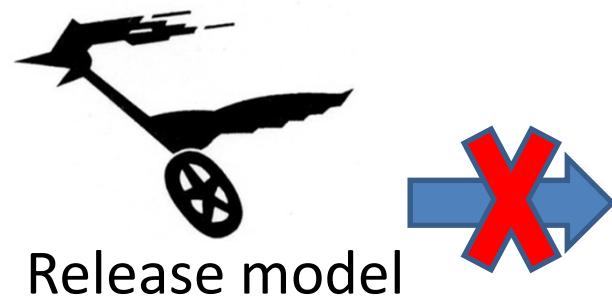
Unique test cases

**Release length,
Testers,
Builds,
Locales**

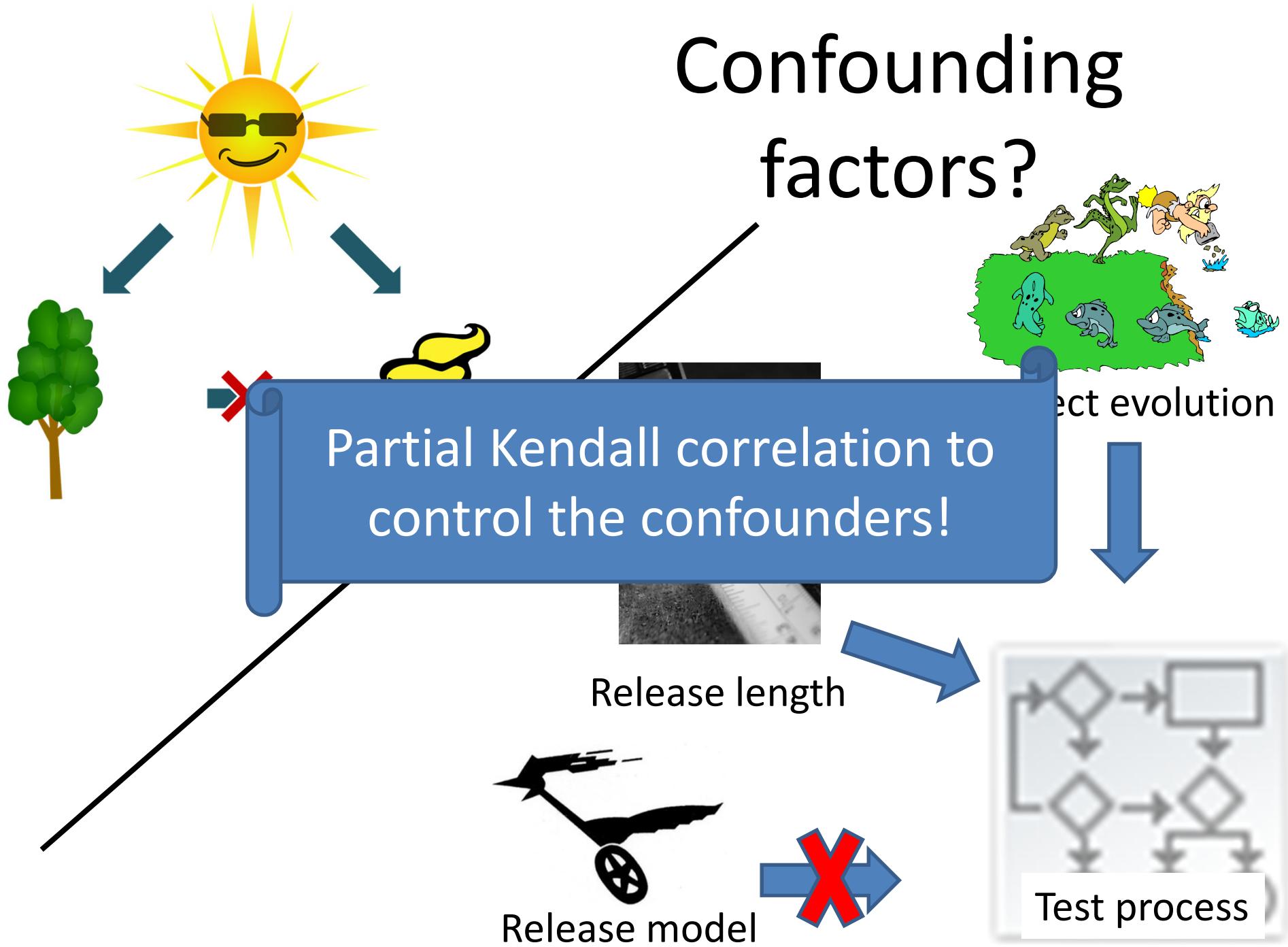
Confounding factors?



Release length

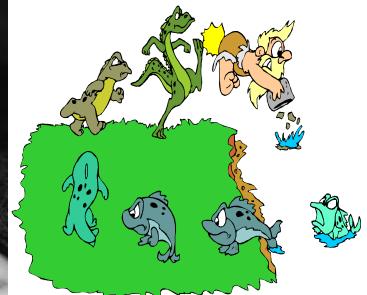
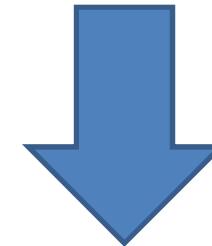


Confounding factors?



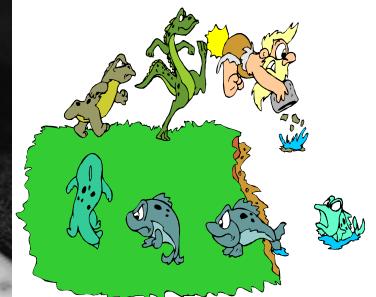
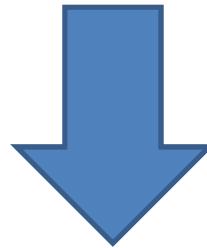
Shorter release length increases test effort

Perhaps due to
increased
regression testing



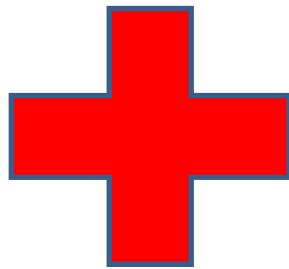
#Test executions per day (RQ1)	0.026	-0.414***	0.048
#Test cases per day (RQ1)	-0.231***	-0.593***	0.017
#Testers per day (RQ2)	-0.224***	-0.331***	-0.069
#Builds per day (RQ3)	-0.105*	-0.258***	-0.176***
#Locales per day (RQ4)	-0.281***	-0.443***	-0.115*
#OSs per day (RQ4)	0.149**	-0.822***	0.130**

Focusing occurs to cope with increased effort



#Test executions per day (RQ1)	0.026	-0.414***	0.048
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Move to Rapid Releases (after controlling confounders) correlates with

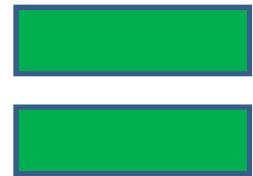
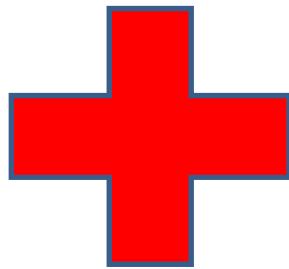


~~Test executions, Operating systems,~~

~~Unique test cases,~~
+Test executions

+Unique test cases
Testers,
Builds,
Locales

Move to Rapid Releases (after controlling confounders) correlates with



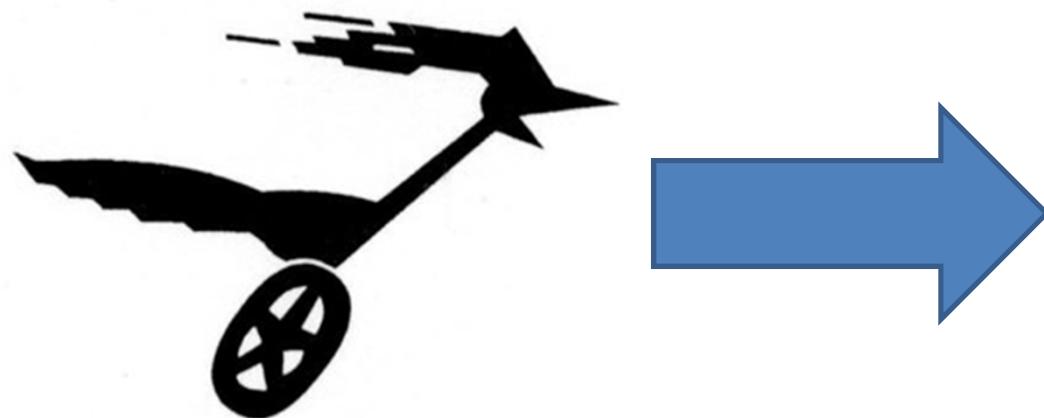
Operating systems,

Test executions

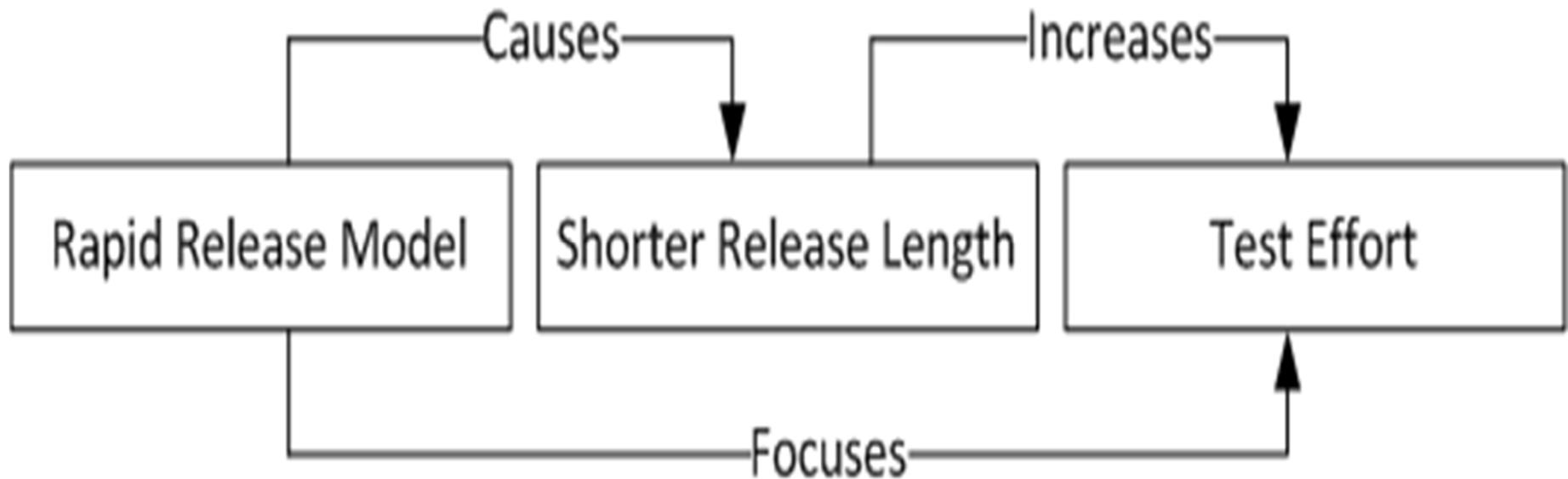
**Unique test cases
Testers,
Builds,
Locales**

It's not just the Shorter Cycle Time, but also a Change in Development Process!

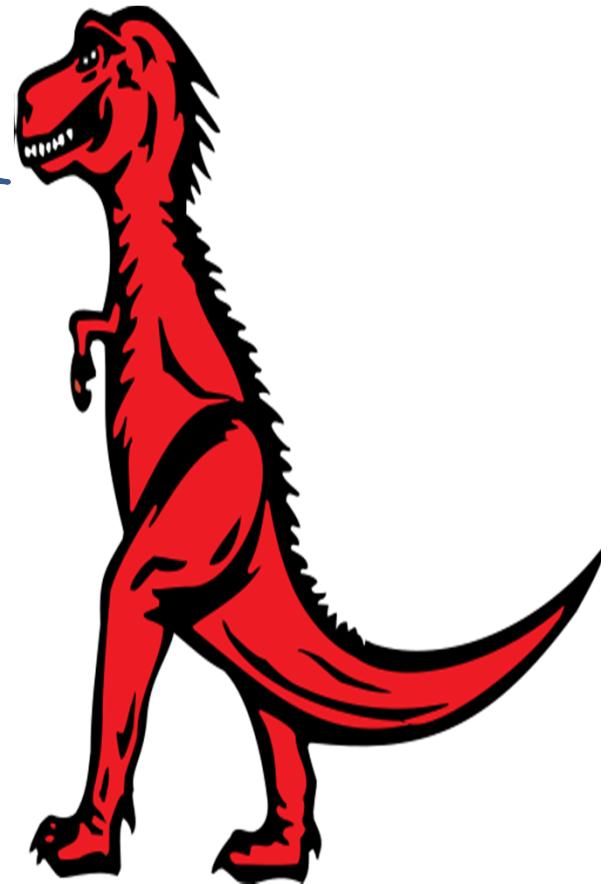
- Smaller Scope of Testing
- Smaller Testing Team
 - with more hired resources
- Test Priorities
 - More OSs, less locales, less builds



To summarize



The greatest strength [of rapid releases] is that **the scope of what needs to be tested is narrow**_so we can focus all of our energy on deep diving into a few areas



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Operating systems,

Test executions

Unique test cases
Testers, Builds, Locales

To survive under the time constraints of a rapid release we've had to cut the fat and focus on those test areas which are prone to failure, less on ensuring legacy support

