

# On Rapid Releases and Software Testing



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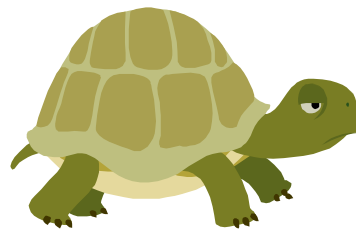
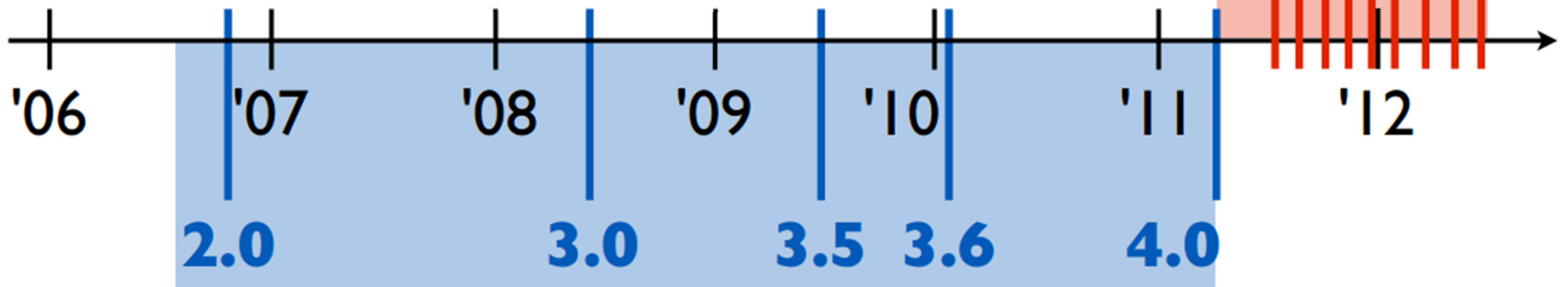
# Need for rapid releases?



- 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"*



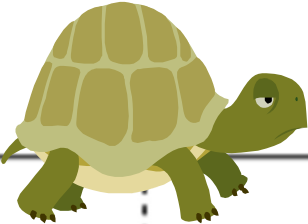
# An example: Firefox



# Releases cycle significantly shorter

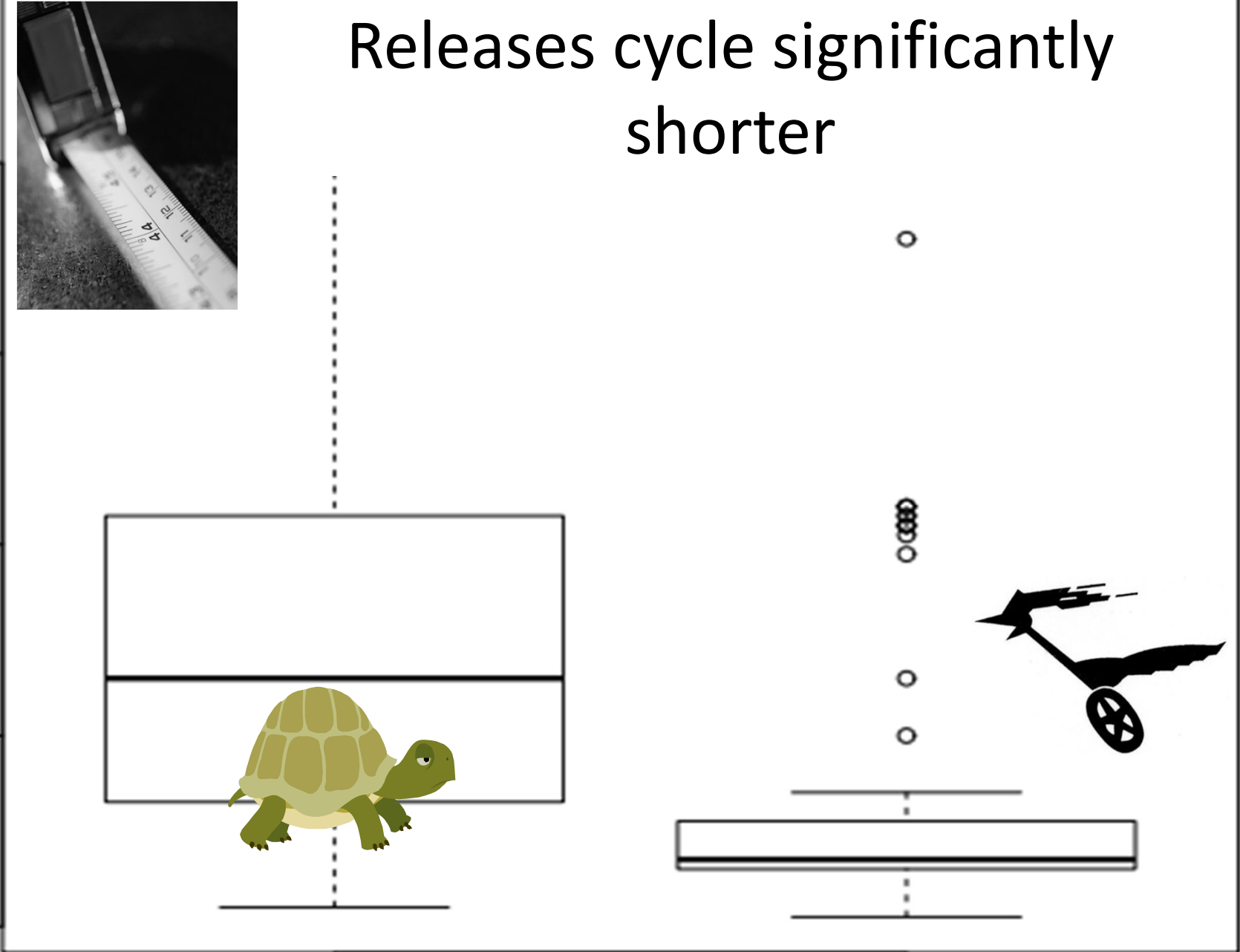
Days since previous release

80  
60  
40  
20  
0

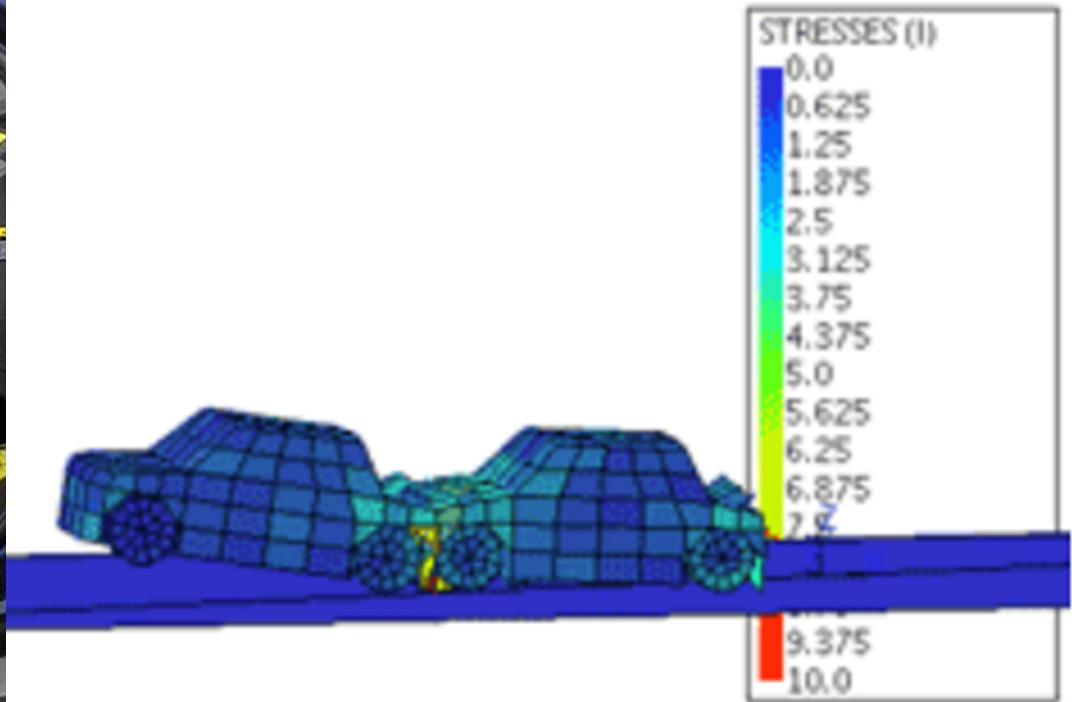


Traditional

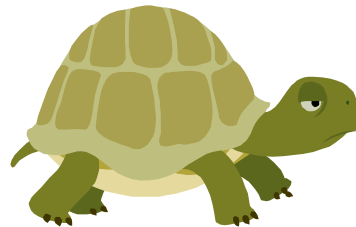
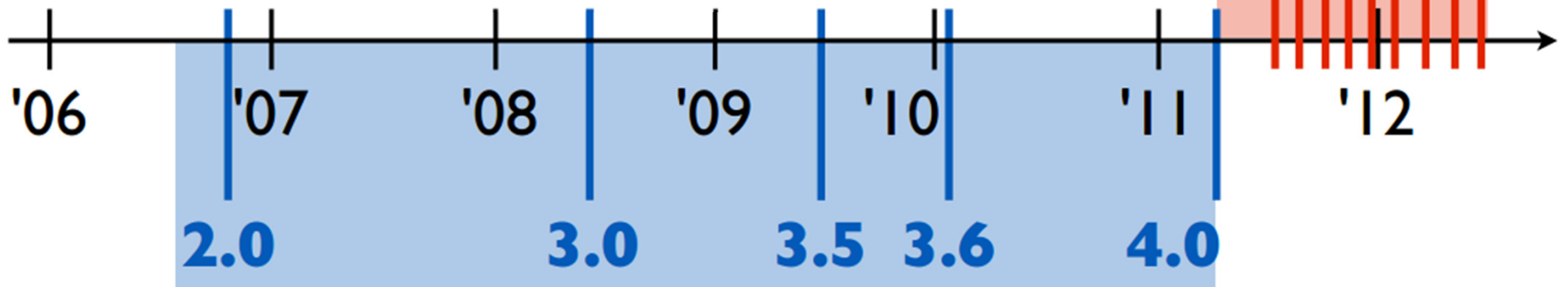
Rapid



# 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

## 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](#)

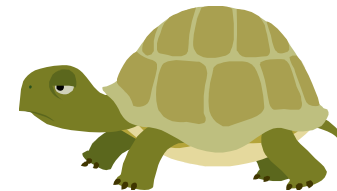
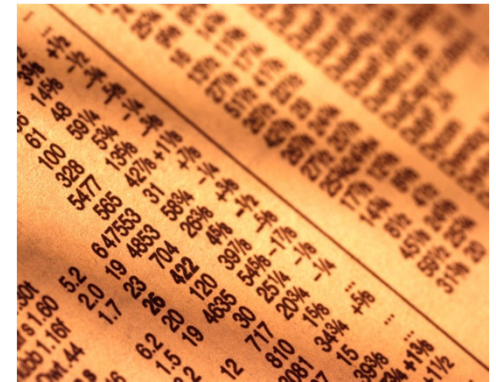
search testcases: **testcases needed!** | [recently added](#) | [recently changed](#) | by id:

# System Test Results

# Mining Results



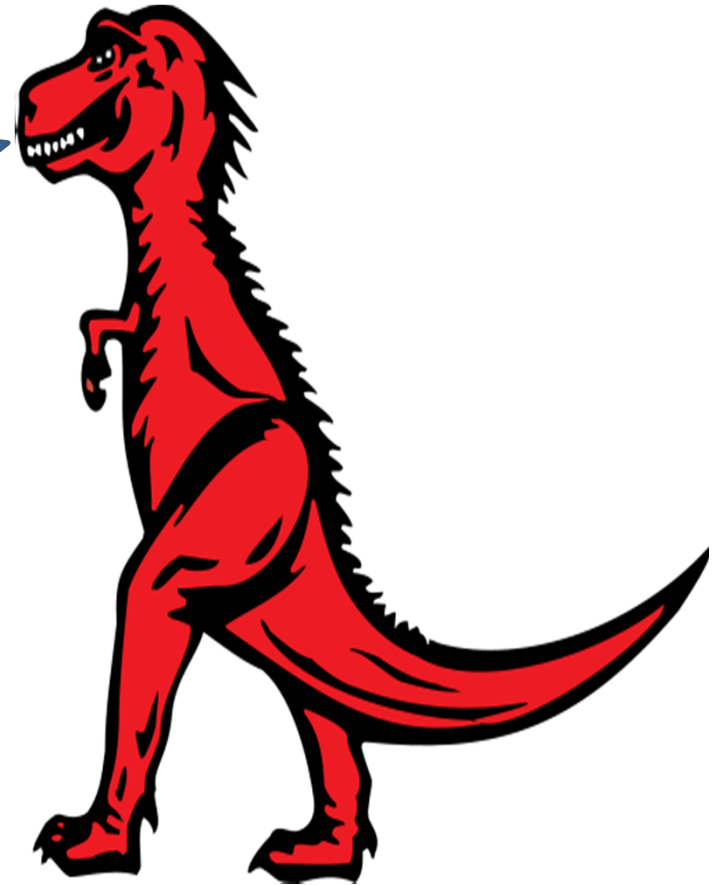
- Descriptive numbers
  - 1,547 unique test cases (roughly 10% of them are automated)
  - 312,502 test case executions
  - 6 years of testing
  - 6,058 individuals
  - 2,009 software builds
  - 22 operating system versions
  - 78 locales
- 5 major TR versions with 147 smaller releases
- 9 major RR versions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





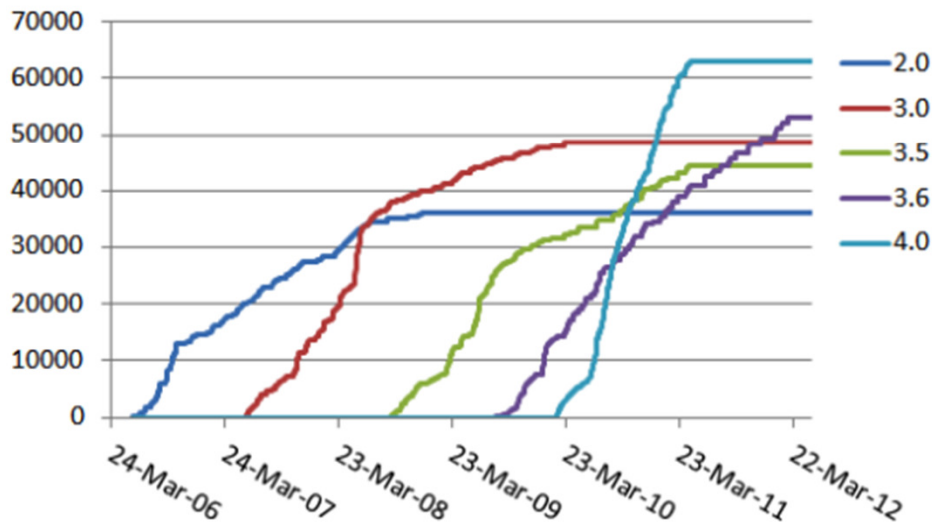
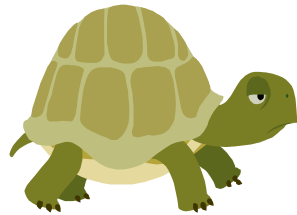
# To triangulate:

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

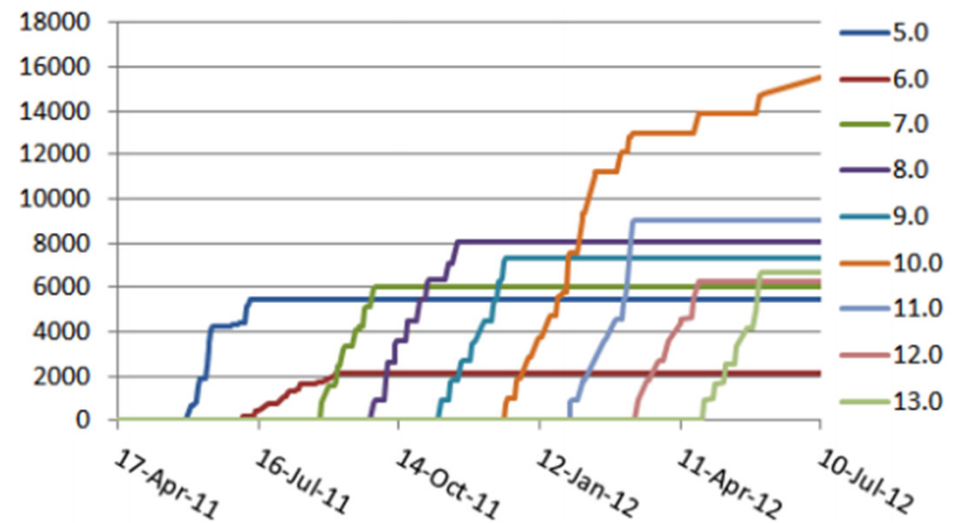


# Less test executions

35,000-55,000  
executions/release

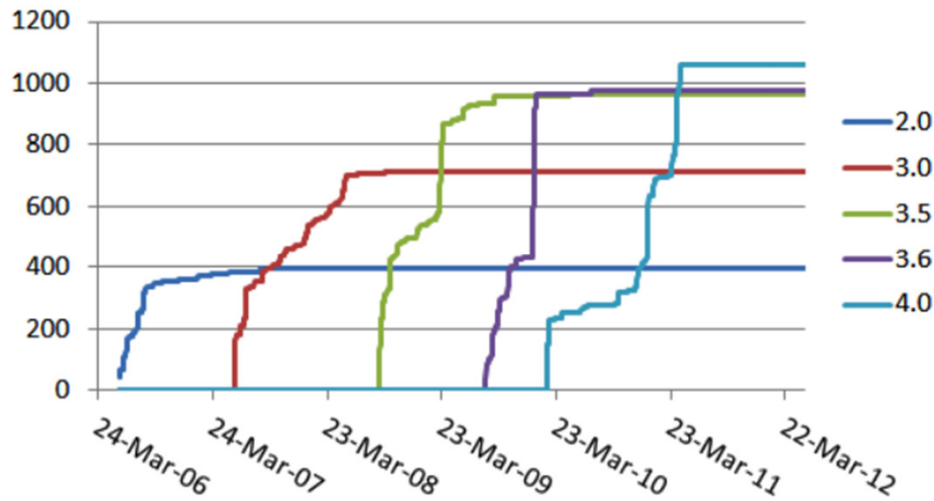
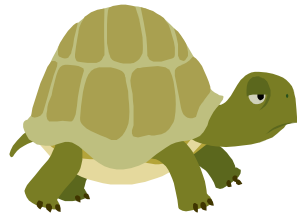


6,000-9,000  
executions/release

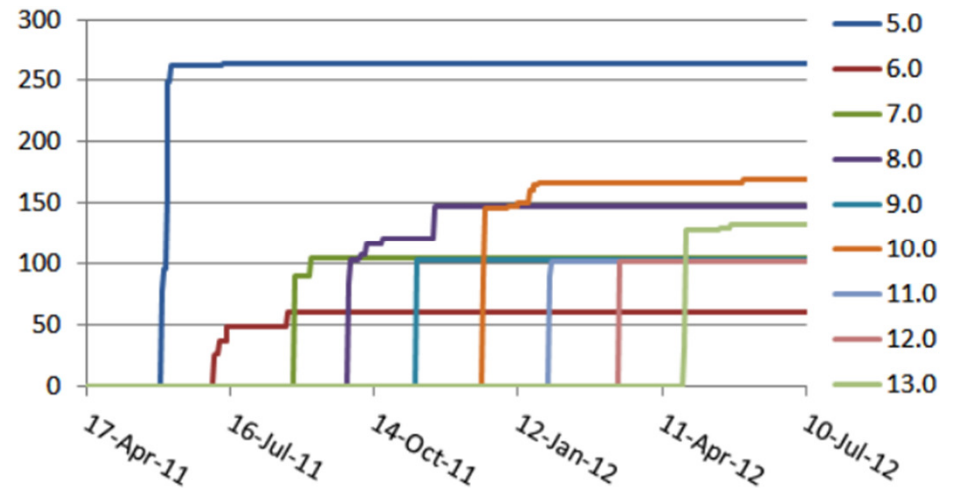


# Smaller test coverage

400-1,050 unique test case executions/release



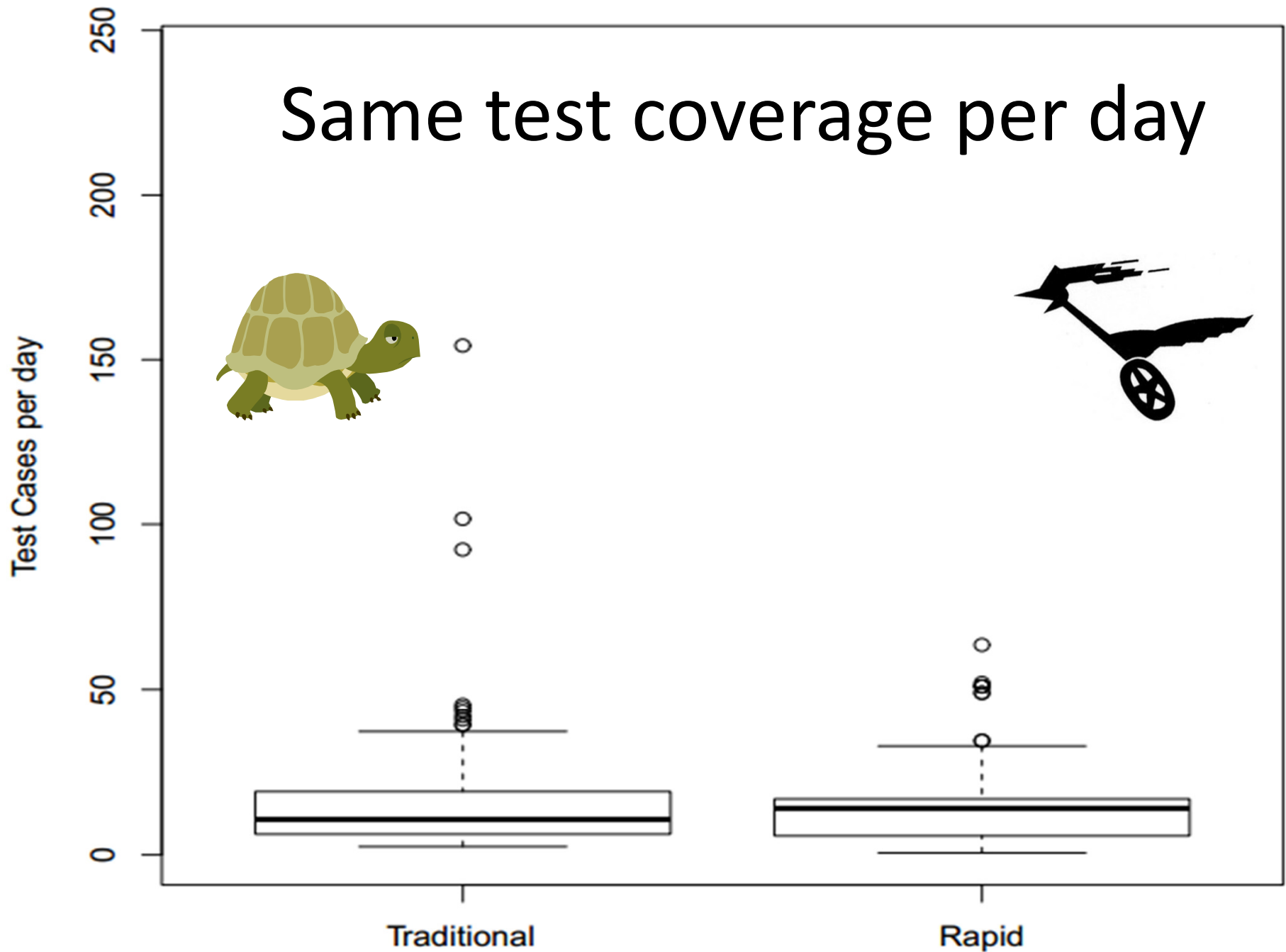
60-260 unique test case executions/release



Twice as many test executions per day



# Same test coverage per day



*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***

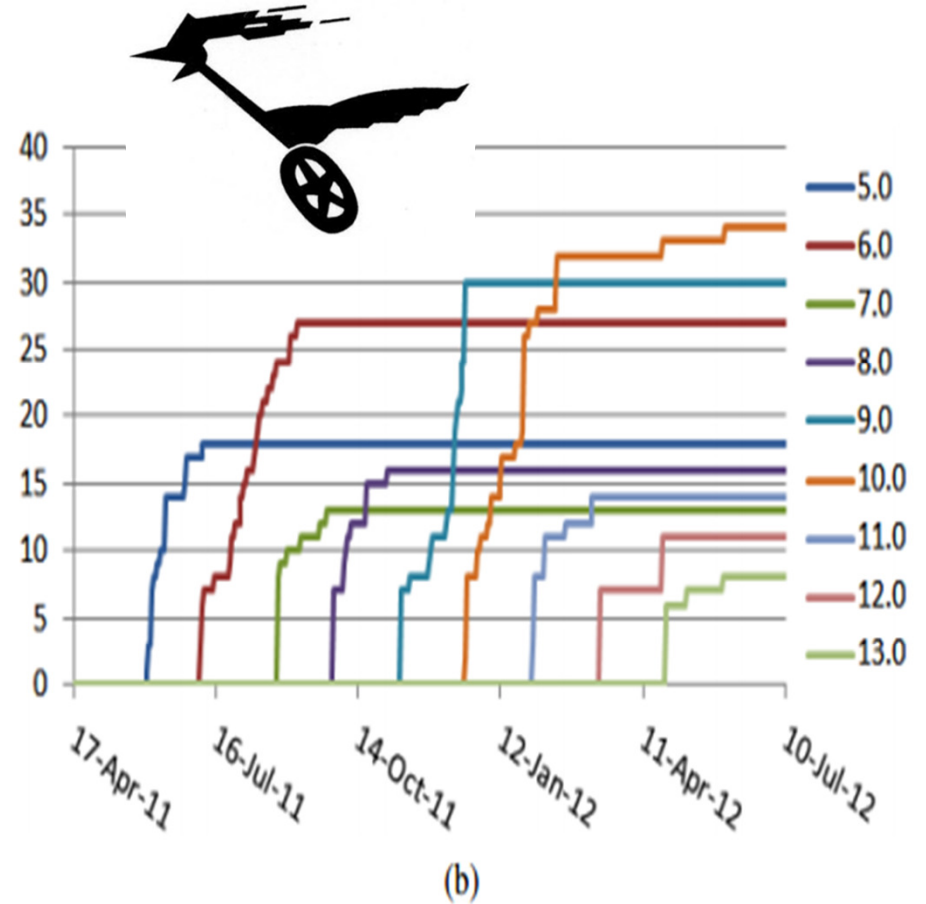
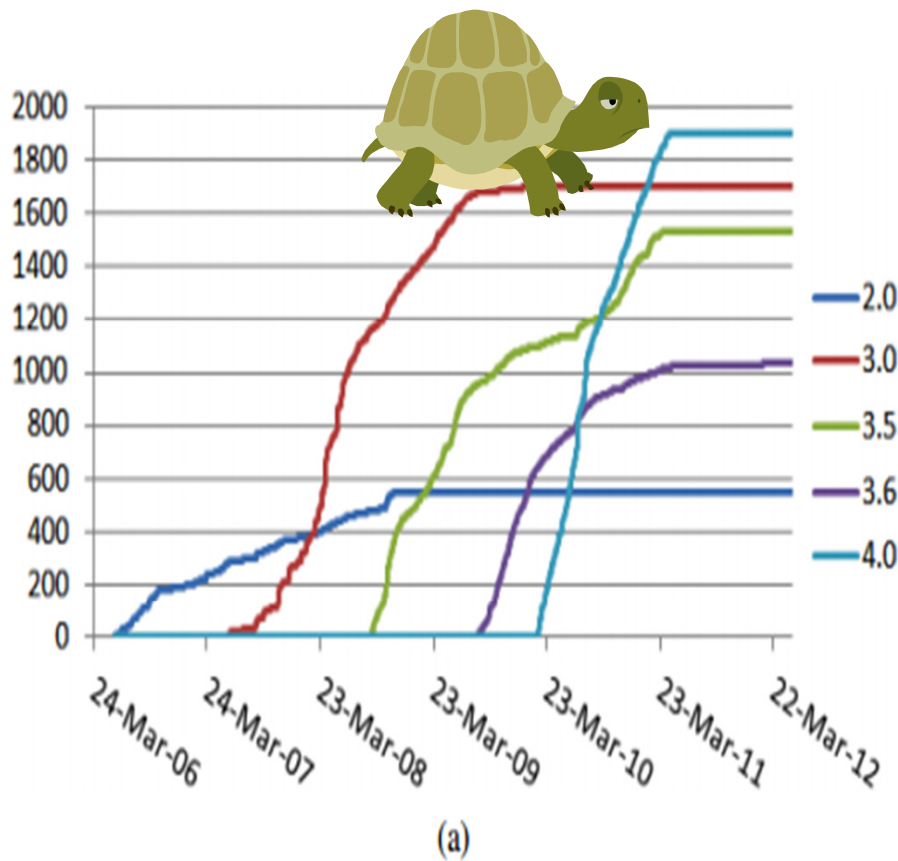
*A fixed set of tests for areas prone to regression ... dynamically changing set of tests to ... high risk features*



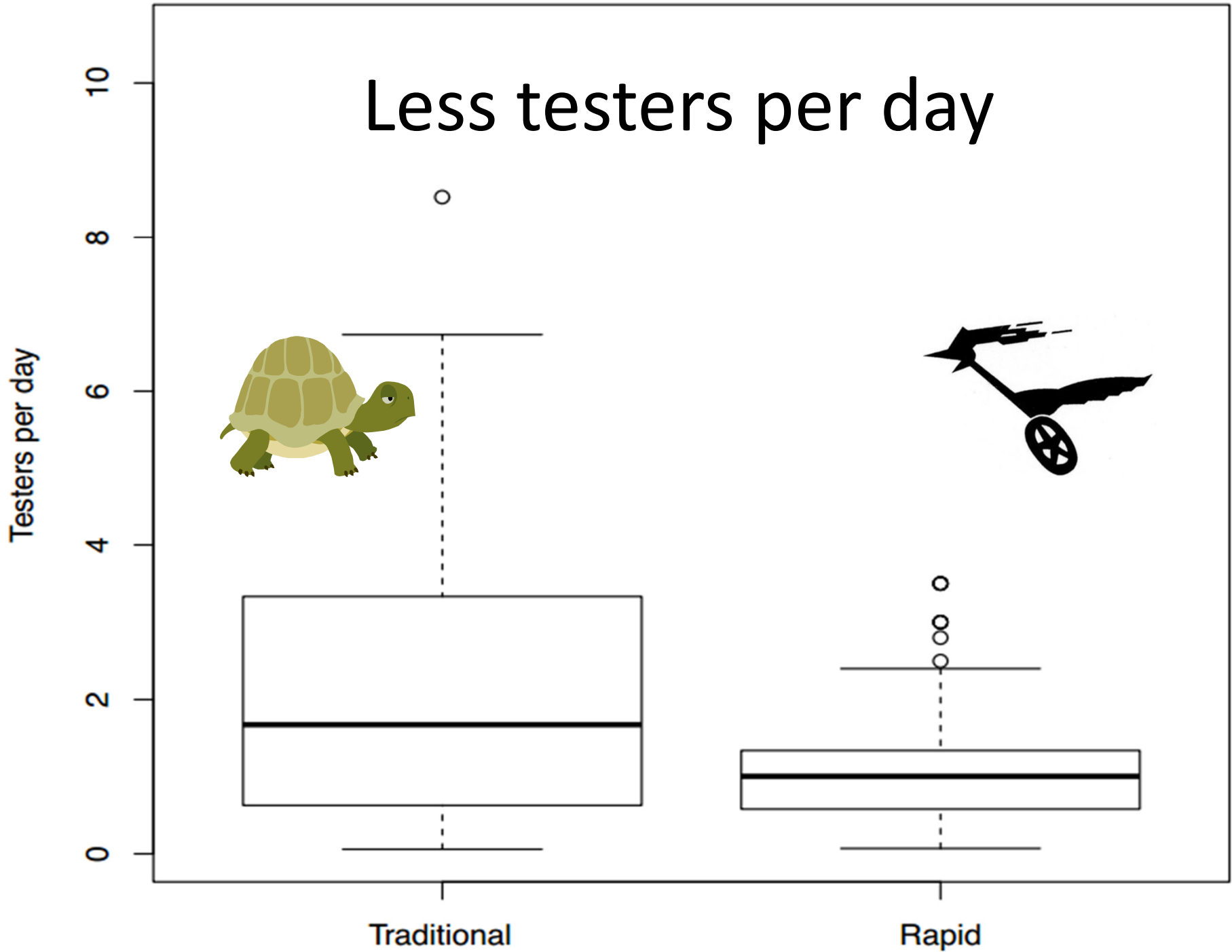
# Less testers

600-1,900 testers/release

7-34 testers / release



# Less testers per day





*...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

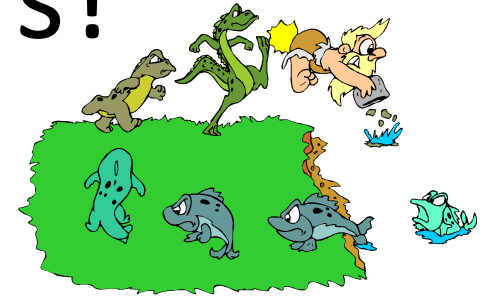
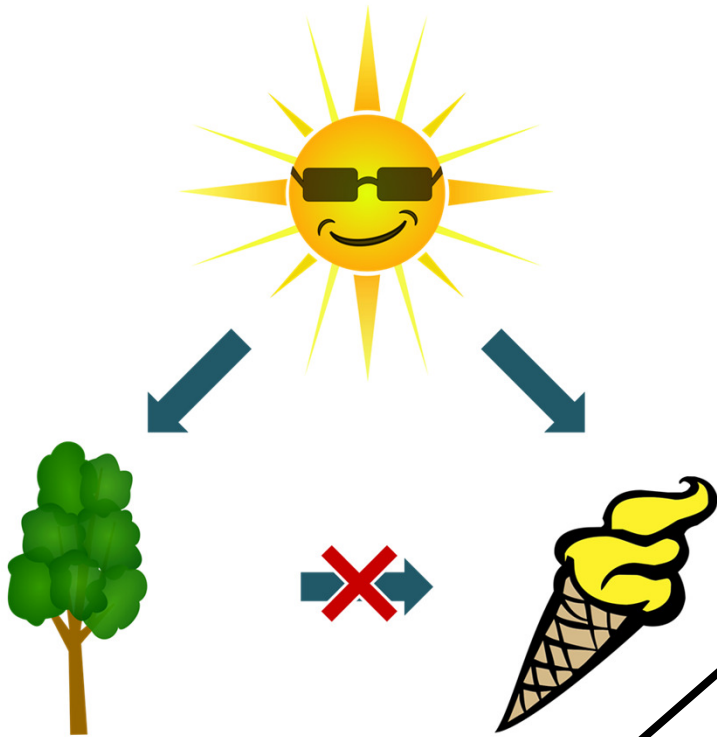


**Test  
executions,  
Operating  
systems**

**Unique test  
cases**

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

# Confounding factors?



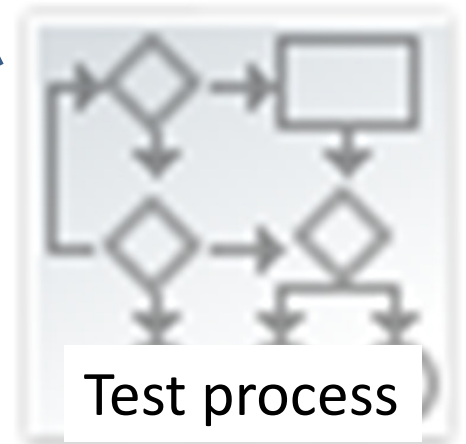
Project evolution



Release length

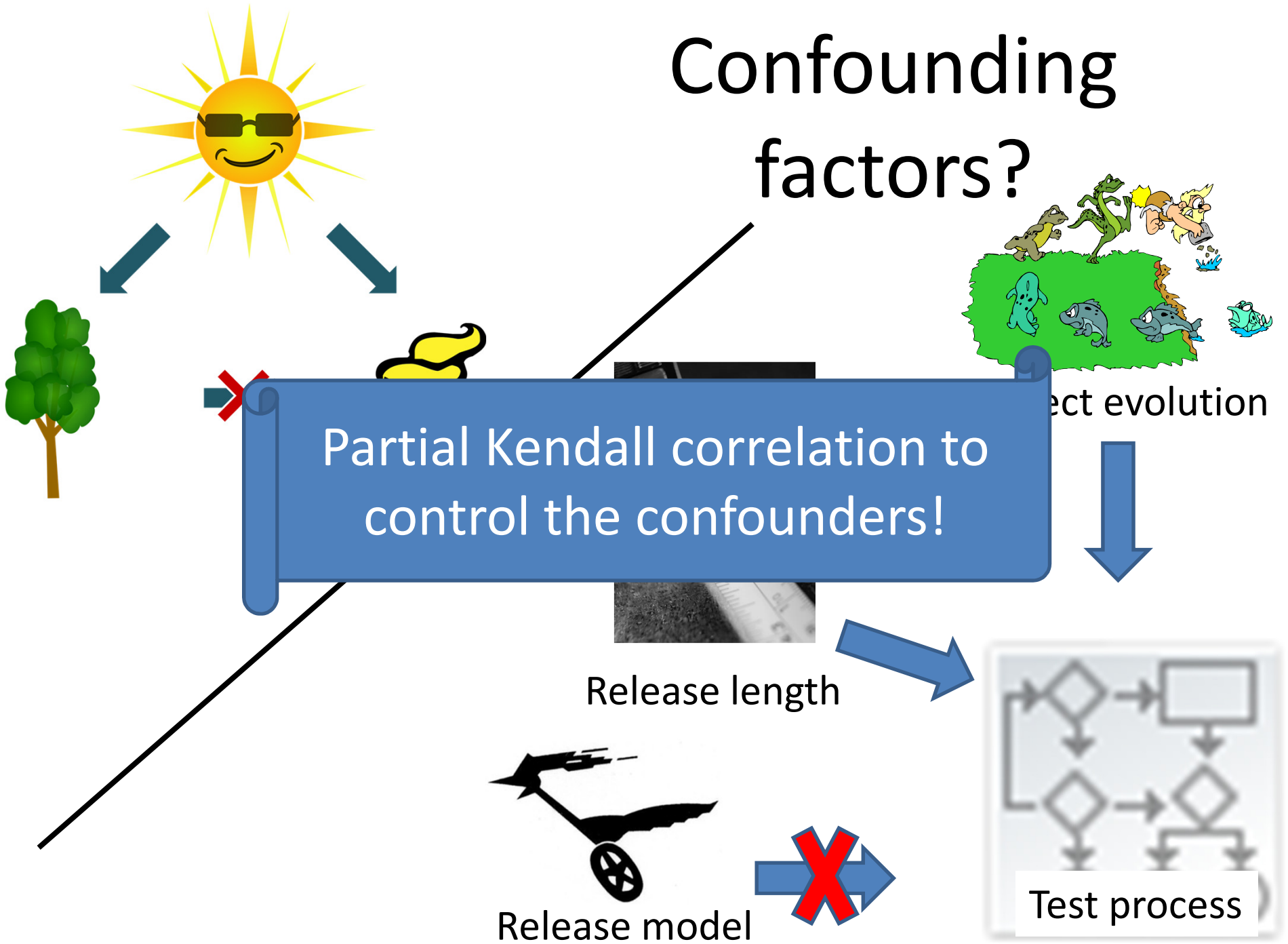


Release model



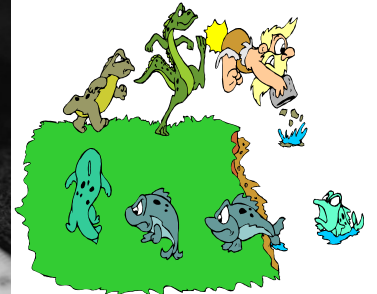
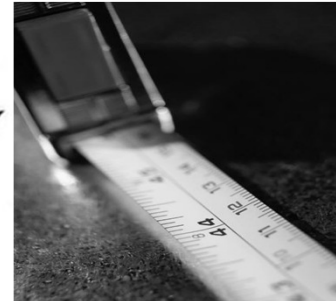
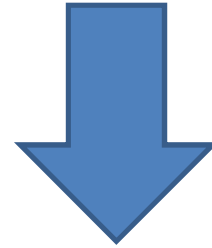
Test process

# Confounding factors?



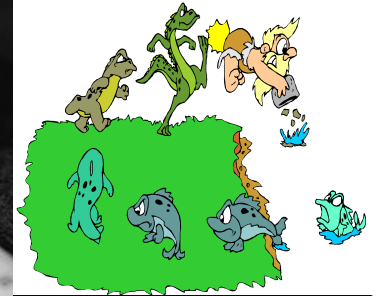
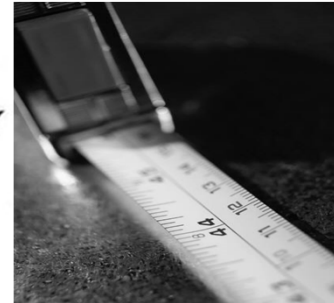
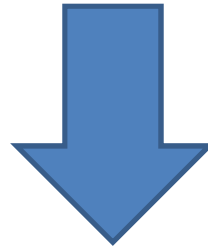
# Shorter release length increases test effort

Perhaps due to increased regression testing



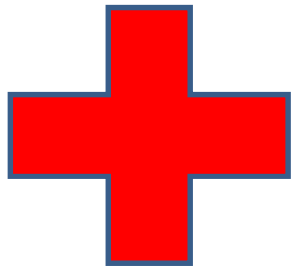
#Test executions per day (RQ1)	0.026	-0.414***	0.048
#Test cases per day (RQ1)	-0.231***	-0.593***	0.017
#Testers per day (RQ2)	-0.224***	-0.331***	-0.069
#Builds per day (RQ3)	-0.105*	-0.258***	-0.176***
#Locales per day (RQ4)	-0.281***	-0.443***	-0.115*
#OSs per day (RQ4)	0.149**	-0.822***	0.130**

# Focusing occurs to cope with increased effort



#Test executions per day (RQ1)	0.026	-0.414***	0.048
#Test cases per day (RQ1)	-0.231***	-0.593***	0.017
#Testers per day (RQ2)	-0.224***	-0.331***	-0.069
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#OSs per day (RQ4)	0.149**	-0.822***	0.130**

Move to Rapid Releases (after controlling confounders) correlates with

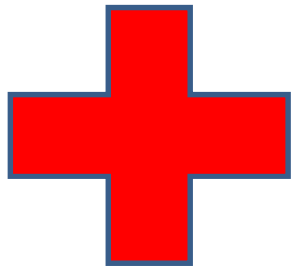


~~Test  
executions,  
Operating  
systems,~~

~~Unique test  
cases,~~  
+Test  
executions

+Unique test  
cases  
Testers,  
Builds,  
Locales

Move to Rapid Releases (after controlling confounders) correlates with



**Operating systems,**

**Test executions**

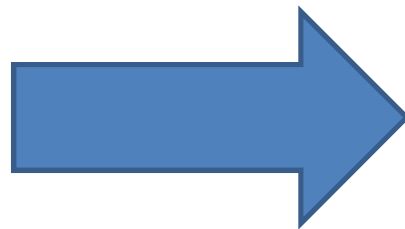
**Unique test cases**

**Testers,  
Builds,  
Locales**

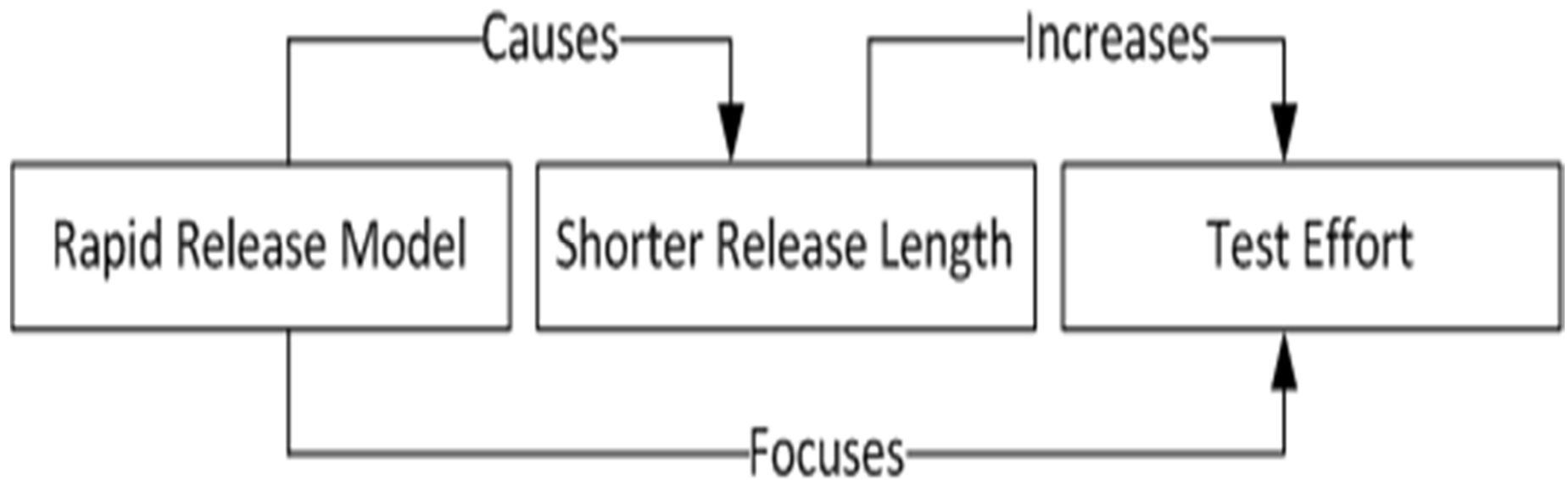


# It's not just the Shorter Cycle Time, but also a Change in Development Process!

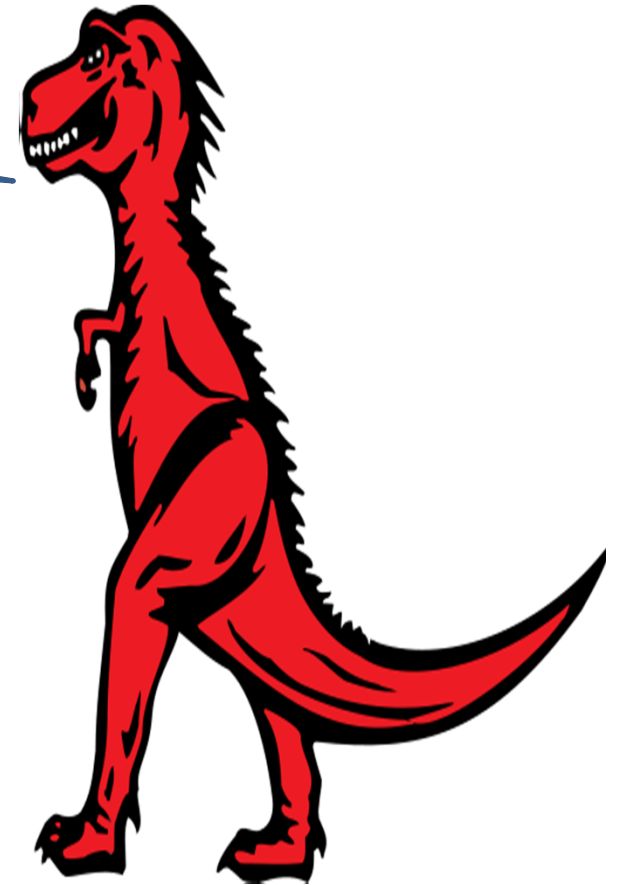
- Smaller Scope of Testing
- Smaller Testing Team
  - with more hired resources
- Test Priorities
  - More OSs, less locales, less builds



# 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*

