

Better Continuous Integration with Test Acceleration

Tanay Nagjee

Solutions Architect & Manager, Electric Cloud

@tanayciousd



I CAN'T DEVELOP AN
AUTOMATED TESTING
SYSTEM BY THE
ARBITRARY DEADLINE
YOU SET.



www.dilbert.com
scottadams@aol.com

TRY WORKING SMARTER,
NOT HARDER, WITH A
SENSE OF URGENCY, AND
A BIAS FOR ACTION.



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OR MAYBE
YOU COULD
DO SOME-
THING
DIFFER-
ENTLY.



I'M NOT
THE ONE
WHO CAN'T
GET HIS
WORK DONE.



High stakes

**“Ford recalls
433,000 cars:
software bug
breaks engine off-
switch”**

The Register, 2015

**Healthcare.gov:
“hundreds of
software bugs had
to be found and
fixed”**

Forbes, 2013

**“To keep a Boeing
Dreamliner flying,
reboot every 248
days”**

Engadget, 2015

**“One bad algorithm
cost traders
\$440m”**

The Register, 2012

***Software Bugs
Cost Economy
\$312 Billion Per
Year***

Cambridge University, 2013

Business pressures that impact testing

Get-it-out-the-door mentality

Will test more later

New feature commitments

Fast feedback



Try to speed up the commit build. Continuous Integration on a build of a few hours is better than nothing, but getting down to that magic ten minute number is much better. This usually requires some pretty serious surgery on your code base to do as you break dependencies on slow parts of the system.

- Martin Fowler



CI testing toolbox

Code
Coverage
Tools

Static
Analysis
Tools

Unit Test
Tools



Typical fixes for long test suites

Manually parallelize test jobs to do more in the same amount of time

Buy faster hardware

Accept long CI cycles

Cut down on tests and analyses that are run during CI



**I WROTE A UNIT TEST
ONCE**

IT WAS AWFUL

AUTOMATE



ALL THE THINGS

**COARSE GRAINED
PARALLELISM**



MORE STUFF AT ONCE

FINE GRAINED PARALLELISM



EVEN MORE STUFF AT ONCE

ElectricAccelerator dramatically
accelerates software builds by safely
parallelizing jobs across shared
clusters of physical or cloud CPUs.

ElectricAccelerator dramatically
accelerates software builds **and tests**
by safely **parallelizing** jobs across
shared clusters of physical or cloud
CPUs.

ElectricAccelerator

**Massive
parallelization and
distribution for fast
builds and tests**

**Automatic
dependency
detection**

**Actionable
visualization and
reports for optimal
parallelization**

**Efficient resource
utilization; create
build/test clouds to
lower costs**





HUDDLE

Like SETI for build/test

Supercharge builds and tests using your teams' unused CPU capacity. *FREE!*

Download & Huddle Up!

Huddle Up!

Use case #1

- Need to reduce cycle time to 10 minutes to enable gated check-ins and continuous delivery
- Sticklers for test-driven development, suites will grow over time
- Tools: Boost, MS Code Coverage, Bullseye
- Time to run tests & coverage:
 - Before: **7m30s**
 - After: **3m11s** on 2 machines & **39s** best case

2.4x

2 Hosts

11.5x

Best Case

Use case #2

- Browser tests not previously run during CI because they take too long
- Tool: Selenium
- Time to run test suite (~100 tests):
 - Before: **27m30s**
 - After: **3m49s** on 2 machines & **27s** best case

7.2x

2 Hosts

61x

Best Case

Demonstration

How does fine grained test parallelism help?

Shorter CI cycles without sacrificing tests/coverage/analysis

Comprehensive testing

Scale no matter how large the code base grows

Minimize new hardware investment

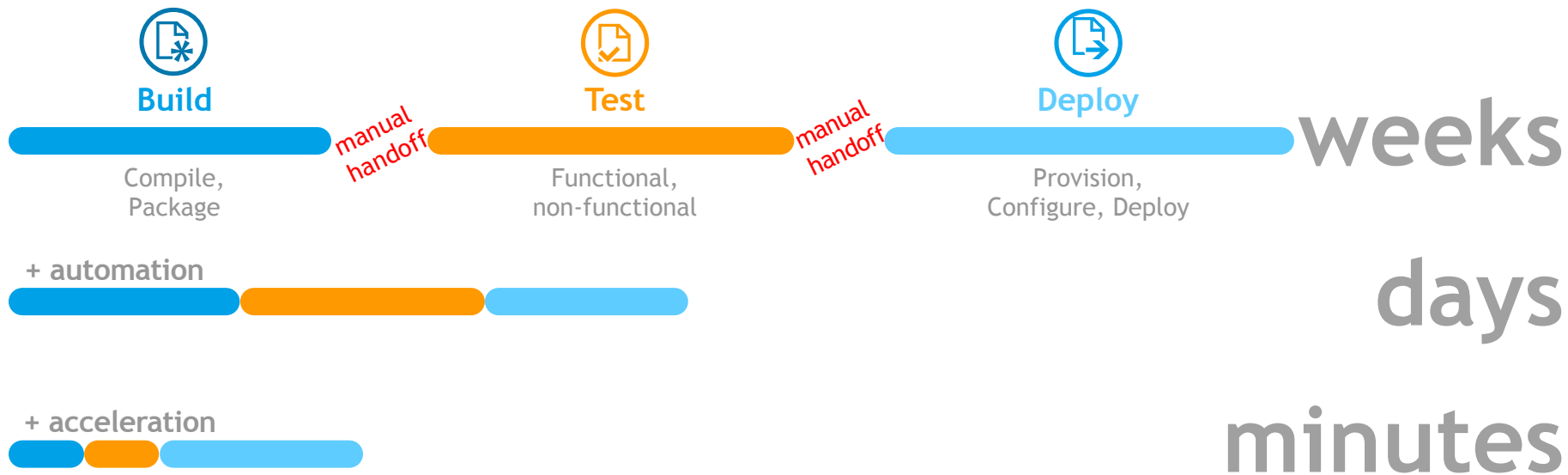
Maximize current hardware investment


Continue to use existing tools

Learn what tests take the longest and any dependencies

The journey

How long does it take to get a **software update** through a delivery pipeline?



A photograph of two people ice climbing a steep, icy wall. The climber in the foreground is wearing a purple jacket and dark pants, and is pulling the second climber up. The second climber is wearing an orange jacket and is higher up the wall. The background is a bright, hazy sky. The text "If it hurts, do it more frequently, and bring the pain forward." is overlaid on the left side of the image.

“If it hurts, do it more
frequently, and bring
the pain forward.”

Martin Fowler

Thank you!

<http://electric-cloud.com/downloads>

@tanayciousd

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