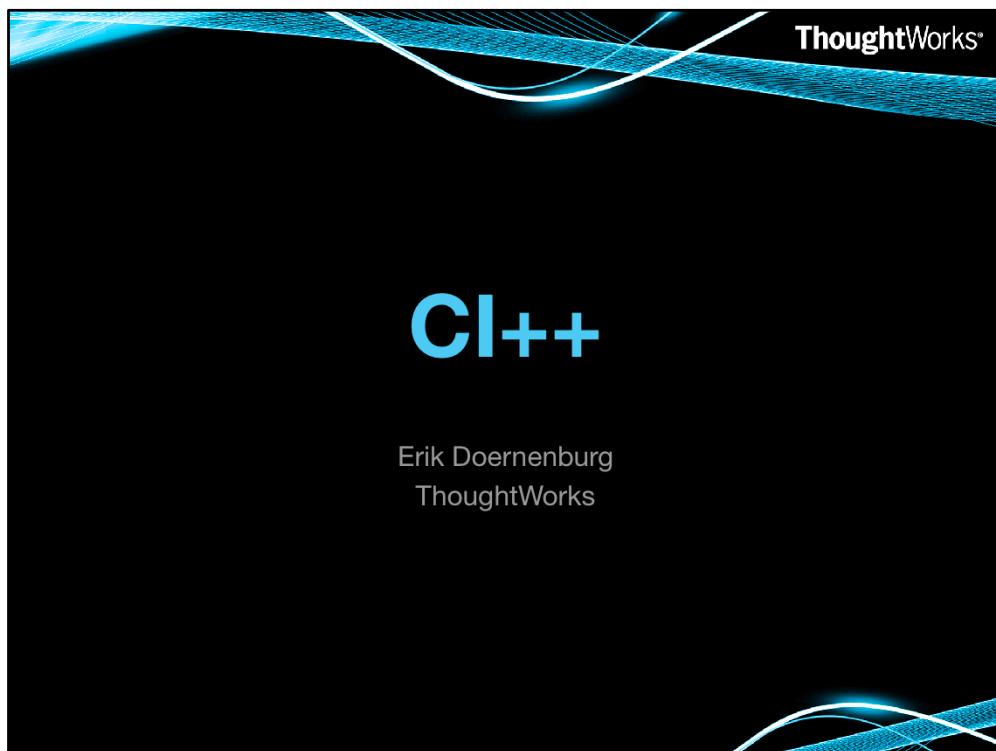
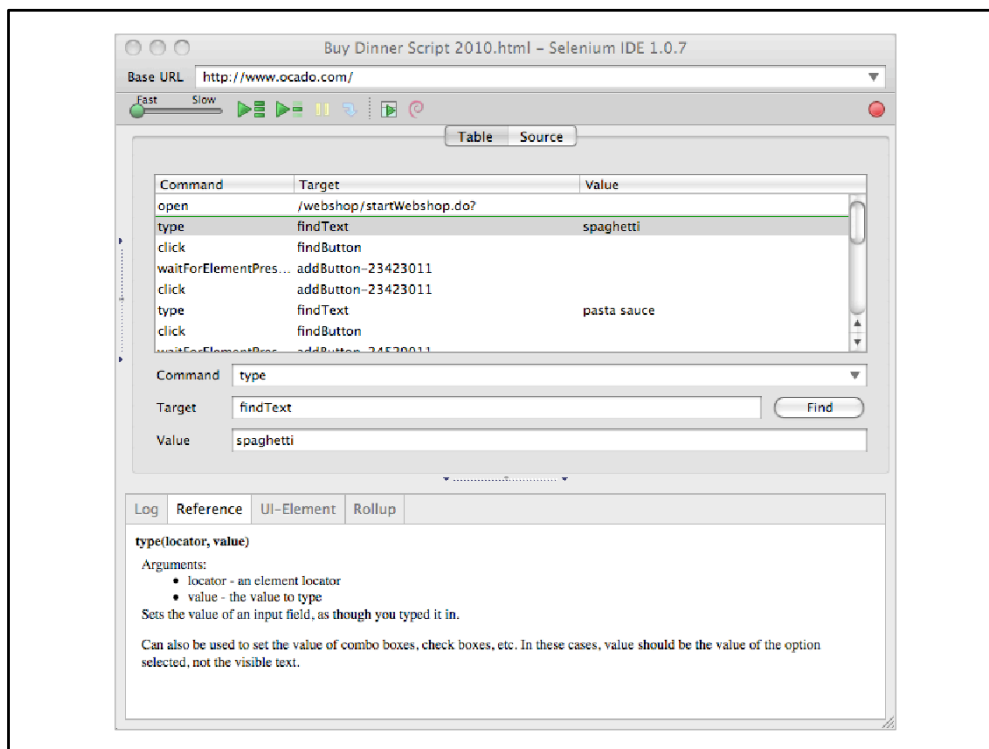




Fully scripted builds and continuous integration have become more mainstream in the past years. In this talk I want to share some of the great ideas and best practices for builds I've seen on projects that take continuous integration a step further. I will examine build pipelines, fully automated acceptance test suites, information radiators, virtualised test environments, and software quality reports. In addition I will discuss a few do's and don't's that can make the difference between a good build and a great build.

[illegible]

2

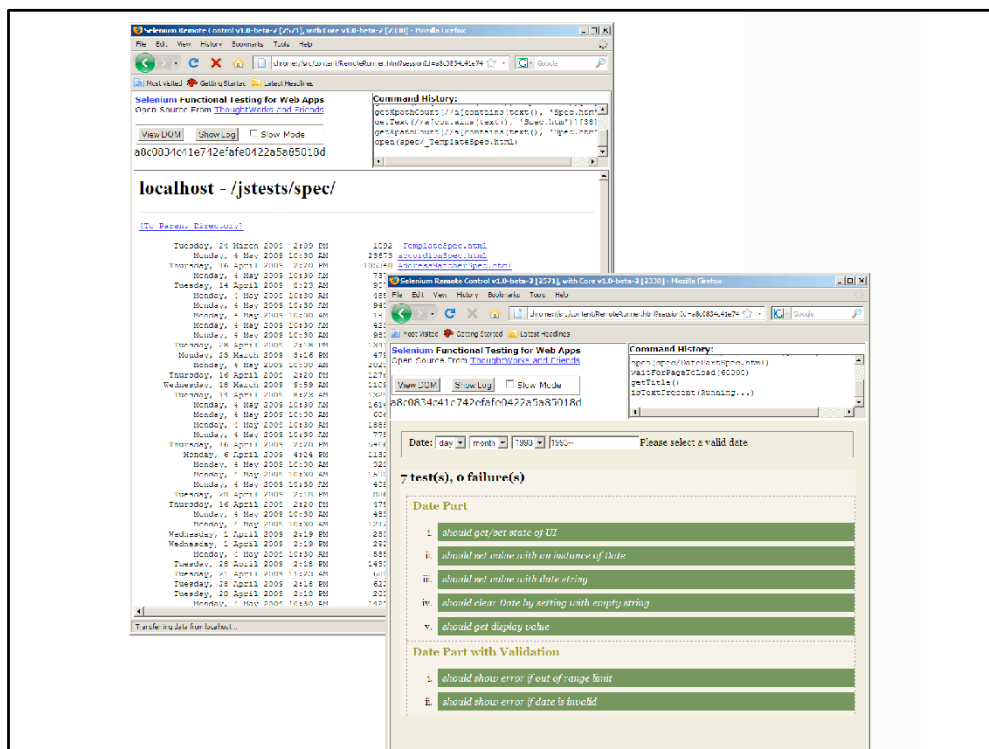


Recording is easy

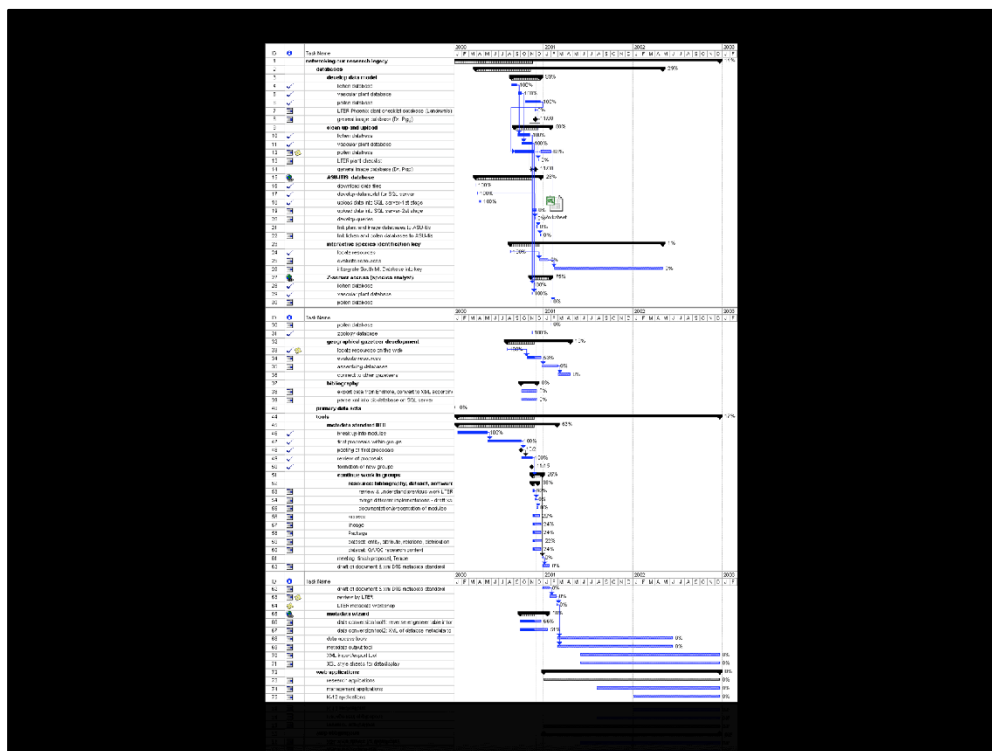
But needs tuning (c.f. “waitForElementPresent” additions)

Not scalable, copy to programming environment and add abstractions

*“Just because it’s JavaScript it
doesn’t mean it isn’t code.”*



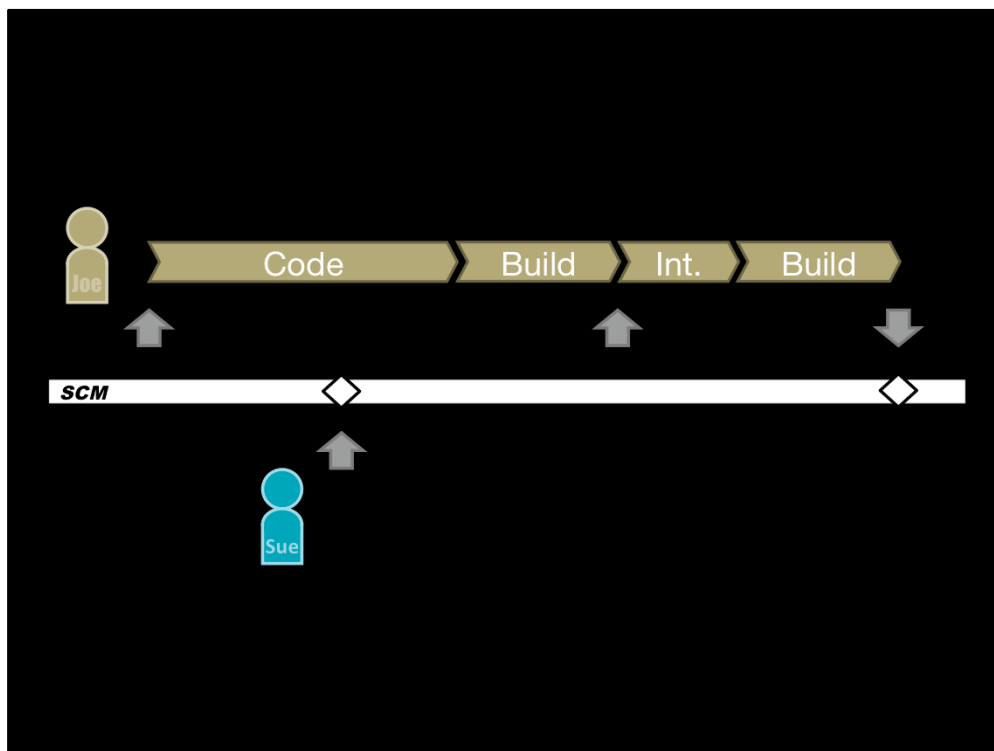
ScrewUnit: Fast and easy to run
Slightly tricky to make part of the build (we use Selenium here...)



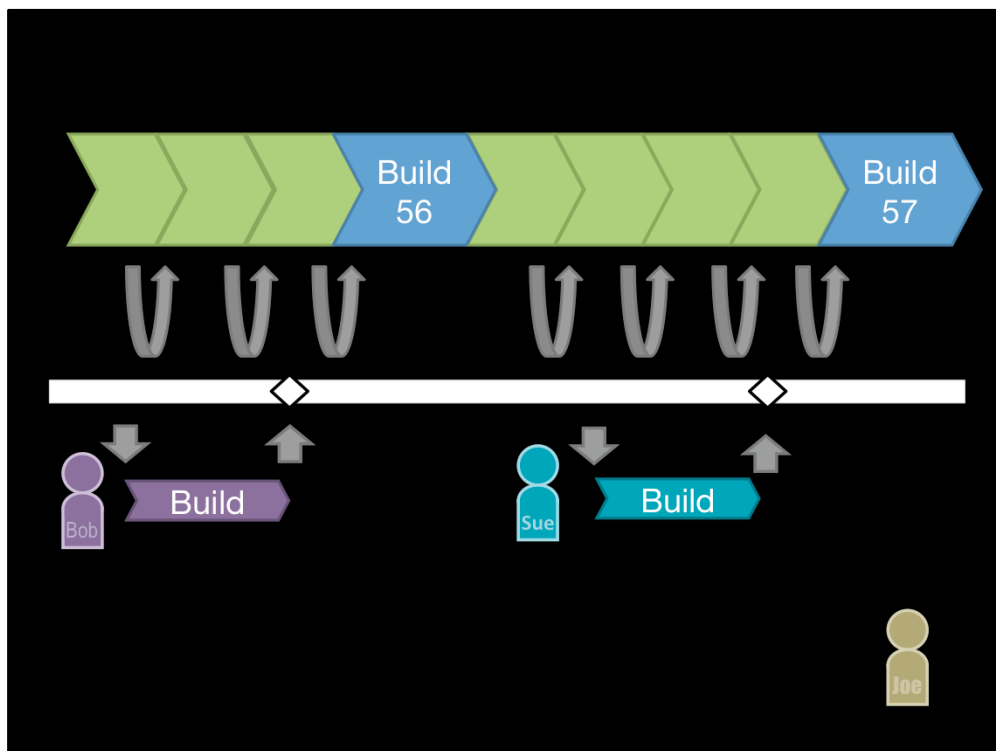
Integration left at end... it's hard to estimate... even harder than coding
 Agile “solved” the estimation of coding... if we developed all the stories in isolation
 we still have the nasty integration problem
 In the words of... “If it’s painful do it more often”
 Now the integration phase disappears... neat trick, eh?
 So, what do we need to make this happen? (next slides)

Meet the devs

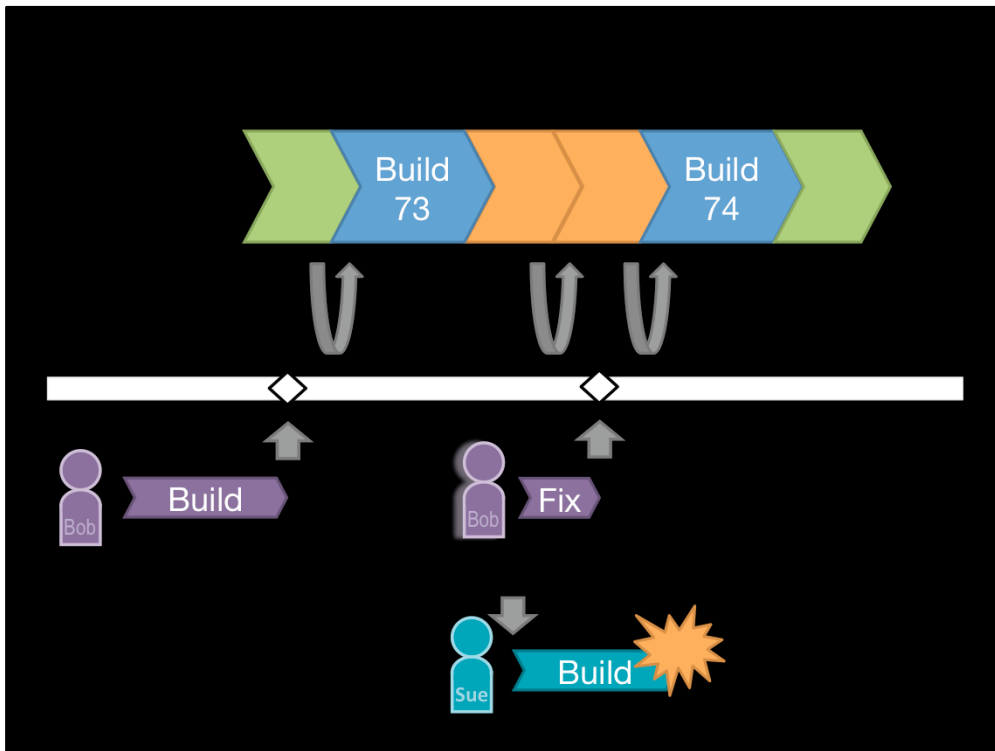




- 1 – Check out from source control
- 2 – Make changes
- 3 – Run build
- 4 – Update from source control
- 5 – Re-run build
- 6 – Check in to source control



The simple scenario: sequential change



Don't check out a broken build!
Never, ever leave after checking in
How do you know it's broken?

The screenshot displays a web application interface for monitoring build status. The main window shows a 'Current status' section with a table of builds. Below this is a 'Recent history' section with a detailed table of build results. A system tray notification in the bottom right corner indicates a successful build.

Current status

Build ID	Status	Tests passed	Artifacts	Changes	Agent	Time left
#39712	Success	50	No artifacts	Changes (1)	jenkins	2h 30m left
#39710	Success	7036	No artifacts	Changes (1)	jenkins	1h 10m left
#39709	Success	9104	No artifacts	Changes (4)	jenkins	1h 10m left
#39706	Success	13717	No artifacts	Changes (7)	jenkins	3h 10m left

Recent history

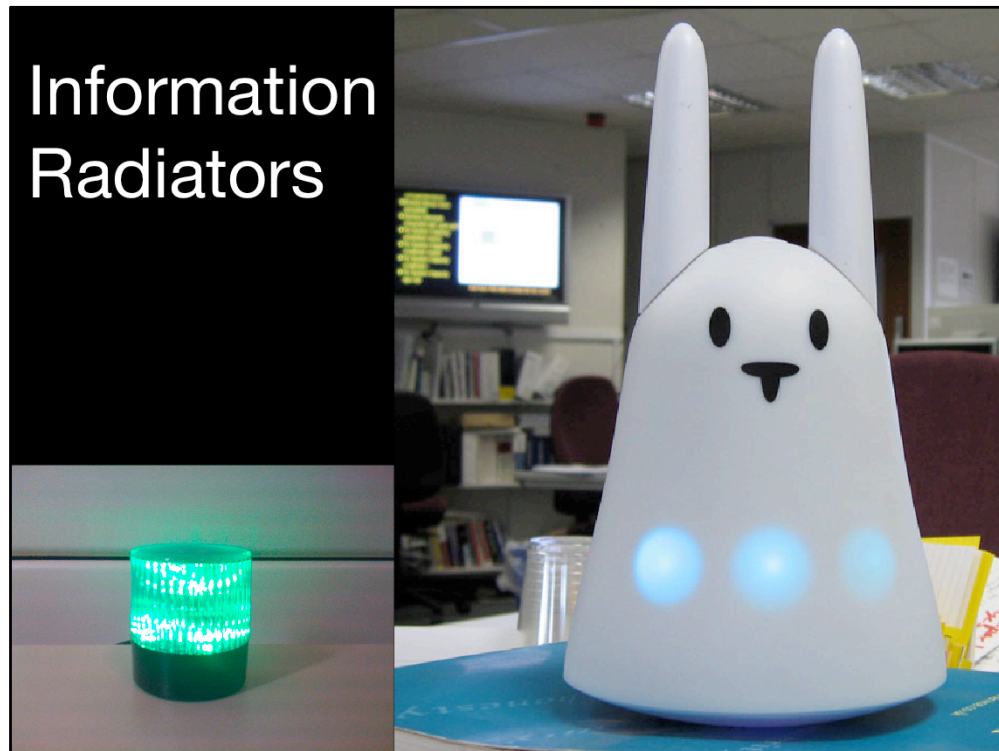
#	Results	Artifacts	Changes	Started	Duration	Agent	Tags
#39709	Tests passed: 54032	View	Changes (0)	21 Apr 09 15:17:15Z	1m:03s	jenkins	None
#39708	Tests failed: 1 (1 non-passed: 1400)	View	Changes (0)	21 Apr 09 15:16:10Z	1m:11s	jenkins	None
#39707	[Out of memory: Java heap space] Tests passed: 14039	View	Changes (14)	21 Apr 09 15:02:15Z	1m:05s	jenkins	None
#39706	Tests failed: 1 (1 non-passed: 14025)	View	Changes (2)	21 Apr 09 15:03:21Z	1m:16s	jenkins	None
#39705	Tests passed: 14026	View	Changes (0)	21 Apr 09 15:02:15Z	1m:03s	jenkins	None
#39704	Tests passed: 14026	View	Changes (0)	21 Apr 09 15:02:15Z	1m:03s	jenkins	None
#39703	[Out of memory: Java heap space] Tests failed: 5 (3 non-passed: 14021)	View	Changes (1)	21 Apr 09 15:04:21Z	1m:02s	jenkins	None
#39702	Tests passed: 14026	View	Changes (0)	21 Apr 09 15:02:15Z	1m:03s	jenkins	None
#39701	[Out of memory: Java heap space] Tests failed: 1 (1 non-passed: 14025)	View	Changes (0)	21 Apr 09 15:02:15Z	1m:03s	jenkins	None

System Tray Notification:

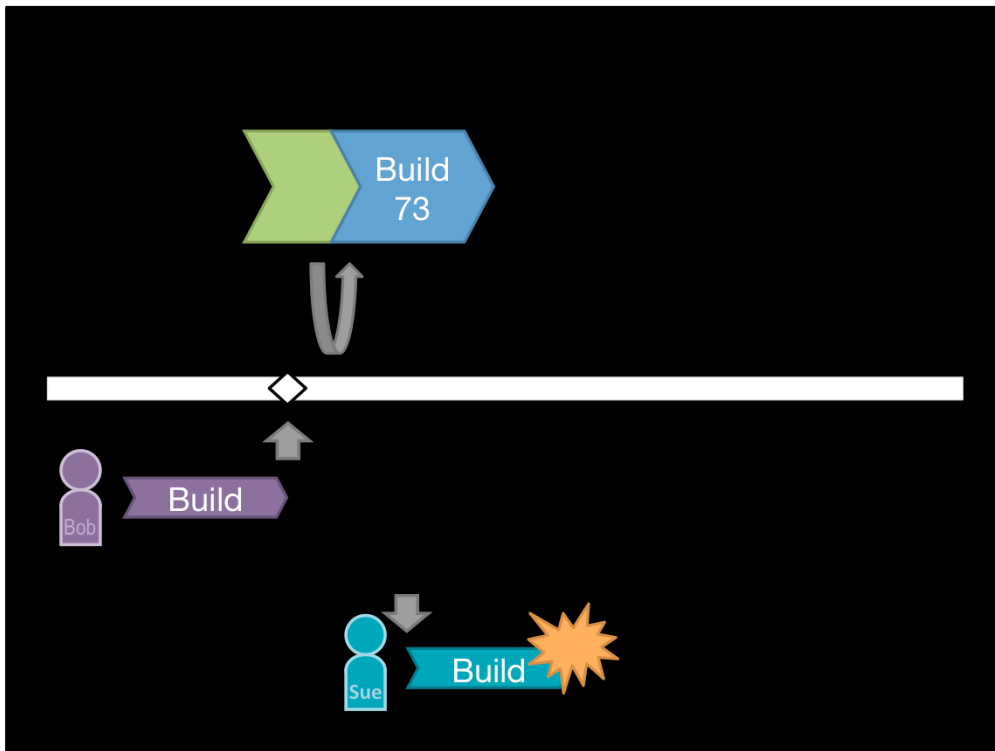
NMock Build successful
Yet another successful build!

8:2 AM

The web page has other uses...
Status needs to be ambient – Twitter?



More visible
Give the abstract build a face, care for your build!



Don't check out while building...
What should the radiator show?



good



broken



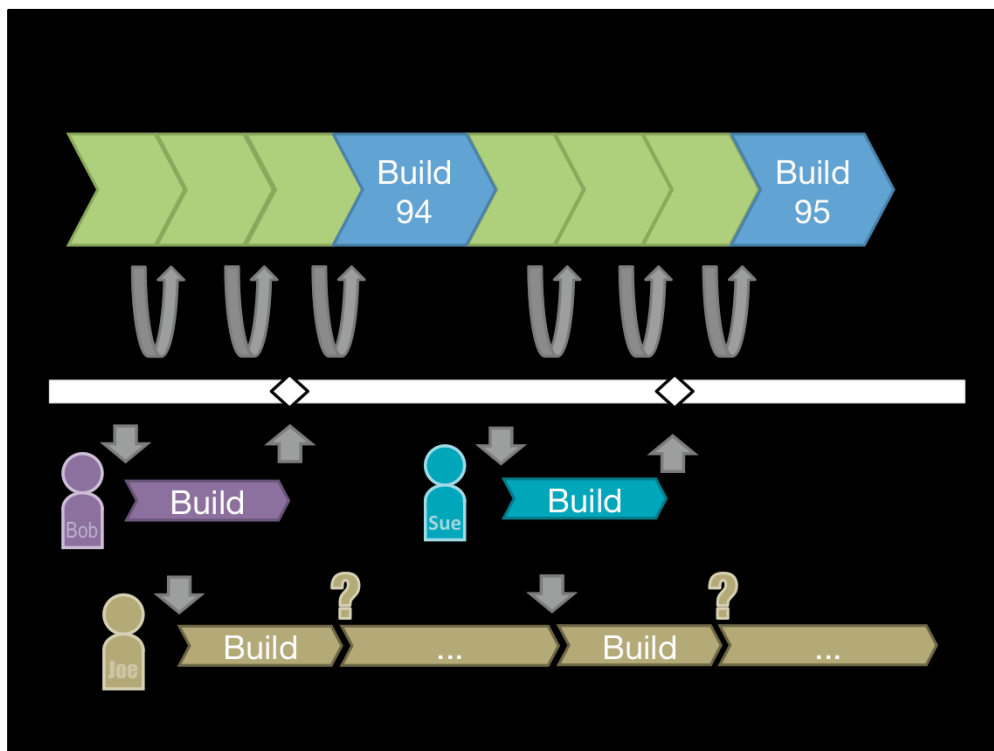
building

Depending on who uses the radiator. If it's for management or information purposes "building" might not mean much...



you do the maths...

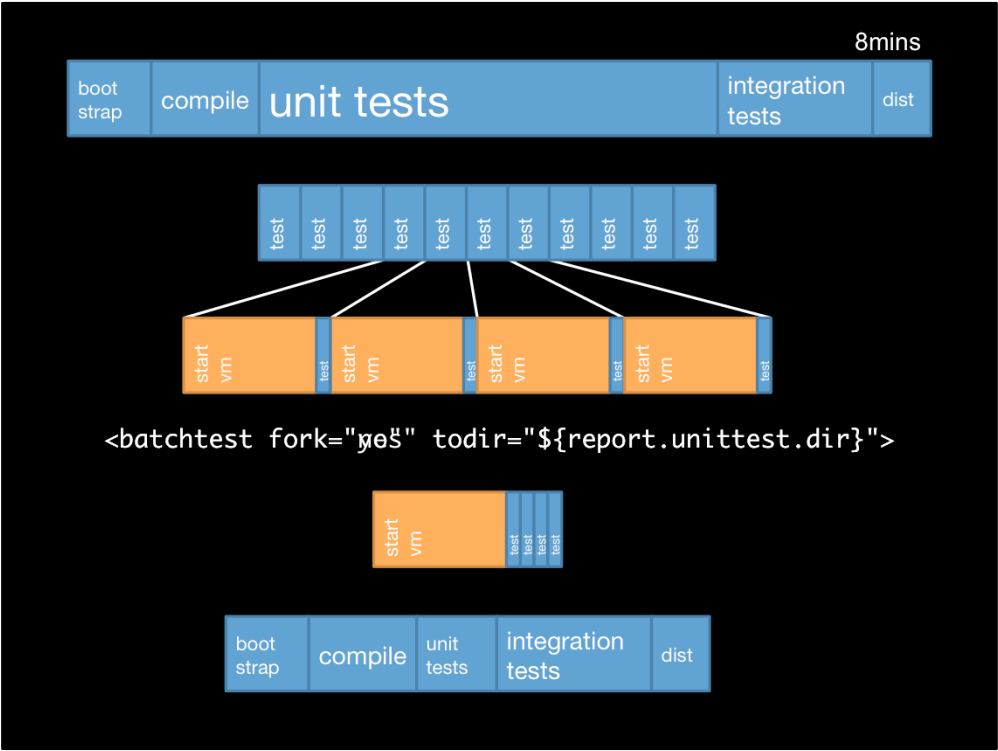
build light shows “building” more than 50% of the time

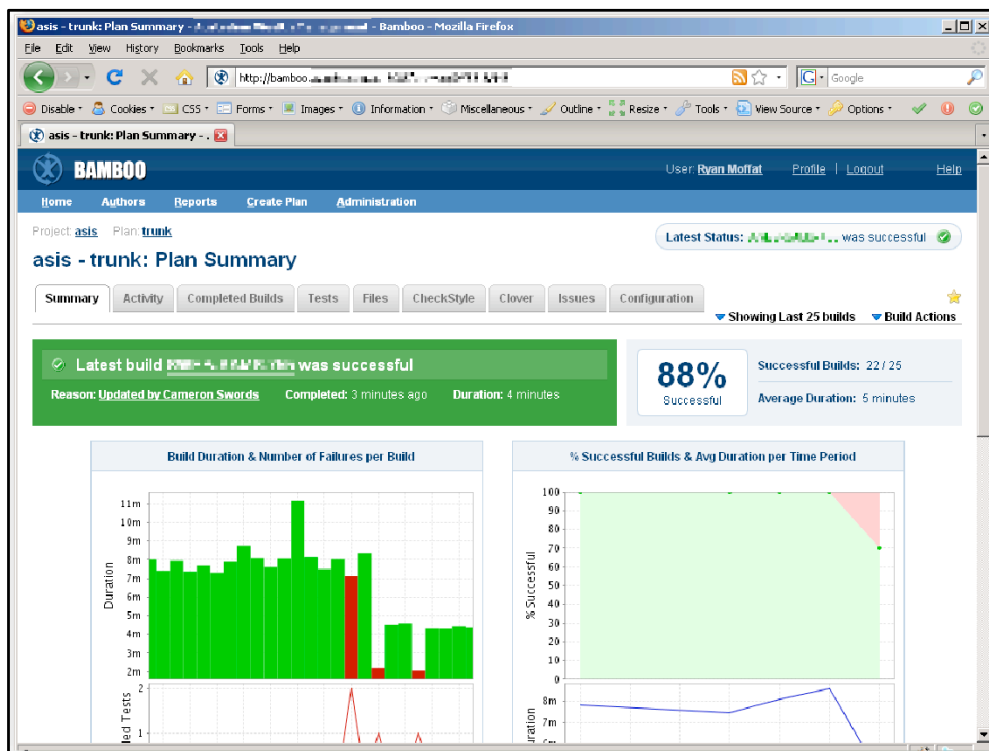


Defeated by the process, concurrency
Length of build does matter



Monitor this
Go further, show the length of the build stages





run unit test

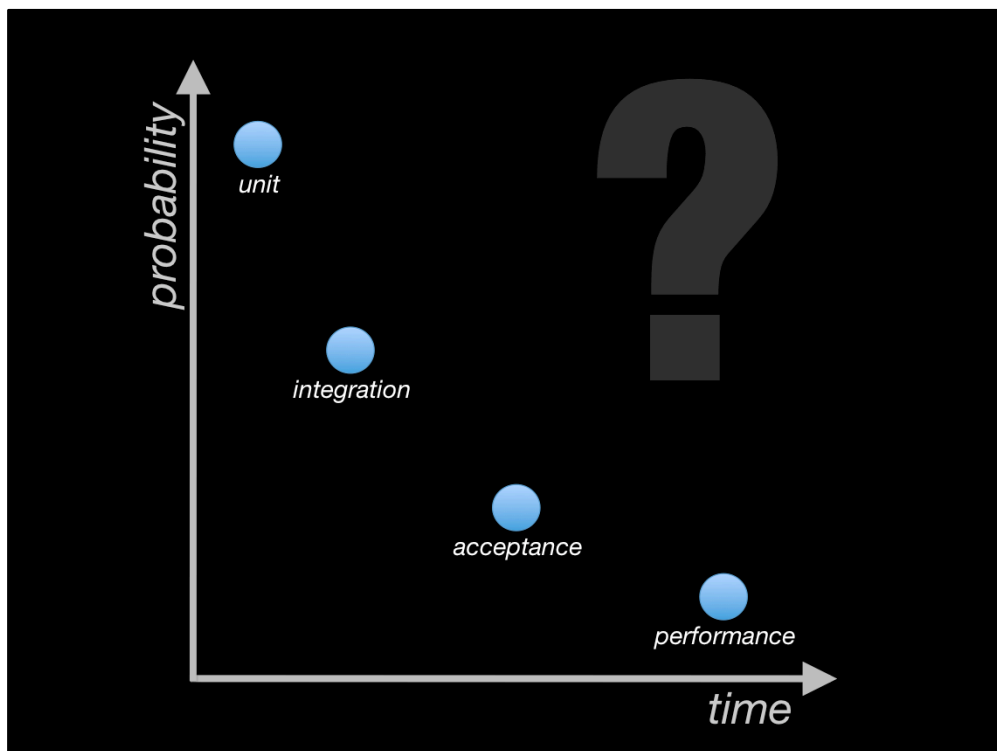
load XML file

open DB connection

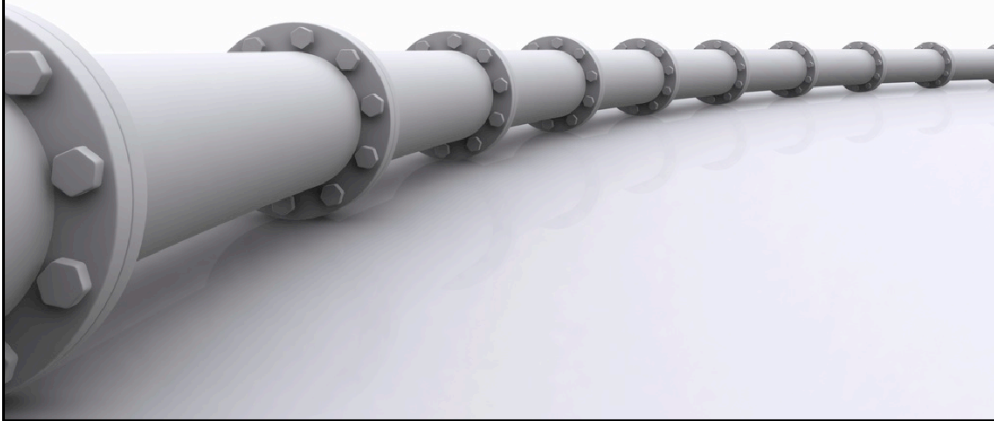
start VM

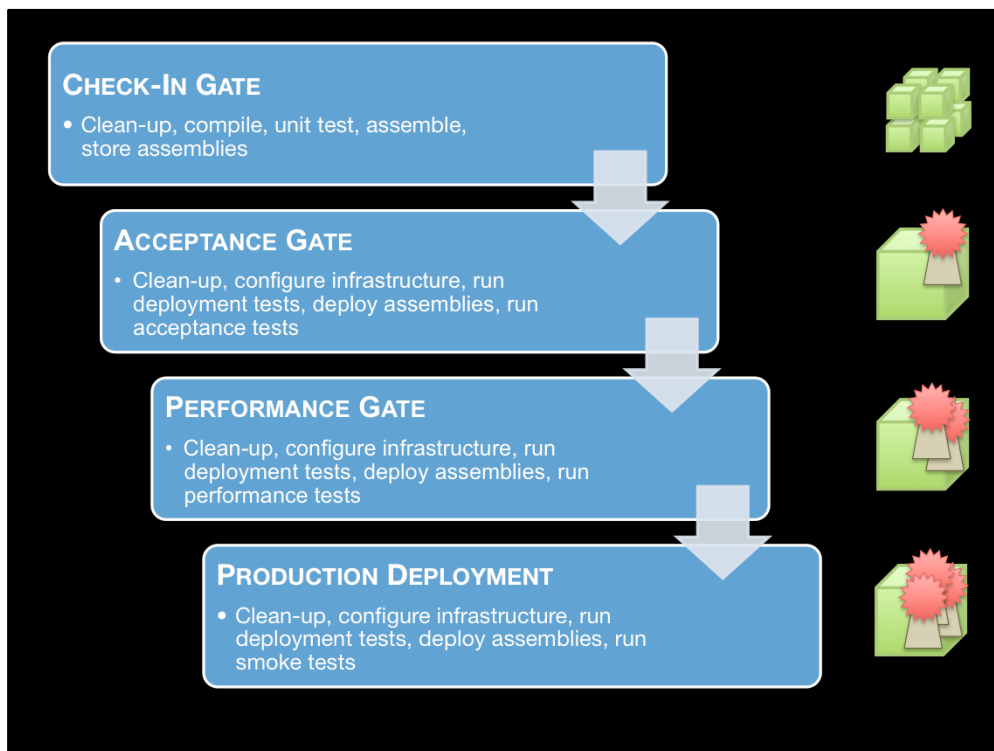
load Spring context

launch Selenium

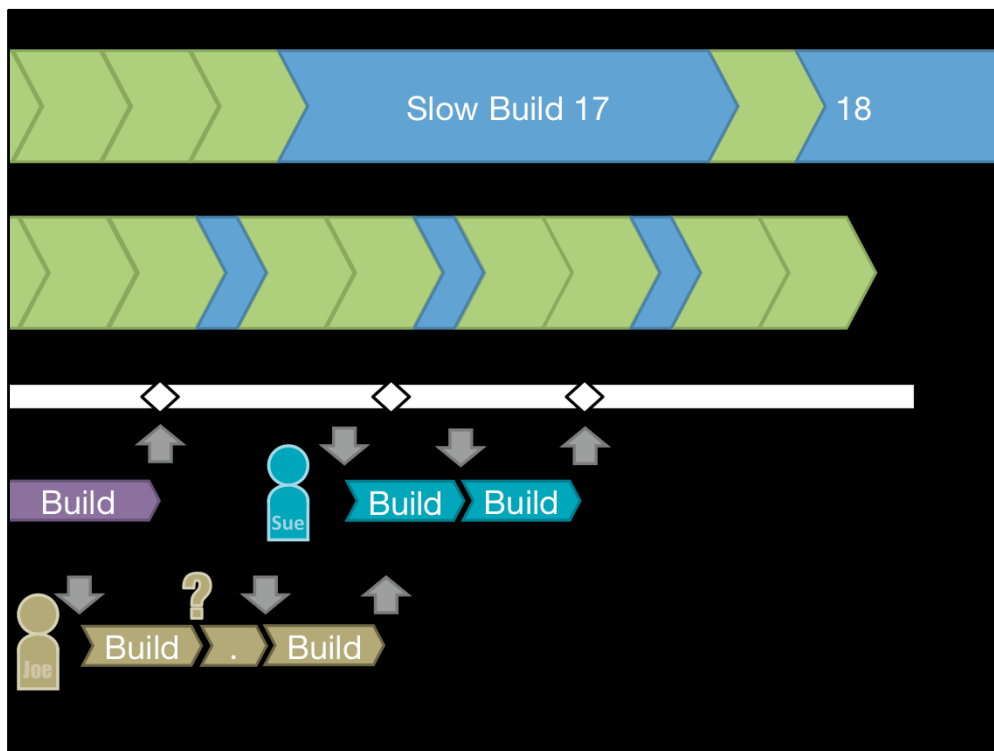


Build Pipeline





never rebuild anything
externalise configuration
ear surgery... haha



Quicker builds all round

What is part of the “pre-commit” build?

Radiator for slow build should not show “building”

Mind you when the slow build breaks...

Pipeline Activity in project X ⓘ

project X ⓘ	dev	ft	UAT
1.0.5 revision: ddcf951d9d5e... 2 hours ago by Chris & Christ	✓	auto → ✓	manual →
1.0.4 revision: 9b29ca932a59... 6 hours ago by Chris & Christ	✗	auto →	manual →
1.0.3 revision: f91420da9bc... 8 hours ago by Chris Turner	✓	auto → ✗	manual →
1.0.2 revision: 8ef3a52e98c... about 1 day ago by CS & Christ	✓	auto → ✓	auto → ✓ Approved by cturmer
1.0.1 revision: 8ef3a52e98c... about 1 month ago by CS & Christ	✓	auto → ✓	manual →

some transitions will be manual
 don't auto-redeploy into testing environment; it will confuse testers

Agents (What is this?)		
agent-linux 127.0.0.1 idle		
☐ Specify Resources	Resources: java ☐ linux ☒ firefox ☒	
agent-windows 10.7.3.163 building B2C-Website/unit-tests/unit-tests-windows		
☐ Specify Resources	Resources: java ☒ windows ☒ ie6 ☒	
agent-mac 10.7.3.88 building B2C-Website/unit-tests/unit-tests-mac		
☐ Specify Resources	Resources: java ☒ mac ☒ safari ☒	

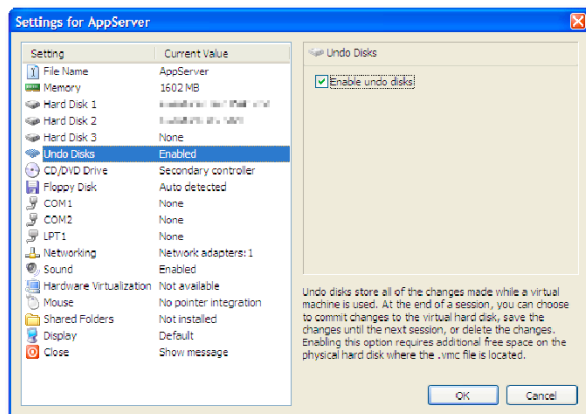
compatibility testing

speed... how much can you run in parallel?

selenium/webdriver tests often only bound by latency, hence perfect candidates for parallelisation

CI compatibility
CI SIT
acceptance UAT
pre-prod







Code in cloud is a management “comfort” issue
Customer data in the cloud (for testing!) can easily be illegal...
<http://www.fakenamegenerator.com/order.php>

Recap

- Checkout & Go
- Automated Acceptance tests
- JavaScript is code
- Continuous Integration
- Check before checking in
- Information Radiators
- Show “building” status?
- Build time matters
- Build Pipelines
- Pre-commit builds
- Build Agents
- Virtual Environments
- Clean State
- The Cloud

erik.doernenburg.com

We didn't talk about databases... Setup, roll-back wrappers, virtual environments