DEVELOPER DISCIPLINES

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@AGILE_GEEK

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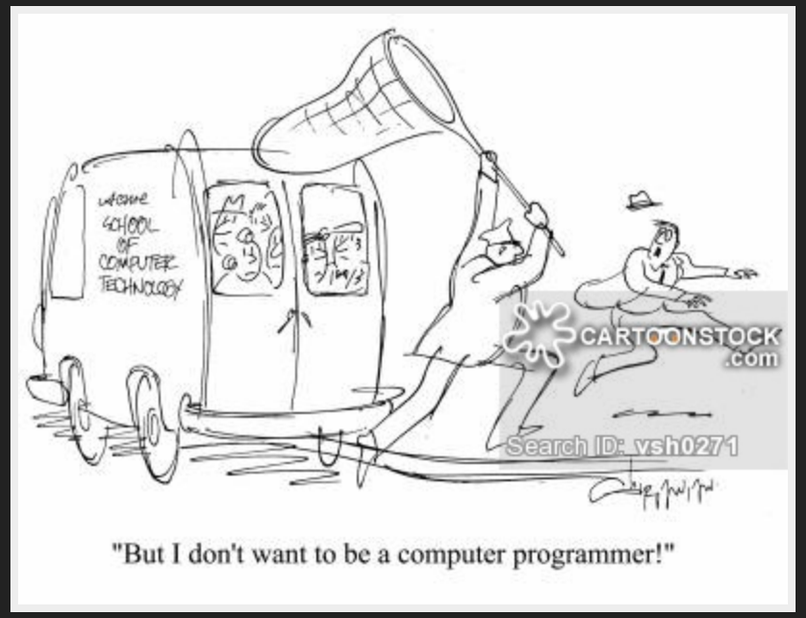
DEVELOPER DISCIPLINES

Who wants to be a Developer?

DEVELOPER



"But I don't want to be a computer programmer!"

What makes a 'Developer'?

- Why it matters?
- Why am I qualified to talk to you?

WHO AM I?

Name: `Chris Howe-Jones`

Job Title: `Technical Navigator`

Twitter: `@agile_geek`

Github: `http://github.com/chrishowejones`

Blog: `http://chrishowejones.wordpress.com`

LinkedIn: `https://uk.linkedin.com/in/chrishowejones`

Organiser:
`London Clojurians, Clojure eXchange, Functional Programming eXchange`

Speaker:
`FP North East, Agile North East, London Clojurians, Dynamo Conference`

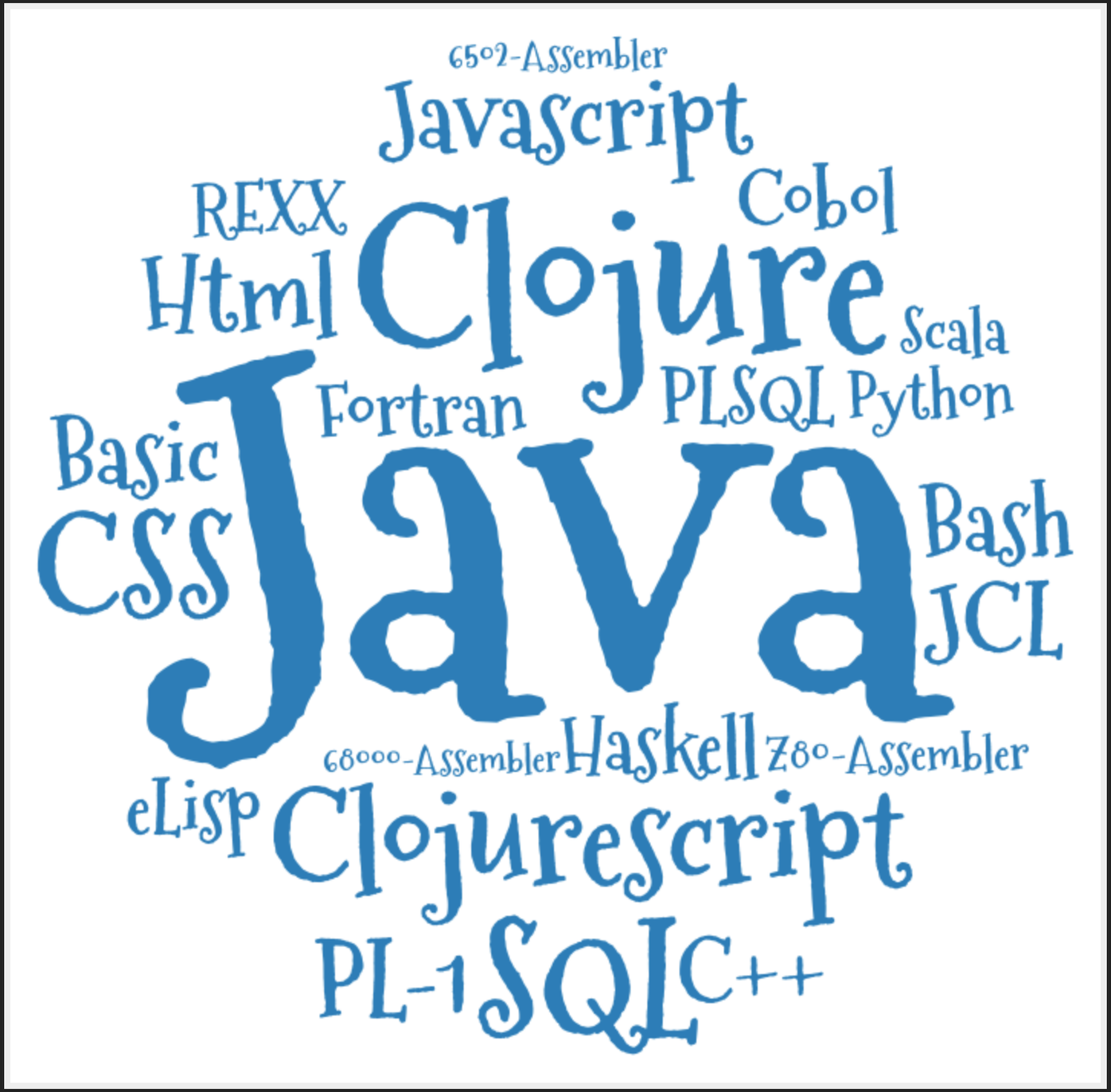
WORKED FOR?


Insure The Box
HMRC
Sage
Credit Swiss
Mastodon C
Tecsphere
Capgemini
JHC
Citi Bank
ICommunico
Opencast Software
Goal Group
Strategic System Solutions
Lloyds Bank
Deutsche Bank
NHS
Onsiteformz
Devcycle
ORE Catapult
Ibacus
JP Morgan Chase

JOBS?


Tech Lead
Software Architect
Analyst Programmer
Lean Coach
Technical Architect
Analyst
Developer
Team Leader
Scrum Master
Solutions Architect
Agile Coach
CTO
Enterprise Architect
Managing Director
Data Architect
Project Manager

LANGUAGES?


6502-Assembler
Javascript
REXX
Cobol
Html
Clojure
Scala
Fortran
PLSQL
Python
Basic
Java
CSS
Bash
JCL
68000-Assembler
Haskell
Z80-Assembler
eLisp
Clojurescript
PL-1
SQL
C++

TECHNOLOGIES AND DISCIPLINES?

SO?

Why do you care?

Because I'm the person who will employ you!

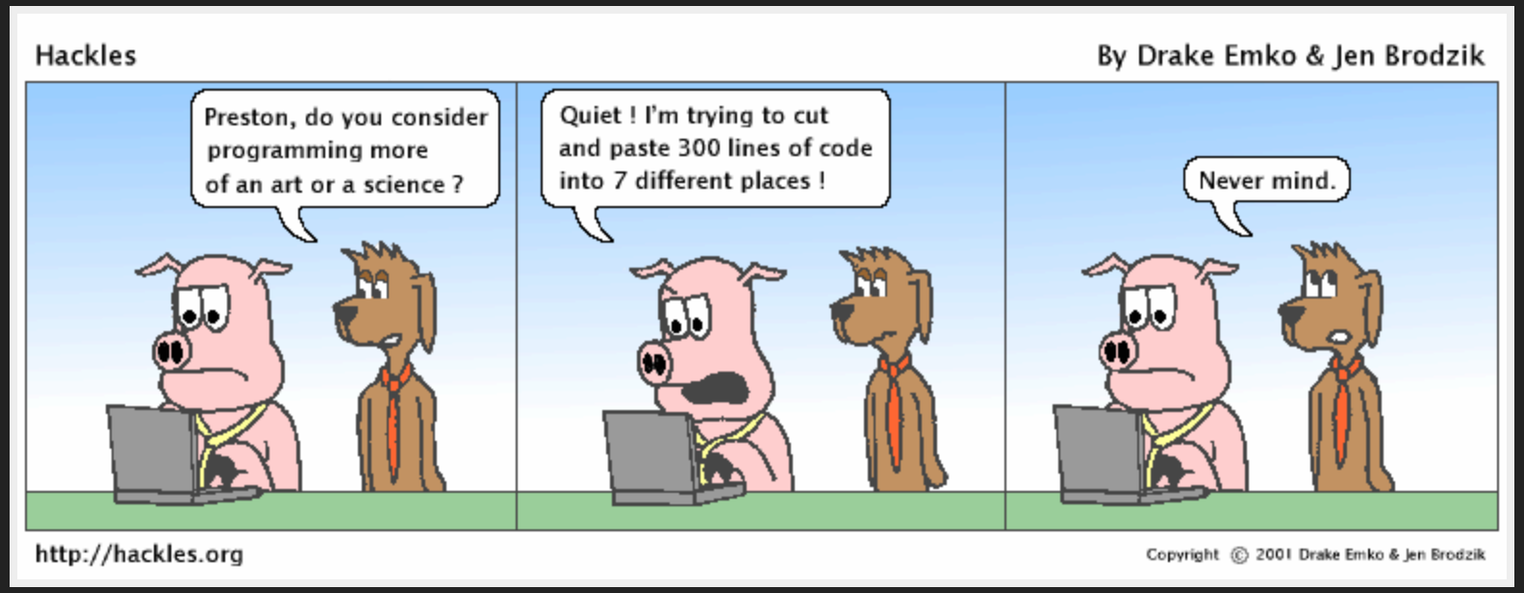
`Or someone just like me`

WHAT DISCIPLINES?

Don't I just need to program?

What else do I need?

SOFTWARE DEVELOPMENT IS A COMPLEX WORLD



MULTI-DISCIPLINED TEAMS

- Developers/Programmers
- Testers/QA
- Business Analysts
- Scrum Masters
- Product Owners
- Project Managers
- Tech Leads
- Team Leaders
- Product Managers

COMPLEX ENVIRONMENT

- Polyglot Programming
  - multiple languages
- Polyglot Persistence
  - multiple persistence technologies
- Cloud Deployment
  - elastic virtualised environments
  - servers on demand

DISCIPLINES

- TDD
- BDD
- Test Pyramid
  - Unit,
  - System,
  - Integration,
  - Performance,
  - Stress,
  - Failure,
  - Load,
  - Functional

- SDLC
  - 'Waterfall',
  - Scrum,
  - DSDM,
  - Kanban
- Version Control
  - frequent,
  - small,
  - incremental

- Continuous Integration
- Continuous Deployment
- Automated testing
- Automated build
- Static code analysis
- Peer review
- Functional review
- Refactoring
- Debugging

- SOLID principles

- *Single Responsibility Principle - a class should have only a single responsibility*
- *Open for Extension, Closed for Modification*
- *Liskov Substitution Principle - "objects in a program should be replaceable with instances of their subtypes without altering the correctness of that program."*
- *Interface Segregation Principle - “many client-specific interfaces are better than one general-purpose interface.”*
- *Dependency Inversion Principle - one should “Depend upon Abstractions. Do not depend upon concretions.”*

- Referential transparency
- Immutability
- Reduced side effects

WHAT'S MOST IMPORTANT?

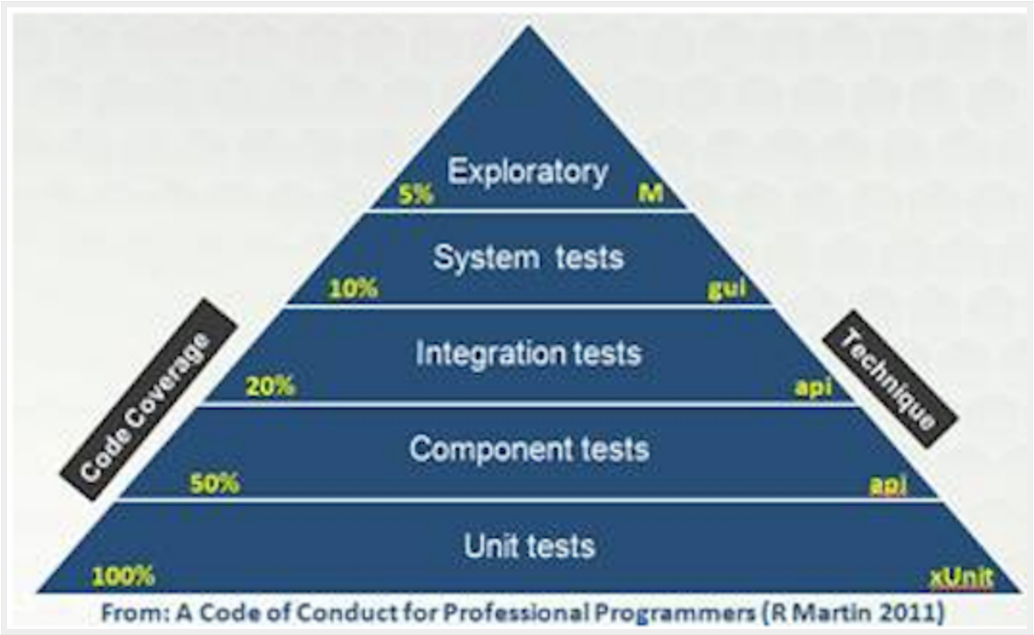
I had a manager who asked?

How do you know when you've finished?

- You decide what success is
- You write tests to prove it
- You implement your code
- You run your tests
- They pass

YOU'RE DONE!

TEST, TEST, TEST AGAIN...



TYPES OF TESTING?

Only really two types of test…

- *Developer Tests*
- *User Tests*

DEVELOPER TESTS

- Unit
- Integration
- System

- Non functional
  - Performance
  - Security
  - Stress
  - Resilience

…etc

USER TESTS

Functional

- Smoke tests
- Sanity testing
- Explorative testing
- Regression testing
- Usability testing
- Accessibility testing
- Acceptance testing

TESTS TO DISCOVER DESIGN

Test Driven Development

TEST DRIVEN DEVELOPMENT

What is Test Driven Development?

WHAT?

Incremental process to build low level design through the feedback mechanism of tests, written tests first.

WHY?

- Tests code (automated and run in build).
- Evolves design constantly checking against tests for 'completeness'.
- Provides automated 'safety net' to catch 'breaking changes'.
- Enables rapid and radical design changes in future.
- Avoids 'big ball of mud'

Good design is testable, And design that isn’t testable is bad.

“I haven’t got time to test that…” If it's worth building, it's worth testing.

If it's not worth testing, why are you wasting your time working on it?

Tests are your first users.

Tests can be your documentation

If TDD hurts..you're doing it wrong.

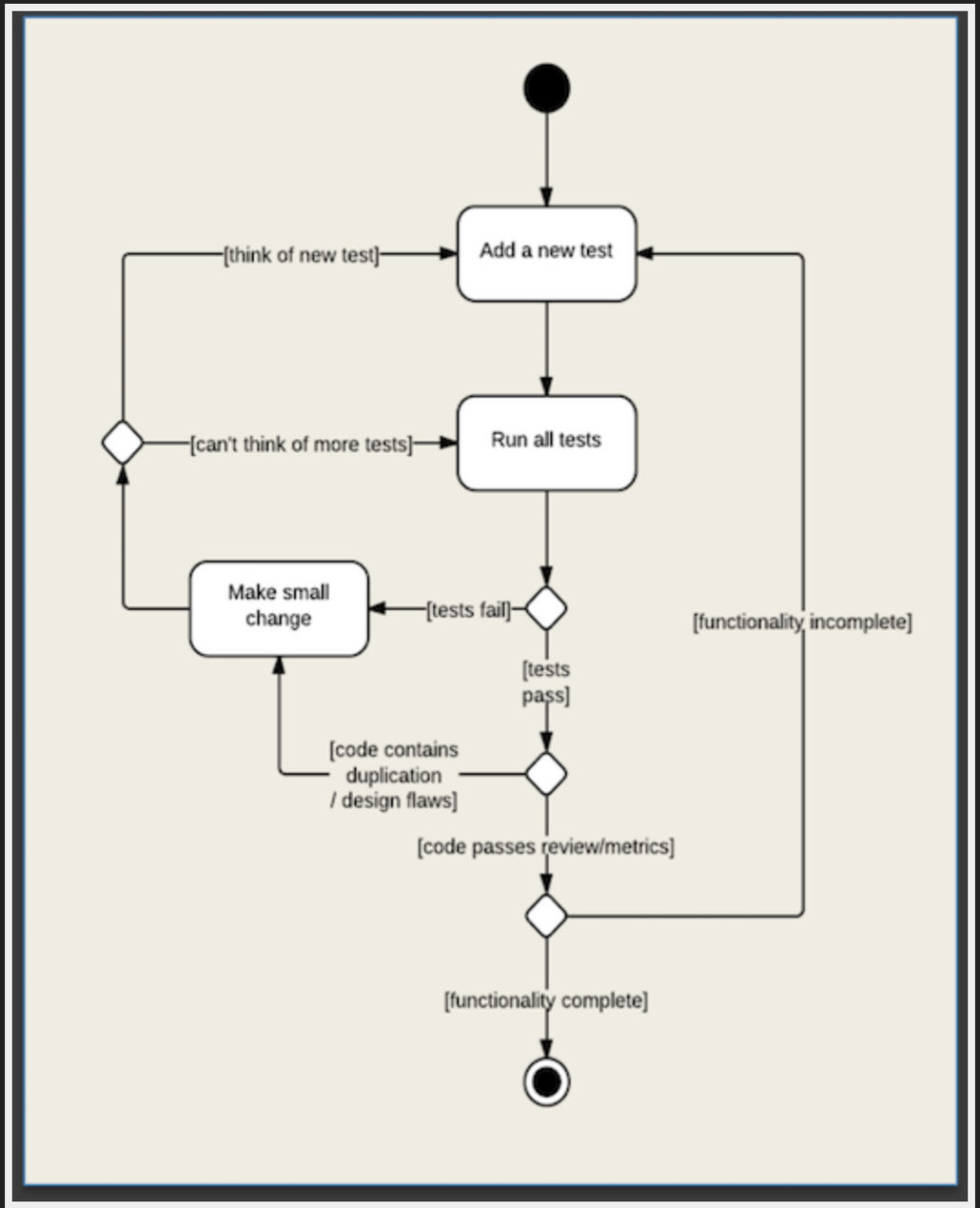
“The story of the unforeseen requirement.”


HOW'S THE DEBUGGING GOING?
JORGE CHAM © 2005
www.phdcomics.com

HOW?

1. Write a (failing) test.
2. Run a (failing) test.
3. Write the (simplest) implementation to get the test to pass.
4. Run test (if pass do next step else do 3)
5. Refactor implementation (and/or test) to remove duplication.
6. Repeat from step 1.

HOW?


Add a new test
[think of new test]
Run all tests
[can't think of more tests]
Make small change
[tests fail]
[functionality incomplete]
[tests pass]
[code contains duplication / design flaws]
[code passes review/metrics]
[functionality complete]

WHEN?

ALL THE TIME

TDD?

Test Driven

Design

VERSION CONTROL - SCM

Git, Subversion, CVS, VSS, Mercurial, PVCS

WHAT IT'S NOT

- Backup
- Centralised code sharing

WHAT IT IS

It's a Time Machine

Small, incremental changes

Record of events

Who

What

When

Why

WHAT CAN YOU DO WITH IT?

Rewind time

Try out a change safely

Integrate code across team

WHY IS IT IMPORTANT?

It tells a story.

It protects you from mistakes.

It enables review.

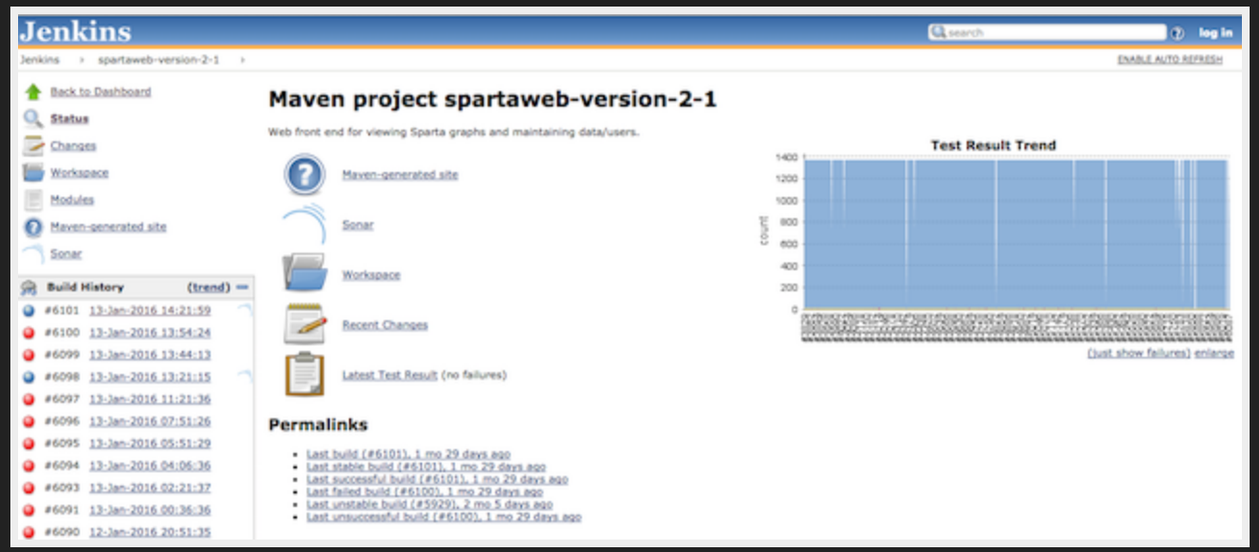
OTHER IMPORTANT DISCIPLINES?

CONTINUOUS INTEGRATION

"Continually integrating (and testing) code across a team."

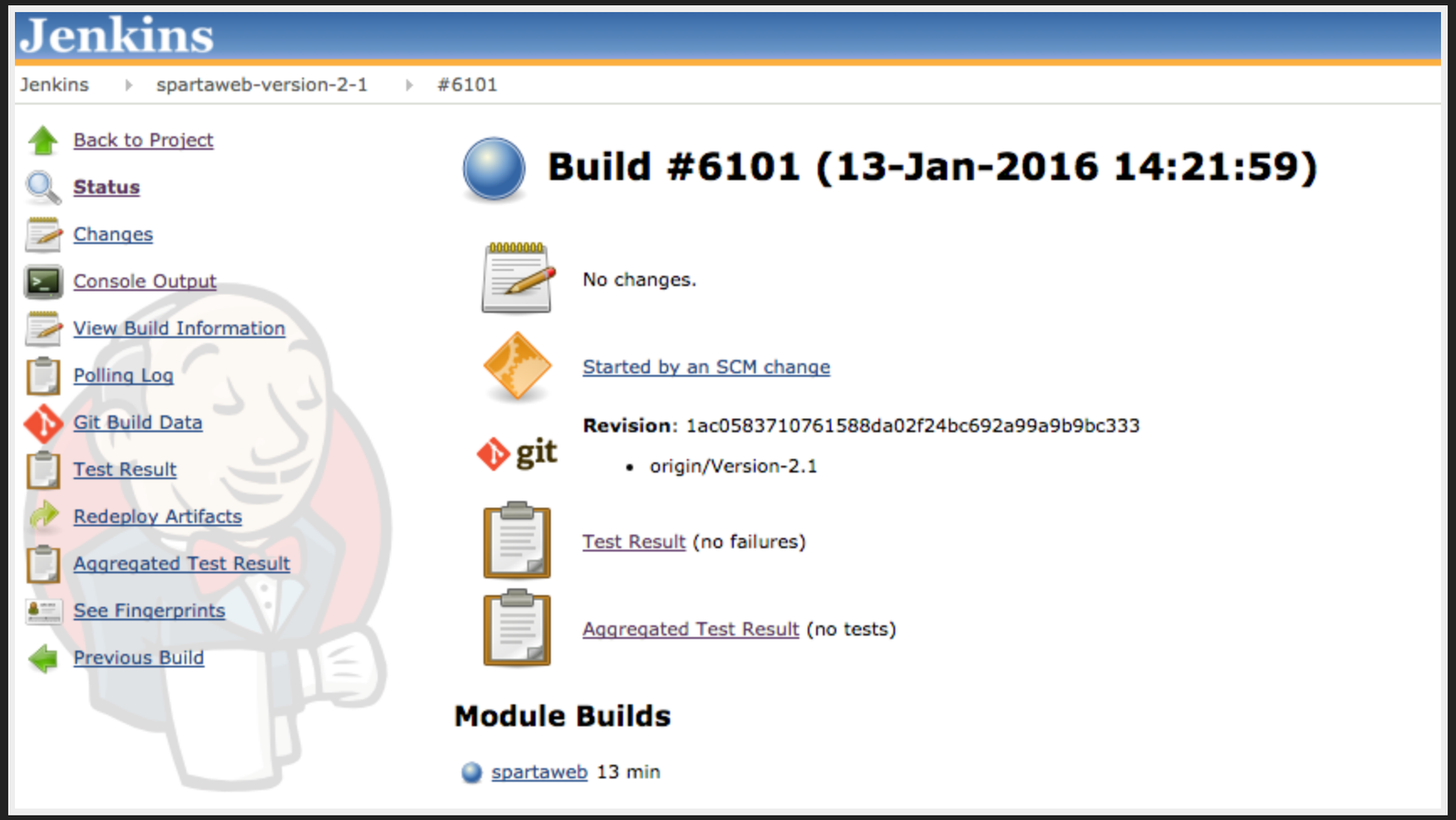
- Merging code regularly.
- Regression testing.

CONTINOUS BUILD



"Continually build (and testing) code across a team."

- Automated builds.



- Build on merges.
- Tests run on build.
- E.g. Jenkins, TeamCity, etc.

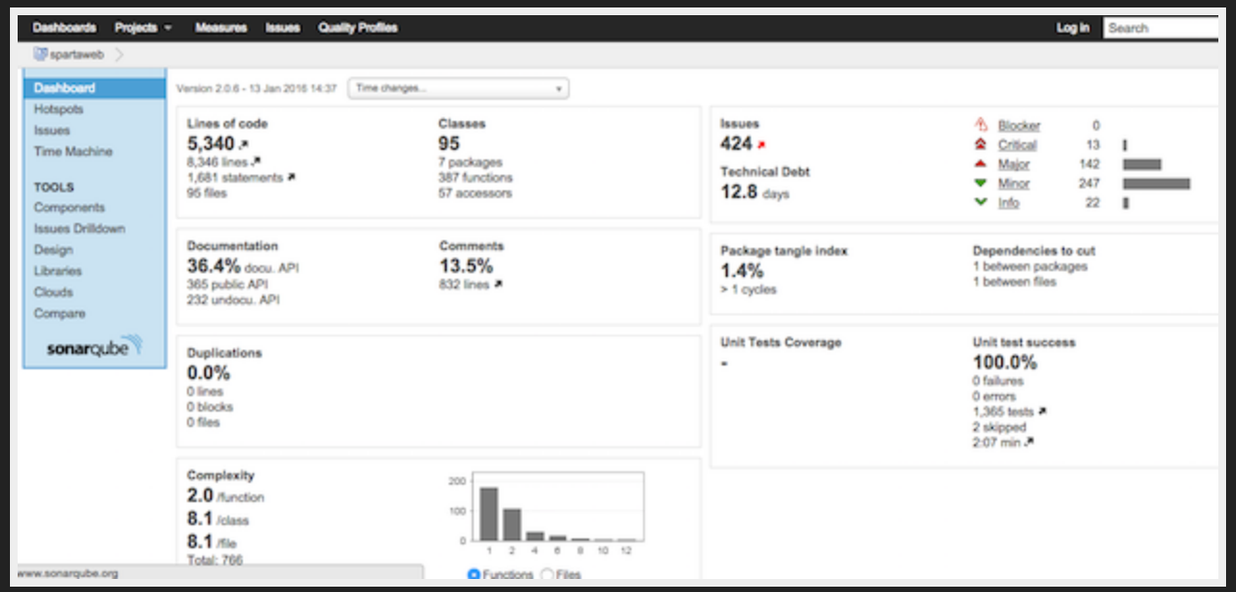
CONTINOUS DEPLOYMENT

"Continually deploy (verified) code to 'live'."

- Automated deployment.
- 'Push Button' deployment.

STATIC CODE ANALYSIS TOOLS

"Analyse code for style and common 'bugs'."



- C# - Resharper, FxCop, StyleCop…
- Java - Sonar, CheckStyle, FindBugs…

AUTOMATED CODE FORMATTER

"Automatically format code to 'team' or 'organisational' standards."

PROPERTY OR GENERATIVE TESTING

"In computer science, a property testing algorithm for a decision problem is an algorithm whose query complexity to its input is much smaller than the instance size of the problem. Typically property testing algorithms are used to decide if some mathematical object (such as a graph or a boolean function) has a "global" property, or is 'far' from having this property, using only a small number of 'local' queries to the object."

WHAT?

"A high level approach to testing in the form of abstract invariants [that] functions should satisfy universally."

WHAT?

"Property-based tests make statements about the output of your code based on the input, and these statements are verified for many different possible inputs."

COMMAND LINE IS YOUR FRIEND

"Don't be afraid of the command line."

WHAT OTHERS SAY ARE IMPORTANT DISCIPLINES?

"Take baby steps and always look for stepping stones, be obsessed with feedback, keep it simple, communicate as much as you can"

Giuseppe Capizzi, Developer Pivotal Labs

Co-organiser: CodeLovers

Speaker: Bergamo Linux User Group, CodeLovers, Milano XP User Group, ClojureBridge

"…SCM, tests, simplifying, static analysis, reviews to share knowledge." "…thinking, talking, sharing…"

Glen Mailer, Freelance Software Developer

Organiser Sheffield Geeks

Speaker: Sheffield Geeks, Clojure eXchange 2015

"deliberate practice using fast feedback."

Philip Potter, Tech lead on registers at @gdsteam

Speaker: London Clojurians, EuroClojure, Clojure eXchange, CodeMesh

"code as if you are going to support your own code…because you might have to."

Mazhar Iqbal, Tech lead LLoyds Bank

"learn your short-cut keys."

Stephen Hobbs, Software Developer at Orchid Software

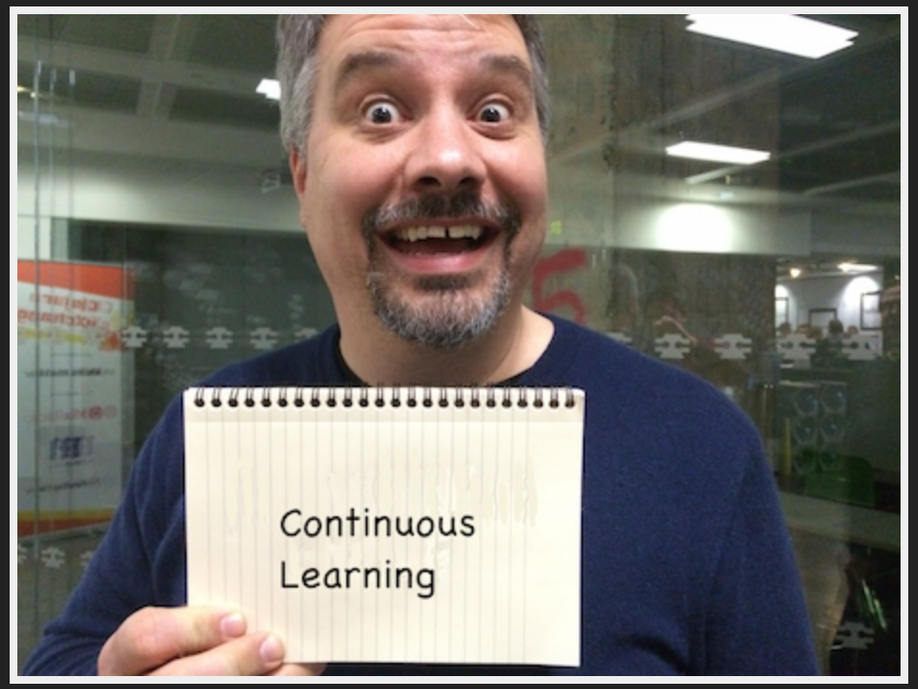
"frequent commits to source control."

Chris Ford, Functional Composer at Thoughtworks

Speaker: London Clojurians, EuroClojure, Clojure eXchange, Strange Loop - St Louis, GOTO Berlin

"Simplifying code, document processes, range based estimates, low coupling, code formatters, lint, automation, few side effects."

Michael Langford, Founder and iOS Development Director Rowdy Labs, Atlanta GA



Bruce Durling, Co-founder & CTO Mastodon C, London

Co-founder London Clojurians, Co-organiser Clojure eXchange, EuroClojure board, Co-organiser Functional Programming Exchange.

Speaker: Data Science, Clojure, Functional Programming.