Creating High-Quality Software: Update to Development Practices

Andrea Bollini, 4Science

Terry Brady, Georgetown University Library

Giuseppe Digilio, 4Science

Tim Donohue, DuraSpace

About

- Why changes?
- Contract first approach
- Test Driven Development
- The review process
- … the result so far

Why changes?

- Increase participation
  - Community sprints
- Simplifying the review process
- Improve the software quality
- Support development of long term goal

Contract first approach

- What is the REST Contract?
- Standards based
- Best and wide adopted practice
- Unlock angular development

Test Driven Development

TDD ≠ fully tested

100% coverage ≠ TDD

"test with a purpose" and know why you are testing something and to what level it needs to be tested

=

(REST Contract first)

Test Driven Development

«Write new code only if an automated test has failed»

(Kent Beck, Test-Driven Development by Example)

«Only ever write code to fix a failing test»

(Lasse Koskela, Test Driven)

«We produce well-designed, well-tested, and well-factored code in small, verifiable steps»

(James Shore, Agile Development)

DSPACE

Test Infrastructure

spring®

JUnit

mockito

H2

Jasmine

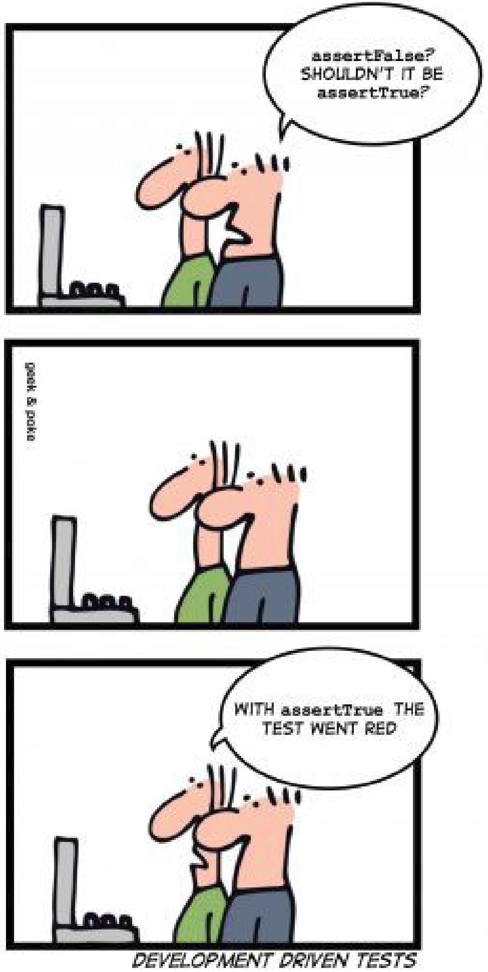
+ KARMA

Protractor

end to end testing for AngularJS

TRAVIS CI

COVERALLS

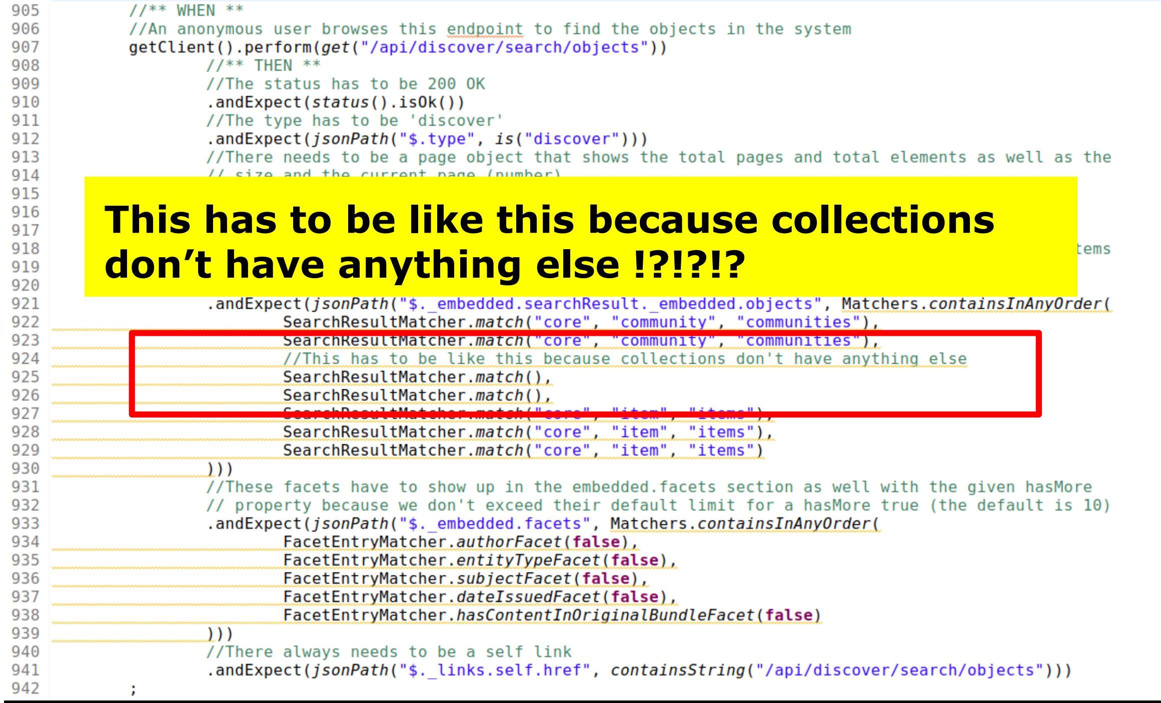

assertFalse? SHOULDN'T IT BE assertTrue?
geek & poke
WITH assertTrue THE TEST WENT RED

DEVELOPMENT DRIVEN TESTS

GIVEN

//1. A community-collection structure with
one parent community with
sub-community and
two collections.

//2. Three public items that are readable by Anonymous with different subjects



```
        //** WHEN **
        //An anonymous user browses this endpoint to find the objects in the system
        getClient().perform(get("/api/discover/search/objects"))
                //** THEN **
                //The status has to be 200 OK
                .andExpect(status().isOk())
                //The type has to be 'discover'
                .andExpect(jsonPath("$.type", is("discover")))
                //There needs to be a page object that shows the total pages and total elements as well as the
                // size and the current page (number)
                                                                                                     tems

                .andExpect(jsonPath("$._embedded.searchResult._embedded.objects", Matchers.containsInAnyOrder(
                        SearchResultMatcher.match("core", "community", "communities"),
                        SearchResultMatcher.match("core", "community", "communities"),
                        //This has to be like this because collections don't have anything else
                        SearchResultMatcher.match(),
                        SearchResultMatcher.match(),
                        SearchResultMatcher.match("core", "item", "items"),
                        SearchResultMatcher.match("core", "item", "items"),
                        SearchResultMatcher.match("core", "item", "items")
                )))
                //These facets have to show up in the embedded.facets section as well with the given hasMore
                // property because we don't exceed their default limit for a hasMore true (the default is 10)
                .andExpect(jsonPath("$._embedded.facets", Matchers.containsInAnyOrder(
                        FacetEntryMatcher.authorFacet(false),
                        FacetEntryMatcher.entityTypeFacet(false),
                        FacetEntryMatcher.subjectFacet(false),
                        FacetEntryMatcher.dateIssuedFacet(false),
                        FacetEntryMatcher.hasContentInOriginalBundleFacet(false)
                )))
                //There always needs to be a self link
                .andExpect(jsonPath("$._links.self.href", containsString("/api/discover/search/objects")))
        ;
```

This has to be like this because collections don't have anything else !?!?!?

Start a constructive review process

- REST Contract PRs should be created **before** REST and Angular Implementation PRs
- Bug fix PRs should come with tests that can reproduce the bug and prove that it has been fixed

DSPACE

What this mean???

https://jira.duraspace.org/browse/DS-4269

Clean and HQ code

- Code should follow the DSpace Code Style Guide
- Javadocs (or TypeDocs) are required for all code classes & public methods
- Small PR (< 1,000 lines of actual code)
- Test Coverage should increase

DSPACE

How this look like???

Speedup the review

- We are very glad for all the volunteer work both on coding than review
- PRs requiring review are now assigned in the weekly meeting to 1-2 reviewers
- Reviewers are expected to provide feedback within 1-2 weeks, request for changes will be lifted in not followed up
- +2 from different institutions are required, exception for obvious fix or PRs older than 3 weeks with not outstanding negative vote

How we can review???

https://github.com/DSpace/DSpace/pull/2444

DSpace Testing in Docker

- Fully replicable test environment that anyone can run.
- Runs independently from your test infrastructure.
- Discard and re-create as needed.

Docker Resources - DSpace 7

- Images
  - **dspace** - backend
  - **dspace-angular** - frontend
  - **dspacedb** - postgres
  - **dspacesolr** - solr back end
- Compose files
  - Orchestration
  - https://github.com/DSpace-Labs/DSpace-Docker-Images

Automated Image Builds

- Each branch of DSpace
  - 4x, 5x, 6x, 7x
- Master branch of DSpace-angular
- Prototype application to build PR images on demand

DSPACE

Replicable Test Data

- Re-usable test data recorded here
  - https://github.com/DSpace-Labs/AIP-Files
- Auto-ingest coded in compose files
- Seeking community contributions to test datasets
  - Not restricted by licenses

... the result so far

A 79%

{ REST } 76%

3

~400

Questions?

Slides available at
https://tinyurl.com/or2019-dspace-hq

Angular UI live coverage: https://coveralls.io/github/DSpace/dspace-angular?branch=master

Backend live coverage: https://coveralls.io/github/DSpace/DSpace?branch=master

REST PRs: https://github.com/DSpace/DSpace/pulls?utf8=%E2%9C%93&q=is%3Apr+label%3A%22REST+API+v7%22

Angular PRs: https://github.com/DSpace/dspace-angular/pulls

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