

Team collaboration with Test-First Approach

Etienne Pierrot

Senior Software Engineer

Zlata Shtamburg

Senior Software Engineer In Test

 **checkout.com**

Our offices



Goals

1. Quick Feedback loop
2. Share QA mindset with overall team
3. Microservices testing



Feedback loop



Feedback is the fuel of the development
process





Nancy [D:\Projects\Git\Demo\Nancy] - ...\samples\Nancy.Demo.Hosting.Aspnet\Piratizer4000.cs - JetBrains Rider

File Edit View Navigate Code Refactor Build Run Tests Tools VCS Window Help

Nancy.Demo.Hosting.Aspnet Piratizer4000.cs Debug | Any CPU Blog

```
1 namespace Yarrrr
2 {
3     using System;
4     using System.Collections.Generic;
5
6     /// <summary>
7     /// Pirate dictionary green plundered from Davie Reed ( http://nifty.stanford.edu/2004/TalkLikeAPirate/
8     /// Yarrrr!
9     /// </summary>
10    public static class HereBePiratesYarrrr
11    {
12        public static string ToSentenceCase(this string input){...}
13
14        private static readonly Dictionary<string, string> lowerSubstitutions;
15        private static readonly Dictionary<string, string> sentenceCaseSubstitutions;
16
17        static HereBePiratesYarrrr(){...}
18
19        return lowerSubstitutions.Aggregate(boringEnglishString, (current, substitution) => current
20    }
21 }
```

Import 'System.Linq.Enumerable.Aggregate' and other missing references? (Alt+Enter to apply or Escape to cancel)

Errors In Solution Database

Inspection Results 6: TODO 7: NuGet 8: Unit Tests 9: Version Control Terminal Docker TypeScript

Cannot resolve symbol 'A... Nancy.Demo.Hosting.Aspnet 95:48 CRLF UTF-8 Git: master 489 errors in 62 files

Feedback duration:
almost instant



Buildtime (1) Runtime

ashdasdfsdfj 1 issue

Interface Builder Storyboard Compiler Error

Internal error. Please file a bug at bugreport.apple.com and attach `"/var/folders/p7/j9zzb1wj1ks41w1jcrn08m2m0000gn/T/IB-agent-diagnostics_2017-03-21_17-18-01_125000"`.
Main.storyboard

Feedback duration:
few seconds



UnitTests.dll - NUnit

File View Project Test Tools Help

Tests

- [-] C:\Projects\AWB\Unit Tests\bin\Debug\Unit Tests.dll
 - [-] Unit Tests
 - [+] Bold Title Tests
 - [+] Fix Main Article Tests
 - [+] Footnotes Tests
 - [+] Formatting Tests
 - Test Br Converter
 - Test Fix Headings
 - [-] Genfixes Tests
 - [-] Double Br
 - External Links In Image Captions
 - Link Whitespace
 - Underscore Removal In External Link
 - [+] Human Cat Key Tests
 - [+] Image Tests
 - Basic Improvements
 - [-] Link Tests
 - Fix Dates
 - Test Bullet External Links
 - Test Fix Link Whitespace
 - [-] Test Link Repairs
 - Test Simplify Links
 - Test Sticky Links
 - [+] Recategorizer Tests
 - Removal
 - Replacement
 - [?] Tools Tests
 - Remove Invalid Chars
 - Test All Case Insensitive
 - Test Case Insensitive
 - Test Invalid Chars
 - Test Remove Hash From Page Title
 - Test Remove Matches

Run Stop C:\Projects\AWB\Unit Tests\bin\Debug\Unit Tests.dll

Test Cases: 50 Tests Run: 50 Failures: 2 Ignored: 1 Skipped: 0 Run Time: 3.40625

```
UnitTests.GenfixesTests.DoubleBr:
  Expected string length 35 but was 29. Strings differ at index 14.
  Expected: "<blockquote>\r\n<br><br></blockquote>"
  But was:  "<blockquote>\r\n\r\n</blockquote>"
-----^

UnitTests.LinkTests.TestLinkRepairs:
  Expected string length 45 but was 46. Strings differ at index 45.
  Expected: "[[Image:foo.jpg|Some [http://some_crap.com]]]"
  But was:  "[[Image:foo.jpg|Some [http://some_crap.com]]]"
-----^
```

at UnitTests.GenfixesTestsBase.AssertNotChanged(String text) in C:\Projects\AWB\Unit Tests\GenfixesTests.cs:line 60
at UnitTests.GenfixesTests.DoubleBr() in C:\Projects\AWB\Unit Tests\GenfixesTests.cs:line 116

Errors and Failures Tests Not Run Console.Out Console.Error Trace Log

Completed

Test Cases : 51 Tests Run : 50 Failures : 2 Time : 3.40625

Feedback duration:
few seconds/minutes





codeclimate bot reviewed 18 hours ago

[View changes](#)

foundation/path/to/file.rb

```
...    @@ -73,6 +87,18 @@ def other_method
73    87    )
74    88    end
75    89
```

```
90    + def duplicated_method?
```



codeclimate bot 18 hours ago

Similar blocks of code found in 2 locations. Consider refactoring.



Reply...

...path/to/file.rb

Show outdated

To enable this functionality, please see [Configuring In-line Issue Comments](#).

[In-line Issue](#)

[Installing the App](#)

[Show me how to use the GH App for](#)

[Configuring Comments](#)

[Configuring Comments](#)

[Troubleshooting Comments](#)

[Pull Request](#)

[Show me how to use the PR Status L](#)

Feedback duration:
hour(s)





Jenkins

Feedback duration:
minutes - hour(s)

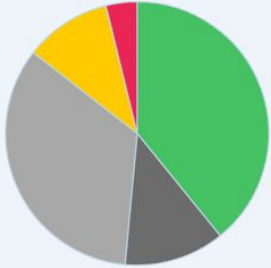


DatHub

- OVERVIEW
- TODO
- MILESTONES
- TEST RUNS & RESULTS
- TEST CASES
- REPORTS
- ADMINISTRATION

R16 Release 1.1: Run 1 (smoke test) 📧 📄 🖨️ 🔒 📊 Reports ▾ 🔄 Rerun ✎ Edit

Created by John Doe. Belongs to milestone [Release 1.1](#).



- **92 Passed**
39% set to Passed
- **29 Blocked**
12% set to Blocked
- **25 Retest**
11% set to Retest
- **9 Failed**
4% set to Failed

39% passed

80 / 235 untested (34%).

Tests & Results

Activity

Progress

Defects

Sort: [Section](#) | Filter: [None](#) | + Add Results | [👤 Assign To ▾](#) | [☰ Columns](#)

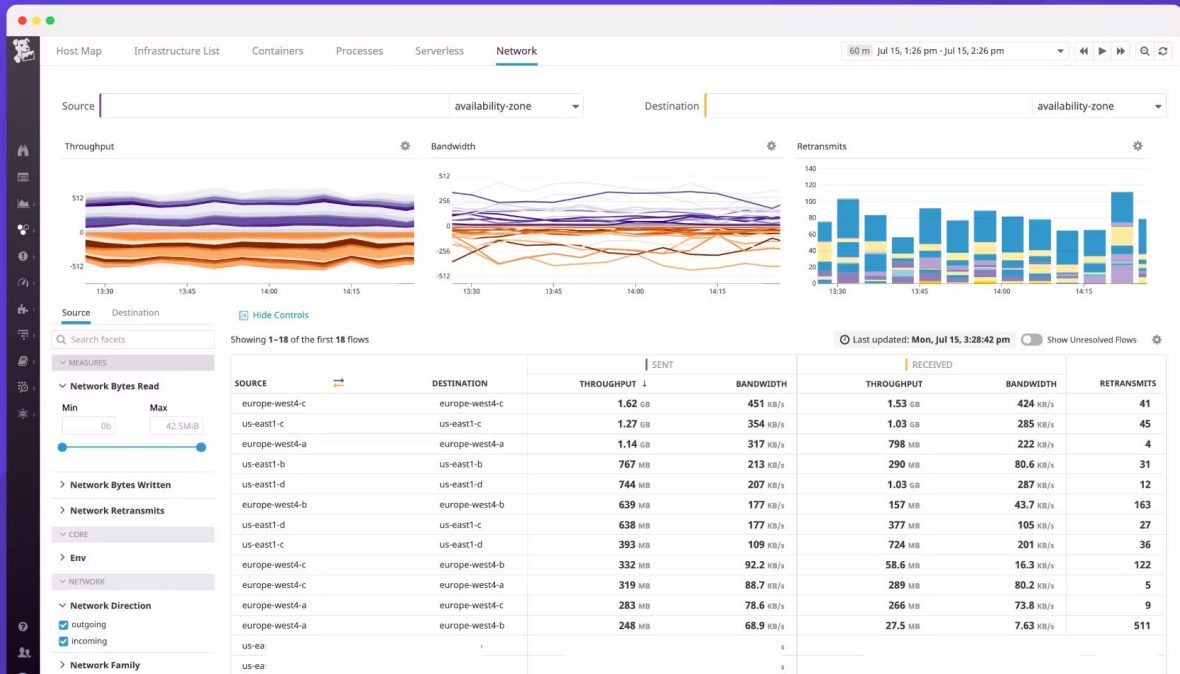
Prerequisites 14 📊

<input type="checkbox"/> ID	Title	Assigned To	Status	☰
<input type="checkbox"/> T3571	Format table with built-in style		Passed ▾	➤
<input type="checkbox"/> T3572	Add new review data point (including note)	admin	Retest ▾	➤
<input type="checkbox"/> T3573	Verify interoperability with system file dialogs	admin	Failed ▾	➤
<input type="checkbox"/> T3574	Verify title, sub title and heading styles	John D.	Blocked ▾	➤
<input type="checkbox"/> T3575	Verify CSV import with enclosed test data files		Blocked ▾	➤

- 📁 All ▾
- Prerequisites
 - Software & Versions
 - Hardware
 - Installation
 - Updates
- Tutorial
 - Goals
 - Metrics
- Login & Account
 - Reset Password
- Feature 1
- Feature 2
- Feature 3
- Feature 4
- Feature 5
- Administration
 - Projects
 - Settings
 - Users & Roles

Feedback duration:
minutes - weeks





Feedback duration:
hours - month



 Excellent

 Average

 Poor

Feedback duration:
days - years



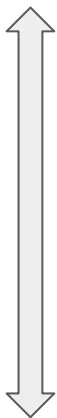
Summary

IDE Syntax lighting	almost instant
Compilation	seconds/minutes
Unit tests	seconds/minutes
Peer review	hour(s)
Continuous integration	minutes - hour(s)
QA validation	minutes - weeks
Production logs and metrics	hours - month
Consumers feedback	days - years



Summary

No QA feedback



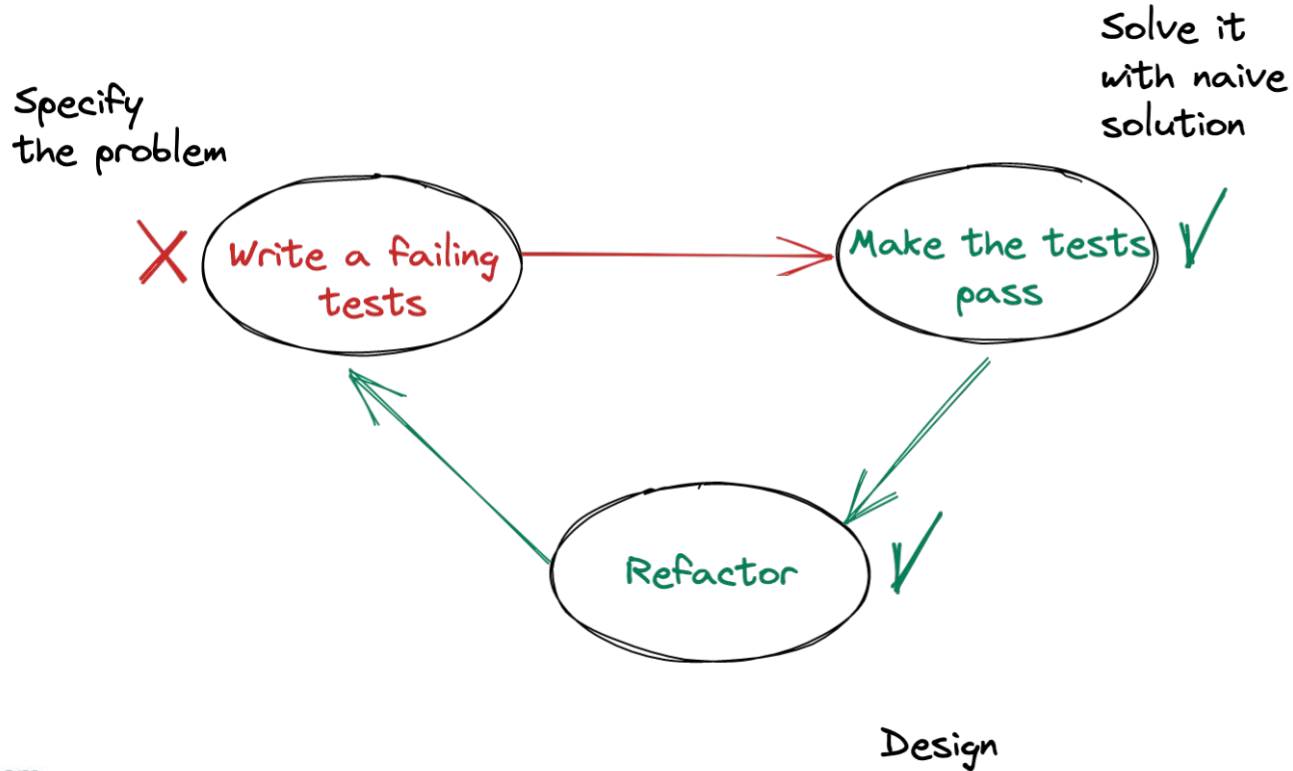
IDE Syntax lighting	almost instant
Compilation	seconds/minutes
Unit tests	seconds/minutes
Peer review	hour(s)
Continuous integration	minutes - hour(s)
QA validation	minutes - weeks
Production logs and metrics	hours - month
Consumers feedback	days - years



Test First approach



The TDD loop



TDD

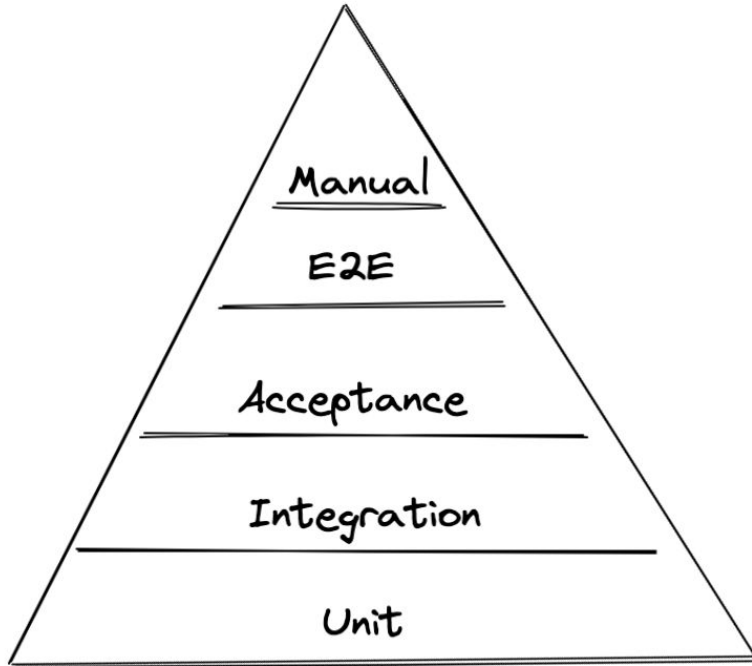
- Push developer to thinking more about the **problem** to solve before jumping to implementation
- Produce **minimalistic** solution focus on the problem to solve
- Progress with **baby step**
- Allow developer to have **confident** about refactoring and improving design



But TDD alone doesn't ensure a shared understanding of the feature



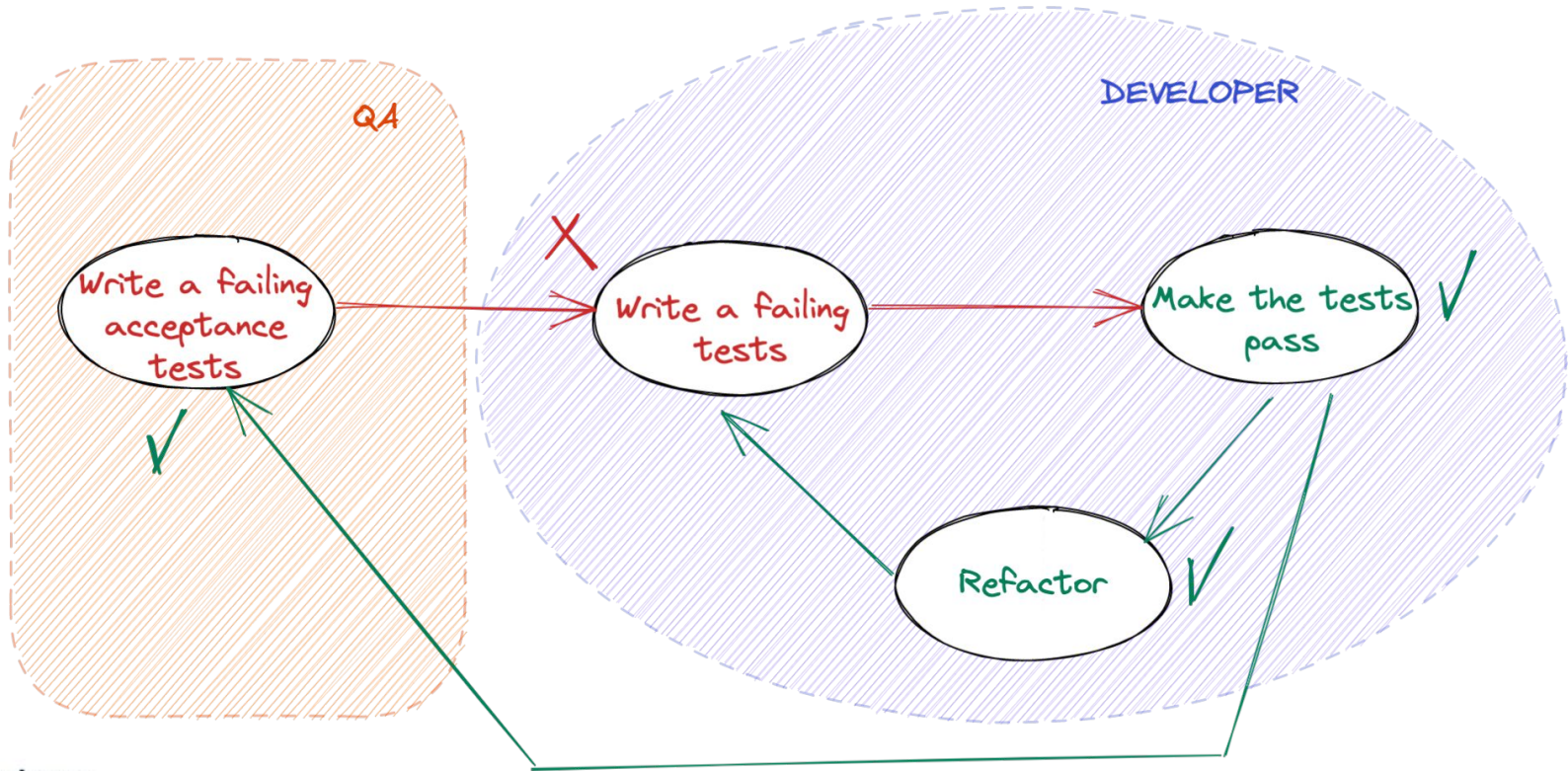
What is Acceptance tests



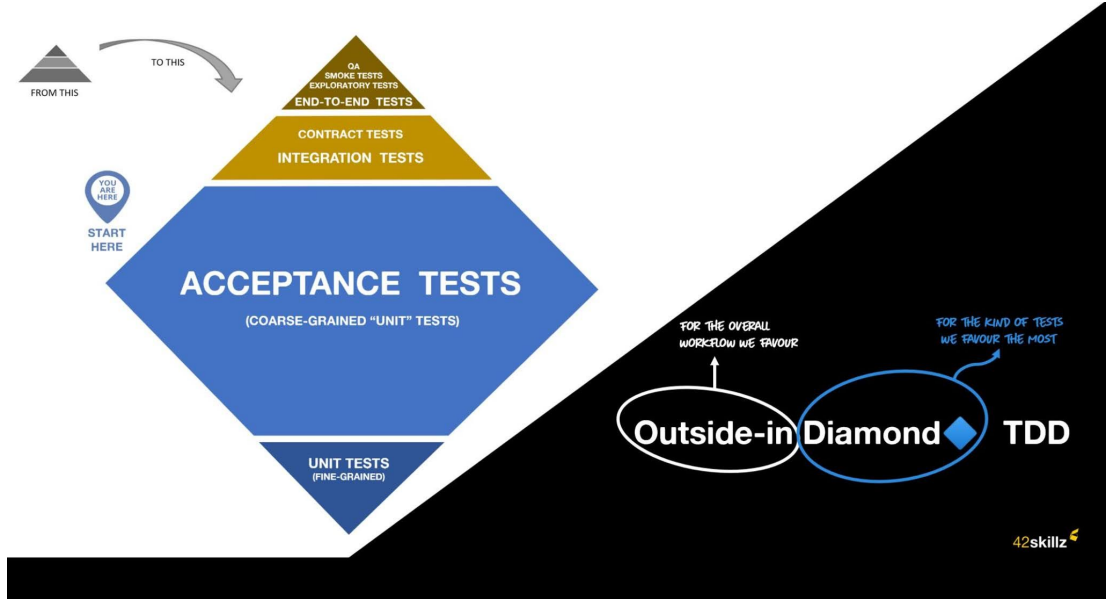
Given Pier has a 10 EUR
When Pier buy a chocolate bar for 2 EUR
Then Pier has a chocolate bar
And Pier has a 8 EUR



Acceptance TDD



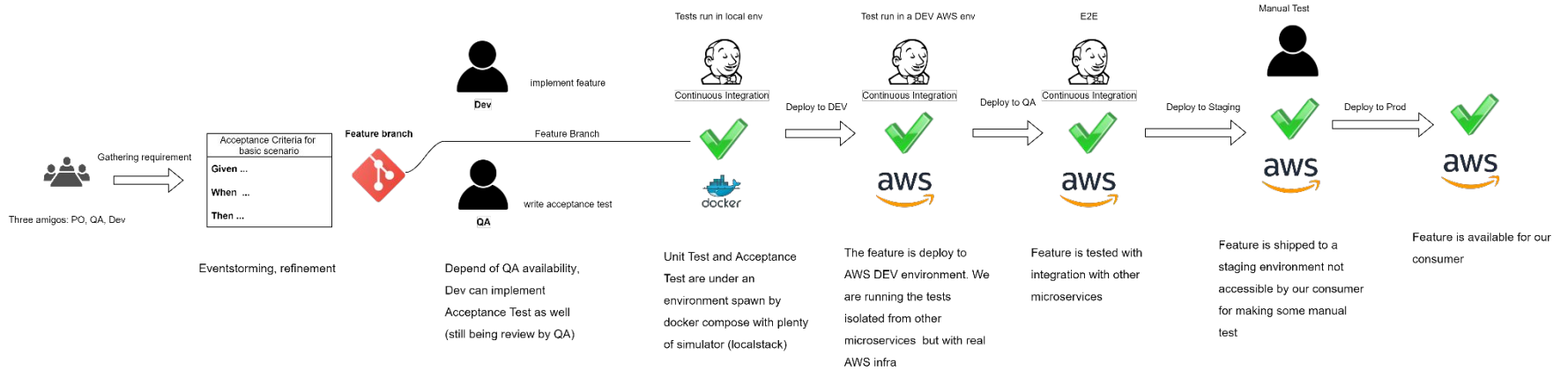
To know more about that :



<http://tpierrain.blogspot.com/2021/03/outside-in-diamond-tdd-1-style-made.html>



Lifecycle of a feature



Devops

Goal: Ability to run the platform on local environment

Potential problems:

1. Different OS used in the team
2. Heavy application / a lot of services

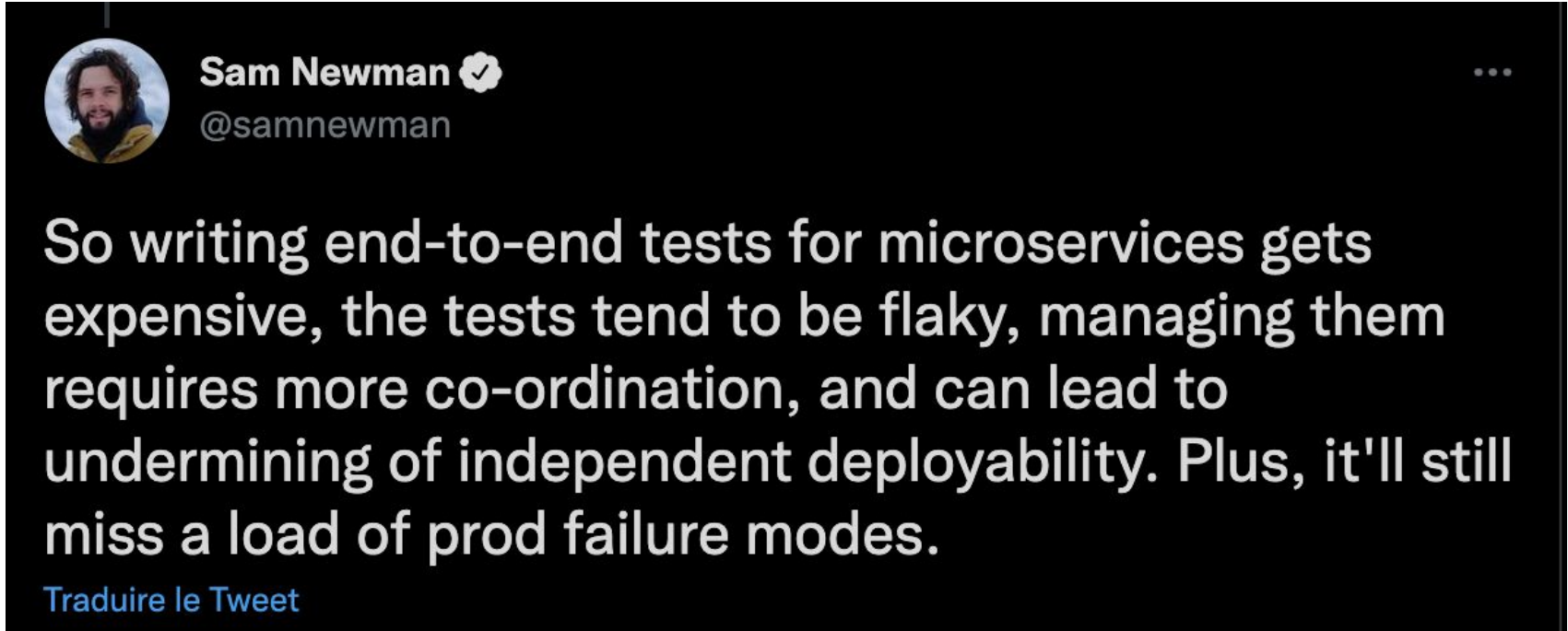
Solution:



+ Mocking



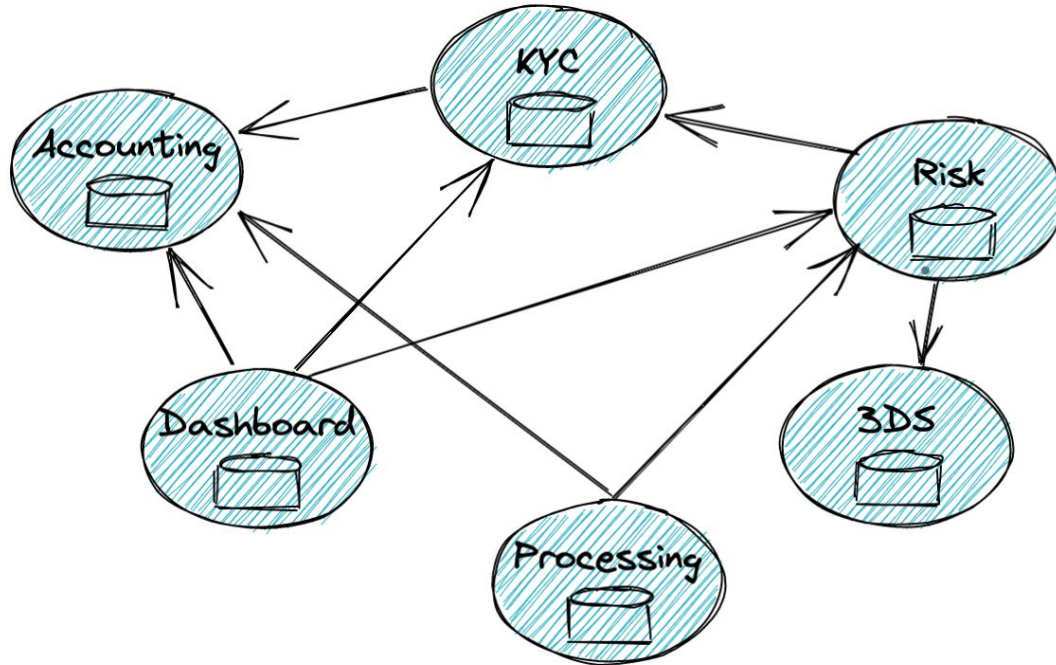
End to end testing and Microservices



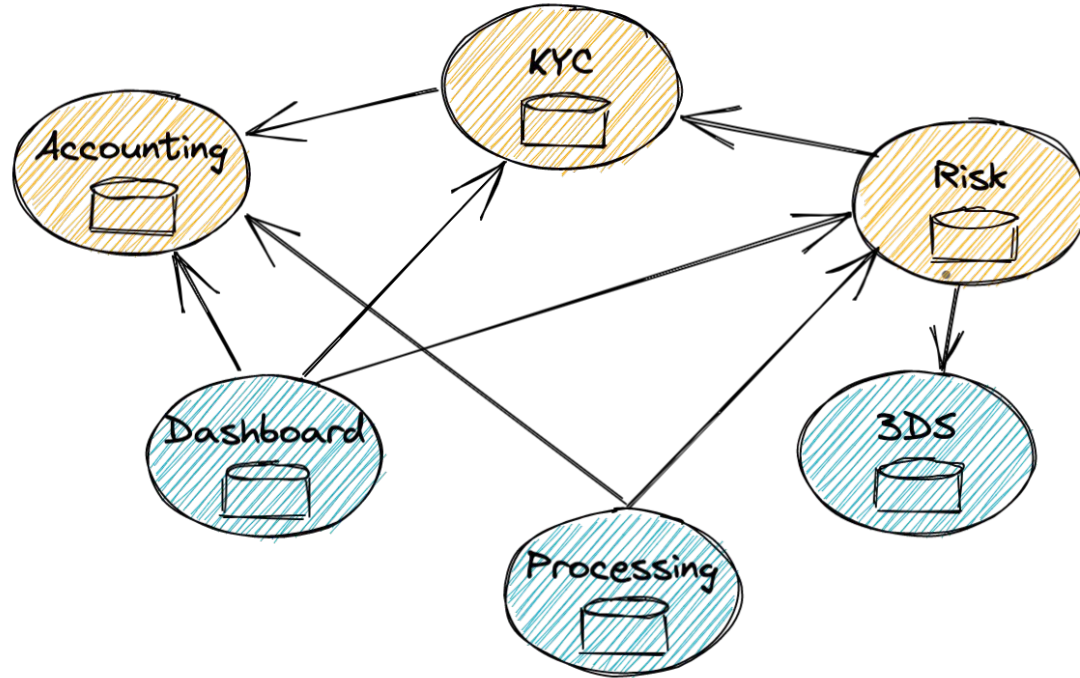
<https://www.twitter.com/samnewman/status/1357642975271124992>



Microservices pros/cons

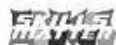
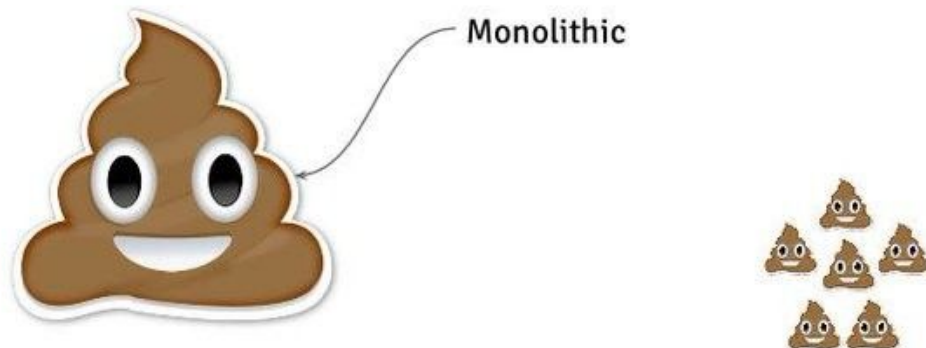



Microservices pros/cons



What is a good amount of microservices?

Monolithic vs Microservices

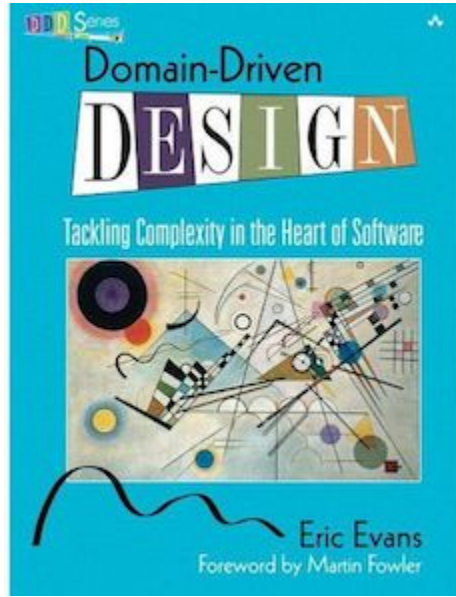


 @alvaro_sanchez

odobo



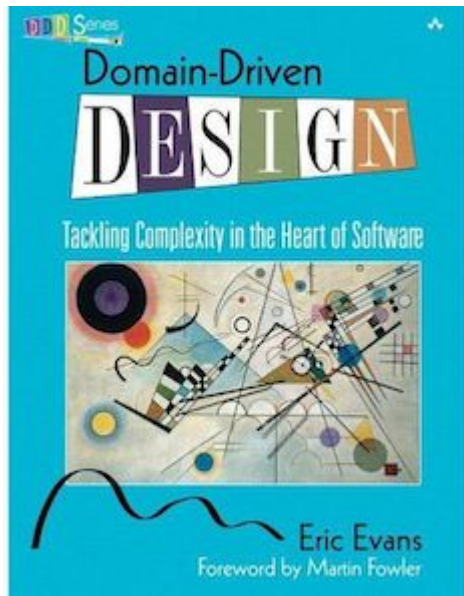
Domain Driven Design to the rescue



Bounded context

Eric Evans definition:

A BOUNDED CONTEXT delimits the applicability of a particular model so that team members have a clear and shared understanding of what has to be consistent and how it relates to other CONTEXTS. Within that CONTEXT, work to keep the model logically unified, but do not worry about applicability outside those bounds. In other CONTEXTS, other models apply, with differences in terminology, in concepts and rules, and in dialects of the UBIQUITOUS LANGUAGE. By drawing an explicit boundary, you can keep the model pure, and therefore potent, where it is applicable. At the same time, you avoid confusion when shifting your attention to other CONTEXTS. Integration across the boundaries necessarily will involve some translation, which you can analyze explicitly.

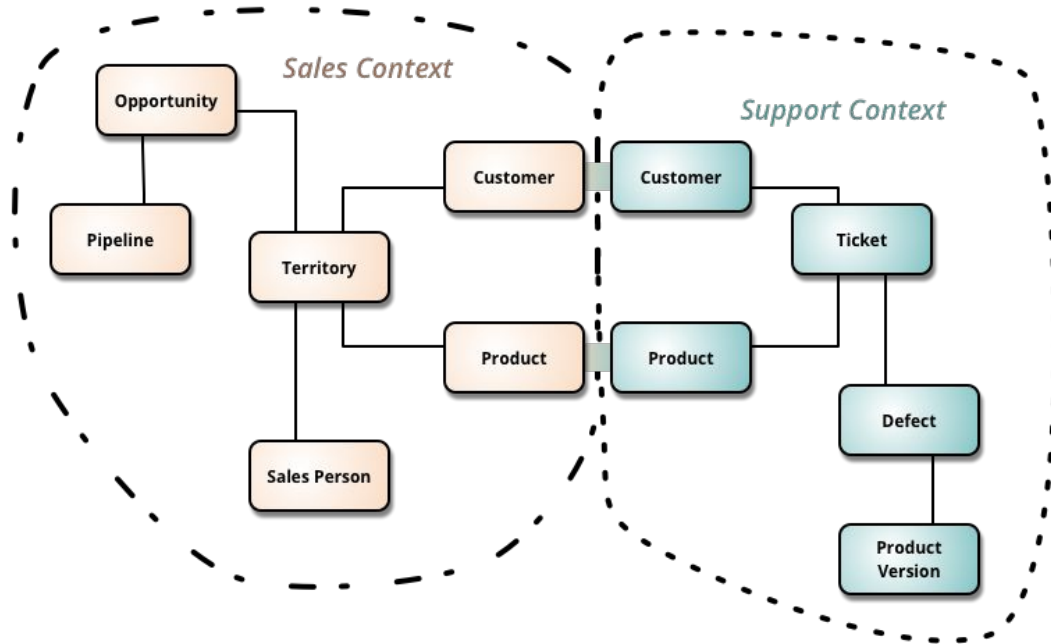


Bounded context quickly

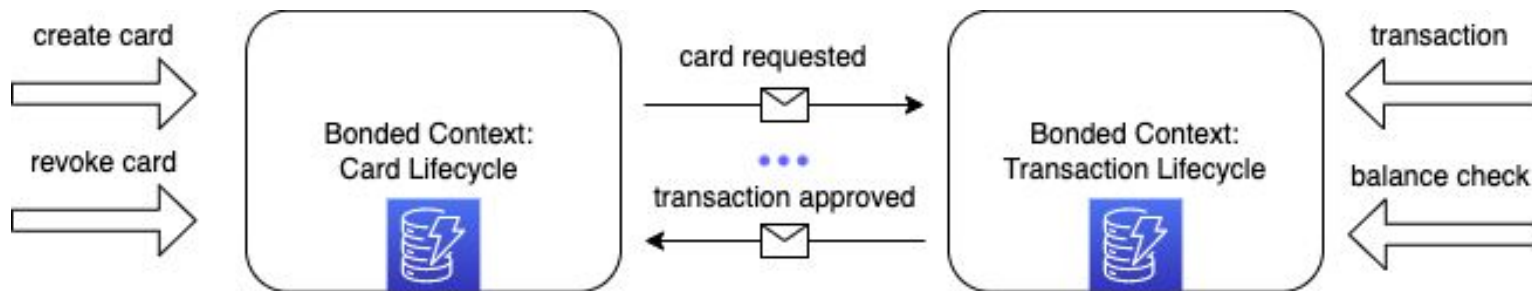
- Prefer to deal with multiple models rather than one huge model
- Each bounded context has his own **ubiquitous language**
- In general, bounded context match with **sub domains**
- Should be driven by the communication structure of the organization (cf **Conway's law**)
- The boundary are implemented with a set of explicit public **contracts**
- **This boundary is not necessarily a network boundary. The boundary can be inside a monolith**



Bounded context



Discovering your domain boundaries



Acceptance test Example



Given single use card is created
When transaction is approved
Then card is revoked



To conclude about microservices

- Microservices can be interesting for socio-technical purpose
- Boundaries / contracts of your microservices / bounded context should be clearly defined
- Prefer rely on Acceptance Test at Bounded Context level rather than E2E testing



Conclusion

- These practices (AT and Bounded Context) help us to have to reduce the feedback between dev and qa
- Boundaries between QA and Developers are more or more blurry
- In our situation, QA validation isn't anymore the main limitation to release very frequently
- Beware to split too early your system into many microservices
- Feature validation at very early stage improve our ability to release more frequently
- Feedback loop - good KPI to measure



Q/A