

Making Things Less Wrong

Automating the development lifecycle, and beyond, at
College of Medicine IT

Who am I?

- ▶ Marnee Dearman
- ▶ Lead Integration Developer at College of Medicine IT since April 2016
- ▶ 14 years as a full stack .Net & SQL Server developer
- ▶ Graduate of the UofA with a BS and Masters in Geological Engineering
- ▶ Co-organize the Tucson Python Meetup

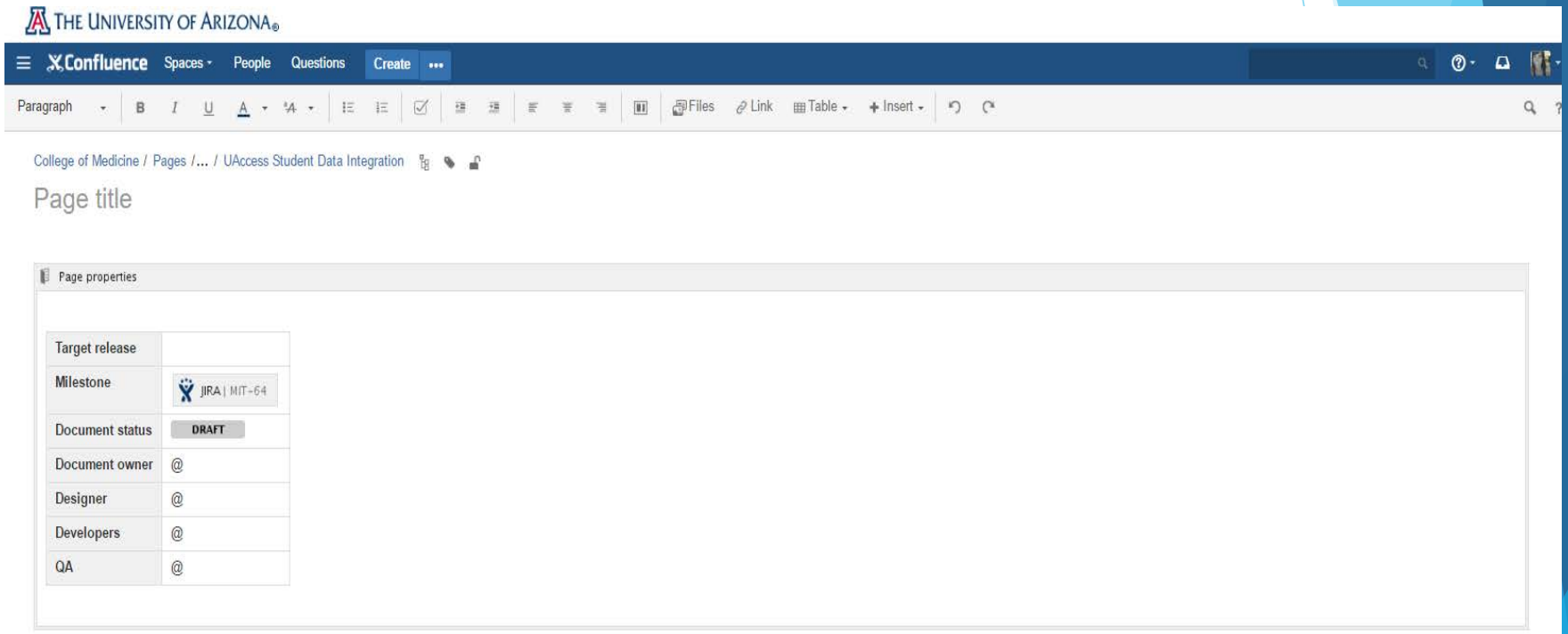
What I will cover in this talk

- ▶ Documentation
- ▶ Source Control
- ▶ Work tracking and collaboration
- ▶ Testing
- ▶ Continuous Integration


FIRST STEP

DOCUMENTATION IMPROVMENTS

Moved our documentation into Confluence



The screenshot displays the Confluence user interface. At the top left is the University of Arizona logo and name. The navigation bar includes 'X Confluence', 'Spaces', 'People', 'Questions', and a 'Create' button. Below this is a rich text editor toolbar with options for Paragraph, Bold, Italic, Underline, Text color, Background color, Bulleted list, Numbered list, Checklist, Table, Link, and Insert. The breadcrumb trail reads 'College of Medicine / Pages / ... / UAccess Student Data Integration'. The page title is 'Page title'. A 'Page properties' panel is open, showing a table of metadata.

Page properties	
Target release	
Milestone	 JIRA MIT-64
Document status	DRAFT
Document owner	@
Designer	@
Developers	@
QA	@

RELATED DOCUMENTS	LINK
Document name or description	link to page or download

Goals

- List of goals for this development effort
- Be brief but specific
- Use simple language

Roles

Role	Person(s)
Describe role	list Persons responsible

Problems we want to solve or use cases

#	Problem	Description and goal of resolution
1		
2		

Affected Systems, Databases, and Code Bases

System	Database	Code Base

Data Sources

Data	Data Source

Proposed Solution Summary

Proposed Solution Data Structure (if any, delete if not needed)

Proposed Solution Workflow Diagram and Description (if any, delete if not needed. try to use bullet points)

Test Cases

	Event or Scenario	Expected Result	Notes
1			

Questions and Open Points

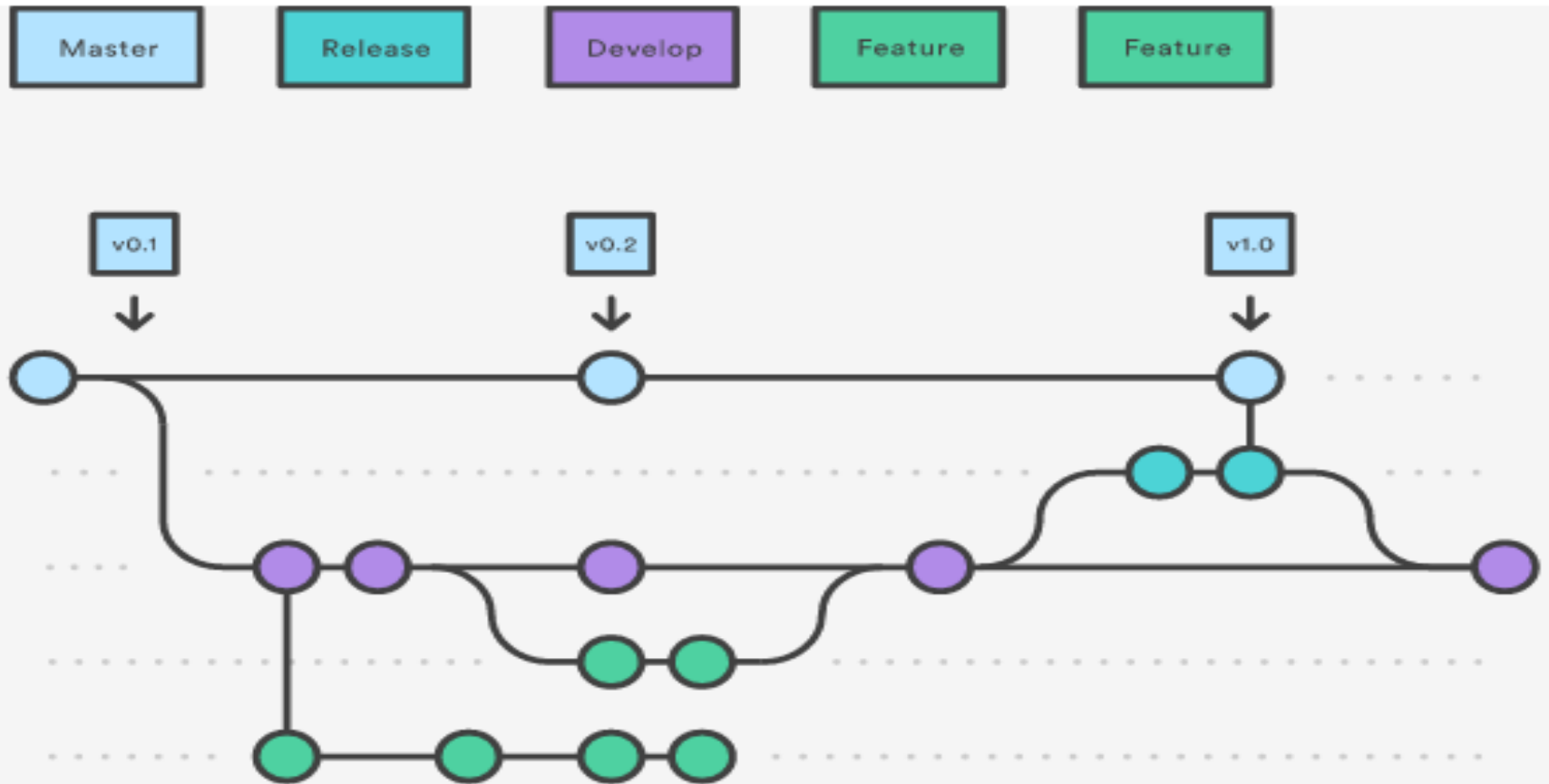
SECOND STEP

SOURCE CONTROL

Git & Kiln

- ▶ Distributed
- ▶ Widely used on campus and by UA ITS
- ▶ Kiln (cloud hosted) shared repository server

Gitflow Workflow



Kiln

The screenshot displays the Kiln web interface. At the top, there is a navigation bar with 'Activity', 'Repositories', and 'Reviews' menus, a search bar, and a user profile picture. Below this, the breadcrumb path is 'Presentations >> powerpoint >> MakingThingsLessWrong'. A 'Subscribe' button is visible on the right. The main content area shows a commit history for the 'MakingThingsLessWrong' repository. On the left, a vertical timeline diagram shows a blue line for the 'master' branch and a green line for a branch that branches off and merges back. The commit history table lists the following commits:

Commit Message	Author	Timestamp
case 400: made the larger blobs small...	marneedearman@email.arizona.edu	Sep 28 at 3:44 PM
Merge branch 'master' of https://comit.kilnhg.c...	marneedearman@email.arizona.edu	Sep 23 at 4:36 PM
case 400: added more notes and changed the ...	marneedearman@email.arizona.edu	Sep 23 at 4:27 PM
added more notes and changed the image on t...	marneedearman@email.arizona.edu	Sep 23 at 4:25 PM
case 400: adding images	marneedearman@email.arizona.edu	Sep 23 at 1:21 PM
case 400: adding demo file.	marneedearman@email.arizona.edu	Sep 23 at 1:20 PM
case 400: added slides on how COM does Cl. ...	marneedearman@email.arizona.edu	Sep 23 at 1:16 PM
init	marneedearman@email.arizona.edu	Sep 23 at 12:37 PM

Approved (Reviewed by Marnee Dearman)

Changes in AZMED 2.0 » MAIN in case254, case244, and case337

Notifications: Subscribed

Add/Remove Changesets...

By File | By Chan

Marnee Dearman: Approved
Add/Remove Reviewers

Opened by Fermin Martinez Fregoso
Sep 19 at 10:34 AM

Please review these changes in Kiln.

Reply

Marnee Dearman Sep 21 at 3:16 PM

Looks fine to me

Reply

Marnee Dearman Sep 21 at 3:16 PM

Approved

Empty text box for comments

Highlight code to attach it

Add Comment

Marnee Dearman is participating in this review.

Case 254: Added a Daily Digest for
block coordinators/directors

Fermin Martinez Fregoso
Sep 19 at 10:04 AM

absenceManager/model/
absenceManagerService.cfc

Show Entire File

Change 1 of 7

Stacked

```
554 554 </cffunction>
555 555
556 556 <cffunction name="getSecurityProfile" returnType="query">
557 557 - <cfargument name="securityProfileValue" required="yes" type="string">
+ <cfargument name="securityProfileValue" required="no" type="string">
558 558 + <cfargument name="sql" required="no" type="string">
559 559
560 560 <cfquery name="qList" datasource="#application.cfc_ds"
561 561 @@ -575,7 +576,12 @@
575 576
576 577 WHERE (dbo.tblSettings.active = 1)
577 577 AND (dbo.tblPerson.person_Active = 1)
578 578 - AND (dbo.tblSettings.settingValue = <cfqu
579 579 + <cfif structKeyExists(arguments, "securityProfileValue")
580 580 + AND (dbo.tblSettings.settingValue = <
581 581 + </cfif>
582 582 + <cfif structKeyExists(arguments, "sql") a
583 583 + AND #preserveSingleQuotes(arguments.s
584 584 + </cfif>
579 585 </cfquery>
580 586
581 587 <cfreturn qList>
```

absenceManager/model/absenceNotificationService.cfc

Show Entire File

Stacked

```
115 115 @@ -115,7 +115,8 @@
116 116 var i = 0;
117 117 var yesterday = dateFormat(dateAdd("d",-1,now()),
118 118 var subjectLine = 'Daily Digest for #yesterday#';
- var azmedURL = 'http://#CGI.SERVER_NAME#/index.cfm';
118 + var azmedURL = 'http://#CGI.SERVER_NAME#/index.cfm';
```

THIRD STEP

Work tracking and collaboration



Cases

Planner

New Case

Email

project: arche

Schedules

Wiki

CAMS only



All cases in CAMS

Refine Further

Save More

sorted by Priority sorted by Milestone Sort

Select Columns

Priority 1 – Critical cases

<input type="checkbox"/>			Case	Title	Status	Priority ▲	Remaining T...
<input type="checkbox"/>	💡	★	366	Logging – Note to self http://www.danesparza.net/201...	Active	● 1 – Critical	Σ 3.5 hours
<input type="checkbox"/>	💡	★	369	Add logging to login process – Adding logging to l...	Active	● 1 – Critical	1.5 hours
[1 subcases not matching search]							
<input type="checkbox"/>	💡	★	258	Local account approval – Also setup user roles so we...	Active	● 1 – Critical	Σ 20 hours
<input type="checkbox"/>	💡	★	375	Integration with FluidReview – Resources used accor...	Active	● 1 – Critical	Σ 58 hours
<input type="checkbox"/>	💡	★	256	Registration, login, profiles, roles functionality support...	Active	● 1 – Critical	Σ 26 hours

+ Add Case

Priority 2 – Essential cases


















<input type="checkbox"/>			Case	Title	Status	Priority ▲	Remaining T...
<input type="checkbox"/>	💡	★	256	Registration, login, profiles, roles functionality support...	Active	● 1 – Critical	Σ 26 hours
<input type="checkbox"/>	💡	★	304	Make login/landing page look like original – Shoul...	Active	● 2 – Essen...	0 hours
[30 subcases not matching search]							
<input type="checkbox"/>	💡	★	356	Testing and Tests – Container ticket to hold testing re...	Active	● 2 – Essen...	Σ 62 hours

+ Add Case

Priority 3 – Must Do cases








<input type="checkbox"/>			Case	Title	Status	Priority ▲	Remaining T...
<input type="checkbox"/>	💡	★	366	Logging – Note to self http://www.danesparza.net/201...	Active	● 1 – Critical	Σ 3.5 hours
<input type="checkbox"/>	💡	★	368	Inject logging – Might need to talk to Cayne about...	Active	● 3 – Must Do	2 hours
[1 subcases not matching search]							
<input type="checkbox"/>	💡	★	258	Local account approval – Also setup user roles so we...	Active	● 1 – Critical	Σ 20 hours
<input type="checkbox"/>	💡	★	336	Send OMCE a notification when users request ac...	Active	● 3 – Must Do	1 hours

Areas:

Edit	Delete	Area	Primary Contact
		Data and Database	Project's Primary Contact
		Documentation	Project's Primary Contact
		Frontend/CSS	Project's Primary Contact
		Infrastructure	Project's Primary Contact
		Integrations	Project's Primary Contact
		Misc	Project's Primary Contact
		Security	Project's Primary Contact
		Tests and Testing	Project's Primary Contact
		Create New Area	

Each project is divided into functional areas. You must have at least one area per project.

Milestones: (this project)

Edit	Delete	Milestone Name	Assignable	Backlog	Completion Date	Start Date	Milestone Dependencies
		0.2 Approval Process	Yes	No	(None)	8/29/2016	
		0.3 Integration with Fluid Review	Yes	No	(None)	9/21/2016	
		0.1 - User Registration, Login, and Profile	Yes	No	8/8/2016		
		Create New Milestone					

A list of past and upcoming milestones or versions specific to this project (for example "Beta", "Version 2.0", etc.)

Edit Workflow

Workflow Name:

Workflow:

For each category, you can configure to whom cases will be assigned upon transition to a new status.

If the Force box is checked, the "Assign To" field will not be editable when editing a case and transitioning to the new status.

Bug

Creating or Editing the status of an Active Case

Status	Assign To	Force ?
Active	<input type="text" value="Marnee Dearman"/>	<input type="checkbox"/>

Reactivating a Resolved Case

Status	Assign To	Force ?
Active	<input type="text" value="-- Case Resolver --"/>	<input type="checkbox"/>

Reopening a Closed Case

Status	Assign To	Force ?
Active	<input type="text" value="-- Case Resolver --"/>	<input type="checkbox"/>

Resolving a Case

Status	Assign To	Force ?
Resolved (Fixed)	<input type="text" value="CAMS Ready for Review"/>	<input type="checkbox"/>
Resolved (Not Reproducible)	<input type="text" value="-- Case Opener --"/>	<input checked="" type="checkbox"/>
Resolved (Duplicate)	<input type="text" value="-- Case Opener --"/>	<input checked="" type="checkbox"/>
Resolved (Postponed)	<input type="text" value="-- No Change --"/>	<input type="checkbox"/>
Resolved (Won't Fix)	<input type="text" value="-- Case Opener --"/>	<input checked="" type="checkbox"/>
Resolved (By Design)	<input type="text" value="-- Case Opener --"/>	<input checked="" type="checkbox"/>

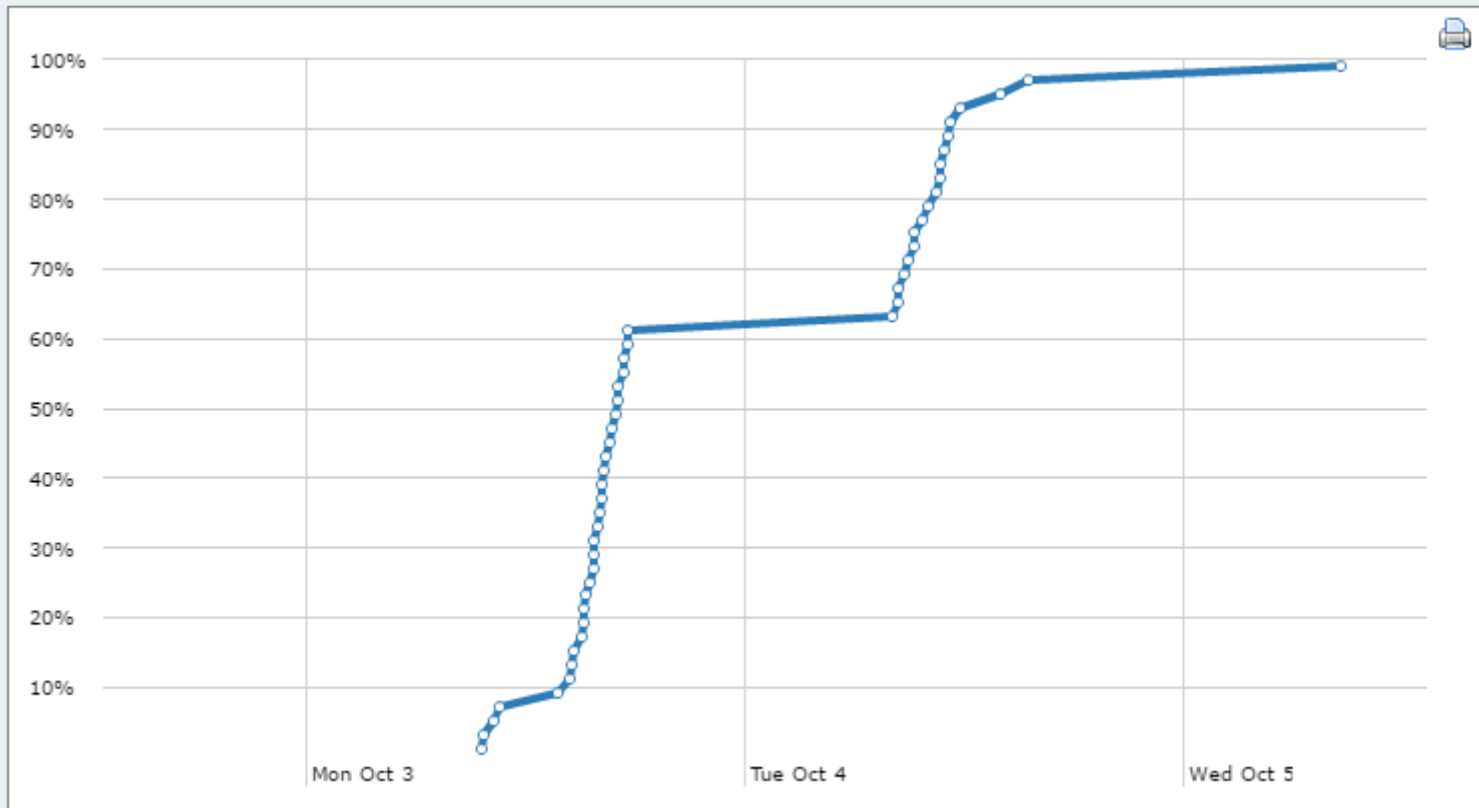
Upcoming Milestones

Milestone	Official Date	50% Date
0.1 - User Registration, Login, and Profile	8/8/2016	10/3/2016
0.2 Approval Process	(None)	10/14/2016
0.3 Integration with Fluid Review	(None)	10/24/2016

Priority

- Priority
- 1 - Critical
 - 2 - Essential
 - 3 - Must Do
 - 4 - Important
 - 5 - Highly Desirable
 - 6 - Do if Time
 - 7 - Don't Bother

Completion Date (Probability Distribution) [View Cases](#) | [Help](#) The Completion Date (Probability Distribution) graph shows the probability distribution of completion dates for a milestone.





[Edit](#) [Assign](#) [Email](#) [Resolve](#)

400

Complete first draft of making things less wrong

Presentations: Misc | Milestone: Undecided

Assigned To Marnee Dearman Active

Priority

● 3 – Must Do

Estimate

original: 10 hours
current: 10 hours
elapsed: 3 hours
remaining: 7 hours

Release Notes

[Add release note](#)

Kiln Changesets

[1 changesets](#)

[Request Review](#)

[RSS Feed](#)

[Subscribe](#)

Changeset ddd413 by marneedearman@email.arizona.edu 09/23/2016 (Today) 1:16 PM
in Presentations » powerpoint » MakingThingsLessWrong

[case 400](#): a **400: Complete first draft of making things less wrong** refactored some slides.

Edited by M
Non-timesher

Status: **Active**
Assigned To: **Marnee Dearman**
Category: **Feature**
Milestone: **Undecided**
Priority: **3 – Must Do**

Assigned to
Estimate set

Latest Comment (by Marnee Dearman) 09/23/2016 (Today) 1:15 PM

Opened by M

Make the presentation less wrong.

Make the p

The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.

DON'T FORGET

TESTING

- ▶ .NET Framework and F#
- ▶ Xunit
 - ▶ Unit testing framework
- ▶ FsUnit
- ▶ Tests are more easily readable

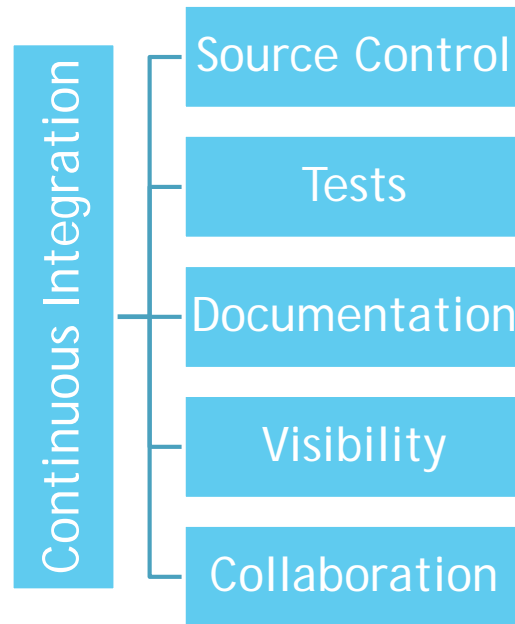
```
[<Fact>]
let ``Can get a user by Id from the Fluid Review web API`` () =
    let user = client.GetUser(9999999, "api/v2/users")
    user.Id |> should equal 9999999
    user.Submissions |> Seq.isEmpty |> should equal true
    user.Groups |> Seq.head |> should equal 25080
```

Even more testing

- ▶ Test Complete
- ▶ Automated testing for the UI
- ▶ Your student workers can write tests for you!

It all comes together with Continuous Integration

- ▶ We have the pieces in place. Now we can do Continuous Integration



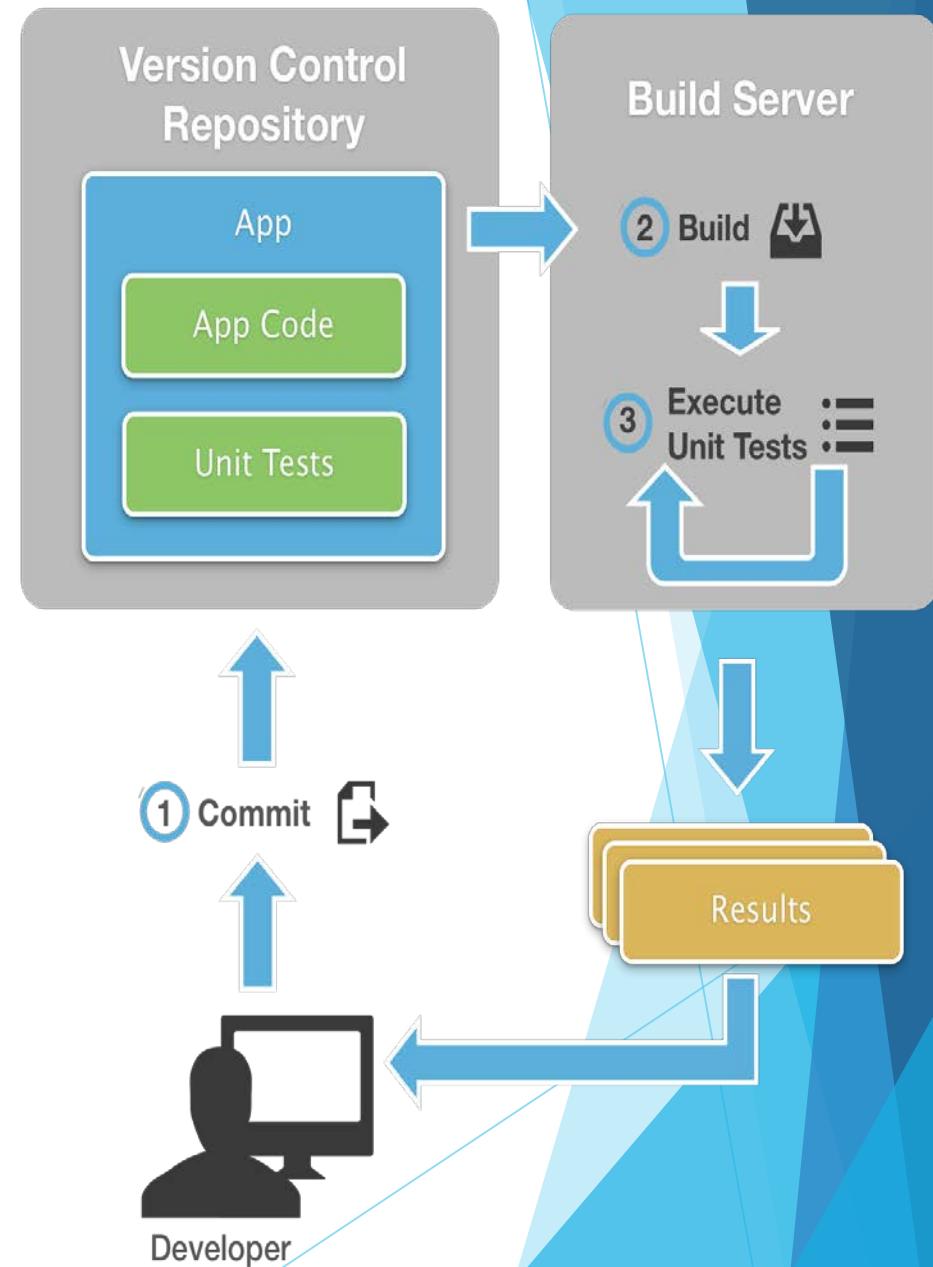
What is continuous integration, anyway?

- ▶ Automated builds
- ▶ Automated testing
- ▶ Automated deployment

In a nutshell

- ▶ Push your code and then watch the magic happen
 - ▶ The build system detects the changes
 - ▶ Pulls code
 - ▶ Builds code
 - ▶ Pulls in dependencies
 - ▶ Runs tests
 - ▶ Deploys

- ▶ Stops if any step fails
- ▶ Sends failure and success notifications



Advantages of Continuous Integration

- ▶ Standardized build process
 - ▶ Tested
 - ▶ Repeatable
 - ▶ Trusted
- ▶ Automated build process
 - ▶ Free up developer time
 - ▶ Deliver more features faster
 - ▶ Reduced support time

Team City

What is College of Medicine using as the Continuous Integration build server?

- Build Configuration Settings
 - General Settings
 - Version Control Settings 1**
 - Build Step: Command Line
 - Triggers 1
 - Failure Conditions
 - Build Features
 - Dependencies
 - Parameters 4
 - Agent Requirements

Last edited 11 days ago by Mamee (view history)

VCS Roots

In this section you can configure how project source code is retrieved from VCS.

+ Attach VCS root

Name	Edit	Delete
(jetbrains.git) https://comit.kilnhg.com/Code/CAMS/applications-and-libraries/webapp.git#refs/heads/master belongs to CAMS Latest check for changes: 13:35 (periodical run by the schedule) Changes checking interval: 1m		

Checkout Options

Additional VCS checkout and display settings.

Checkout Settings

VCS checkout mode: Always checkout files on server

Checkout directory: Auto (recommended)
With this selection all build configurations with the same VCS checkout directory.

Clean build: Clean all files in the checkout directory before the build

Display Settings

Display options: Show changes from snapshot dependencies
This also affects treatment of pending changes in schedule triggers

You can also configure VCS roots labeling with the help of VCS labeling build feature.

Save Cancel

Hide advanced options

Environment Variables (env.)

Environment variables will be added to the environment of the processes launched by the build runner (without env. prefix). [?](#)

Name	Value		
env.Database.ConnectionString	%secure:teamcity.password.env.Database.ConnectionString%	Edit	Delete
env.Eds.Password	%secure:teamcity.password.env.Eds.Password%	Edit	Delete
env.Eds.Username	com-cams	Edit	Delete
env.Notifications.admin_email	camstest@mailinator.com,marneedearman@email.arizona.edu	Edit	Delete
env.Notifications.email_from	marneedearman@email.arizona.edu	Edit	Delete
env.SqlProvider.ConnectionString	%secure:teamcity.password.env.SqlProvider.ConnectionString%	Edit	Delete



Projects | ▾

Changes

Agents 1

Build Queue 0

Mamee | ▾ Administr

☰ CAMS > ☐ Build Develop > #66 (28 Sep 16 12:47)

Run ...

Actions ▾

Edit Co

Overview

Changes 1

Tests

Build Log

Parameters

Artifacts

« #65 | All

Result: System.Exception: Errors reported by xUnit runner: D:\TeamCity\buildAgent\work\66cdb3d8bcb3a379\tmp\...

Agent: WWW102

Time: 28 Sep 16 12:47 - 12:48 (1m:25s)

Triggered by: Git on 28 Sep

▾ Build problems (1 new)

▾ Problem reported from build script. New build status text: (1)

* System.Exception: Errors reported by xUnit runner: D:\TeamCity\buildAgent\work\66cdb3d8bcb3a379\tmp\test\CAMS.Infrastructure

▾ Build failure condition (1)

[Process exited with code 42](#) | ▾

▾ 1 test failed (1 new)

▾ Test collection for CAMS.Infrastructure.Tests.FluidReviewTests+UserDetailsTests (1): CAMS.Infrastructure.Tests (1)

* [FluidReviewTests+UserDetailsTests.Can get a user from the API](#) | ▾

✔ 2 tests passed

COMIT ▾
● marnee

CHANNELS (3) +

- # build
- # general 1
- # random

DIRECT MESSAGES (4) +

- ♥ slackbot
- marnee (you)
- cayne
- fermin

+ Invite people

#build

3 members | Add a topic

Search

marneedearman

📌 "Build Develop" Failed @channel

TeamCity BOT 3:04 PM
Running - CAMS :: Build Develop #76

Build Develop

Failed - CAMS :: Build Develop #76

Build Develop
Elapsed: 43s

Reason
FS0225: FSC(0,0): Source file
'D:\TeamCity\buildAgent\work\66cdb3d8bcb3a379\tests\Core.Tests\SchedulingTests.fs' could not be found, Process exited with code 42, Building CAMS.sln failed with exitcode 1.

Commits
de4d97b058 :: marneedearman :: Tested the build with a broken test and changed it back so it tests correctly

Changes By
marneedearman

Today new messages

Message #build

What's next?

What's next for College of Medicine?

FUTURE ENHANCEMENTS

- ▶ Automated database migrations with RedGate SqlCompare
- ▶ Introduce behavior driven development
 - ▶ PMs, BAs can write tests using Gherkin that serve as specification and test all in one.
- ▶ Automated provisioning in the cloud (Azure site and SQL Azure)
- ▶ Continuous deployment?

How are you making things less wrong?

- ▶ Questions?
- ▶ Tell me what you do. Let's make all the things less wrong.

▶ LINKS

- ▶ <https://www.fogcreek.com/fogbugz/>
- ▶ <https://xunit.github.io/>
- ▶ <https://github.com/fsprojects/FsUnit>
- ▶ <https://smartbear.com/product/testcomplete/overview/>
- ▶ <http://testcollab.com/>
- ▶ <https://www.thoughtworks.com/continuous-integration>
- ▶ https://youtu.be/_wnd-eyPoMo
- ▶ <http://www.joelonsoftware.com/items/2007/10/26.html>