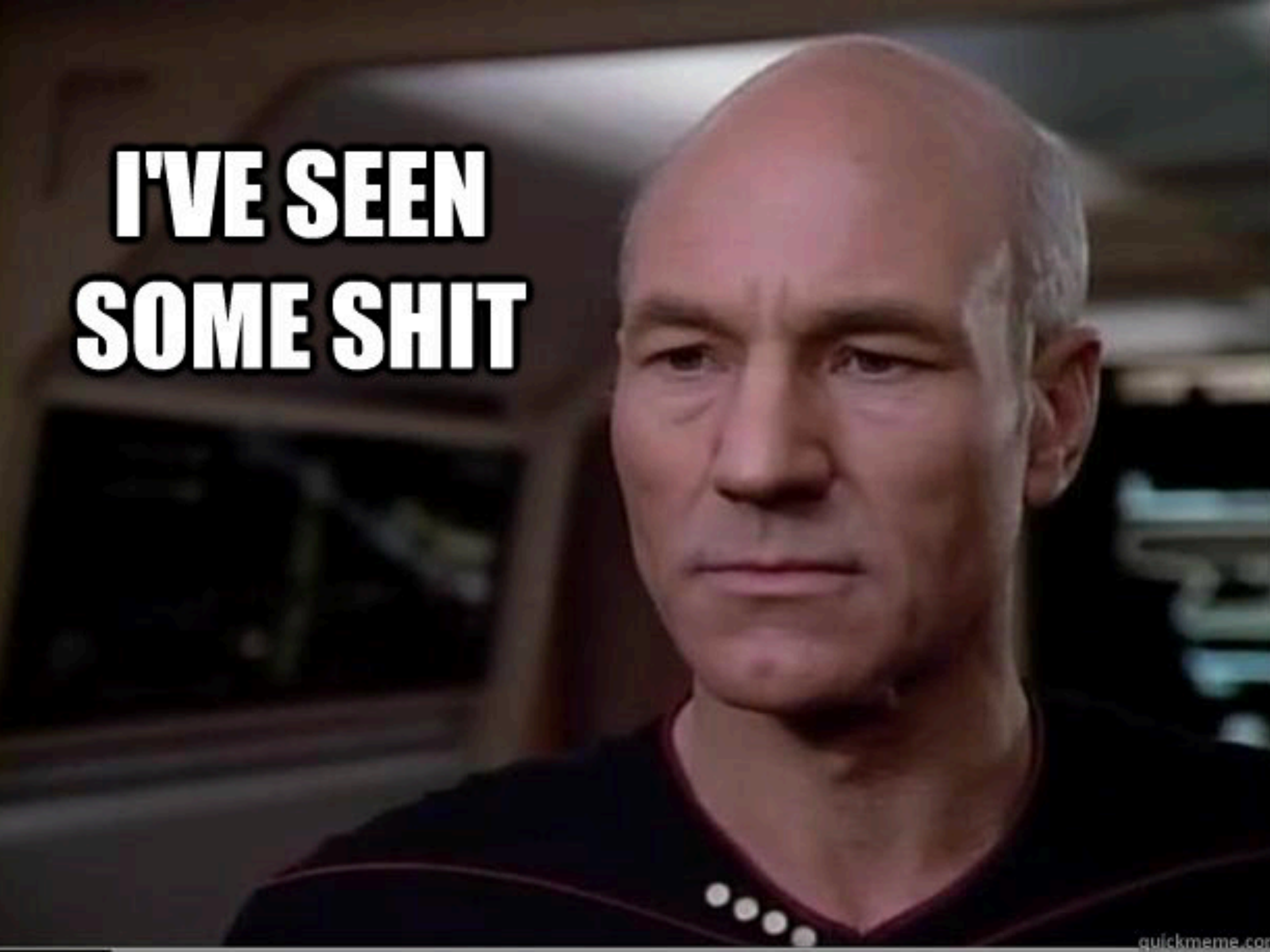
BLAKE NIEMYJSKI

USING EXCEPTION DRIVEN DEVELOPMENT TO BUILD ROCK-SOLID SOFTWARE


I'VE SEEN
SOME SHIT
quickmeme.com

WHAT IS EXCEPTION DRIVEN DEVELOPMENT?

1. COLLECT CONTEXTUAL DATA
2. FIX ISSUES
3. DEPLOY OFTEN

WHY DO I CARE?

WHY DO I CARE?

SOFTWARE HAS BUGS

THE QUESTION ISN'T HOW MANY BUGS YOU WILL SHIP WITH, BUT HOW FAST CAN YOU FIX THEM?

Jeff Atwood

AVG: 15–50 PER 1K LOC
SPACE SHUTTLE: 0 PER 500K LOC

Steve McConnell

"IF YOU'RE WAITING AROUND FOR USERS TO TELL YOU ABOUT PROBLEMS WITH YOUR WEBSITE OR APPLICATION, YOU'RE ONLY SEEING A TINY FRACTION OF ALL THE PROBLEMS THAT ARE ACTUALLY OCCURRING.

THE PROVERBIAL TIP OF THE ICEBERG."

Jeff Atwood

WHY DO I CARE?

TRUST THE DATA**

WHY DO I CARE?

INCREASED PRODUCTIVITY

TECH SUPPORT

How mayz I help?

WHY DO I CARE?

BRAND IMAGE

SUMMARY

- All software has bugs
- Trust the data*
- Increased productivity
- Improved brand image

STEP 1

COLLECT DATA

ASK YOURSELF

HOW DO I KNOW MY APP IS PREFORMING AS EXPECTED?

WAYS TO COLLECT

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

er Job System: 'DatabaseIntegrityCheck - USER_DATABASE

er Job System: 'IndexOptimize - USER_DATABASES' comple

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

er Job System: 'DatabaseIntegrityCheck - SYSTEM_DATABA

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

er Job System: 'DatabaseBackup - USER_DATABASES - FUL

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er Job System: 'DatabaseIntegrityCheck - USER_DATABASE

er Job System: 'IndexOptimize - USER_DATABASES' comple

LOGGING

TO EMAIL

THE NUMBER OF EMAILS IN MY INBOX
IS TOO DAMN HIGH!

```
WARN Bootstrapper Redis is NOT enabled
WARN Bootstrapper Azure Storage is NOT
INFO EventIndex Retrieved list of 1 in
WARN AppBuilder Jobs running in proces
INFO AppBuilder Starting api...
INFO EventPostsJob Starting continuous
INFO WorkItemJob Starting continuous j
INFO WorkItemJob Starting continuous j
INFO EventPostsJob Processing post: id
INFO EventUserDescriptionsJob Starting
INFO EventPostsJob Ran 1 events throug
INFO WebHooksJob Starting continuous j
INFO EventNotificationsJob Starting co
INFO MailMessageJob Starting continuou
INFO DownloadGeoIPDatabaseJob Starting
INFO DownloadGeoIPDatabaseJob Deleting
INFO DownloadGeoIPDatabaseJob Download
INFO DownloadGeoIPDatabaseJob Extracti
INFO DownloadGeoIPDatabaseJob Finished
INFO CloseInactiveSessionsJob Starting
INFO DailySummaryJob Starting continuo
INFO DailySummaryJob Job run "DailySum
INFO EventPostsJob Processing post: id
INFO EventPostsJob Ran 1 events throug
INFO EventPostsJob Processing post: id
INFO EventPostsJob Ran 1 events throug
INFO EventPostsJob Processing post: id
INFO EventPostsJob Ran 1 events throug
```

LOGGING

TO DISK

IT'S GONNA BE.....
HUGE
memegenerator.net

DEVELOPERS! SOMETHING IS WRONG!!
STACKTRACE OR GTFO
B-B-BUT-
STACKTRACE. OR. GTFO.

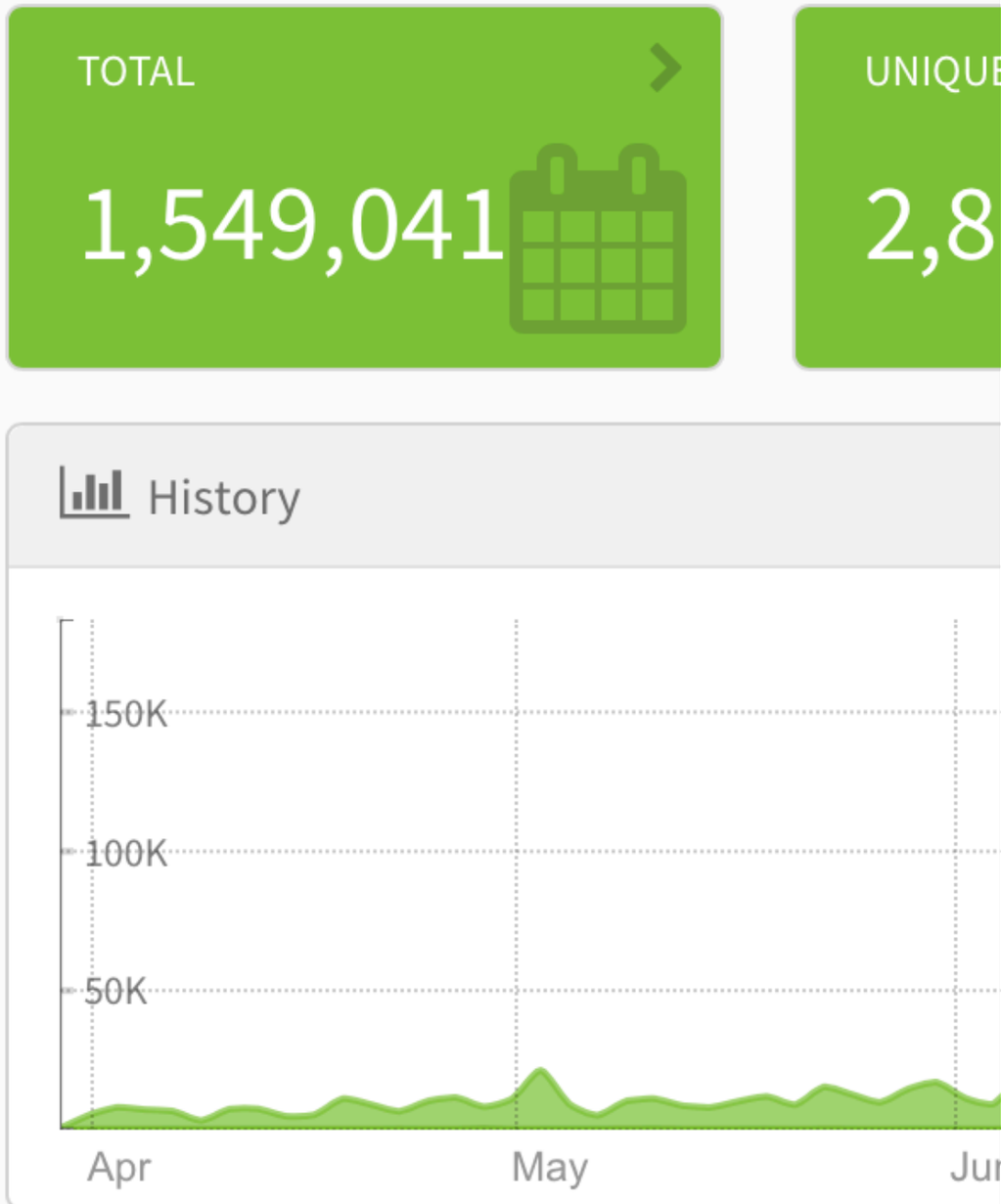
LOGGING

INHOUSE

THE DANGER IN BUILDING INTERNAL TOOLS IS NOT THAT IT SAVES INSIGNIFICANT AMOUNT OF CASH, BUT THAT IT STIFLES FUTURE CASH

Josh Pigford

SO WHAT SHOULD I USE?



LOGGING

THIRD PARTY SOLUTIONS

- Exceptionless
  - Starting at $15, Free to self host
- RAYGUN
  - Starting at $250
- Application Insights
  - Starting at $15/node, Azure only

- Exceptionless
  - Open Source (MIT)
  - Detailed error reports
  - Real-time view as events occur
  - Rich notifications

Most Frequent

	Summary	Users	Count
	HttpException in **MoveNext** The client disconnected.	0%	90,447
	Error in **b/<** [ngRepeat:dupes] Duplicates in a repeater are not allowed. Use 'track by' expression to specify unique…	1.3%	60,571
	MaxRetryException in **RethrowKeepingStackTrace** Failed after retrying 5 times: 'POST events/events/_search'. InnerException: WebException,…	2.8%	21,260
	OperationCanceledException in **ThrowOperationCanceledException** The operation was canceled.	0%	20,107
	Error in **<anonymous>** [$compile:ctreq] Controller 'uibTabset', required by directive 'uibTab', can't be foun…	7.4%	15,695
	Error in **responseError** HTTP response error	6.4%	7,208

TOTAL	USERS	FIRST	LAST
1,031	0%	7 days ago	15 minutes ago

Stack REGRESSED

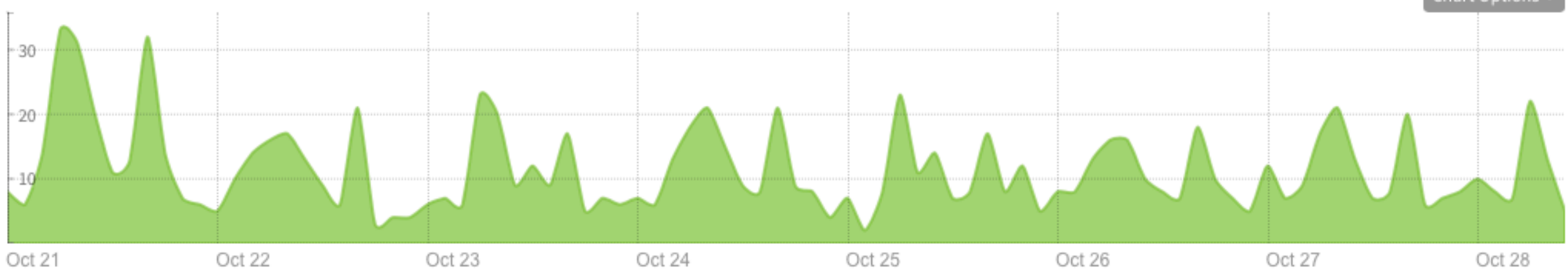
Mark Fixed Options

Title	The operation was canceled.
Project	Exceptionless

Stacking Information

ExceptionType	System.OperationCanceledException
Method	System.Threading.CancellationToken.ThrowOperationCanceledException()

Chart Options



Recent Occurrences

	Summary	User	Date
	OperationCanceledException in **ThrowOperationCanceledException** The operation was canceled. /api/v2/events		15 minutes ago
	OperationCanceledException in **ThrowOperationCanceledException** The operation was canceled. /api/v2/events		39 minutes ago

Overview | Exception | Request | Environment

Occurred On	Oct 28, 2016 10:55:31 AM (13 minutes ago)
Project	Exceptionless
Reference	7e10522ac6
Error Type	System.OperationCanceledException
Message	The operation was canceled.
Version	3.5.2593 64ba149261
URL	https://collector.exceptionless.io/api/v2/events

Stack Trace

```
System.OperationCanceledException: The operation was canceled
```

Session Events

Summary	User	Session Time
Feature: Event	Blake Niemyjski	after a minute
Feature: Event	Blake Niemyjski	after a minute
Feature: Event	Blake Niemyjski	after a minute
Feature: app.stack.Stack.Recent.events.open	Blake Niemyjski	after a minute
Feature: Event	Blake Niemyjski	after a minute
Feature: app.stack.Stack.Recent.events.open	Blake Niemyjski	after a minute
Feature: app.Dashboard	Blake Niemyjski	after a few seconds
Error in **<anonymous>** [ngRepeat:dupes] Duplicates in a repeater are not allowed. Us… ▸ /event/57f5fb180306f704e4718428	Blake Niemyjski	after a few seconds
Feature: app.Dashboard	Blake Niemyjski	after a few seconds
Feature: Stack	Blake Niemyjski	after a few seconds

STEP 1

DEMO TIME!!!

SUMMARY

- Ship software
- Collect **contextual** data

STEP 2

FIX THE ISSUES!!

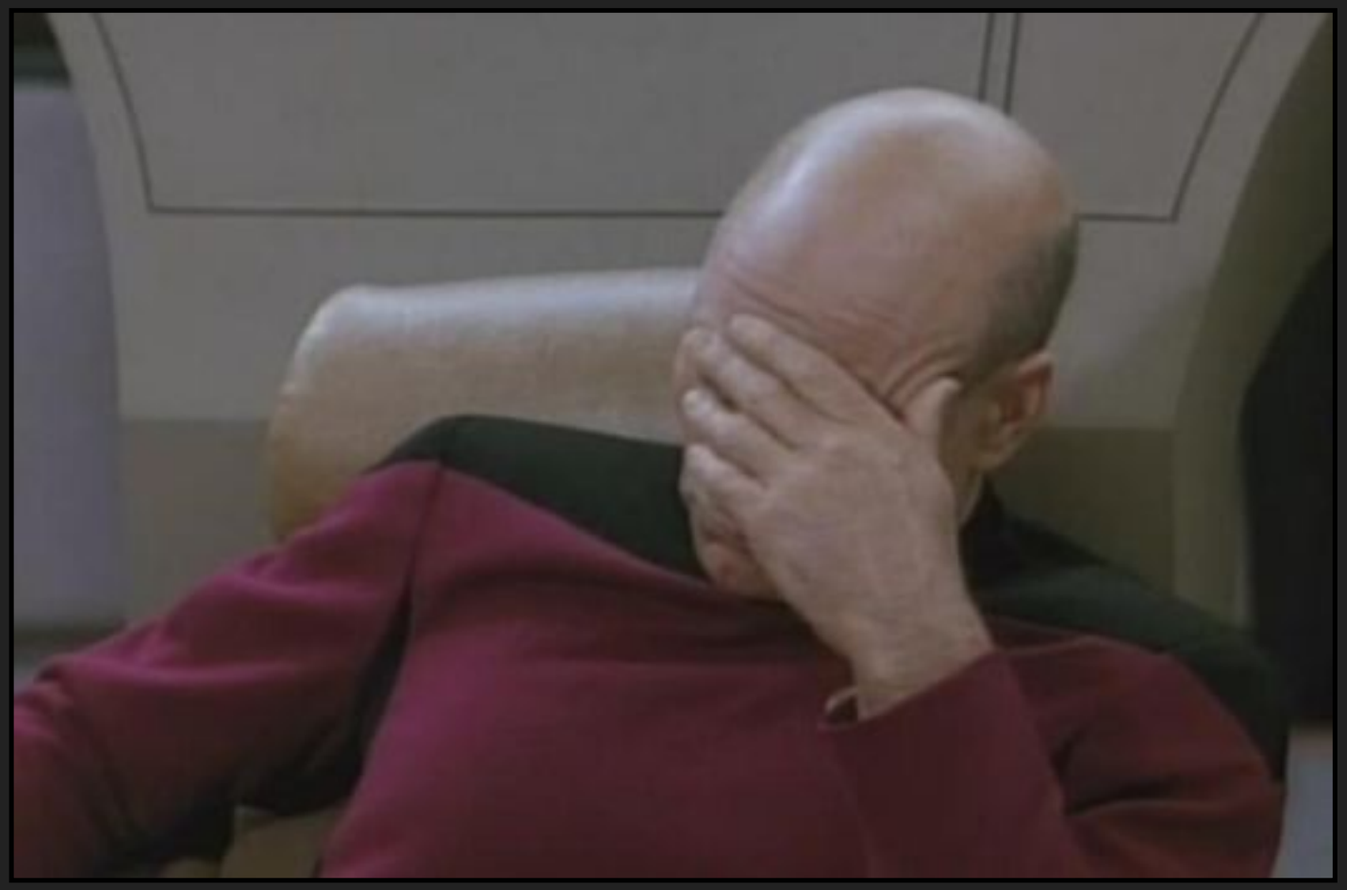
WHAT SHOULD I FOCUS ON?

"Broad-based trend analysis of error reporting data shows that 80% of customer issues can be solved by fixing 20% of the top-reported bugs. Even addressing 1% of the top bugs would address 50% of the customer issues."

Windows Error Reporting Service

FIX THE TOP THREE ERRORS!!!

```
[Theory]
[InlineData(null, null, true, false)]
[InlineData("  ", null, true, false)]
[InlineData("data.field:(now criteria2)",
[InlineData("data.date:>now", "idx.date-d
[InlineData("data.date:[now/d-4d TO now/d
[InlineData("data.date:[2012-01-01 TO 201
[InlineData("data.date:[* TO 2012-12-31]"
[InlineData("data.date:[2012-01-01 TO *]"
[InlineData("(data.date:[now/d-4d TO now/
[InlineData("data.count:[1..5}", "idx.cou
[InlineData("data.Windows-identity:ejsmit
[InlineData("data.age:(>30 AND <=40)", "i
[InlineData("data.age:(+>=10 AND < 20)",
[InlineData("data.age:(+>=10 +<20)", "idx
[InlineData("data.age:(->=10 AND < 20)",
[InlineData("data.age:[10 TO *]", "idx.ag
[InlineData("data.age:[* TO 10]", "idx.ag
[InlineData("hidden:true AND data.age:(>3
[InlineData("hidden:true", "hidden:true",
[InlineData("fixed:true", "fixed:true", t
[InlineData("type:404", "type:404", true,
[InlineData("ref.session:12345678", "idx.
0 references | run test | debug test
public void CanProcessQuery(string query,
    var result = QueryProcessor.Process(q
    Assert.Equal(expected, result.Expande
    Assert.Equal(isValid, result.IsValid)
    Assert.Equal(usesPremiumFeatures, res
}
```



ADD TESTS

PREVENT REGRESSIONS

STEP 2

DEMO TIME!!!

SUMMARY

- Look at the data
- Fixing the top THREE issues
- Add tests

STEP 3

DEPLOY AGAIN

DEPLOY EVERY BUG FIX

FOLLOW UP WITH CUSTOMERS

RINSE AND REPEAT

SUMMARY

- Deploy often
- Follow up with end users
- Fix more bugs!
- Have rock solid software

STEP 4

PROFIT!

@BLAKEN

GITHUB.COM/NIEMYJSKI

EXCEPTIONLESS.COM

Blake Niemyjski