

# BREAKING OUT OF THE FEAR CYCLE

I A N   T H O M A S | L A M B D A C O N F  2 0 1 8

# HOW MANY "9"s ARE ENOUGH?





sky bet

soccer saturday

# BRITAIN'S MOST POPULAR ONLINE BOOKMAKER

Over 2m customers

11m financial transactions every Saturday

50m real-time updates every day

20,890  
BETS PER MINUTE  
GRAND NATIONAL 2018



+ Sky Bet



90 days ago

99.99 % uptime

Today

# A CHRISTMAS TALE...



HalfTimeBet @halftimebet · 26 Dec 2014

@SkyBet @damiontucker23 there is a dif between down for a min due to suspended but this is a joke today get a grip #multimillionpoundcompany



bet

@SkyBet

We are ex  
& app. We  
inconveni



Kasey Taylor

@KaseeTaylor

Follow



@SkyBet lost a bet which I was going to cash out on due to the website being down! Deffinetly not using sky bet again 😴😴😴



Stuart Fuller

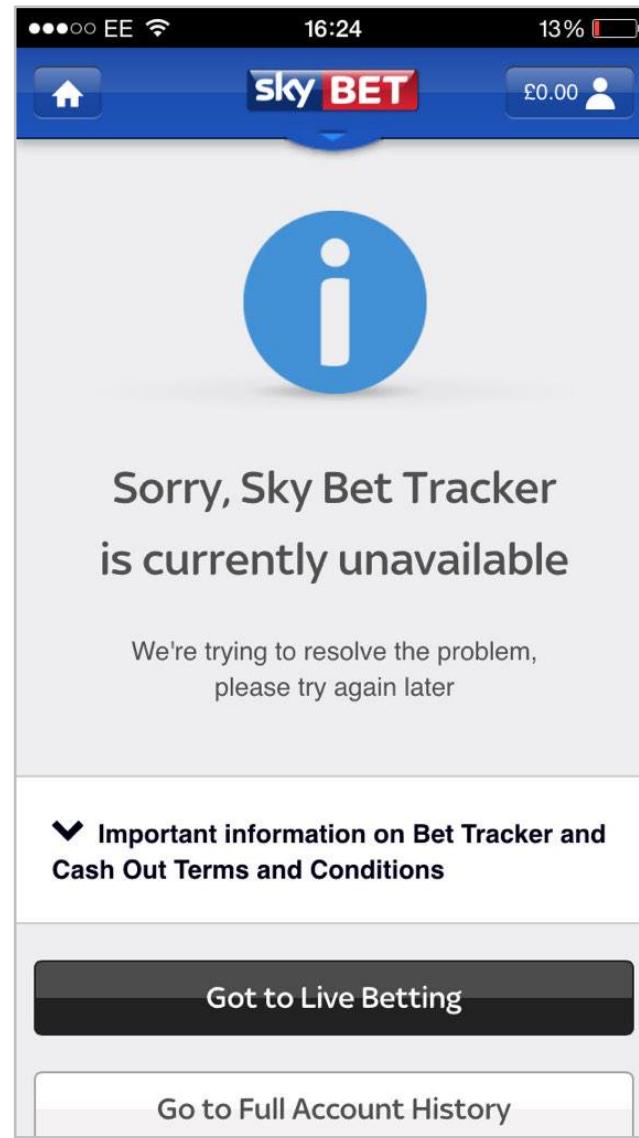
@theballisround

Follow



Looks like it's been a bad day at the office for @SkyBet judging by their Twitter feed tonight. Very unhappy punters

11:49 PM - 26 Dec 2014



We'd like to thank Lee Kennedy (@K3nn3dy10) for his reply to our tweet about cash out issues.

Lee Kennedy (@K3nn3dy10) said:

Replies to @SkyBet

@SkyBet won't be using you ever again this has happened to often over Christmas and the cash out has been broken #Rubbish

3:22 PM - 28 Dec 2014

21 Retweets 8 Likes



233 21 8

# WHAT IS THE FEAR CYCLE?

Small changes have unpredictable,  
scary, or costly results.

We try to make every change  
as small and local as possible.

We begin to **Fear** making changes

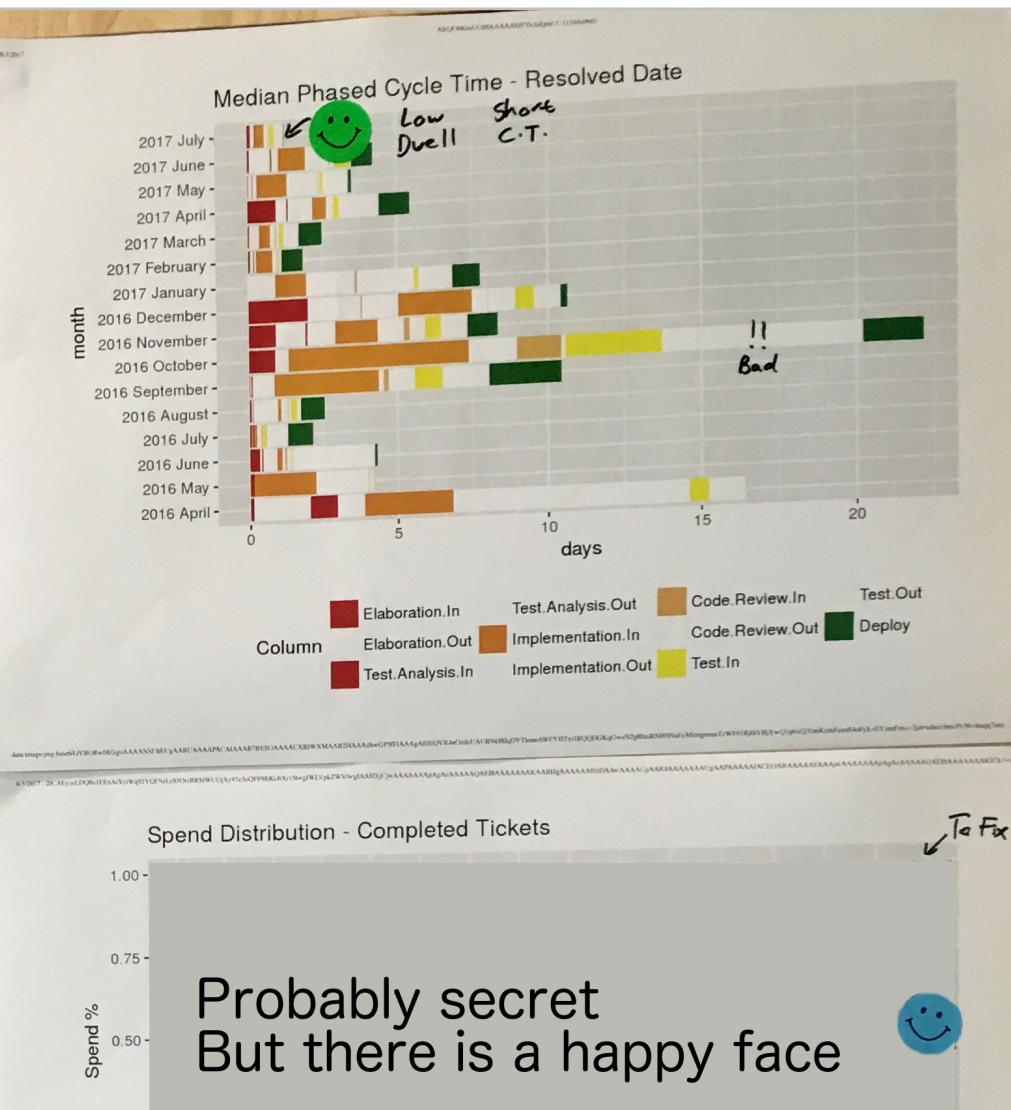
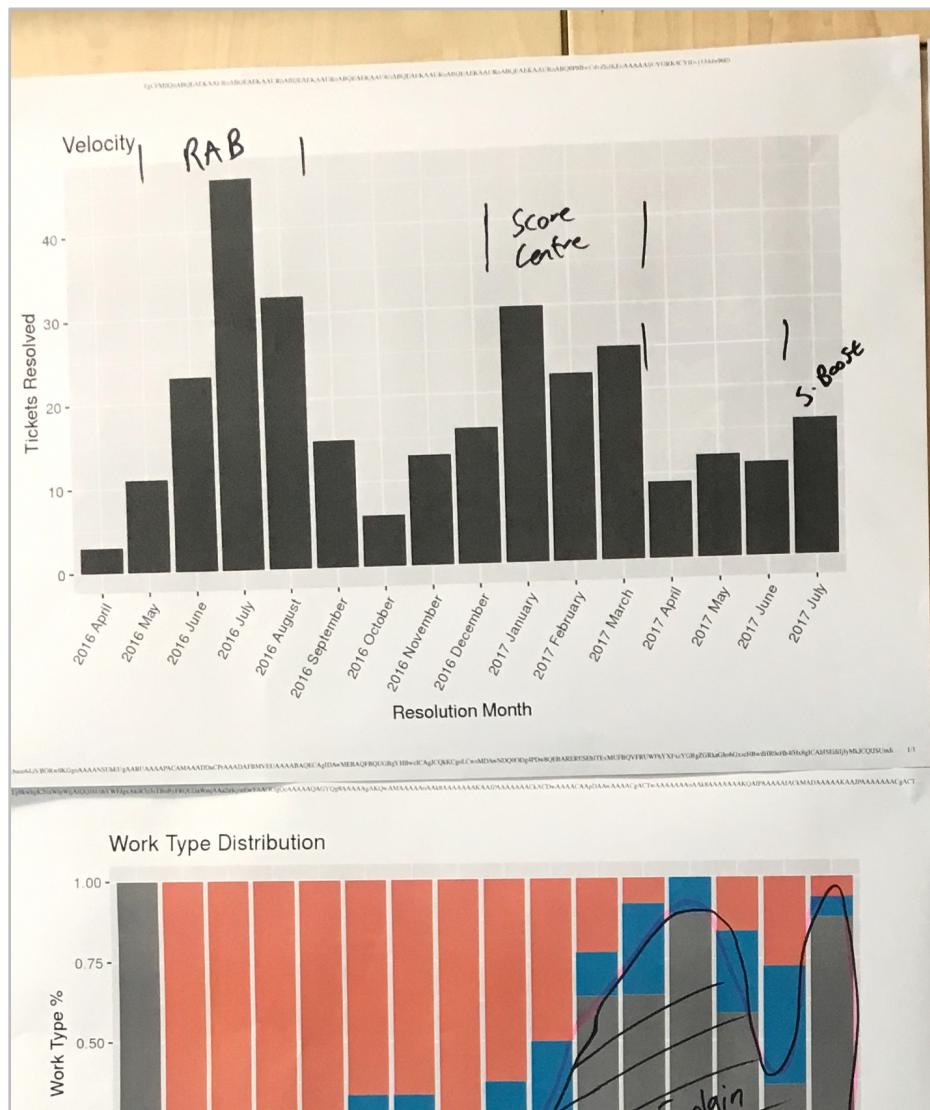
The code base accumulates  
**warts**, **knobs**, and **special cases**.

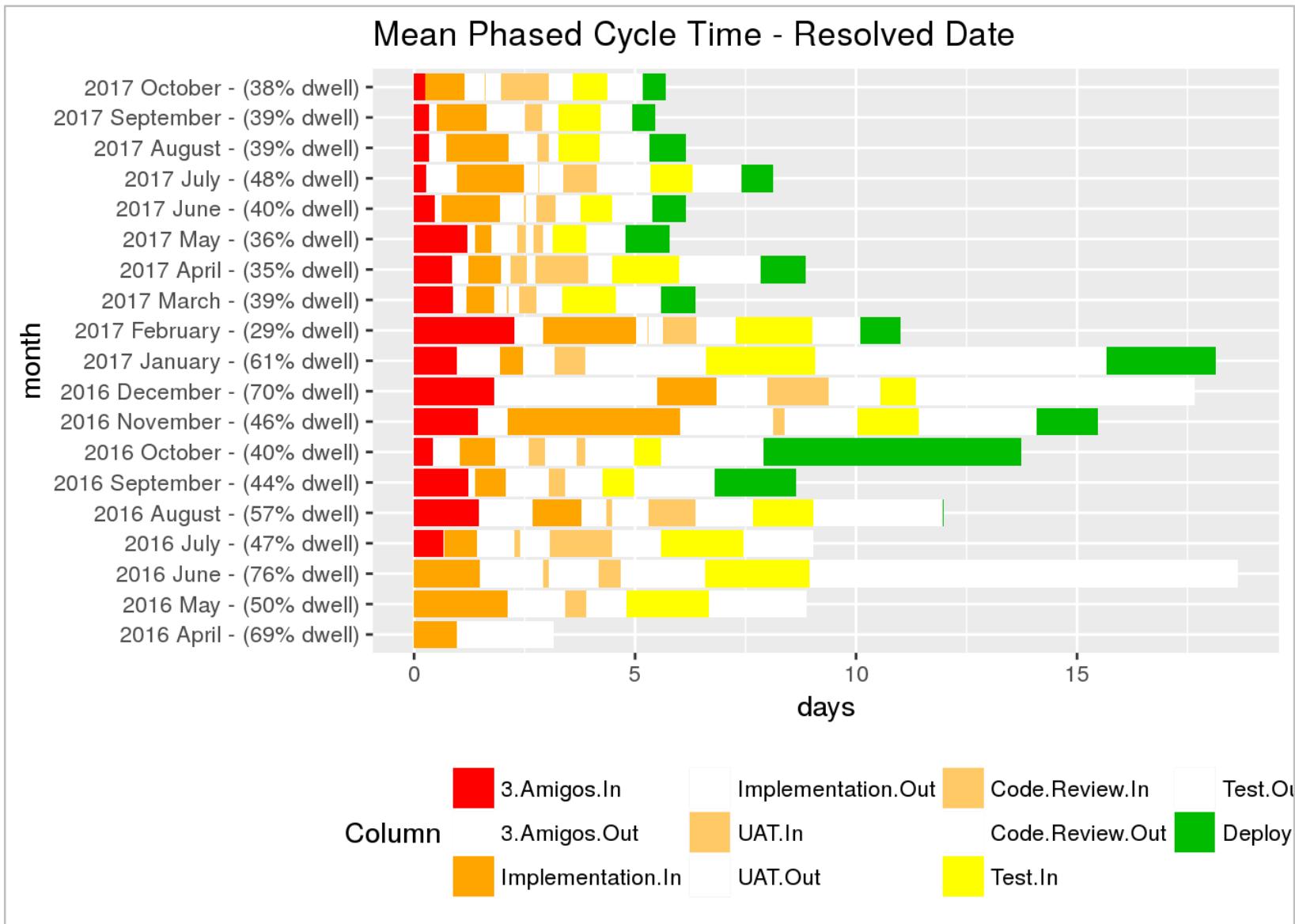
**Fear intensifies.**

“The vicious cycle is completed when one of those local kludges is responsible for someone else’s “What? I didn’t know that!” moment. At this point, **the fear cycle is self-sustaining**. The cost of even small changes will continue to increase without limit.”

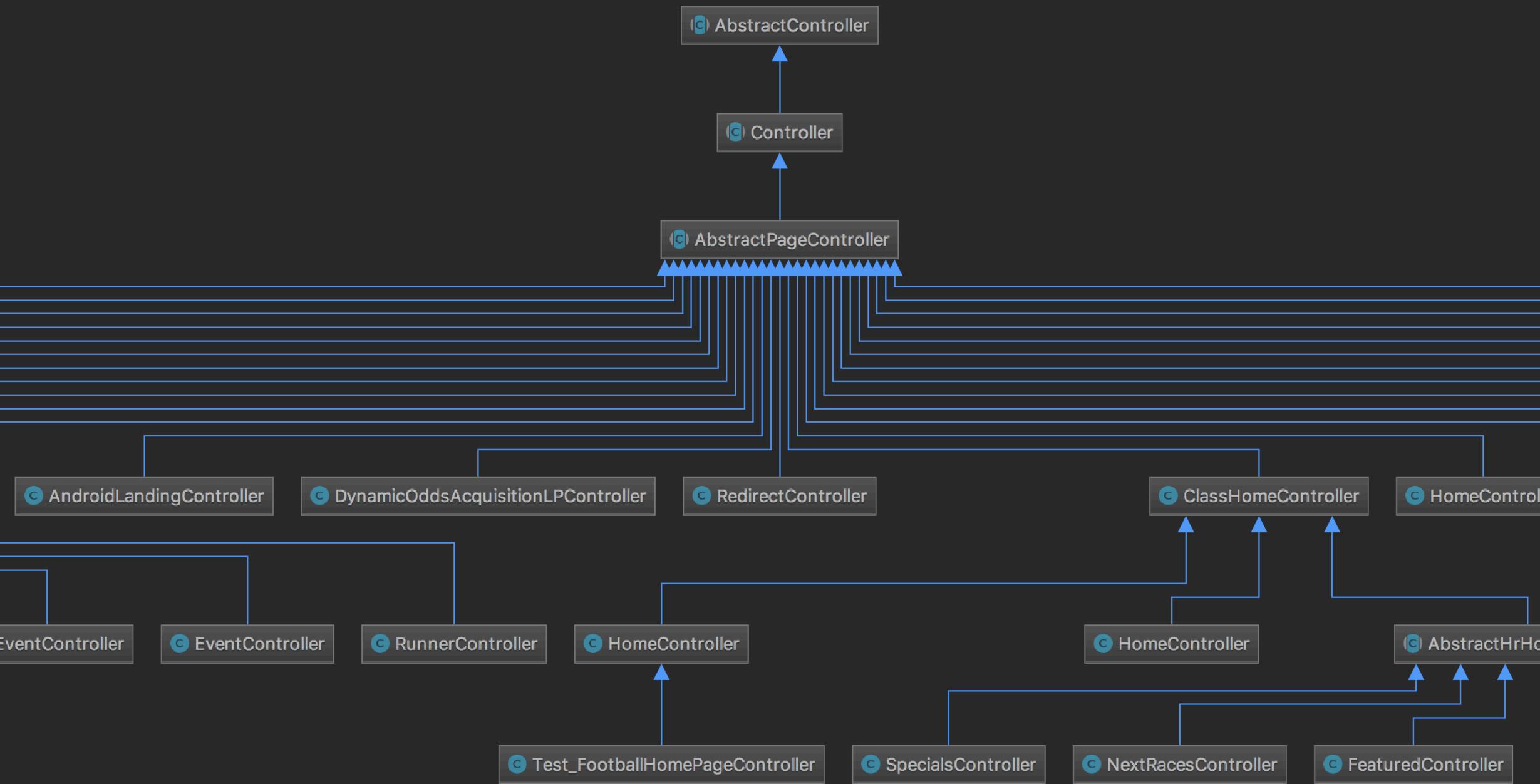
– Michael Nygard, [The Fear Cycle](#)

# HOW DO YOU KNOW YOU'RE IN IT?





# WARTS AND KNOBS





**WE FAVOURED INHERITANCE OVER COMPOSITION**





Ian Thomas 12:01

FAILURES!

Tests: 4867, Assertions: 15296, Errors: 56.

What could cause such catastrophic failure in unit tests?

adding a new `customerHash` property to the `$customer`

```
function AbstractAnimalRacingHomepageDocumentHandler() {
    AbstractPageDocumentHandler.call(this);
    if (this.raceManager === null) {
        this.raceManager = new RaceManager();
    }
    this.raceManager.setChannel(channel);
}

this.raceManager.setChannel(channel);

if (this.raceManager.getRaceCount() > 0) {
    var race = this.raceManager.getRace(0);
    if (race.getAntePostOdds() > 0) {
        return race;
    }
}
};

this.raceManager.setChannel(channel);

this.antepostOdds = this.raceManager.getAntePostOdds();
this.antepostOdds = this.raceManager.getAntePostOdds();

return this.antepostOdds;

};

this.antepostOdds = this.raceManager.getAntePostOdds();

this.specials = this.raceManager.getSpecials();
this.specials.forEach(function(special) {
    var event_ = special.event;
    var type_ = special.type;
    return displayEvent(event_, type_);
}, this);
});

this.nextRacesPageNumber = this.raceManager.getNextRacesPageNumber();
this.nextRacesPageNumber = this.raceManager.getNextRacesPageNumber();

channel, 10, this.classId);

util.inherits(AbstractAnimalRacingHomepageDocumentHandler, AbstractPageDocumentHandler, AbstractPageDocumentHandler);
```



**“Object-oriented programming offers a sustainable way to write spaghetti code. It lets you accrete programs as a series of patches.”**

– Paul Graham



WE WANT TO "GO FAST"

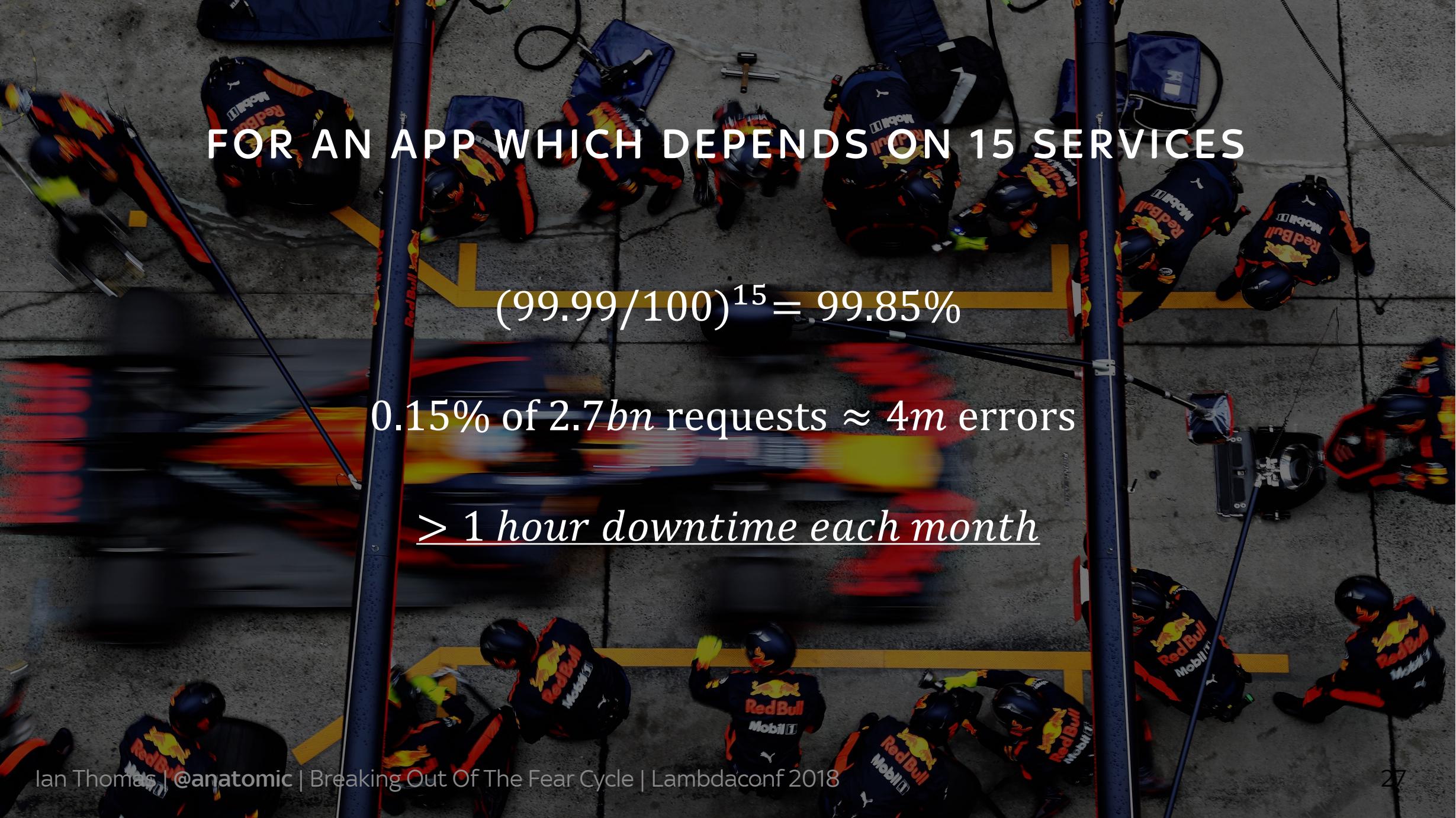
# WE WANT FOUR NINES

## Availability

99%  
99.9%  
99.99%  
99.999%  
99.9999%

## Associated Downtime Per Year

87 hours and 39 minutes  
8 hours and 46 minutes  
53 minutes  
5 minutes  
32 seconds



FOR AN APP WHICH DEPENDS ON 15 SERVICES

$$(99.99/100)^{15} = 99.85\%$$

0.15% of 2.7bn requests  $\approx$  4m errors

*> 1 hour downtime each month*

# INTRODUCING FUNCTIONAL PROGRAMMING PRINCIPLES

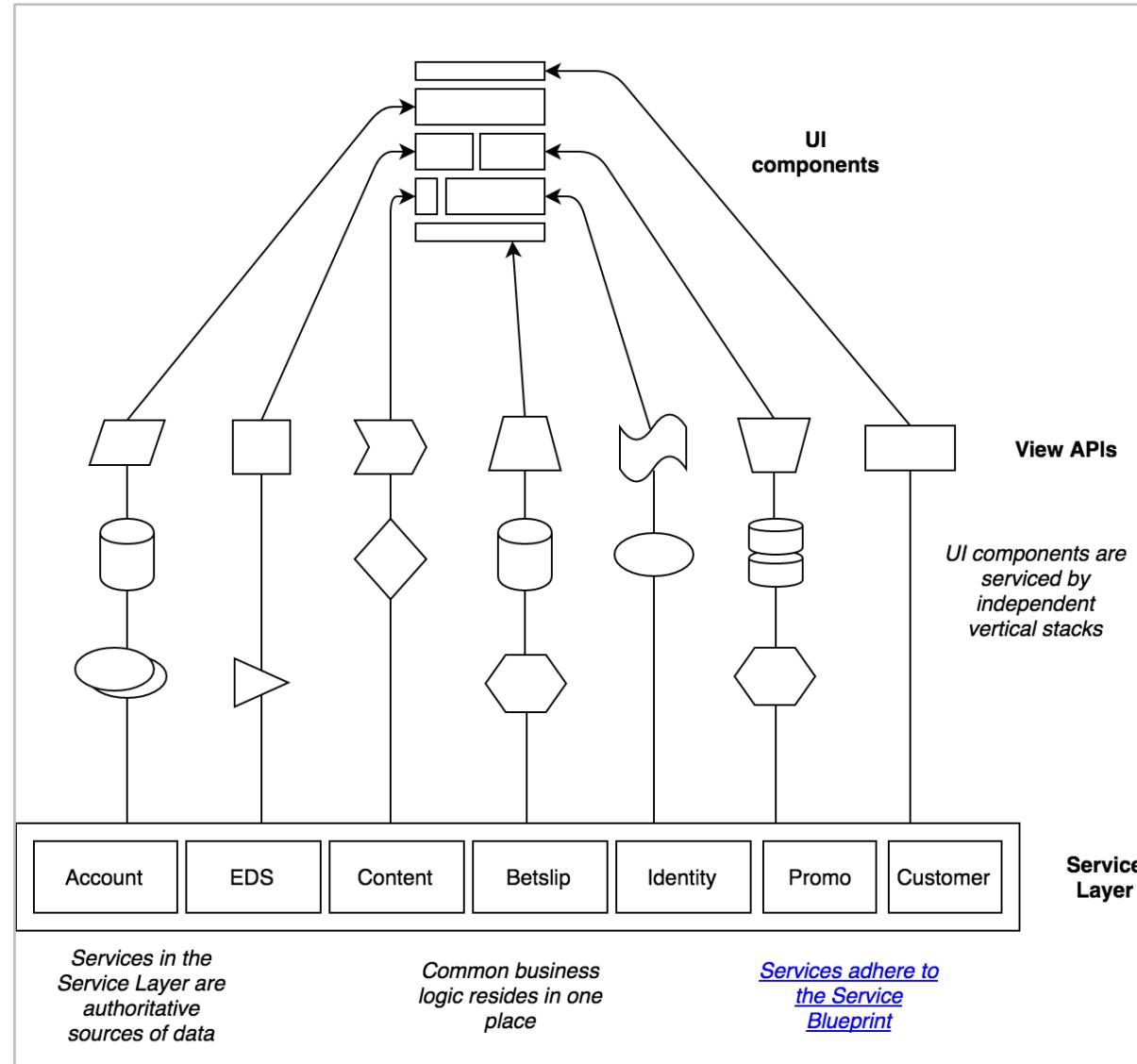
A RADICAL PIVOT TOWARDS A NEW TARGET ARCHITECTURE

“...You should be able to get all the functionality you need just by assembling existing components through ~~object~~ composition.”

function

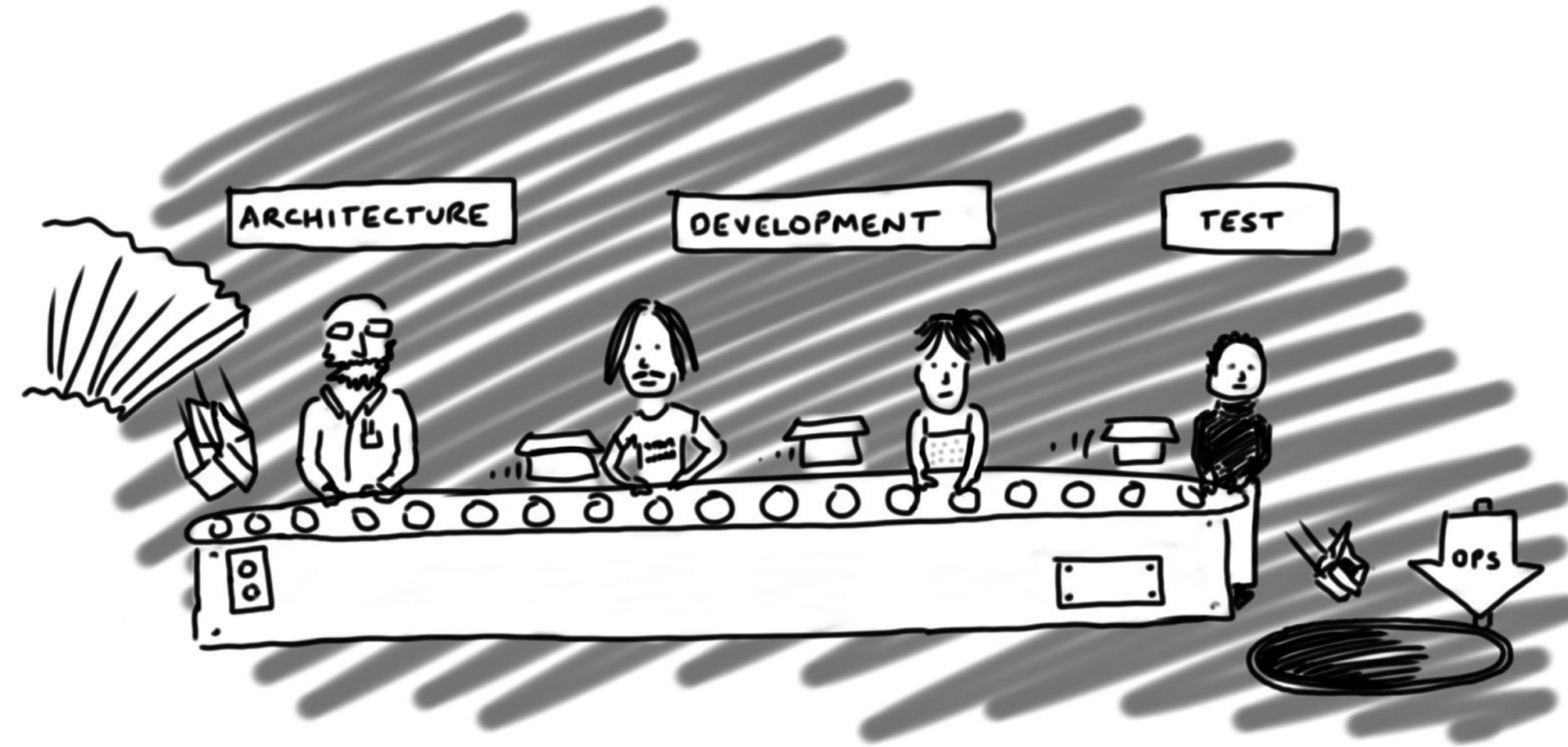
Gamma et al, 1994

$f \circ g$



**WHAT DO YOU DO WHEN STARTING FROM  
SCRATCH ISN'T AN OPTION?**

# **BREAKING OUT OF THE FEAR CYCLE**





# ONE TEAM, WORKING WITHOUT BOUNDARIES

NO MORE “US AND THEM”, OPS AND  
ENGINEERING ARE NOW TWO SIDES OF  
THE SAME COIN

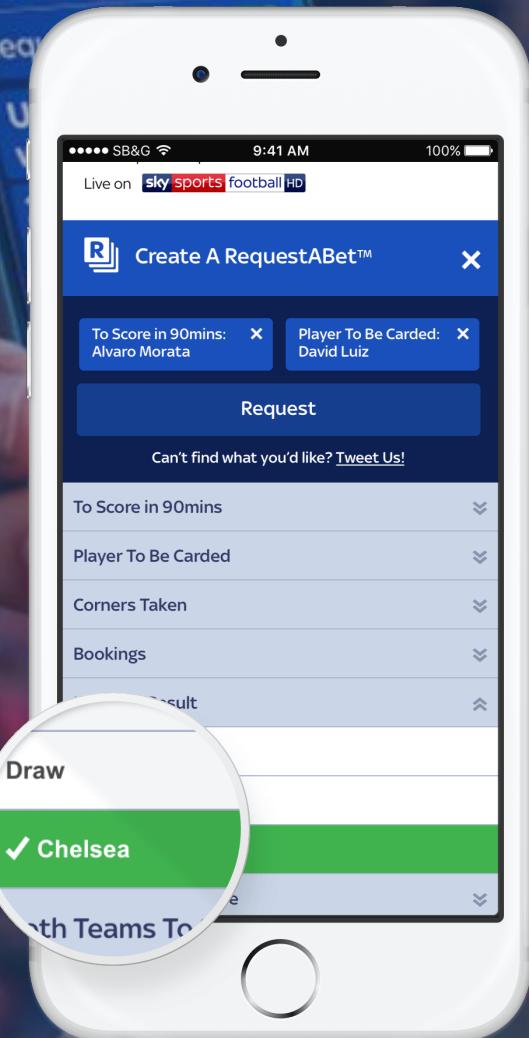
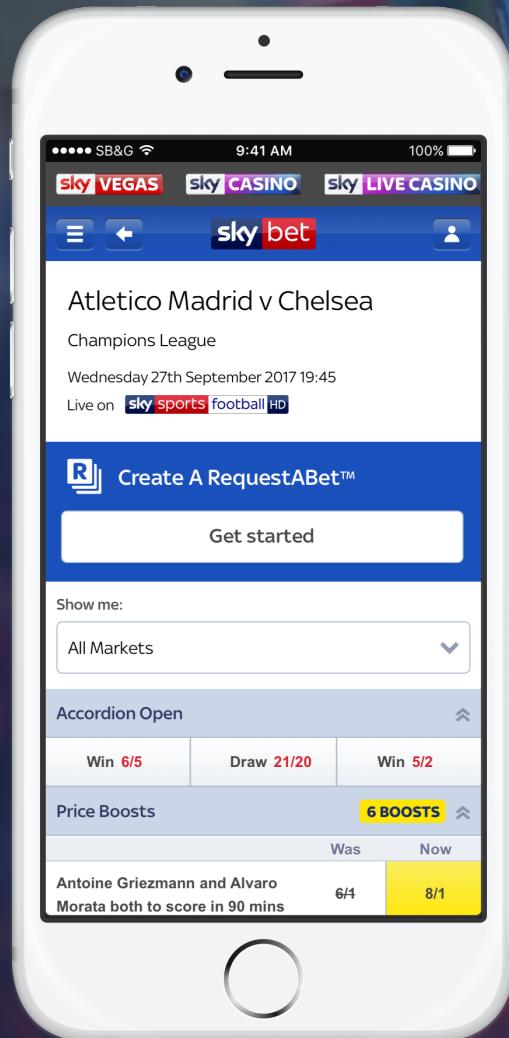




**BE PRAGMATIC, BE PRACTICAL**

# **SHOW THE BENEFITS OF YOUR APPROACH**





# REQUESTABET™ R

DO IT YOUR WAY AND  
BACK YOUR INSTINCTS TO  
CREATE ONE UNIQUE BET

SEE IT, BUILD IT, BACK IT

BET NOW

**WE ONLY HAD  
SIX  
WEEKS**



Deadline is coming...





Adam Fox @foxyftm · 2h  
@SkyBet Jack Rodwell to start and Sunderland to win 😂? Let's end this 32 game streak! #RequestABet

Sky Bet ✅ @SkyBet

Sorry Adam, we can only take serious requests.

29/10/2016, 09:58

310 RETWEETS 308 LIKES

 Sky Bet ✅  
@SkyBet

FOLLOWING

👏 This #RequestABet has broken records tonight.

Over 4,000 backed it - making it our biggest ever pay-out on an individual #RequestABet.



Single @ 80/1  
£5.00

You won £405.00 (inc. stake)

Settled

Won

Messi & Luis Suarez to score and Busquets, Verratti & Marquinhos Correa to be carded @ 80/1  
@FootyAccums Specials  
Barcelona v Paris St Germain  
Live scores aren't available on this selection

10:28 PM - 8 Mar 2017

582 Retweets 1,405 Likes



# CHALLENGES IN ADOPTING NEW TECHNOLOGIES



13:19

@iant: `const toPriceObject = compose(([num, den]) => ({num,den}), split('/'))` I am sort of in awe at this  
that is lovely  
bit of a lightbulb moment in terms of why FP is so awesome



16:11

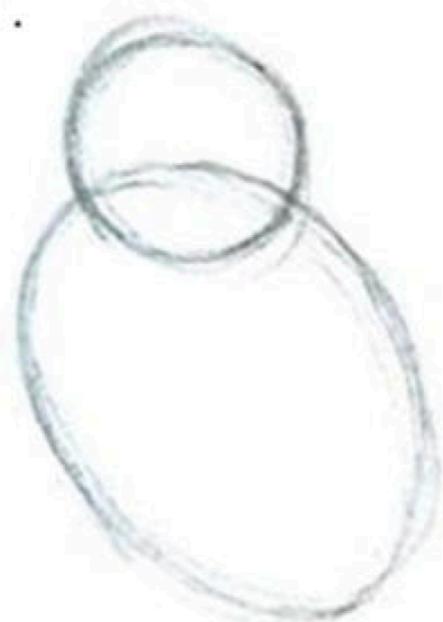
no idea. Was meaning to have a talk to Ian about this NGU-75 thing. I am not happy with this FP/Ramda thing really. I  
woke up (literally, btw) thinking THAT WAS A TERRIBLE MISTAKE.

# **SCALING TEAMS MAKES ALIGNMENT HARDER**

# **EDUCATION & EVANGELISM**

## How to draw an owl

1.



2.



1. Draw some circles

2. Draw the rest of the fucking owl

 14:51

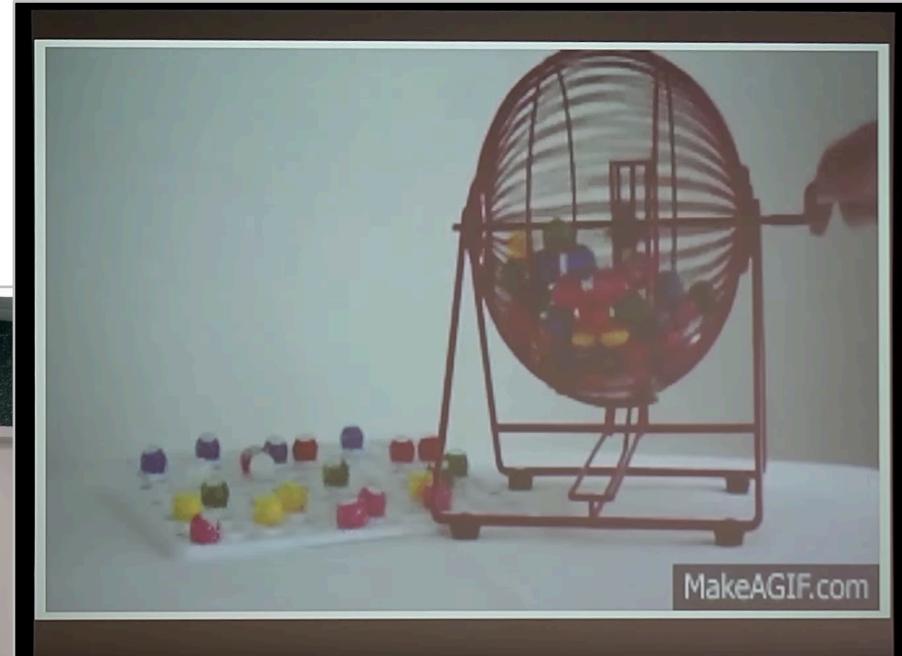
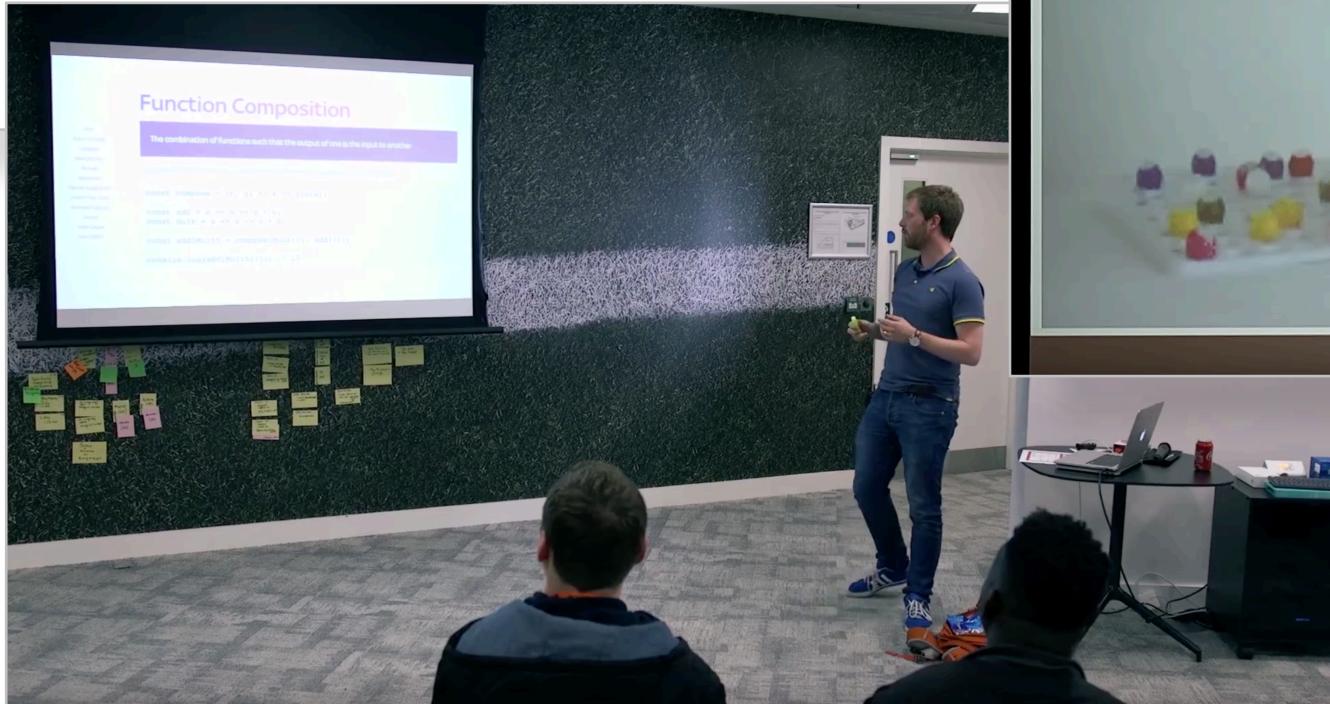
@here if you want to see @iant talk about functional programming, he will be starting at 3:15pm in the innovation space

 14:51

It's a good talk, I saw it on Tuesday

Applicative Functor  
Arity  
Auto Currying  
Closure  
Currying  
Endomorphism  
Foldable  
Function Composition  
Functor  
Higher Order Function  
Idempotent  
Isomorphism  
Monad  
Monoid  
Morphism  
Partial Application  
Point-Free Style  
Pointed Functor  
Predicate  
Purity  
Referential Transparency  
Semigroup  
Setoid  
Side Cause  
Side Effect

## @anatomic's Functional JS Bingotron



**LEVEL UP YOUR ONBOARDING AND SHARE  
KNOWLEDGE OUTSIDE YOUR IMMEDIATE TEAM**

## **REDUCE THE AMOUNT OF OPTIONS**

**Brian Lonsdorf**

@drboolean

Following



More constraints on code makes it harder to write up front, but easier to understand later. For example, if everything was a mutable global, that'd be easier up front, but harder later. Next time you feel constrained, rest assured you're probably helping the reader.

5:03 PM - 29 Mar 2018

73 Retweets 203 Likes



5

73

203





**CHOOSE YOUR TOOLS WISELY**



**Alex Lambert**  
@alambert

Follow ▾

so, you avoid vendor lock-in by building your own. and then later realize you still have vendor lock-in, but you're the vendor, and there are no other customers. oops.

6:53 PM - 29 Jan 2018

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1,504 Retweets 3,641 Likes



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41 1.5K 3.6K

**MAKE TRIALING NEW IDEAS CHEAP AND LOW RISK**

**RequestABet**

**sky bet**

### Insights

- Instant pricing got positive feedback from the participants – they said it is useful when you’re in a rush.
- The placement journey was good.
- Two participants expressed that if instant pricing was available they would not book a RAB.

### Next Steps

- Define UI for instant pricing.
- Continue exploring market types as more are added.

Usability Testing - 22nd May 2018

**sky bet** £10.00

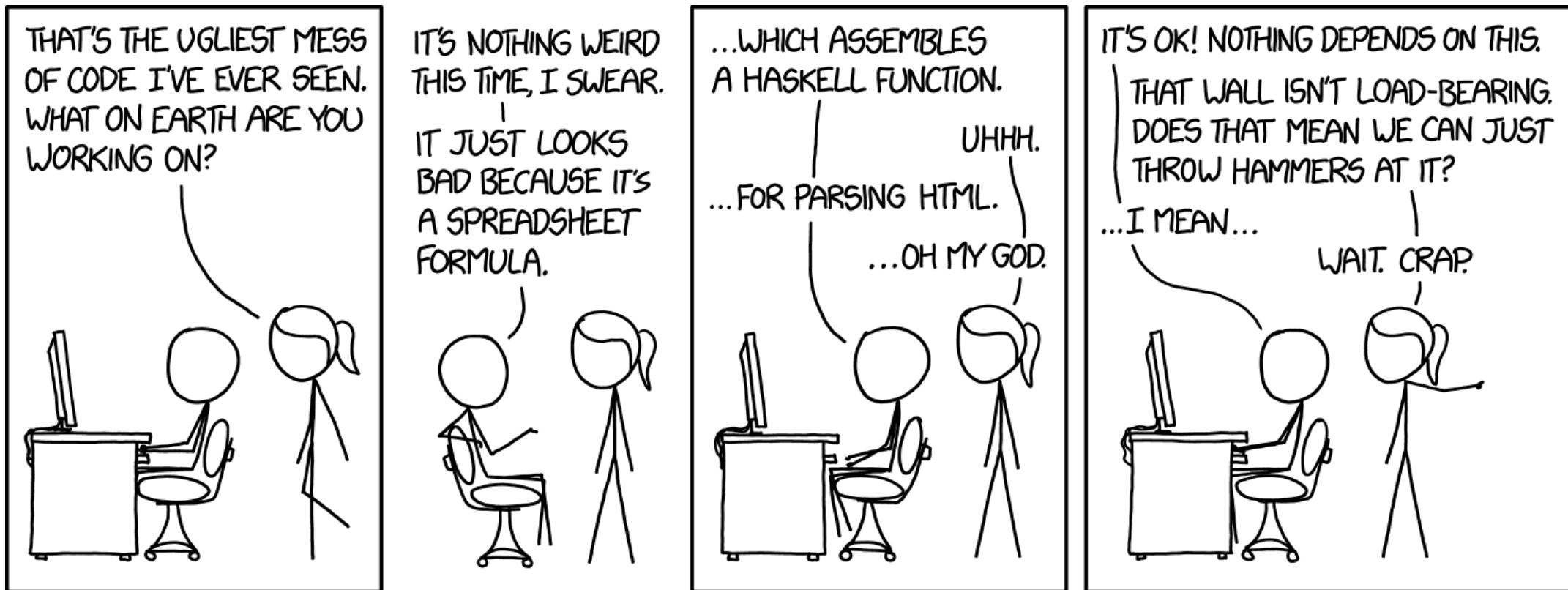
**Millwall v Nottingham Forest**  
Sky Bet Championship  
Friday 30th March 2018 06:00  
In-Play betting will be available  
[Back to event list](#)

**Create a RequestABet™**  
2 Selections (max 4) - Full Time Result: Nottingham Forest, Correct Score: Nottingham Forest 3-0  
£ 0.25 Place Bet @ 300/1  
Returns: -

**Nottingham Forest** **Nottingham Forest 3-0**  
Full Time Result Correct Score

**Full Time Result**  
Millwall Draw Nottingham Forest

**Correct Score**



**LET'S REPHRASE THE OPENING QUESTION...**

HOW DO WE GET  
**FOUR NINES**,  
HAPPY  
CUSTOMERS,  
HAPPY  
DEVELOPERS  
AND MAKE  
MONEY?



# INTRODUCE FUNCTIONAL PROGRAMMING

PICK SOMETHING SMALL  
GET IT INTO PRODUCTION  
REPEAT

# WORK AS A TEAM

SCALING SOFTWARE IS HARD,  
SCALING TEAMS IS EVEN  
HARDER. PUT EXTRA EFFORT  
INTO ALIGNMENT, EDUCATION  
AND EVANGELISM.

# DELIVER REAL VALUE TO THE BUSINESS

NOTHING GIVES GREATER  
CREDIBILITY THAN DATA  
PROVING YOUR  
APPROACH WORKS.

“When people talk about traveling to the past,  
they worry about radically changing the  
present by doing something small, but barely  
anyone in the present really thinks that they  
can radically change the future by doing  
something small.”

- Shower Thoughts