



DATA DRIVEN

Product Development

Story from SILICON VALLEY

« David Chu »

Trưởng bộ phận Quản lý
& Phát triển sản phẩm GotIt!



» Rahul Saraf »

Kỹ sư trưởng về phát triển
ứng dụng di động trên iOS



Thời gian: | 18h30 - 20h30
Thứ năm 23/03/2017

Địa điểm: BKHUP Co-working Space, tầng 3, tòa nhà A17

Why should you care about this?

“Knowledge is Power”

- Sir Francis Bacon

Many arguments / debates / decisions in high tech companies are won by the person with the most compelling data

Who are we?



got it! Is building the world's first on-demand platform for human expertise. Our first application provides instant academic help to students through a 10 minute chat session.

David Chu

Head of Product at got it!

Product for 13 years

Vietnam Engineering Team

100+ years of combined engineering experience

Rahul Saraf

Lead iOS Client Developer at got it!

iOS since the start of app store

Topics

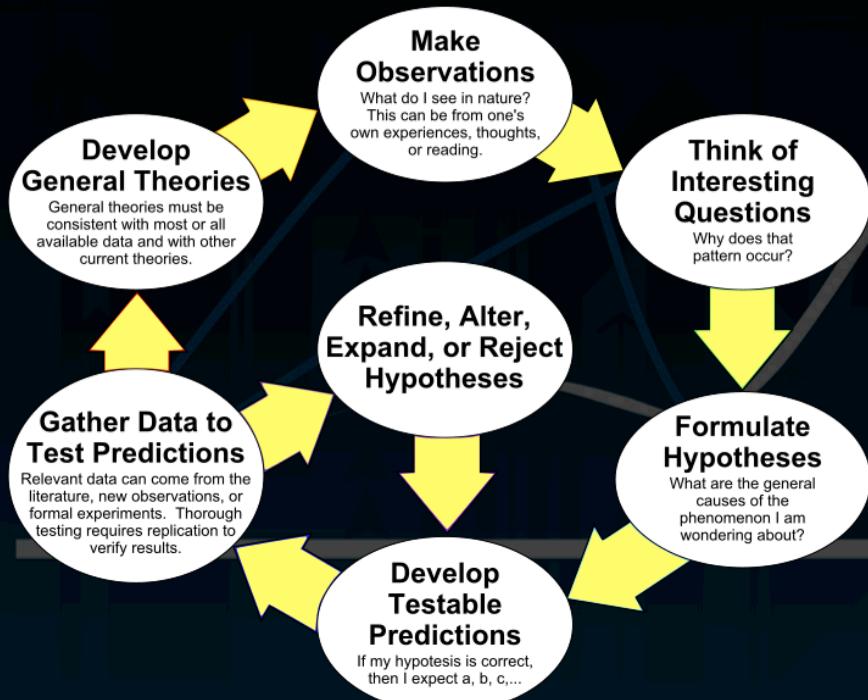
Overview - “What is Data Driven Product Design?”

Experiment Design - “What are you testing?”

Engineering for Data Analysis, Tools

What's Next?

This is NOT complicated...



This is the scientific method (from Wikipedia)

Data driven product development

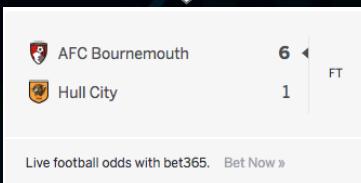
=

Using data to test theories & evaluate results

Generating Ideas + Confirming with Data



Get Better
Players!



Win More
Games!



Win a
Championship!

Work backwards from what you want to
create an “equation”

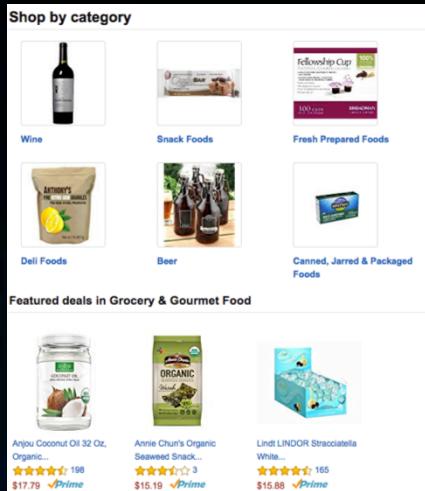
Work backwards until you find something
you can directly change

Find data that proves this:

Winning more games = increased % of
winning cup?

Better players = winning more games?

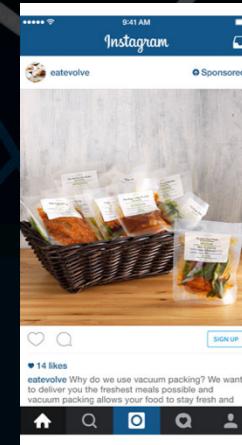
A Real Example - Online Shopping



You currently make \$1000 per day from selling snacks online

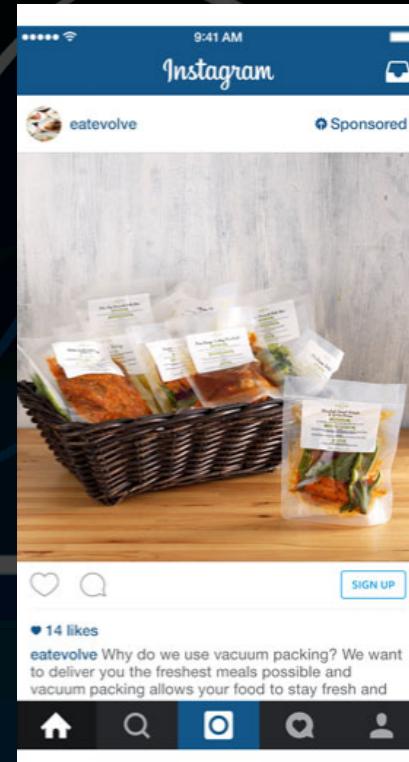
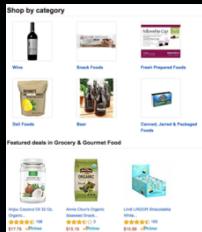


5% of people who visit your website make a purchase



10% of people who see your ads click on them, and go to your website

A Real Example - Online Shopping



We should make 10% → 15%!

- More visitors = more people making purchases = More money!

Let's make better ads!

Experiment Design - “What are you testing?”

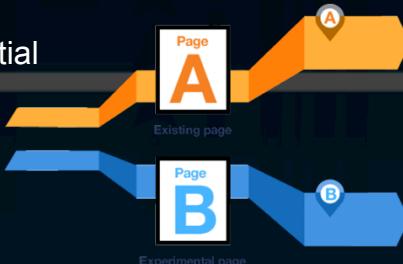
Good experiment design determines the quality of the data that comes out of the test

Bad test design = results that will cause you to make the **WRONG** decision

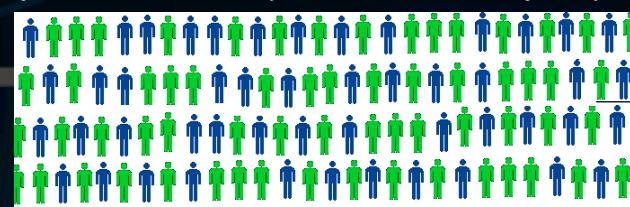
Two Things to Consider

Test Methodology

Sequential

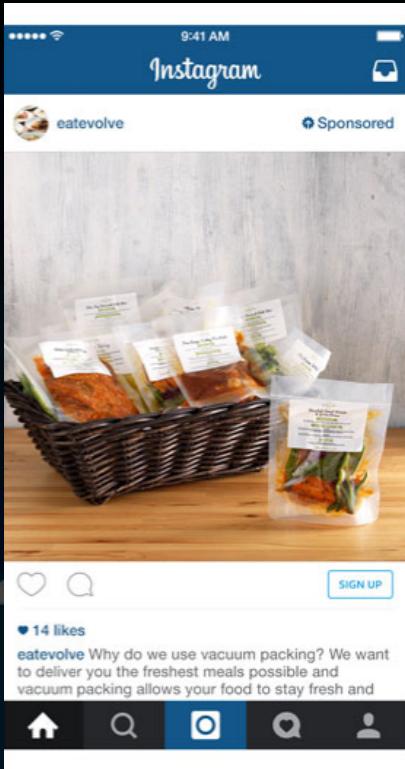


Population Sizes (number of samples)



IMPORTANT!!!!

Back to Shopping



We create new ads!

We will test them to see
which one is better!

Example - A/B Testing vs. Sequential

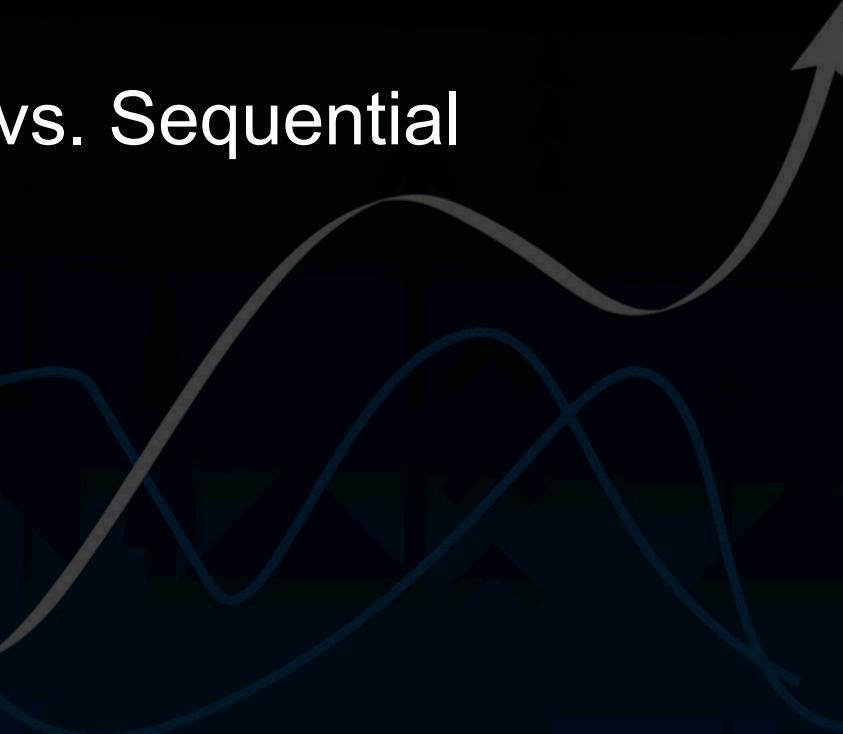
Sequentially Tested System

Week 1

Test 1 - 100%

Week 2

Test 2 - 100%



Example - A/B Testing vs. Sequential

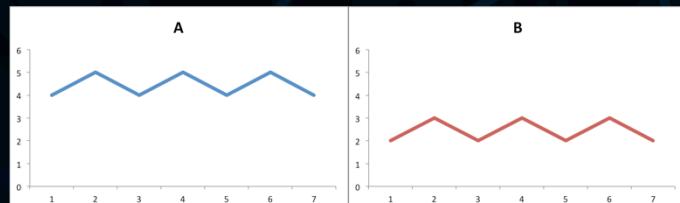
Sequentially Tested System

Week 1

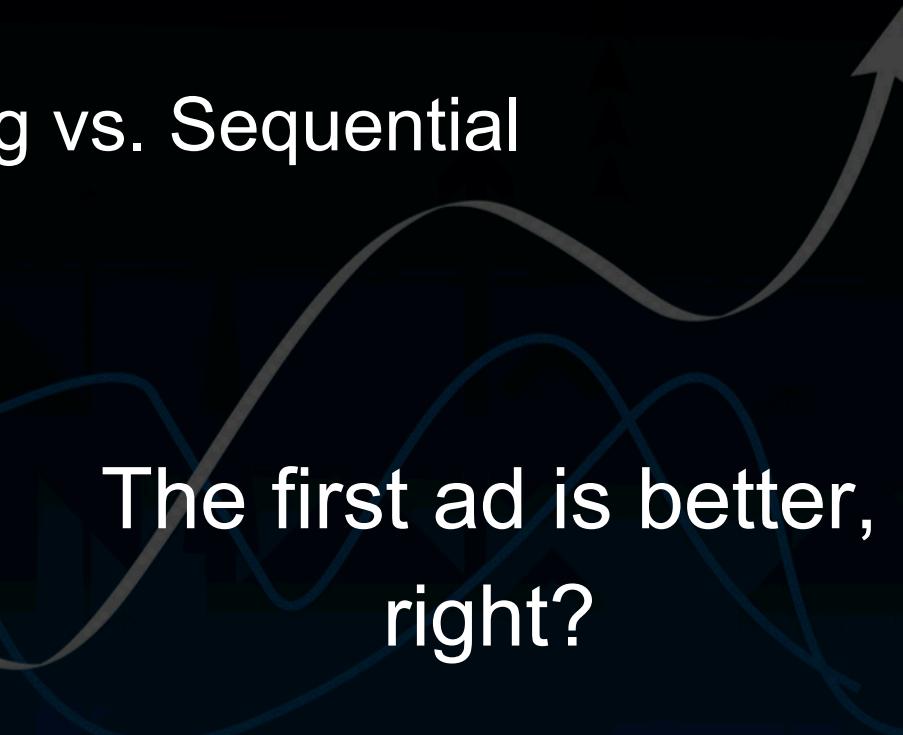
Test 1 - 100%

Week 2

Test 2 - 100%

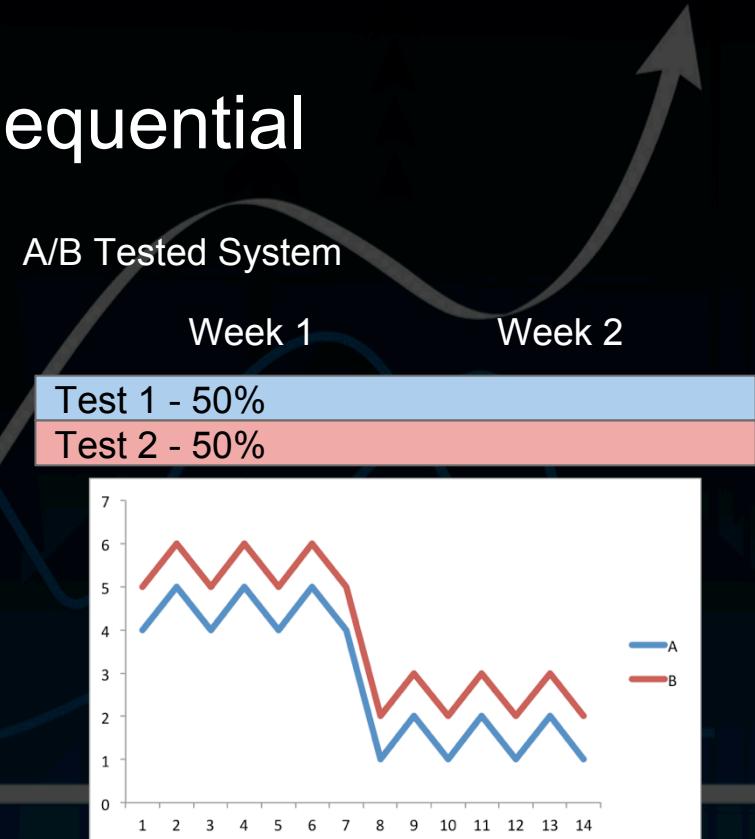


The first ad is better,
right?



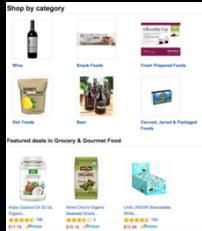
Example - A/B Testing vs. Sequential

What if we had run them at the same time?



What you didn't know is that an external force (example: typhoon) happened to your users in week 2, reducing clicks on ALL ads. **Sequential testing would have led to an incorrect choice.**

Mẹo đầu tưởng hay, chẳng xoay mẹo khác



Success right? Not so fast...

Here's a short list of OTHER things you could have tried...

IMPORTANT!!!!

Other Options

Improving the Efficiency of the Funnel

Re-design the store

- More "buy" buttons everywhere - user can not hide from purchase

- Make it easy to repeat purchase - more \$\$\$ per user

- Show "recommended" products - users hate making decisions

- Personalize the store - only show what you think the user will want

- Bigger pictures

Reduce Funnel Steps

- Change the destination of the ad unit - land the user right on the snack item

- Reduce the number of clicks needed to purchase - less action = better performance

- Automatically add the item to the cart when they click on the ad

- Keep credit cards on file - one less thing for user to enter

Financial Options

- Offer more snack items - more items = more likely user will purchase

- Offer a sale - lower price = more purchases

- Packaging option - put 2+ products together for a deal

- Limited time options - make it urgent that they buy

- Promotional code that comes with ad unit

Increase the Size of the Funnel

Spend more money in ads

- Add a new ad channel (google, print ads, people with signs)

- Get people to recommend the site to friends

- Build an SEO system

- Partner with another store to recommend your store

- Send emails to existing users to come back and make purchase

Change the Type of User in the Funnel

- Change marketing strategy to ONLY find people who buy snacks frequently

- Demographic targeting

- Intent targeting (google SEM)

- Change copy to describe more snacks

This list took me 5 minutes to generate

Topics

Overview - “What is Data Driven Product Design?”

Experiment Design - “What are you testing?”

Engineering for Data Analysis, Tools

What's Next?

Event Tracking Tools & SDKs

General

Mixpanel

Google Analytics

Facebook Analytics

Engineering

Fabric (Previously owned by Twitter, now owned by Google)

Marketing

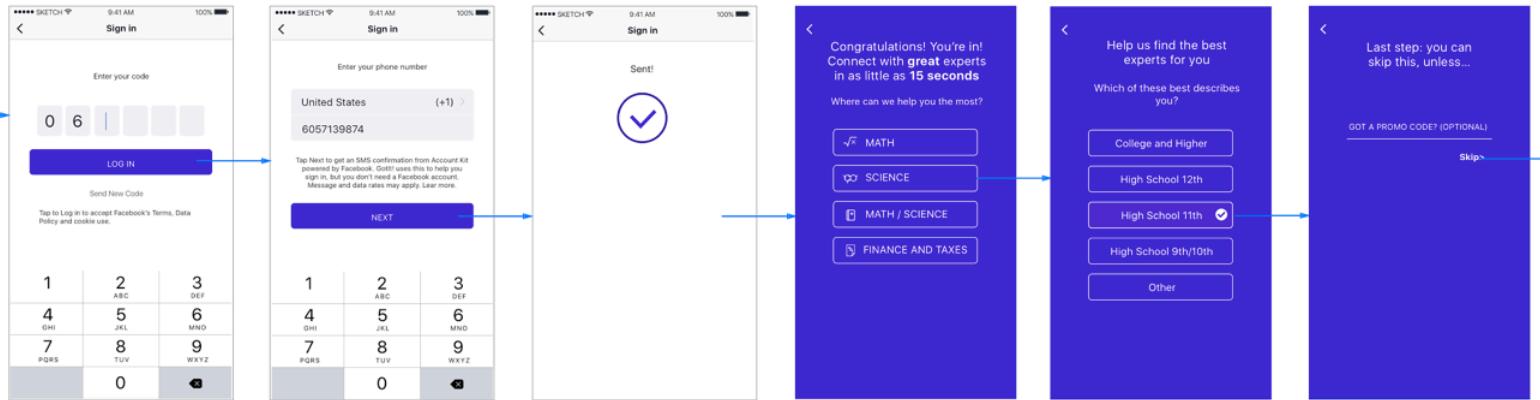
Kochava

Things to consider:

- Cost
 - Some of these tools and SDKs can get expensive! \$\$\$
- Features
 - tracking & install attribution for advertisements, push notifications, in-app notifications, A/B Testing, user surveys, crash reporting, etc

General Event Tracking

Product (David) will say something like: "I want to track the funnel for the new user flow"



Event Tracking Design

(hard to fix later)

Event tracking as an afterthought

Not everything is an event - With proper planning you can create efficient events that will generate valuable and accurate data

```
[[Mixpanel sharedInstance] track:@"Purchase Ads Removed" properties:nil];
[[Mixpanel sharedInstance] track:@"Purchase Ads Removed Finished" properties:nil];
```



```
[[Mixpanel sharedInstance] track:@"purchase_iap" properties:@{@\"product_id\":@\"remove_ads_tier_1\", @\"state\":@\"started\"}];
[[Mixpanel sharedInstance] track:@"purchase_iap" properties:@{@\"product_id\":@\"remove_ads_tier_1\", @\"state\":@\"completed\"}];
```



Event Tracking Design

(continued...)

Complex logic for events vs being smart with event properties

A lot of companies want to track very specific things when testing the effectiveness of a new feature which can lead to engineers creating complex logic to track exactly what is wanted. As engineers, you should help design events and properties that allow the proper data to be extracted while keeping the design and code simple and intuitive.

```
NSTimeInterval start = [[NSDate date] timeIntervalSince1970];
[[Mixpanel sharedInstance] track:@"Image Upload Started" properties:@{@"upload_start_time":@(start)};

[self uploadImageWithSuccessHandler:^{
    NSTimeInterval end = [[NSDate date] timeIntervalSince1970];
    [[Mixpanel sharedInstance] track:@"Image Upload Completed" properties:@{@"upload_finish_time":@(end)}];
}];
```



```
NSTimeInterval start = [[NSDate date] timeIntervalSince1970];
[self uploadImageWithSuccessHandler:^{
    NSTimeInterval end = [[NSDate date] timeIntervalSince1970];
    [[Mixpanel sharedInstance] track:@"Image Upload" properties:@{@"upload_time":@(end - start)}];
}];
```



```
[[Mixpanel sharedInstance] timeEvent:@"Image Upload"];
[self uploadImageWithSuccessHandler:^{
    [[Mixpanel sharedInstance] track:@"Image Upload"];
}];
```



Event Tracking Design

(continued...)

Events vs User properties

Sometimes people forget to set up and design a ‘user profile’ with the event tracking tool they use. A user profile is a list of properties set on the user rather than the event.

When a user signs up (only called once)

```
// Register user and create Alias for mixpanel.distinct_id and our user_id
// This makes the current ID (by default an auto-generated GUID)
// and '13793' interchangeable distinct ids (but not retroactively).
[[Mixpanel sharedInstance] createAlias:@"13793" forDistinctID:mixpanel.distinctId];
[[Mixpanel sharedInstance] identify:mixpanel.distinctId];

//Set basic user info when a user has signed up
[[[Mixpanel sharedInstance] people] set:@{@[@"first_name":@"John", @"last_name":@"Smith",
                                             @"username":@"jsmith", @"email":@"john.smith@gmail.com"}];
```

When a user makes a purchase (called every time a purchase is completed)

```
// Track completed purchase
[[Mixpanel sharedInstance] track:@"purchase_iap" properties:@{@[@"product_id":@"remove_ads_tier_1", @"state":@"completed"}];

// Update most recent purchase to target users by last purchase date
[[[Mixpanel sharedInstance] people] set:@{@[@"last_purchase_timestamp":@(1490255328)}];

// Increment number of purchases to target users who have purchased x number of times
[[[Mixpanel sharedInstance] people] increment:@"number_iap_purchases" by:@(1)];
```

Crash Reporting & Logging

Internal testing can catch a lot of bugs and crashes, but it's difficult to account for every device and OS combination (especially for Android). A user's available storage space, background processes, internet connection/speed can often mask potential bugs and crashes, and are not always thought about as test scenarios.

Tools:

Crashlytics (Part of Fabric, now owned by Google)

Pros: Lightweight and good alerts, FREE, can easily sort large amounts of data

Cons: Not always great at grouping similar crashes

Apple crash reports

Pros: Built in to iOS SDK, free

Cons: Delayed data, users can opt-out, no alerts

Instabug

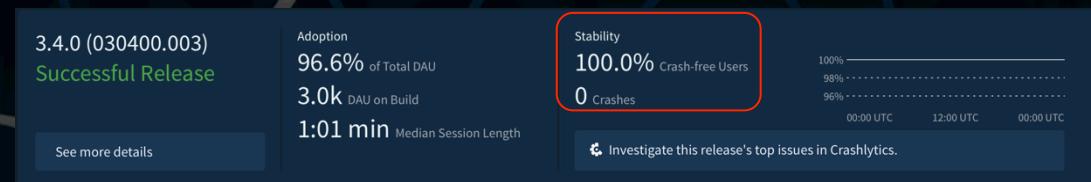
Pros: Great console data, in app-feedback

Cons: Paid, alerts are just OK, integration and configuration can be a bit finicky, duplicate crashes

HockeyApp (Owned by Microsoft)

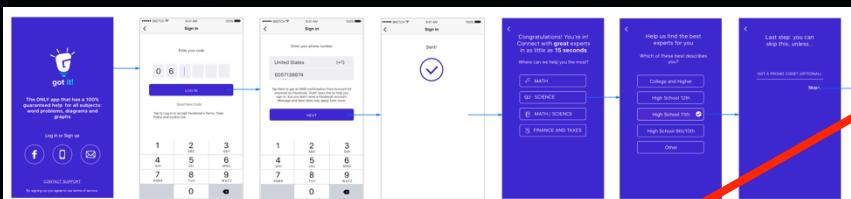
Pros: Great reporting and accuracy

Cons: Paid, difficult integration and configuration,



A/B Testing & Server Configurability

New user flow + Signup



User	Test Group
1	A
2	B
3	B
4	A

When user signs up, assign the user to a test group (A,B)

Pricing (example)

The screenshot shows a mobile application interface for buying credits. At the top, it displays 'Available Credits: 4', the time '01:59:46', and a 'Limited time offer!' with a discount message. Below this is a section for selecting a payment method with icons for Visa, MasterCard, and others. The main part of the screen lists three pricing plans:

Plan	Description	Price
Daily Plan	1 Session + \$.99/session for 1 day	\$1.99
Weekly Plan	6 Sessions + \$.99/session for 1 week	\$11.99
Semester Plan	60 free sessions + 0.99/session for 6 Months	\$149.99

Group	Price
A	\$1.99
B	\$2.99

Group	Price
A	\$11.99
B	\$14.99

User Feedback! (Human data)

You might think you know your users and what is best, but there will likely be a variety of people and personalities and cultures using your app. Think about all the times you've used an app and wished they would implement a feature you would love. User feedback gives them a voice

Tools:

Apptentive

Zendesk

Surveys

Emails

We're Hiring...



Internship and full time positions OPEN!

Engineers

QA

Product Managers

Operations

Awesome benefits!

Free lunch and dinner

Free training from lynda.com

Trips to US

More!

Apply here: <http://www.gotitapp.co/team.html>