



Yonatan V. Levin



Google Developer Expert



levin.yonatan



parahall

Gett

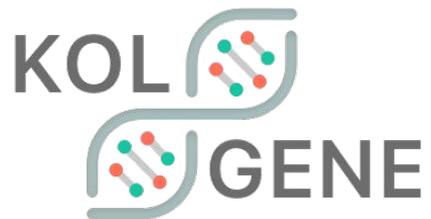


0000ops...

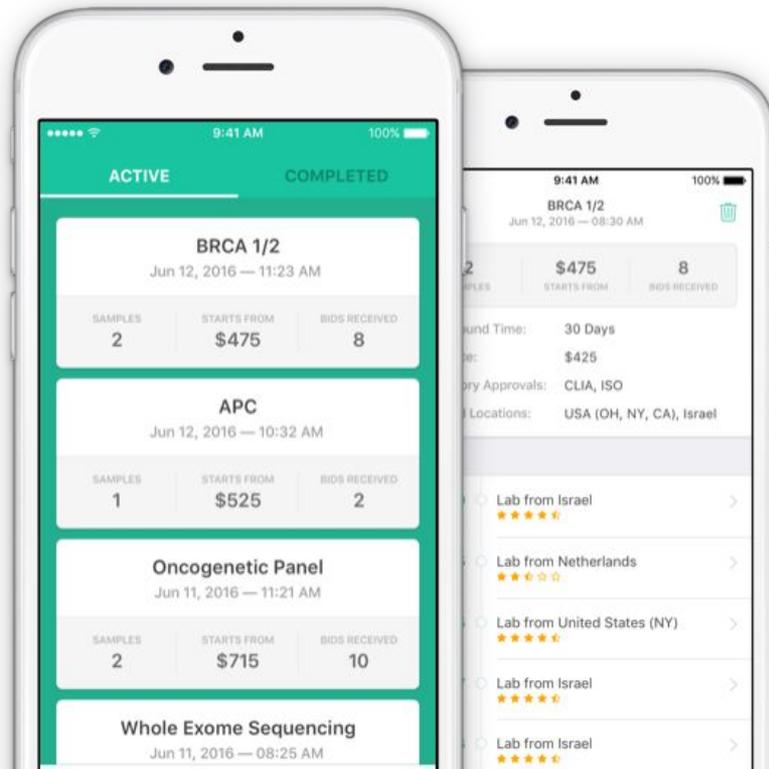
>100 Cities

Ruby, Go, Python, Microservices

> 30M users



Making genetic tests accessible





> 2500 members



Together with
Google Developers



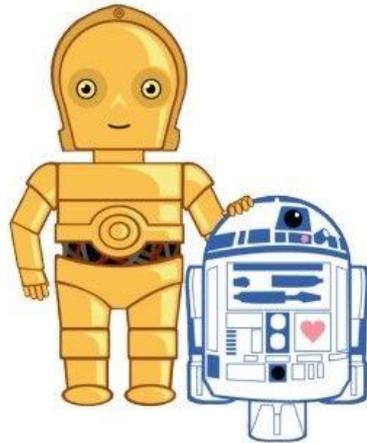
Women Techmakers



Largest Android Active Community



A friend in need - a JS indeed



☰ What we are going to do?



Fun!



~~GetTaxi~~ Gett story



V8 engine



Dynamic UI Concept

Let's make it even more engaging



Let the fun begin!

A long time ago, in a galaxy far,
far away....



CVS
AUTOMOTIVE Aston University
www.itsonthemeter.com

ITS ON THE METER

PERFORMANCE DIRECT

PERFORMANCE DIRECT

484 MMF

IT'S ON THE METER
WORLD TAXI CHALLENGE

SUPPORTING THE RED CROSS

Get Taxi
BREAKING A WORLD RECORD

BlackBerry

WWW.GETTAXI.COM
WWW.ITSONTHEMETER.COM

GetTaxi Becomes Gett, Lets You Order A Variety Of Services

MARLA FONG on April 29, 2015 at 2:21 pm



3



21



0



0

0

SHARES





I...



Veve Clicquot
CHAMPAGNE

Gett 
Veve Clicquot  Veve Clicquot

GettClean





GettSushi



#GettChoc



Gett 

 **BOROLI**
PIEMONTE

Gett Wine

ВЕДОМОСТИ

Бизнес

Сервис такси Gett готов доставлять iPhone покупателям за два часа

ПОДАЧА 3-5 МИНУТ

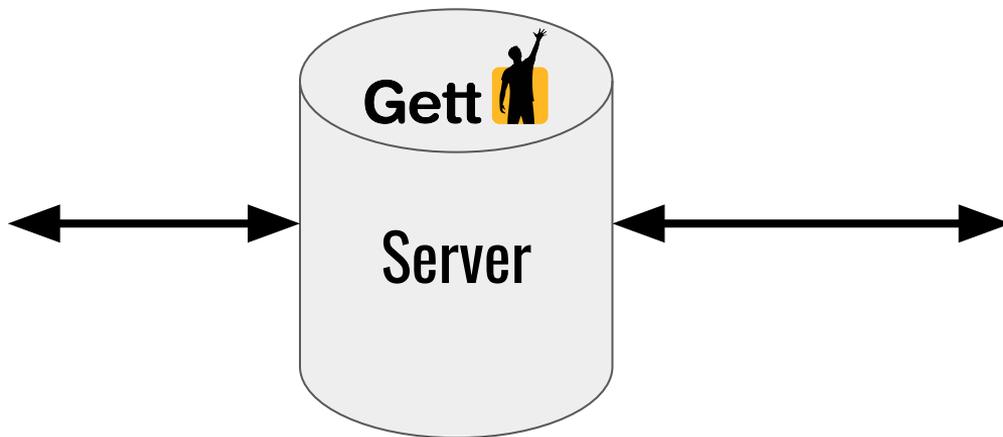
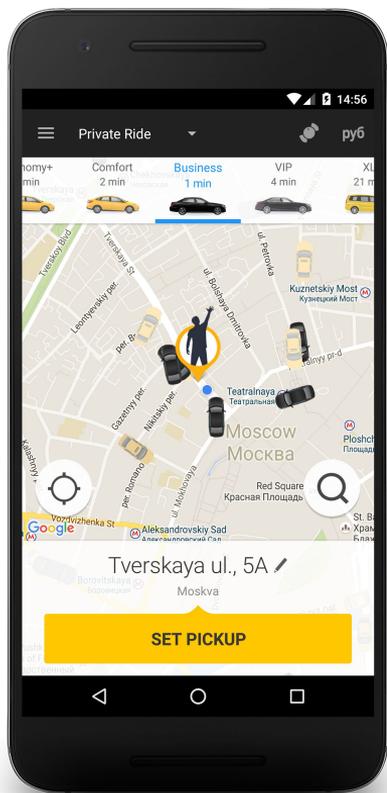
Gett iМастер

ремонт экрана iPhone
дома или в офисе всего

за 15 минут!

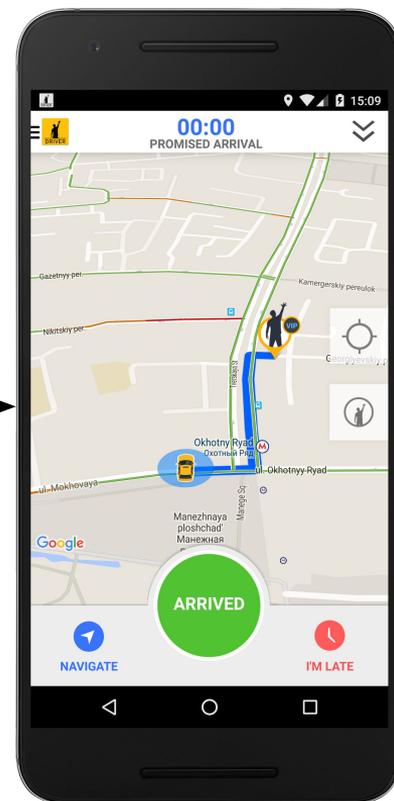
```
MeterSummary.java x MeterEngine.java x
63     */
64     private static final Logger LOGGER = LoggerFactory
65     |         .getLogger(MeterEngine.class);
66
67     private final Context mContext;
68
69     /** The meter. */
70     protected Meter meter;
71
72     /** The use meter. */
73     private boolean useMeter;
74
75     /** The meter summary. */
76     private MeterSummary meterSummary;
77
78     private double fixedPriceAmount;
79
80     private double mTotalPrice;
81
82     private Order mOrder;
83
84     private ArrayList<FeeItem> mFeeList;
85
86     /**
87     * Instantiates a new meter engine.
88     *
89     * @param context the context
90     */
91     public MeterEngine(Context context) {
92     |         mContext = context;
93     |         this.useMeter = false;
```

Intro - Normal World



**Customer
App
iOS / Android**

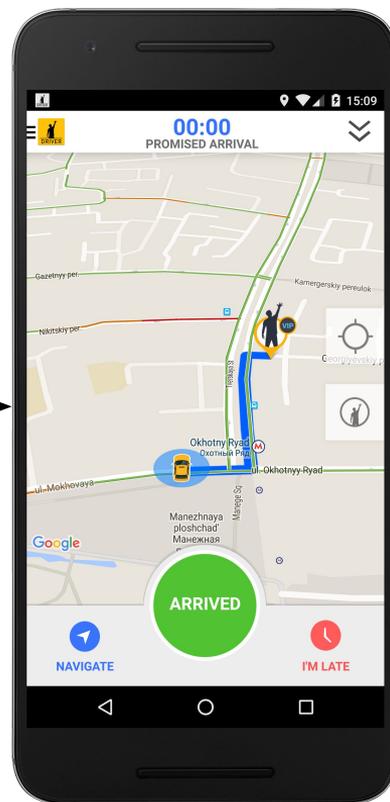
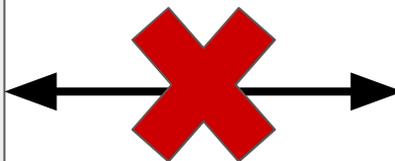
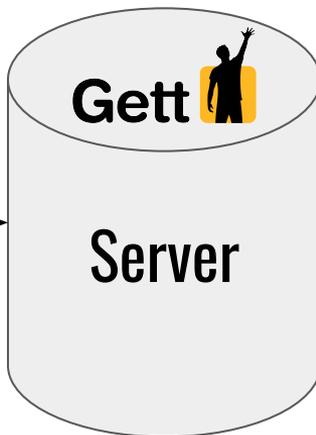
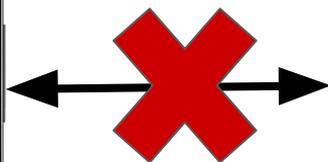
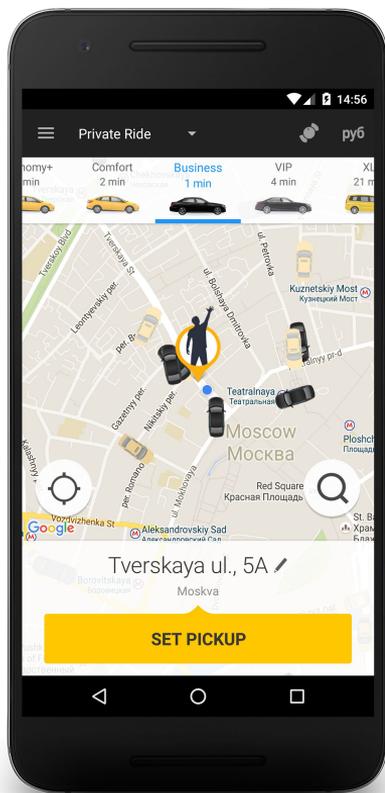
**Supplier App
iOS / Android**



Offline/2G



Our World



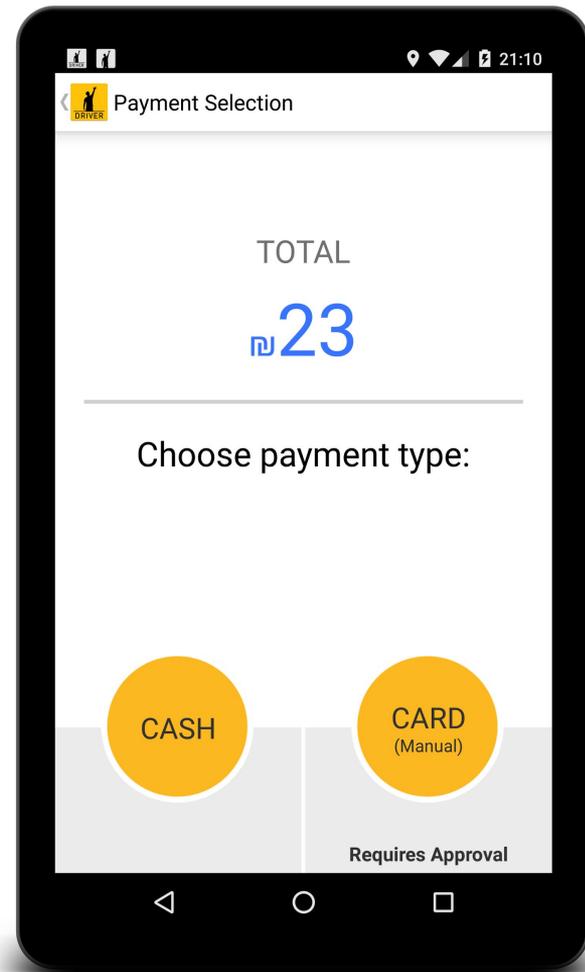
**Customer
App
iOS / Android**

**Supplier App
iOS / Android**

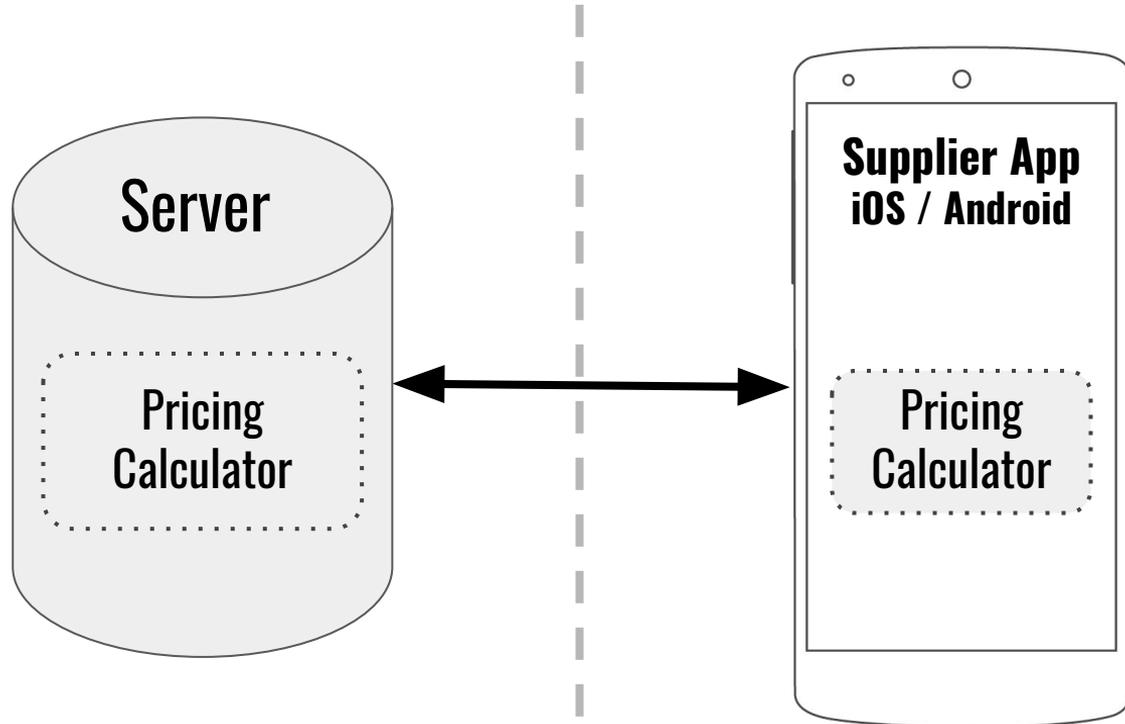


DO YOU ACCEPT CASH?

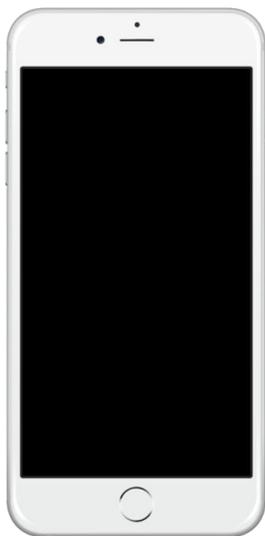
Ability to
calculate price
without server
instantly



☰ First approach



☰ Same logic - 4 times



Pricing
Calculator



Pricing
Calculator



Pricing
Calculator

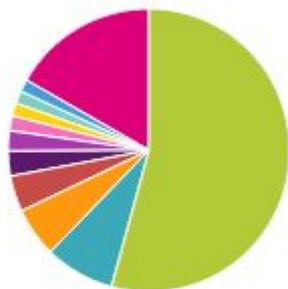


Pricing
Calculator

Product guy:

- **We need an ability to create a new class every day.**
- **Every single moment!**

☰ Pain of Upgrade



TOP 10 / STAGED ROLLOUT / BETA / ALPHA

<input checked="" type="checkbox"/>	61815	54.29%
<input checked="" type="checkbox"/>	61713	8.00%
<input checked="" type="checkbox"/>	61312	5.66%
<input checked="" type="checkbox"/>	61519	4.12%
<input checked="" type="checkbox"/>	6807	2.85%
<input checked="" type="checkbox"/>	6517	2.30%
<input checked="" type="checkbox"/>	6909	1.70%
<input type="checkbox"/>	61113	1.46%
<input type="checkbox"/>	6319	1.46%
<input type="checkbox"/>	4409	1.42%
	Others	16.75%

**“Fool me once, shame on you;
fool me twice, shame on me.”**

Italian proverb

☰ Server creates Pricing Calculator

iMaster
60 min



Cleaning
120 min



Courier
13 min



Economy+
5 min

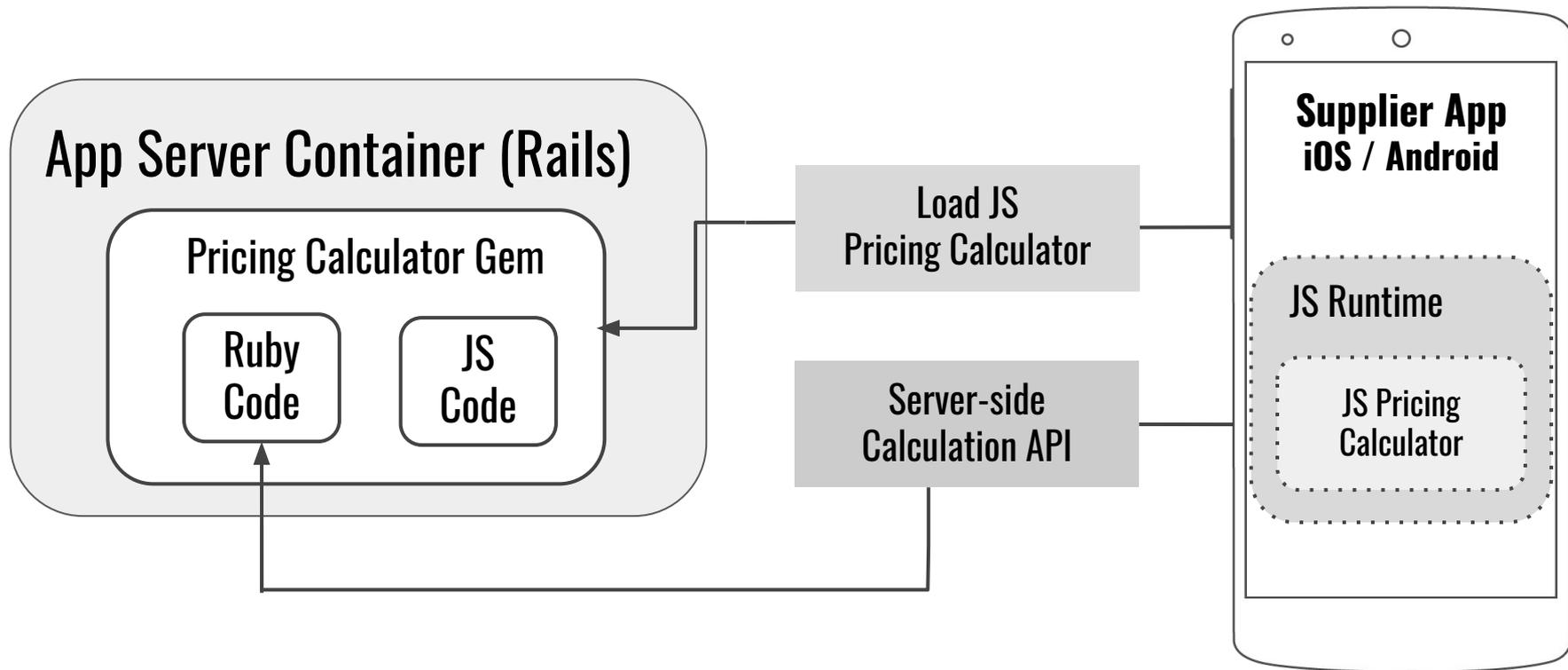


Pricing Calculator Gem

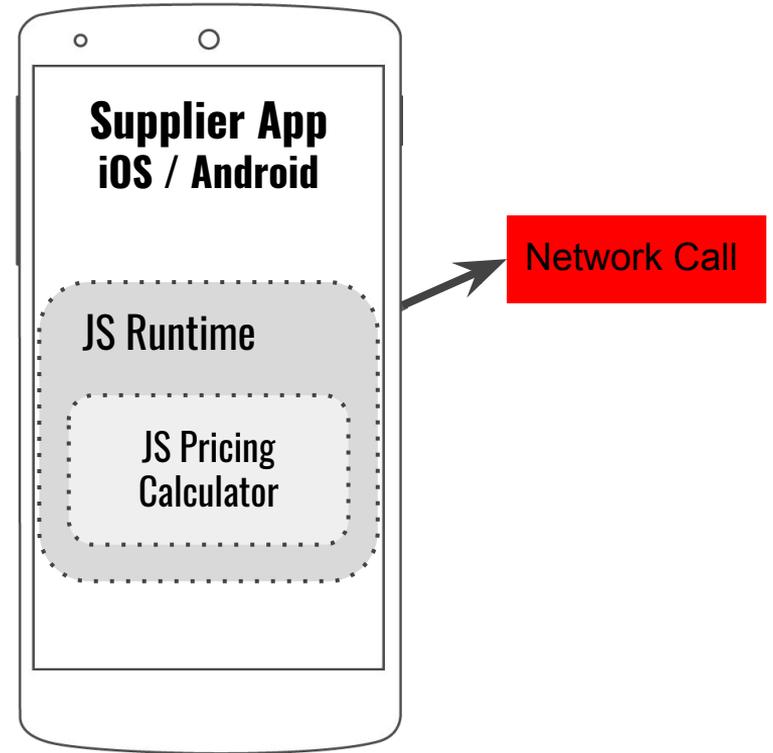
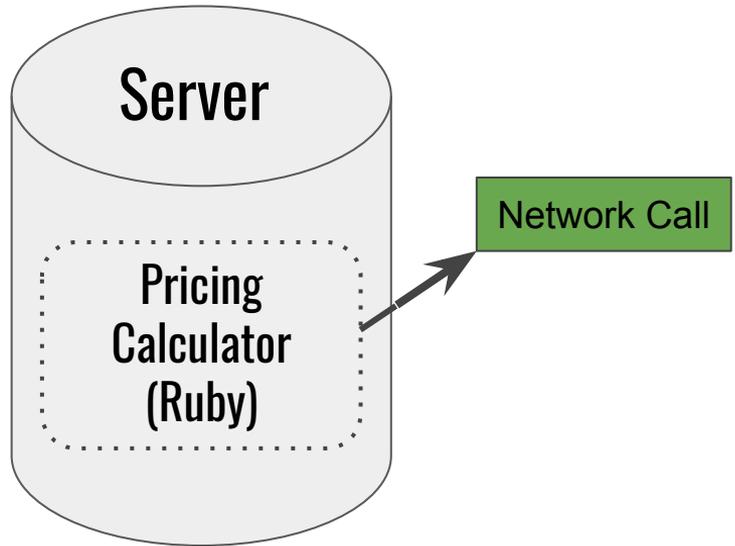
Ruby
Code

JS
Code

☰ Runtime Flow



☰ Different Capabilities of Execution Context



**Architecture is ready.
What next?**

WebView

JavaScript



Bluetooth, Alarm, Signal, Battery, 16:50

JSEngine

START



Java

Native Time took: 18 ms



Time took: 31 ms

A
Ave



s
ms

WebView Various version

Depends on what is installed on device

Not controllable

We have a lot of “Made in China” devices



We love native-development





V8 is Google's open source high-performance JavaScript engine, written in C++ and used in Google Chrome

And also Node.JS



<https://developers.google.com/v8/>

☰ You can use it native

v8 / v8

mirrored from <https://chromium.googlesource.com/v8/v8.git>

👁 Watch ▾ 254

<> Code

🔗 Pull requests 0

📖 Wiki

🔊 Pulse

📊 Graphs

D8 on Android

Michael Hablich edited this page on Nov 19, 2015 · 1 revision

Prerequisites

- a Linux/Mac workstation
- v8 r12178 (on Google Code) or later
- an Android emulator or device with matching USB cable
- make sure [building with GYP](#) works

<https://github.com/v8/v8/wiki/D8%20on%20Android>

APPLICATIONS

Home

Contacts

Phone

Browser

...

APPLICATION FRAMEWORK

Activity
Manager

Window
Manager

Content
Providers

View
System

Notification
Manager

Package
Manager

Telephony
Manager

Resource
Manager

Location
Manager

XMPP
Service

LIBRARIES

Surface
Manager

Media
Framework

SQLite

OpenGL|ES

FreeType

WebKit

SSL

SSL

libc

ANDROID RUNTIME

Core
Libraries

Dalvik Virtual
Machine

LINUX KERNEL

Display
Driver

Camera
Driver

Bluetooth
Driver

Flash Memory
Driver

Binder (IPC)
Driver

USB
Driver

Keypad
Driver

WiFi
Driver

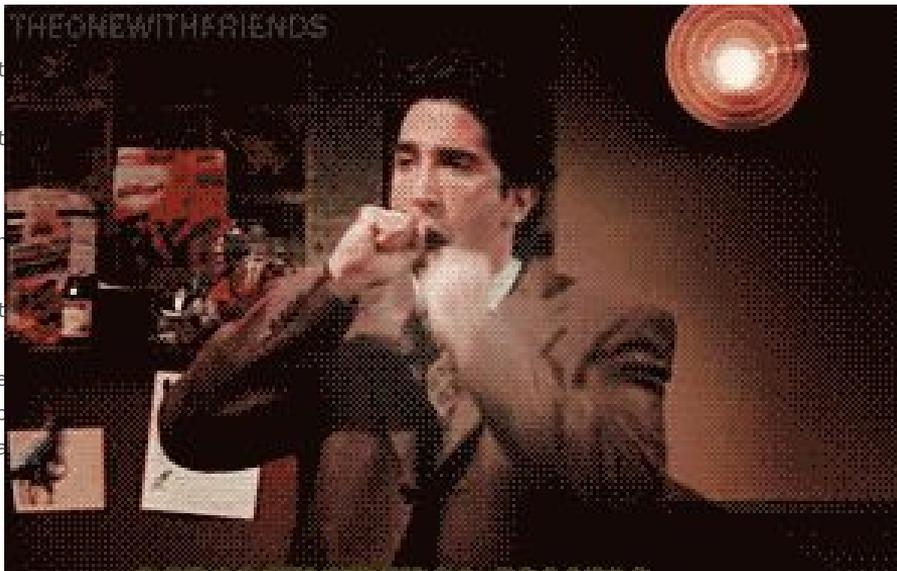
Audio
Drivers

Power
Management

☰ Write some JNI code

```
V8Runner::V8Runner () {
    isolate = Isolate::New();
    Locker l(isolate);
    Isolate::Scope isolateScope(isolate);
    HandleScope handle_scope;
    context = Persistent<Context>(Context::New(isolate, handle_scope));
}

void V8Runner::mapMethod (JNIEnv* env,
    Locker l(isolate);
    Isolate::Scope isolateScope(isolate);
    HandleScope handle_scope;
    Context::Scope context_scope(context);
    MappableMethodData* data = new MappableMethodData(env, name);
    data->methodObject = env->NewGlobalRef(env->GetJavaVM(&data->jvm));
    methodDatas.push_back(data);
    //context->DetachGlobal();
    Handle<Object> global = context->Global();
    global->Set(String::New(name), FunctionTemplate::New(&registerCallback, External::New(data))->GetFunction());
    //context->ReattachGlobal(global);
}
```



☰ Eclipse J2V8

Small tiny library

Wrapper for JNI

Really easy to integrate and use



Author: [Ian Bull](#)

Updated: Jun 11th, 2015

How to?

START



Java

Native Time took: 18 ms

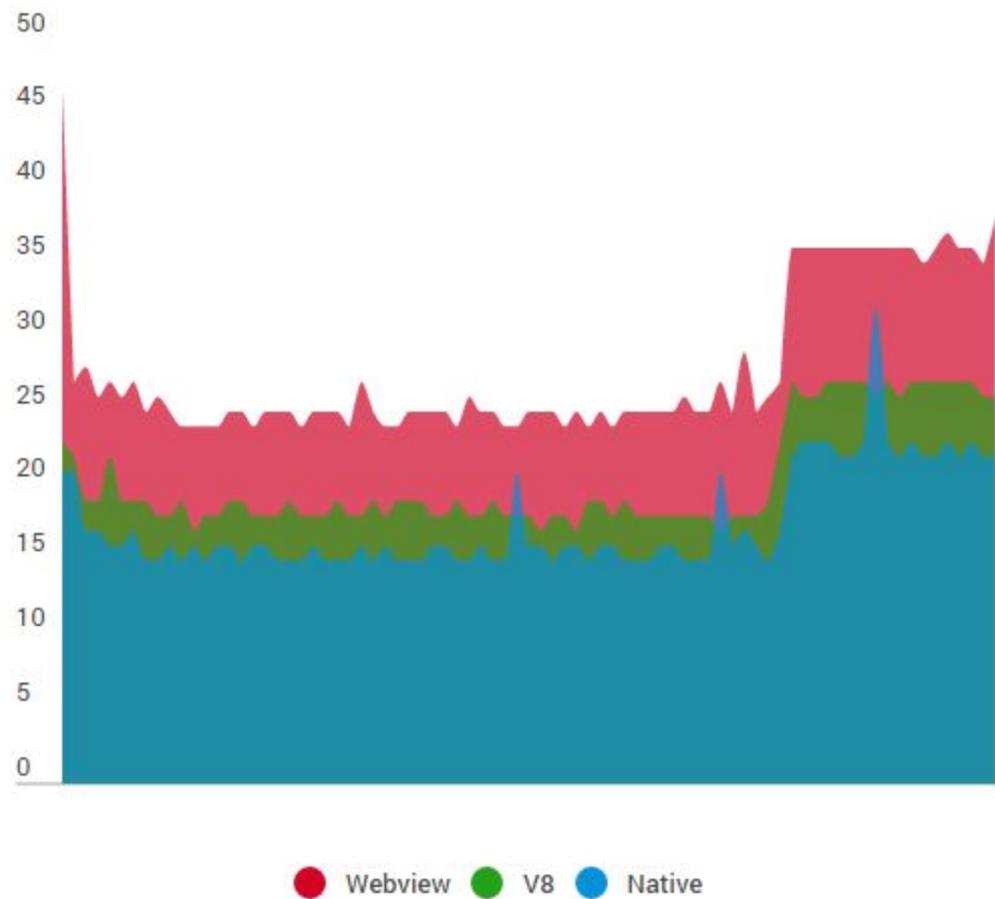


Time took: 31 ms



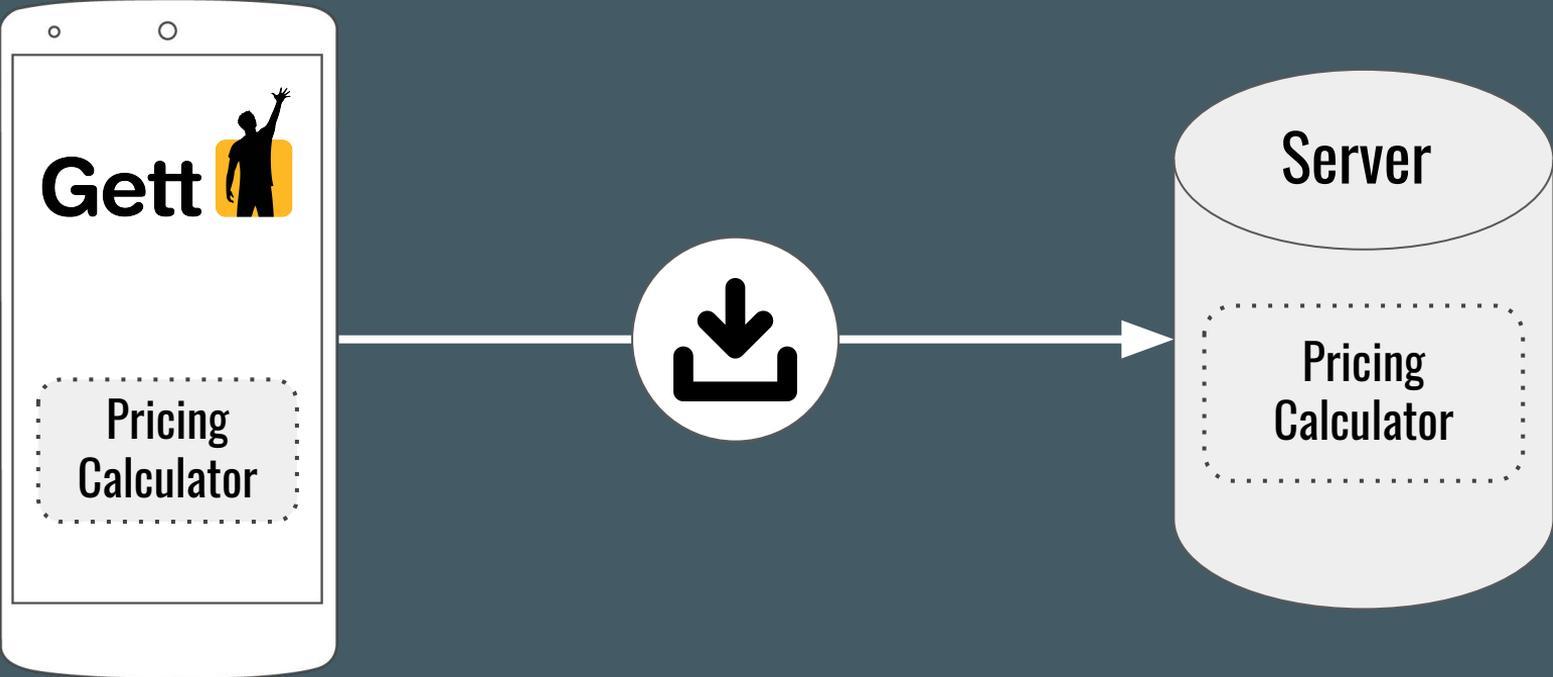
Time took: 27 ms





Back to Gett story

Download calculator on login



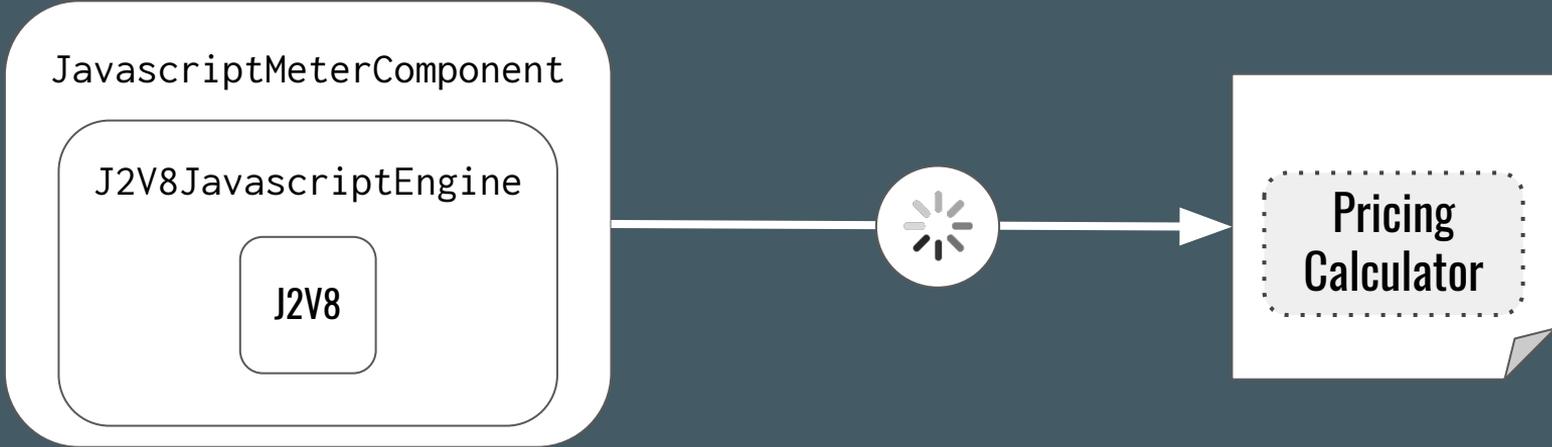
```
public VoidResponse downloadChargingEngine(String fileName, String filePath) {
```

```
    retrofit2.Call<ResponseBody> call = mGTServiceApi
```

```
        .downloadChargingEngine(ChargingEngine.VERSION);
```

```
    return getToFile(call, fileName, filePath, VoidResponse.class);
```

```
}
```



```
protected static JavascriptMeterComponent createJavaScriptComponent(String
javascriptFilePath) {

    J2V8JavascriptEngine javascriptEngine = new J2V8JavascriptEngine();
    JavascriptMeterComponent javascriptMeterComponent = new
    JavascriptMeterComponent(javascriptEngine);
    File file = new File(javascriptFilePath, J2V8JavascriptEngine.J2V8JavascriptFileName);

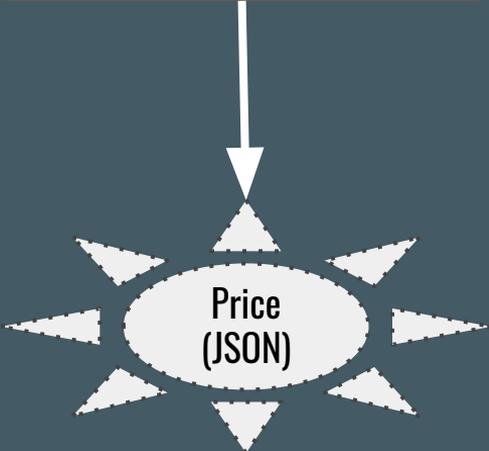
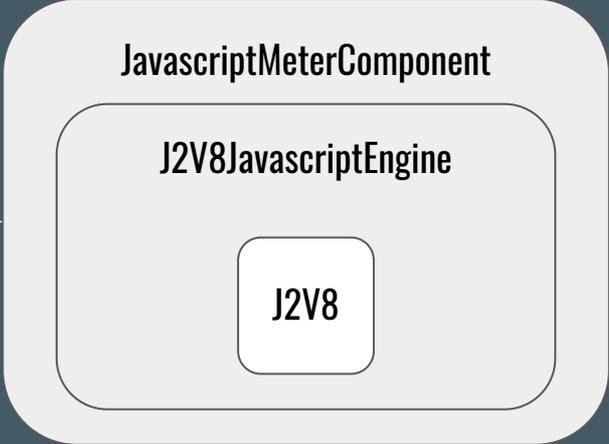
    javascriptMeterComponent.loadChargingEngine(new java.io.FileInputStream(file));

    return javascriptMeterComponent;
}
```

Run!!!!

“calculate_and_adapt”

Ride data



Calculate

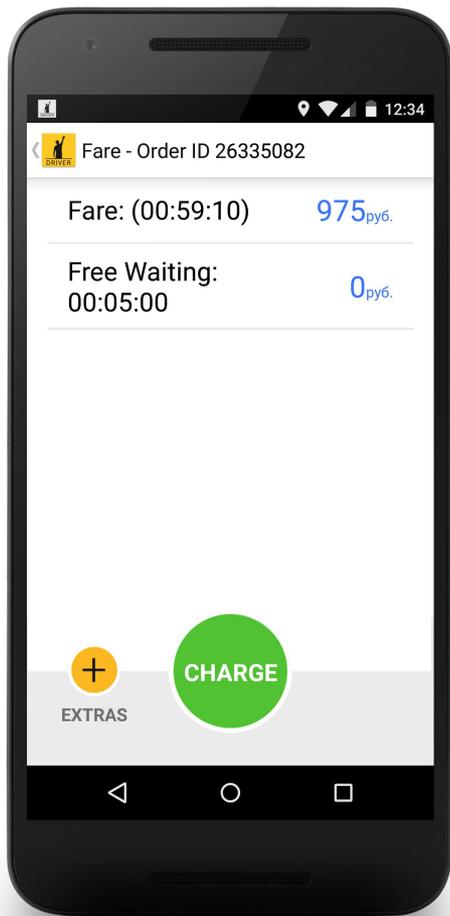
```
public CalculationResult calculateAndAdaptOrderCost(Data data, String
priceModel,String areasFixedPrice) {
    String rideData = mGson.toJson(data);

    String calculationAsJson =
        mJavascriptEngine.executeMethodOnObject("$calculate_and_adapt",rideData);

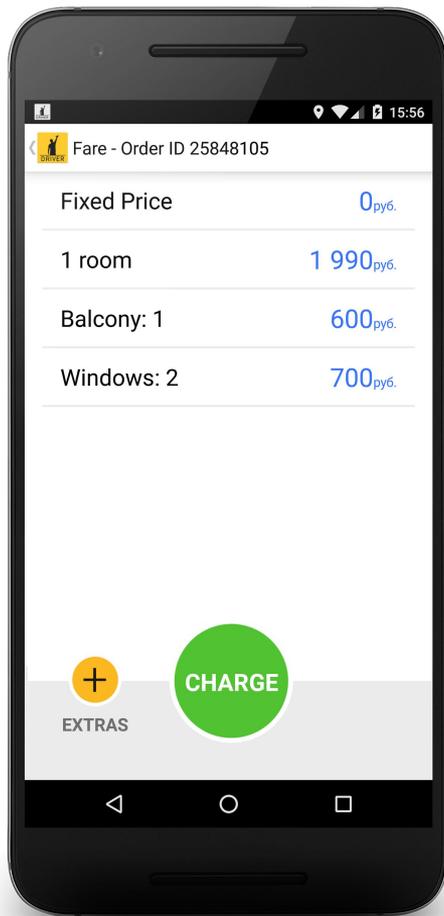
    return mGson.fromJson(calculationAsJson, CalculationResult.class);
}
```



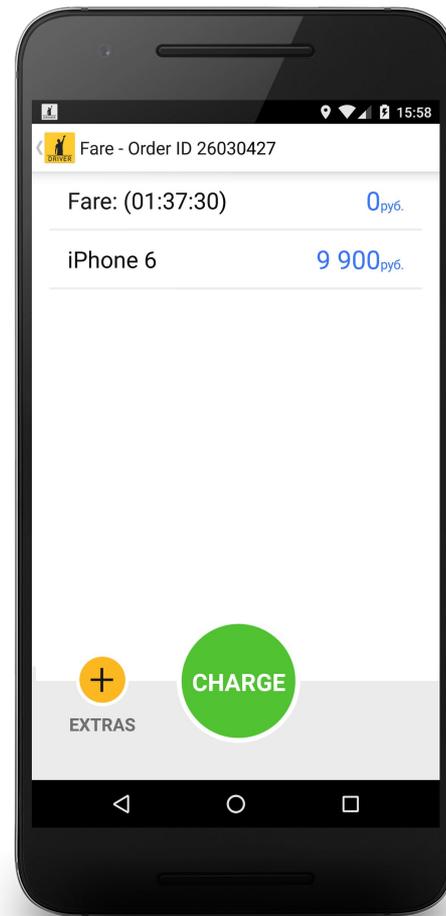
Taxi



Cleaner



iMaster



“adapt” that turns the raw data to UI key-value

```
public class CalculationResult {  
  
    private List<List<BreakdownRow>> breakdown;  
  
    private Totals totals;  
  
}
```

“adapt” that turns the raw data to UI key-value

```
public class BreakdownRow {  
  
    String label;  
  
    String value;  
  
    @SerializedName("valueIsMonetary")  
    boolean valueIsMonetary;  
  
    String description;  
  
}
```

Flat and insert to list

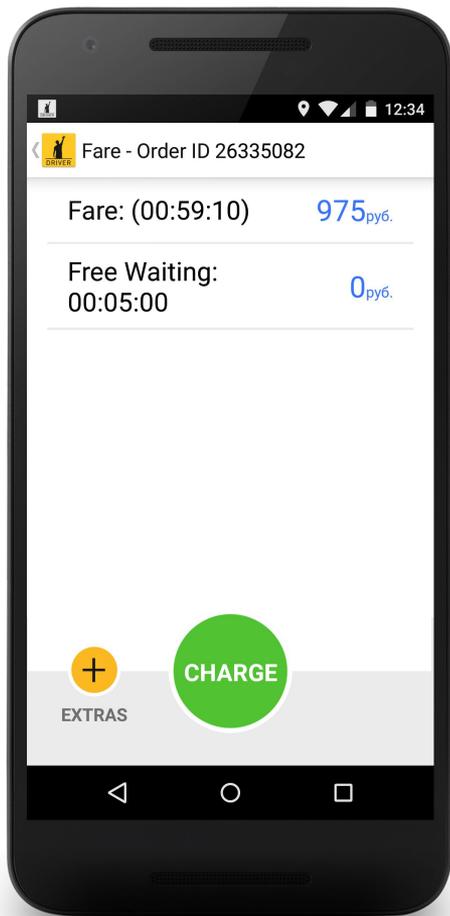
```
private void convertRowsToItems(List<List<OrderBreakdown.BreakdownRow>> breakdown) {
    List<RowItem> rowsItemsList = new ArrayList<>();

    // flat the rows - show all row as an item
    for (List<OrderBreakdown.BreakdownRow> breakDownRowArray : breakdown) {
        for (OrderBreakdown.BreakdownRow breakdownRow : breakDownRowArray) {

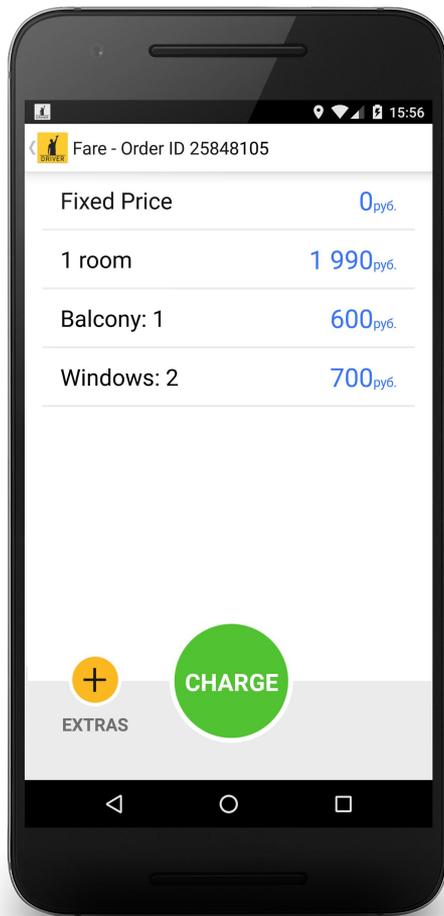
            String description = breakdownRow.getDescription();
            String RowLabel = breakdownRow.getLabel();

            rowsItemsList.add(new RowItem(RowLabel, breakdownRow.getValue(),
                breakdownRow.isSummary(), breakdownRow.isValueIsMonetary()));
        }
    }
}
```

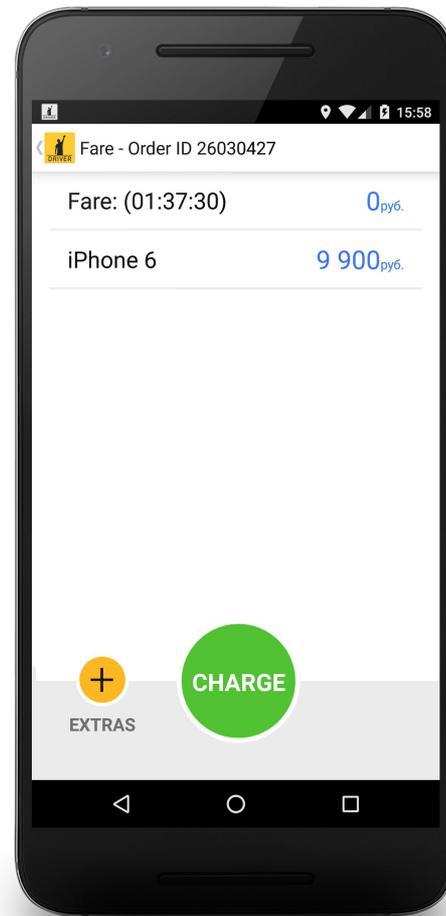
Taxi



Cleaner



iMaster





So what we had



V8 Engine



Business pricing logic outsourced to the server



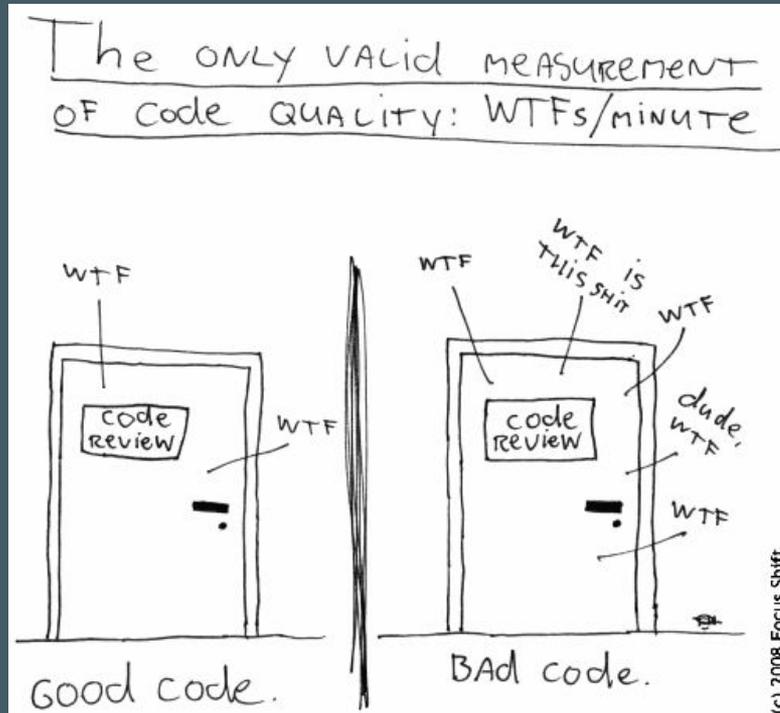
UI is no longer tightly coupled to the fields but built dynamically



#PerfMatters

Launched Jul 2015

Moscow, Marathon of 4 dev days launching.



2 AM

Proguard cut our JNI Java Side :)



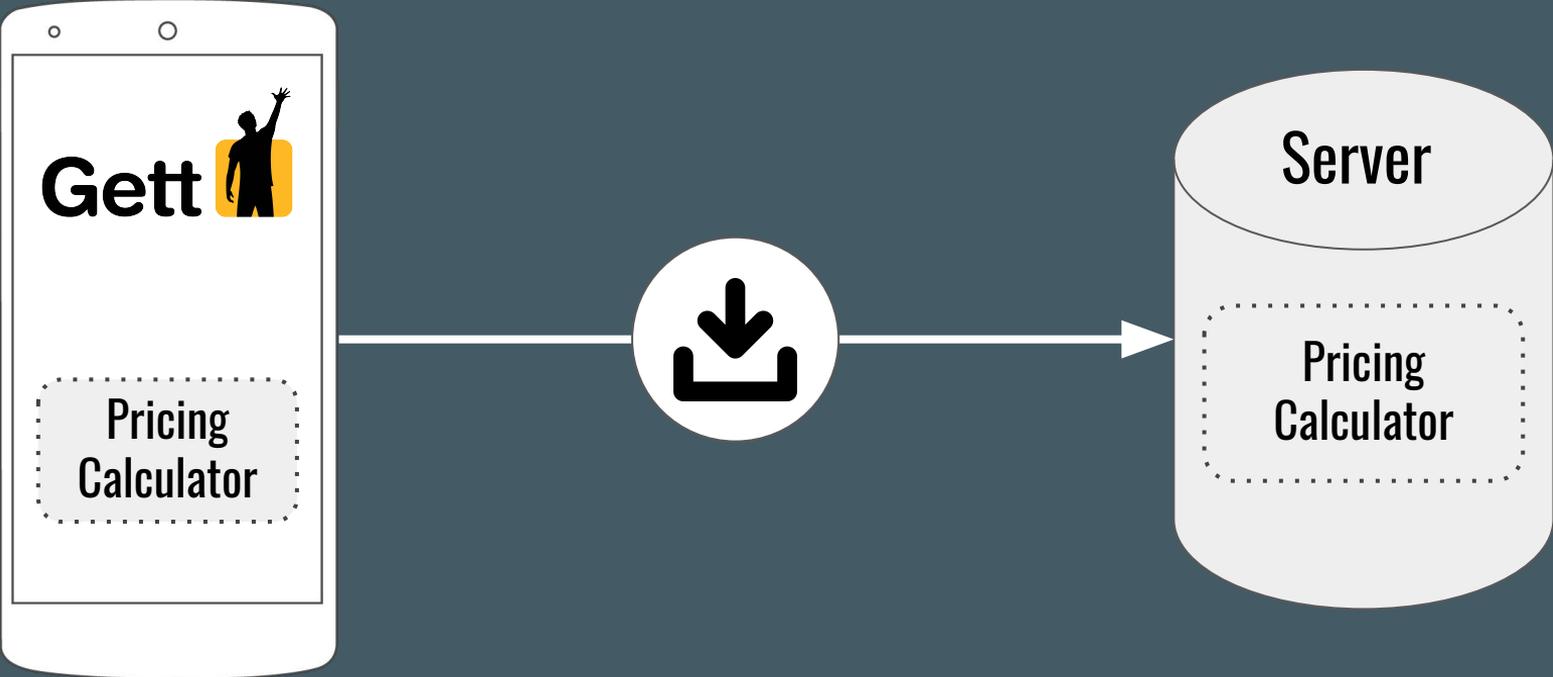
Return Val;

Almost 2.5 year in production.

0 performance issues.



Download calculator from server



“It’s not us, it’s server”

Q?

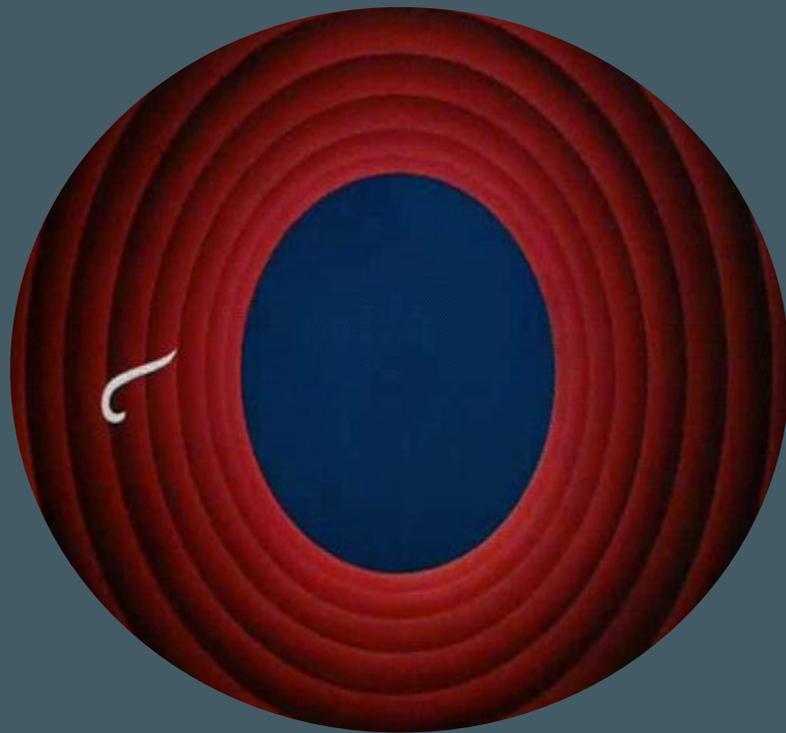
20

MAY THE

$$\frac{d}{dt} (\overrightarrow{mv})$$

BE WITH YOU





Yonatan V. Levin

 Google Developer Expert



levin.yonatan



parahall