

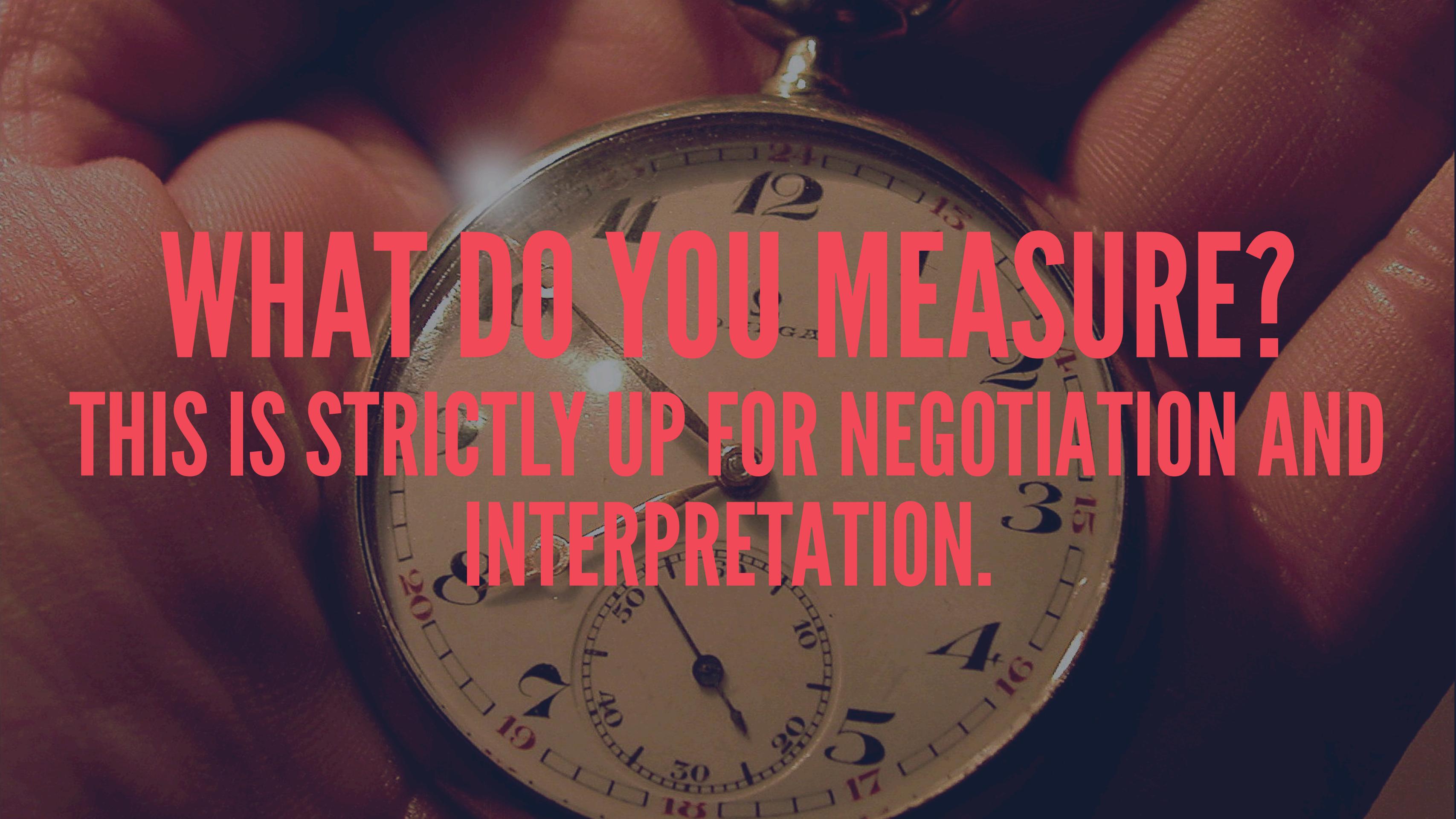
A large, white iceberg is shown floating in a dark blue ocean. The top portion of the iceberg is above the water, while a massive, jagged base is submerged, creating a dramatic visual effect. The sky above is a lighter shade of blue with some wispy clouds.

COLDSTART

**THE TIME BETWEEN THE TAP
AND A USABLE APP**

**WHO CARES?
MARKETING PEOPLE AND USERS**

**APPS CAN BE A MAGICAL EXPERIENCE, BUT
YOU CAN SCREW THAT UP REAL FAST.**



**WHAT DO YOU MEASURE?
THIS IS STRICTLY UP FOR NEGOTIATION AND
INTERPRETATION.**



→ UI WITH FRESH DATA

1. 

2. Binaries & Obj-C Runtime

3. +load()

4. main()

5. +init()

6. applicationWillFinishLaunching:

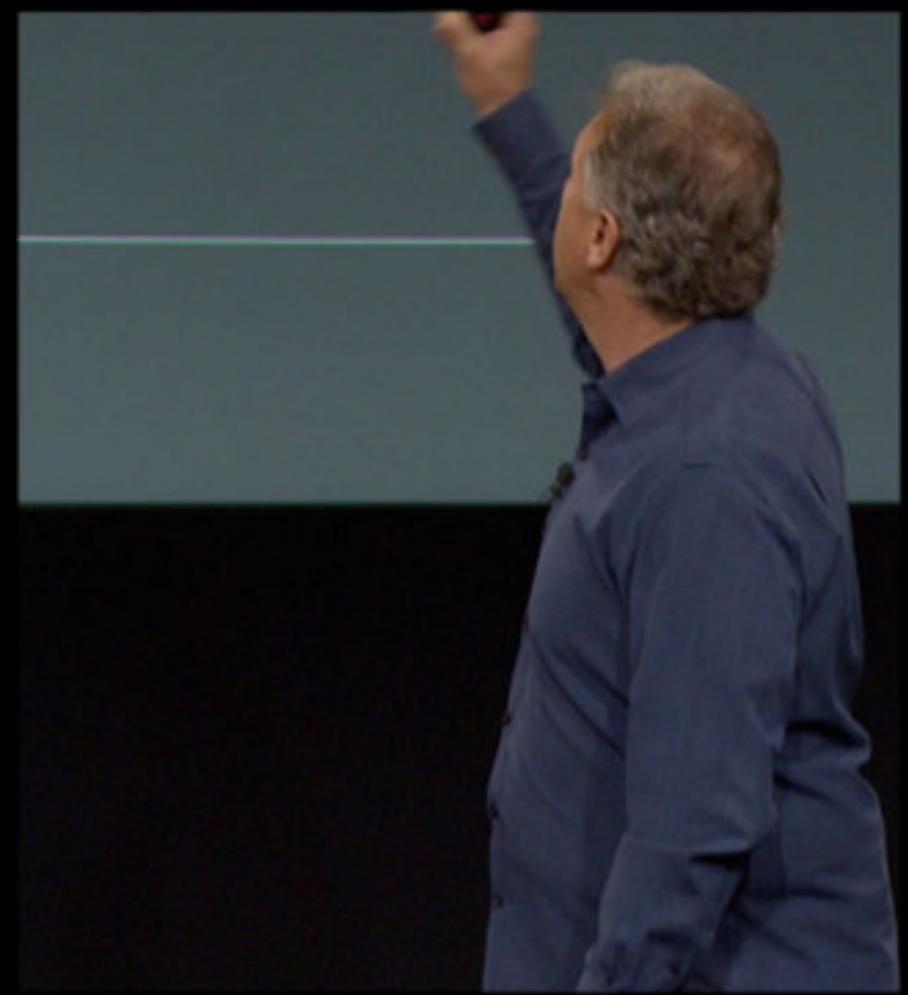
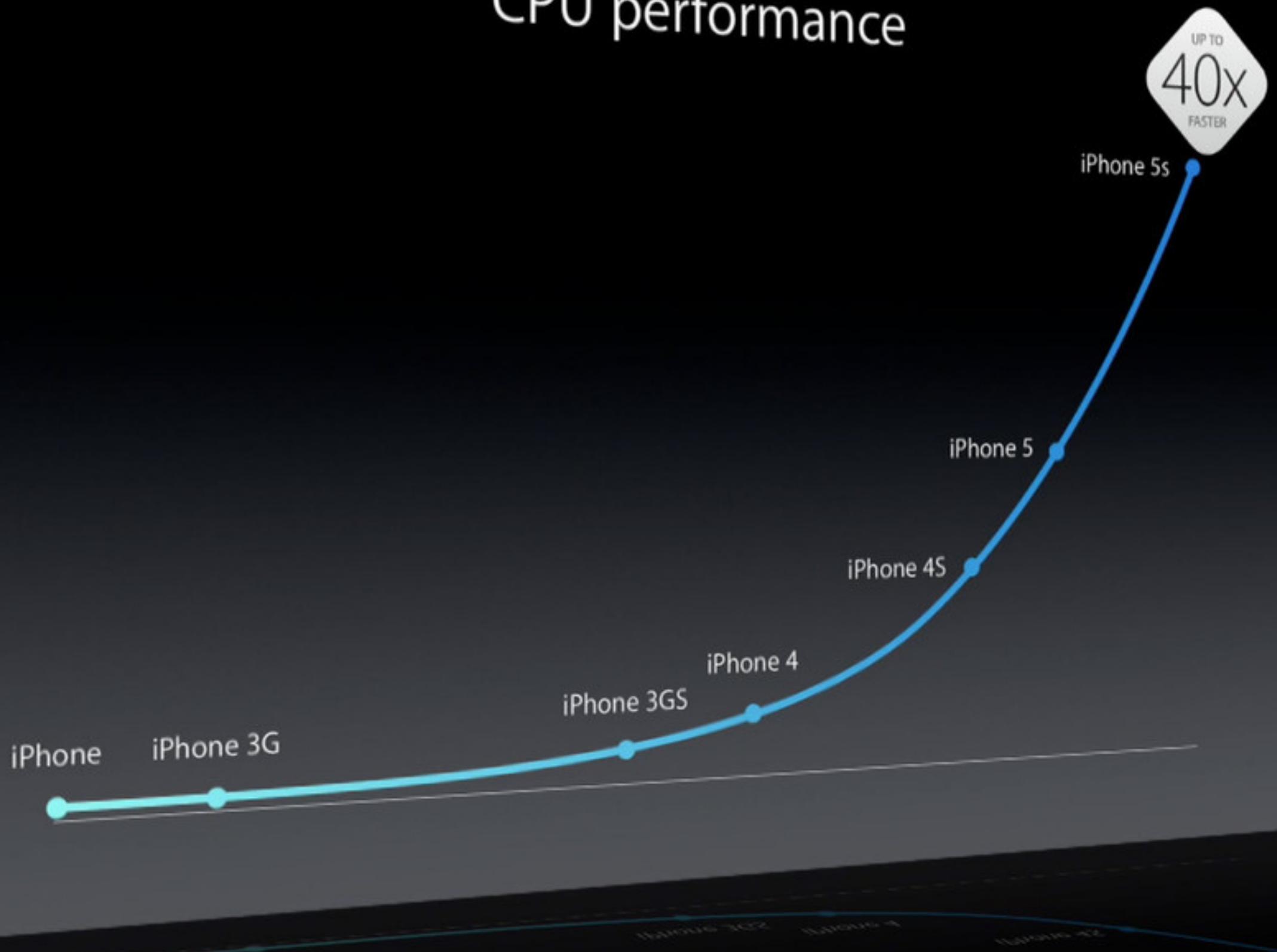
`main() → UI WITH FRESH DATA`

KNOW YOUR USERS

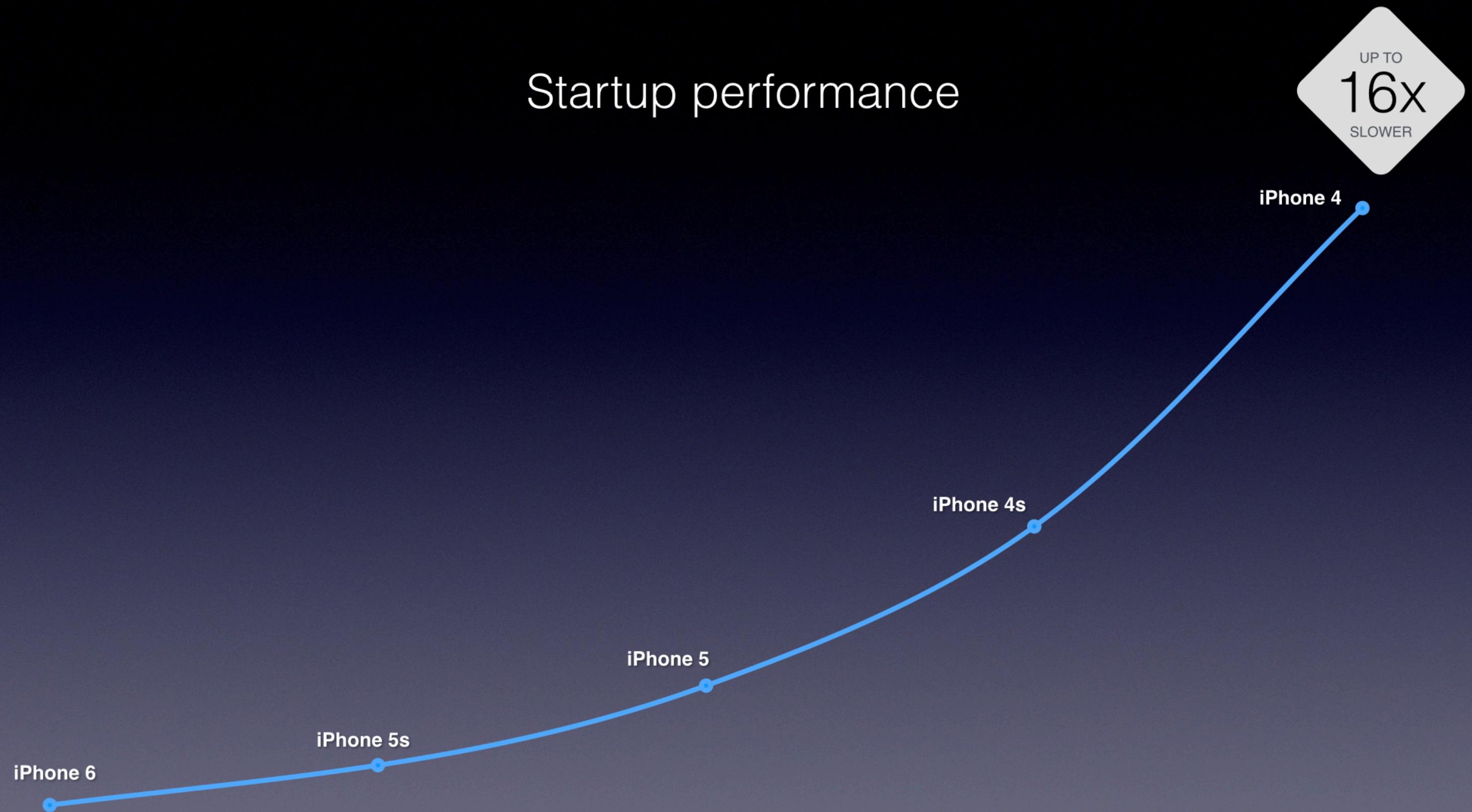
WHAT DEVICES DO THEY USE?

WHERE ARE THEY?

CPU performance



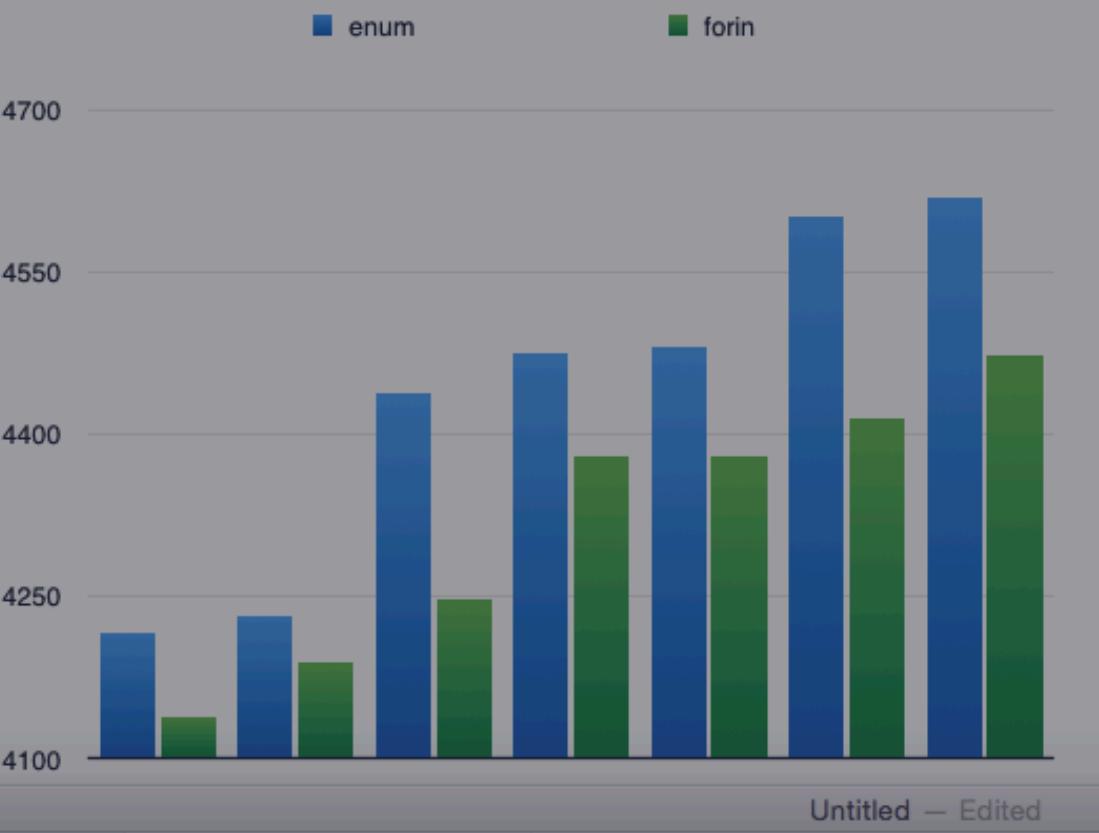
Startup performance



WHAT I THOUGHT MY JOB WOULD BE

Table 1

	enum	forin
	4216	4138
	4232	4188
	4438	4247
	4474	4379
	4481	4380
	4601	4415
	4618	4472
average	4437	4317
diff	120	



ACTUAL JOB

**LEARN ENOUGH STATS TO BE
DANGEROUS**

A black and white photograph of a man with dark hair and a prominent mustache. He is wearing a light-colored, vertically striped suit jacket over a white shirt and a patterned tie. He is looking off to his left with a serious expression. In his right hand, he holds a dark revolver. The background shows a bar counter with several bottles of alcohol on shelves. To the left, there is a framed picture on the wall.

60% of the time,
it works every time.

PROPERLY MEASURING

```
// No, no, no
NSDate *startTime = [NSDate date];

// Yes
CFTimeInterval startTime = CACurrentMediaTime();

// Also, yes
uint64_t t_start = mach_absolute_time();
```

MY MOST USED XCODE SNIPPET

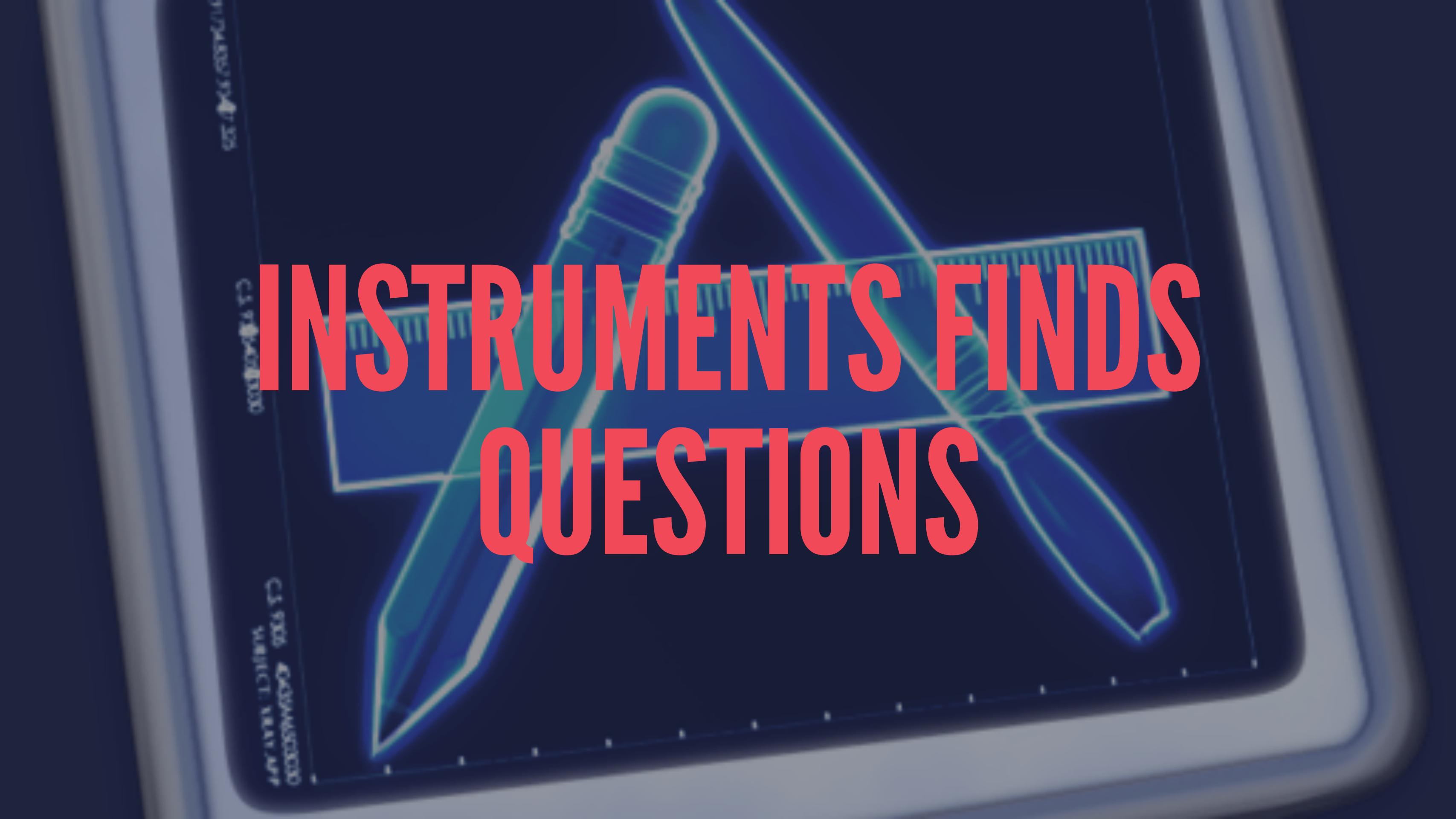
DON'T MEASURE THESE

1. LLDB interaction
2. Safari interaction
3. Streaming logs to Xcode
4. iTunes

**HOW DO WE
IMPROVE IT?**

THE SCIENTIFIC METHOD

1. Ask a Question
2. Form a Hypothesis
3. Make a Fair Test
4. Analyze
5. Karaoke



INSTRUMENTS FINDS QUESTIONS

MICRO OPTIMIZATIONS

```
for(Foo *f in bars)  
    NOT  
enumerateObjectsWithBlock:
```

**USE AN NSDictionary INSTEAD
OF config.json WHERE APPROPRIATE**

SWIZZLING IS SLOW

`+load()` / `+init()`

PEOPLE PUT "CLEVER" STUFF THERE

MACRO OPTIMIZATIONS

FLATTEN UI

ABOVE THE FOLD

1 NETWORK REQUEST

DEFER

I will not rate your app in the first 500ms

I will not use your sidebar before the UI appears

Your animation is in my way

An aerial photograph of a multi-lane highway interchange. On the left, a red building features a vertical sign with "BUS LANE" and "SOURCE". A white sign above the highway indicates "B LANE 6 AM - 10 AM 3 PM - 7 PM MON-FRI". The highway has several lanes numbered 9, C, 1, 6, 5, 4, and 3 from west to east. A green arrow light points down lane 8, while red X lights are visible on lanes 4, 5, and 6. A white taxi is in lane 3. Pedestrians are walking on the sidewalk to the left, and a train track runs parallel to the highway on the right.

CONCURRENCE

```
- (void)setupSomeSDK {
    NSAssert([NSThread isMainThread], @"This must be called from main thread.");
    // ...
}
```

NSBundle, I'M LOOKING AT YOU

DECOMPOSE



MY FIRST UITableViewcontroller

```
- (void)viewWillAppear {
    TeamsDataSource *dataSource = (TeamsDataSource *)self.dataSource;
    [dataSource fetchTeams:^(NSArray *things, NSError *error) {
        [self reloadTable];
    }];
}
```

THE CPU WILL GET BORED

DECOMPOSE THAT VIEWCONTROLLER

```
// In your appDelegate, as early as possible
TeamsDataSource *dataSource = [[TeamsDataSource alloc] initAndFetch];

// Lots of other code...

// When you get to the UI
TeamsViewController *vc = [[TeamsViewController] initWithDataSource:dataSource];
```

REALITY...

```
[self initCoreDataSlowly];

// In your appDelegate, as early as possible
TeamsDataSource *dataSource = [[TeamsDataSource alloc] initAndFetch];

// ...

// When you get to the UI
TeamsViewController *vc = [[TeamsViewController] initWithDataSource:dataSource];
```

WORK AROUND THE LATENCY

```
// Even earlier... fetch and parse some JSON, don't CoreData it.  
TeamsFetchRequest *teamsRequest = [TeamsClient fetchTeams];  
  
[self initCoreDataSlowly];  
  
// Still way before the UI  
TeamsDataSource *dataSource = [[TeamsDataSource alloc] initWithFetchRequest:teamsRequest];  
  
// ...  
  
// When you get to the UI  
TeamsViewController *vc = [[TeamsViewController] initWithDataSource:dataSource];
```

KEEP BREAKING DOWN THE LATENCY

```
// This will make an HTTP request.  
//  
// Dependencies:  
// - DNS  
// - TCP handshake  
// - SSL handshake  
//  
TeamsFetchRequest *teamsRequest = [TeamsClient fetchTeams];
```

DNS

```
$ dig api.yourapp.com
```

```
; ; QUESTION SECTION:
```

```
;api.yourapp.com.           IN  A
```

```
; ; ANSWER SECTION:
```

```
api.yourapp.com.    3600   IN  CNAME   yourapp.us-east-1.elb.amazonaws.com.
```

```
yourapp.us-east-1.elb.amazonaws.com. 60 IN A 54.233.61.10
```

```
yourapp.us-east-1.elb.amazonaws.com. 60 IN A 54.143.221.204
```

DNS

```
$ dig api.yourapp.com
```

```
; ; QUESTION SECTION:
```

```
;api.yourapp.com.           IN  A
```

```
; ; ANSWER SECTION:
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api.yourapp.com.    3600   IN  CNAME   yourapp.us-east-1.elb.amazonaws.com.
```

```
yourapp.us-east-1.elb.amazonaws.com. 60 IN A 54.233.61.10
```

```
yourapp.us-east-1.elb.amazonaws.com. 60 IN A 54.143.221.204
```

RESOLVE THE DNS WITH `getaddrinfo()` ASAP



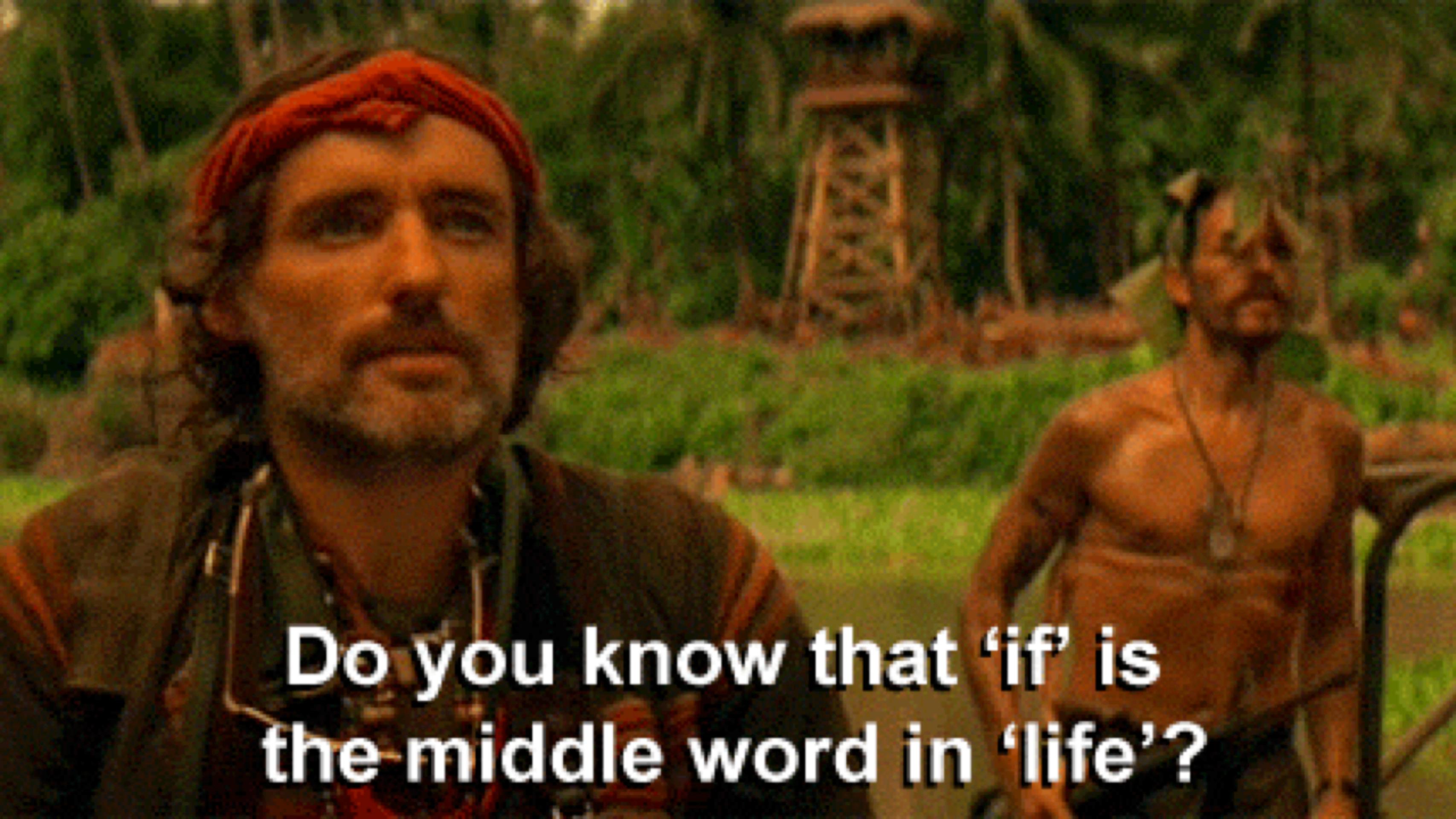
HTTP KEEP-ALIVE A HEAD REQUEST

IN PRACTICE...

COLD START IS NOT PURELY A CLIENT SIDE ISSUE
LET YOUR BIG IRON DO THE LIFTING

LOCALIZE THE API (`NSNumberFormatter`, `NSDateFormatter`)

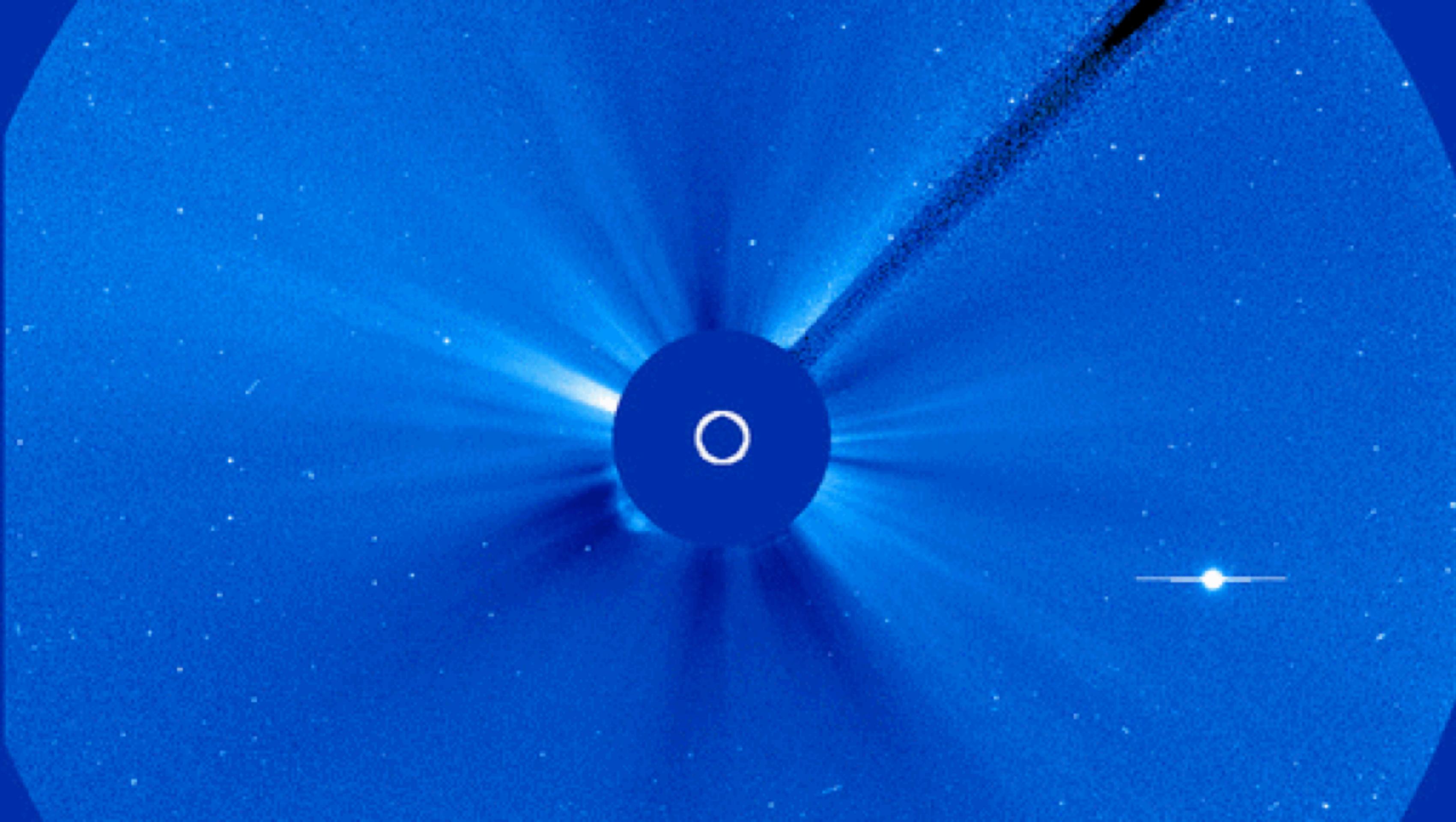
THE DAY WILL COME WHEN...

A photograph of a man with a long, dark beard and a woman in a red dress standing in a dense forest. The man is on the left, looking slightly upwards and to the right. The woman is on the right, also looking in the same direction. The background is filled with tall trees and green foliage.

**Do you know that 'if' is
the middle word in 'life'?**

THE TRUTH IS OUT THERE





IT'S A COMPUTER

cacheableability	<1200003203e358060cd8c352d>	37753	422	0	-	331	50	(daemon) (idle)
CacheDeleteAppCo	<0c6be618f57b3762ba94b3d017d1bd26>	22.351	455	0	-	3314	50	(daemon) (idle)
Chrome	<b7dbe7d892983c5cbe1716ca9889ce4e>	72.254	32418	0	-	49094	400	(suspended)
Y! Finance	<4b32dc9b6e834fea17c4168ce4a4b40>	9.328	2994	0	-	9906	50	(suspended)
gamed	<07de5aa744d732f0949d9135c494ba7e>	5.016	693	0	-	1502	50	(daemon) (idle)
limitadtrackingd	<0b0d2229c6f2378897f9db95698dcdf5>	0.997	199	0	-	740	50	(daemon) (idle)
adid	<318b35f544ef30458c779f196840141b>	0.309	108	0	-	481	50	(daemon) (idle)
AssetCacheLocato	<5edd855aaad239dbb3504d6eb510eb7d>	1.898	203	0	-	574	50	(daemon) (idle)
com.apple.Stream	<49ef5bae281a3424b05d20287f349f0e>	31.586	156	0	-	999	50	(daemon) (idle)
installd	<c054b52d30d93252972fbe3d735787a2>	44.941	394	0	-	3013	50	(daemon) (idle)
assetsd	<2d5f7a1a077932f297fe92cf716f798c>	28.383	2571	0	-	3893	50	(daemon) (idle)
aosnotifyd	<58b29e80dd223c79a4b1e2fcc21f76a0>	8.839	420	0	-	1372	50	(daemon) (idle)
findmydeviced	<c0ec1e40ed303d12b637c1d6be76130d>	5.010	482	0	-	1452	50	(daemon) (idle)
containermanager	<4f44b45771063717a60e920abf5f1b6f>	49.522	825	0	-	2231	50	(daemon) (idle)
assistant_servic	<47f750a1a14a39cd9928ab5f39dccab>	17.911	1166	0	-	3062	50	(daemon) (idle)
mobileassetd	<f9f9b5fffcd302ebc440d81b1cde49e>	19.009	496	0	-	2701	50	(daemon) (idle)
softwareupdatese	<a99921dede3a3f95a47f6c05ac55c1f1>	18.932	927	0	-	1803	50	(daemon) (idle)
fmfd	<4e076e844aec36aca1355c804d2167b5>	2.878	257	0	-	816	50	(daemon) (idle)
callservicesd	<6e67737a8f9d37349ce48b3c8c829a83>	9.526	696	0	-	1529	50	(daemon) (idle)
misd	<6b4091dbad5d34bba4e994734ffe9153>	1.090	149	0	-	575	50	(daemon) (idle)
re	<09060f737b15ce73be2829>	1.602	240	0	-	34	0	(idle)
pi	<n037615f7a9c>	0.713	281	0	-	33	0	(idle)
CallHistot	<44dd583b4af9b091b0>	19.952	911	0	-	41	0	(idle)
ncH	<3878b562394bc5116388f44f>	3.662	429	0	-	90	0	(idle)
nanore	<4911af337f773082a814d>	5.470	392	0	-	42	0	(idle)
nanoregist	<aun071e5923b3c954ced602cb40>	0.152	144	0	-	59	0	(idle)
re	<6a45716f130815a1e937356>	5.182	606	0	-	44	0	(idle)
med	<02e104259302f7ac99e7e66>	18.069	321	0	-	95	0	(idle)
fid	<3d4483e9c3a4cb13f15067c>	6.400	143	0	-	34	0	(idle)
y	<her917acdeee3e84b43f3fc67>	19.554	707	0	-	36	0	(idle)
co	<thd2f33355801afe954f2d5>	2.836	480	0	-	55	0	(idle)
bsd	<672f1ac2e3308611>	0.198	80	0	-	19	0	(idle)
ne	<perb0d3a543d365a5409b0>	13.071	176	0	-	50	0	(idle)
Calendarwidget	<e4dc82ad0fb53471b91c140080b91266>	15.240	960	0	-	2118	50	(suspended)
StocksWidget	<61d6fba4bc50345c878e77d2b2409b9d>	46.834	1232	0	-	2767	50	(suspended)
itunescloudd	<6e74e1ffab2e3aad9105c798aa2c1c78>	19.659	1676	0	-	5496	50	(daemon) (idle)
CMFSyncAgent	<f97f28ddcdfa3198b6b349e61f120df7>	1.029	166	0	-	596	50	(daemon) (idle)
mobactivationd	<cd0a9e9b888335bfada01bb768061297>	2.627	161	0	-	596	50	(daemon) (idle)
companion_proxy	<f8318a1d4dab3889807e2d17c63b3323>	1.936	226	0	-	698	50	(daemon) (idle)
notification_pro	<f35d6426f33b3fc587745cdedabc2b96>	2.559	172	0	-	394	50	(daemon) (idle)
rtcreportingd	<e4600063b91136ca86ded8cf713bb570>	0.731	825	0	-	1478	50	(daemon) (idle)
networkd_privile	<040300a0c76e3c5fb2e18121919410c7>	0.068	83	0	-	233	50	(daemon) (idle)
com.apple.WebKit	<52c601e533e23d07a1fddd97b4509f9b>	2.187	6163	0	-	7721	50	(suspended)
com.apple.WebKit	<52c601e533e23d07a1fddd97b4509f9b>	0.531	1168	0	-	2000	50	(suspended)
MobileSafari	<09c69476aa4a3f52856c97f3b0215572>	46.290	7605	0	-	11839	50	(suspended)
MessagesNotifica	<56f0682d860b373fb3f68540b05e10df>	8.782	1417	0	-	2816	50	(suspended)
calaccessd	<a7c10586155532e39e18fe0bbe00a4ac>	293.159	823	0	-	1908	50	(daemon) (idle)
DuetHeuristic-BM	<cb66de15a54236efad904591ad24fa22>	19.636	357	0	-	945	50	(daemon) (idle)
misagent	<a7b580bde146356b8cddb7ab80bd5da0>	4.790	122	0	-	529	50	(daemon) (idle)
GmailHybrid	<12911d50f7ac325880e7308d1574c206>	12.232	9838	0	-	31086	50	(suspended)
lockbot	<fb9c74689043d2380135f0180809c47>	1.689	157	0	-	517	50	(daemon) (idle)
Aerogram	<a5e4526d4cf937bd8c9ac74f90ea87d8>	47.498	7522	0	-	13238	100	(suspended)
stopcheckkeenord	<daad3b6f7ab630a5a10d0a755f0c4f0>	11.957	1501	0	-	7734	50	(daemon) (idle)

**UNFORTUNATELY, THE BEST DATA COMES
FROM DEPLOYING.**



@DBGRANDI



<https://speakerdeck.com/dbgrandi/coldstart-in-ios>

Images:

http://blog.indieflix.com/wp-content/uploads/2013/09/tip_of_the_iceberg.jpg

https://farm6.staticflickr.com/5170/5249841186_3fabc6a12c_o.jpg

http://www.long-island-mac-tech.com/wp-content/plugins/RSSPoster_PRO/cache/c0b48_iphone_5s_a7_cpu_40x_slide.jpg

<https://www.badgermapping.com/blog/wp-content/uploads/2014/07/the-matrix-online-wallpaper-HD-.jpg>

http://upload.wikimedia.org/wikipedia/en/4/4c/Apple_Instruments_Icon.png

http://upload.wikimedia.org/wikipedia/commons/4/41/Sydney_Harbour_Bridge_lane_markers.jpg

https://farm6.staticflickr.com/5170/5249841186_3fabc6a12c_o.jpg

<http://media.giphy.com/media/GG65KxQQdwDPW/giphy.gif>

<http://theprobeandcons.com/wp-content/uploads/2015/01/screen-shot-2013-07-26-at-9-43-38-am.png>

http://www.spaceweather.com/images2015/05apr15/cme_anim.gif?PHPSESSID=omr8b5h2on8v2vhsl7ua1ue5

<http://ilovehdwallpapers.com/wallpapers/nike-blue-color-logo-1920x1080.jpg>