Magic vs Science

Telerik Next's {N} Workshop

Sebastian Witalec

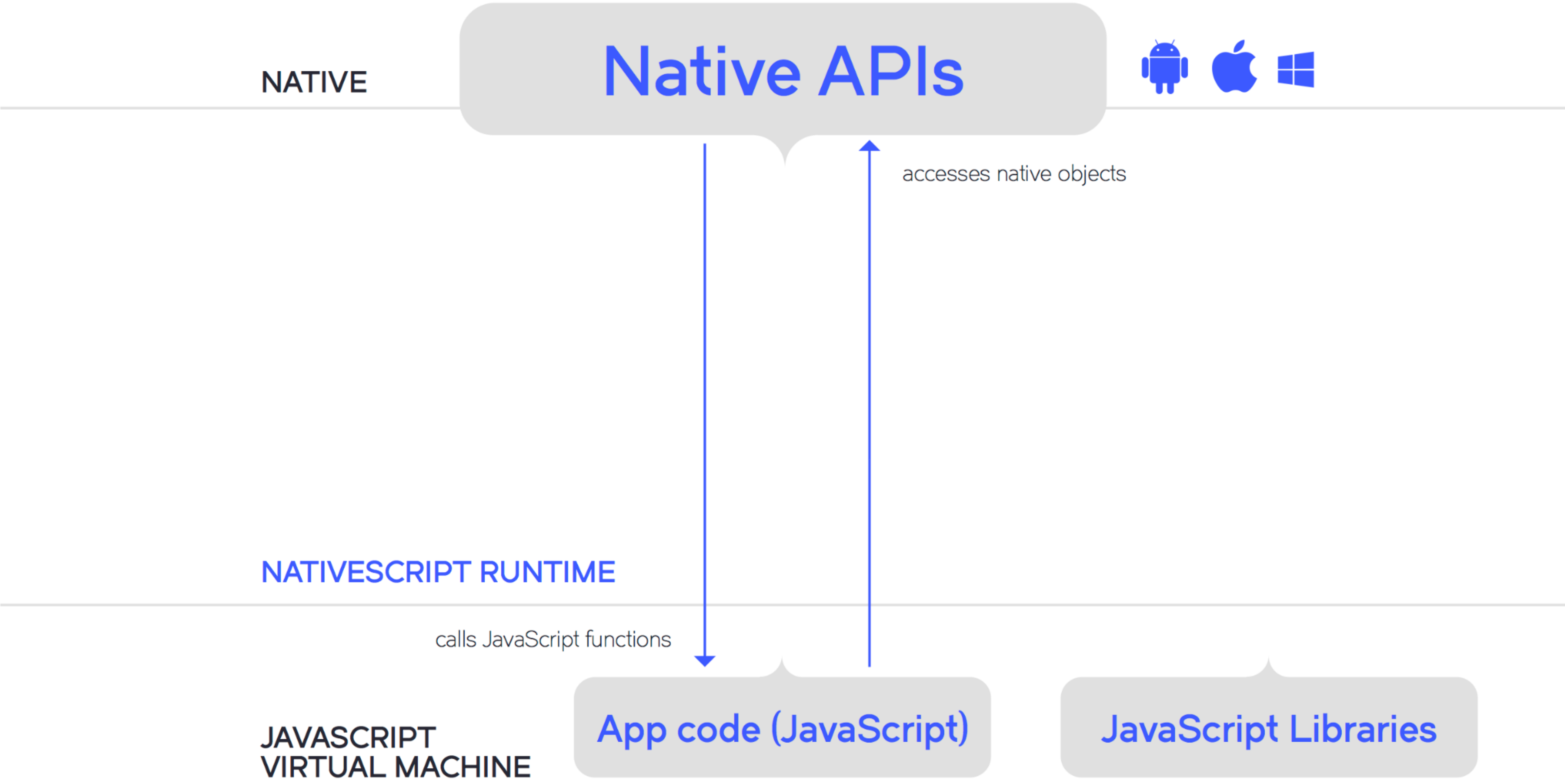
May 3-5, 2015 | Boston, Massachusetts USA

More Science Than Magic

JavaScript Virtual Machine

Google V8 JavaScript Engine

Webkit JavaScript Core



NATIVE

Native APIs

accesses native objects

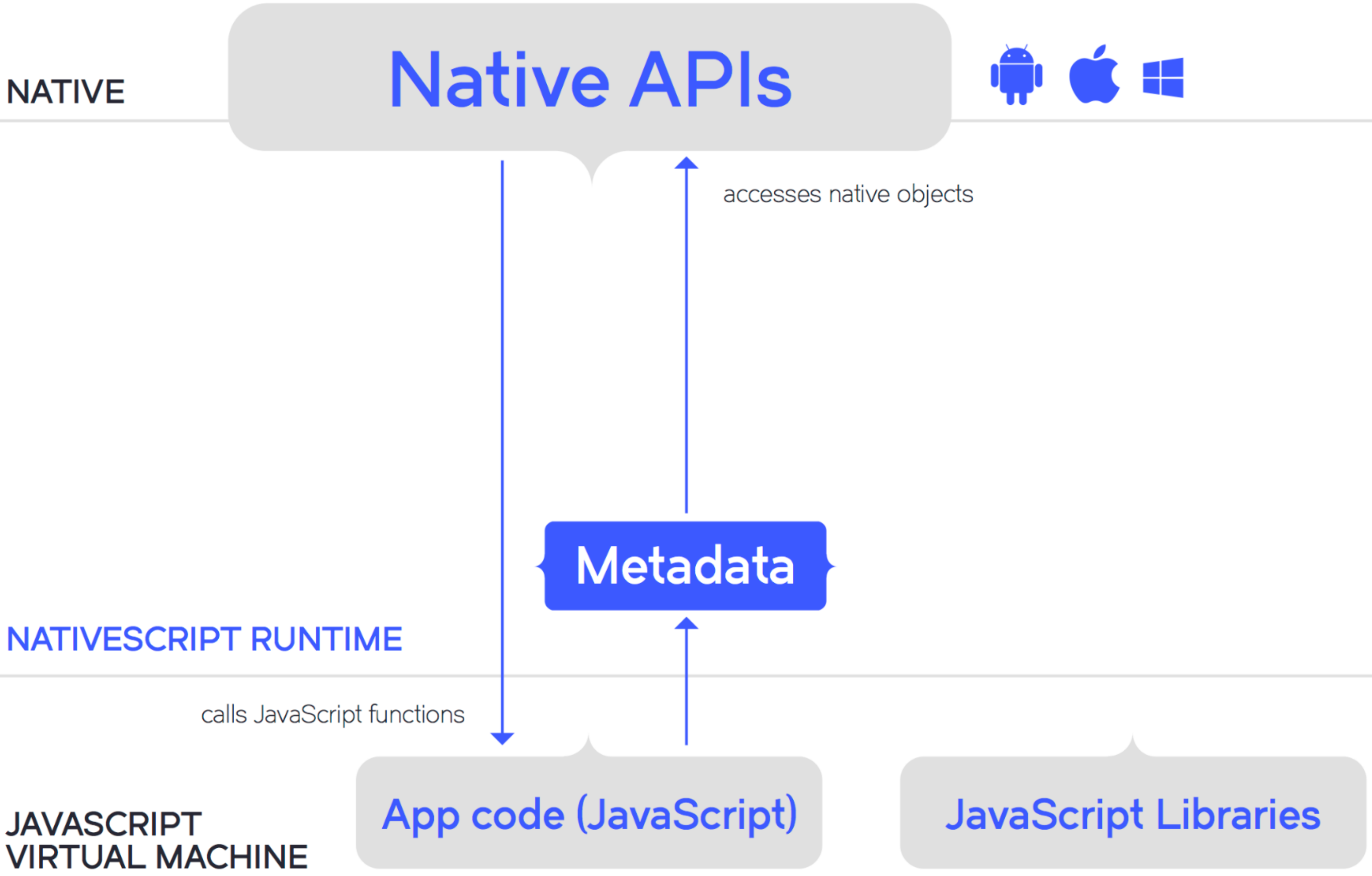
NATIVESCRIPT RUNTIME

calls JavaScript functions

JAVASCRIPT
VIRTUAL MACHINE

App code (JavaScript)

JavaScript Libraries



NATIVE

Native APIs

accesses native objects

Metadata

NATIVESCRIPT RUNTIME

calls JavaScript functions

JAVASCRIPT
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App code (JavaScript)

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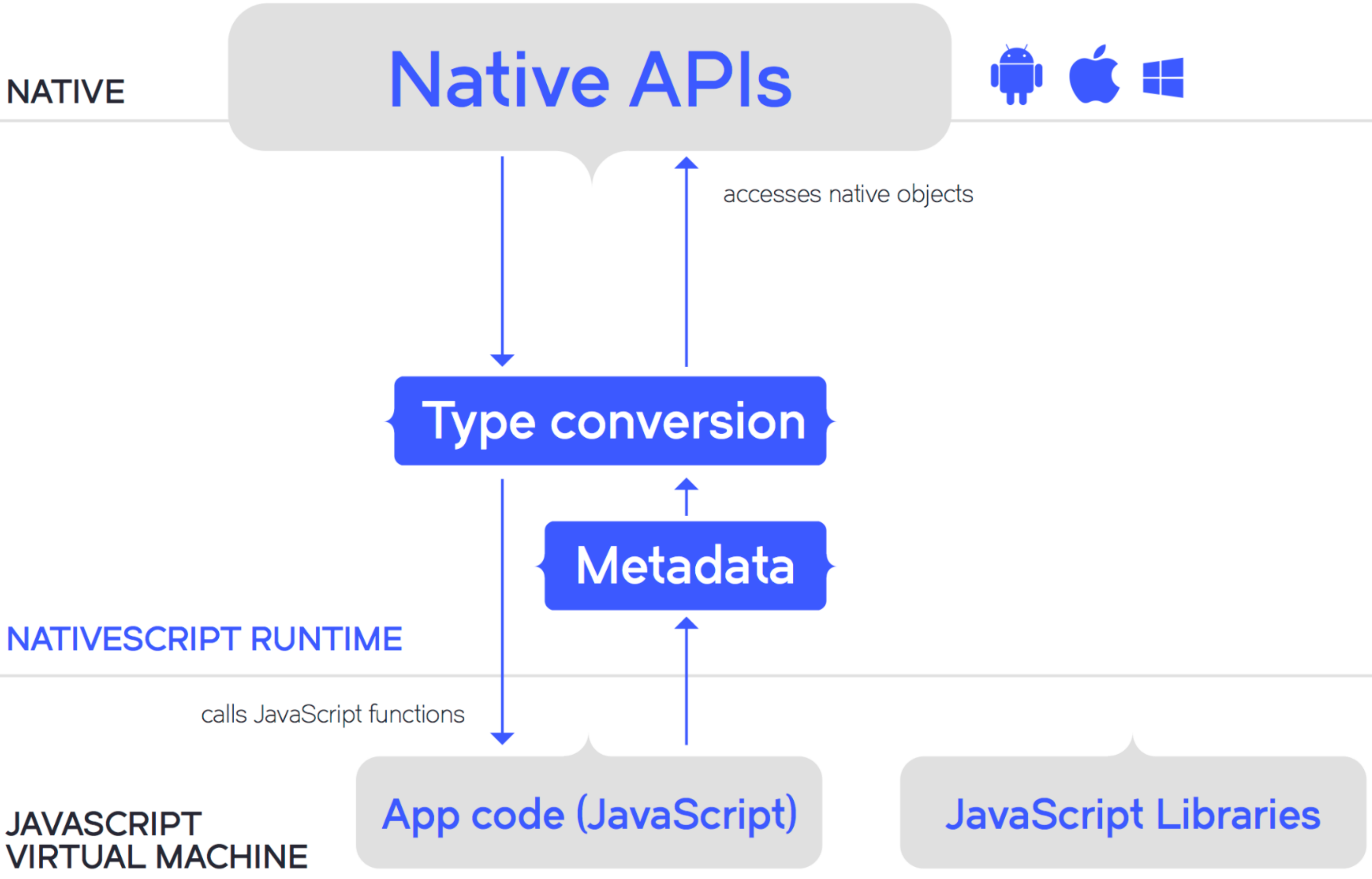

NATIVE

Native APIs

accesses native objects

Type conversion

Metadata

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calls JavaScript functions

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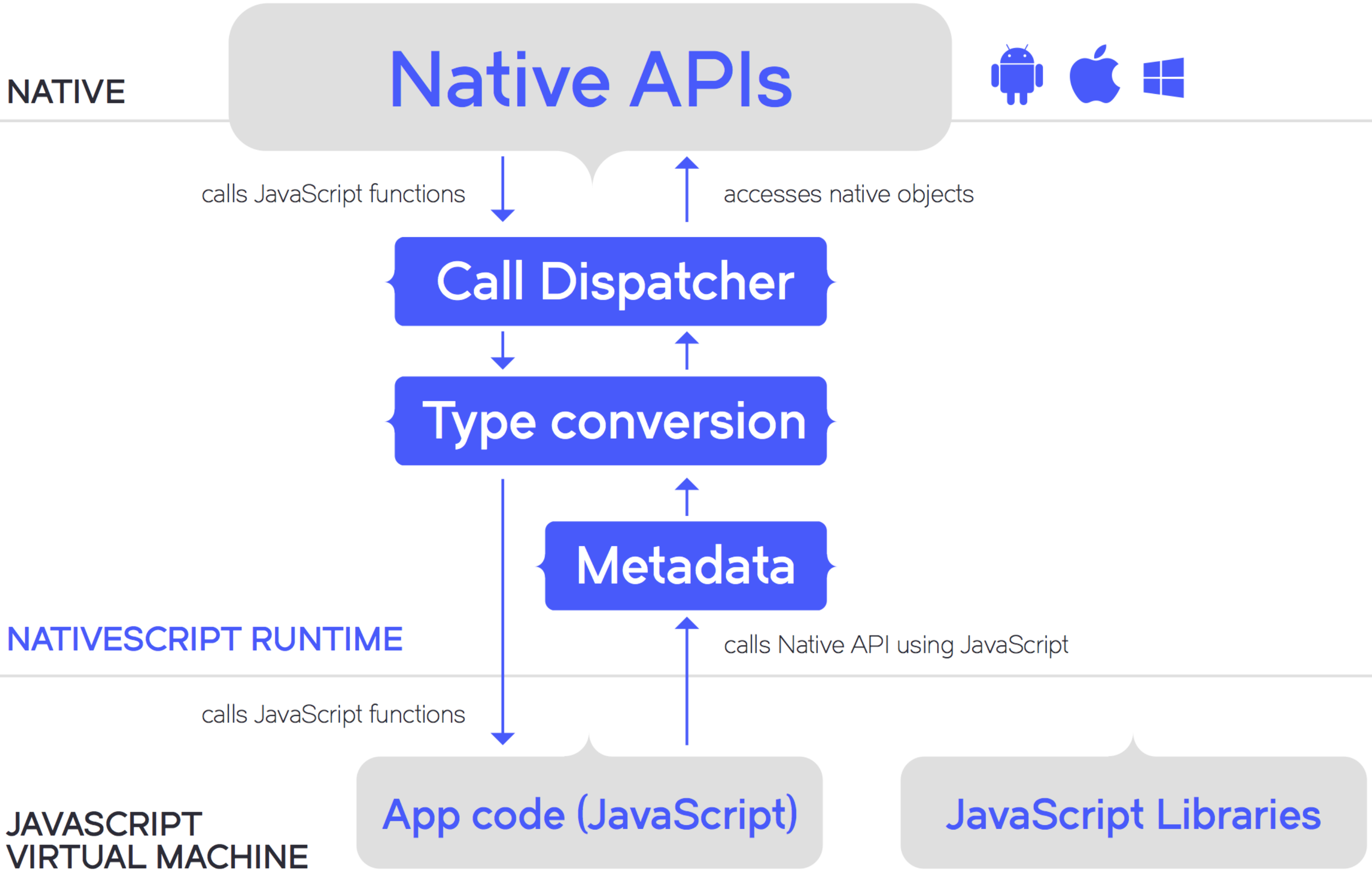


NATIVE

Native APIs

calls JavaScript functions

accesses native objects

Call Dispatcher

Type conversion

Metadata

NATIVESCRIPT RUNTIME

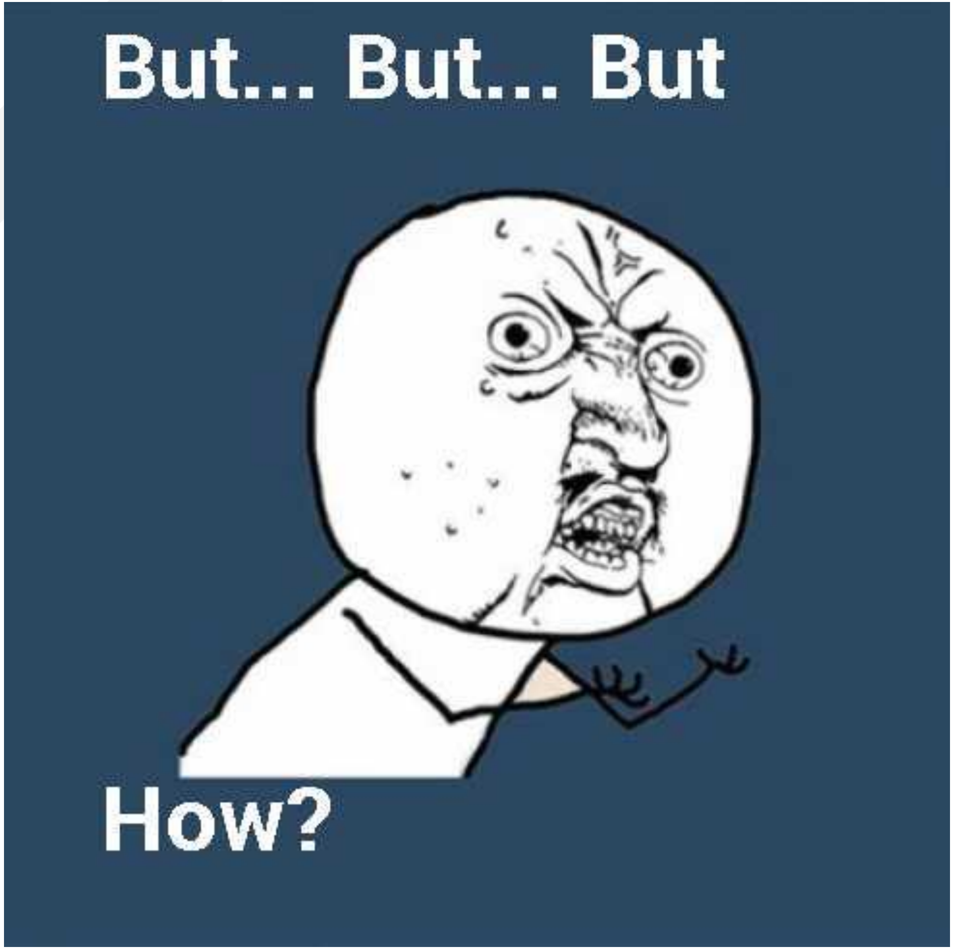
calls Native API using JavaScript

calls JavaScript functions

JAVASCRIPT
VIRTUAL MACHINE

App code (JavaScript)

JavaScript Libraries

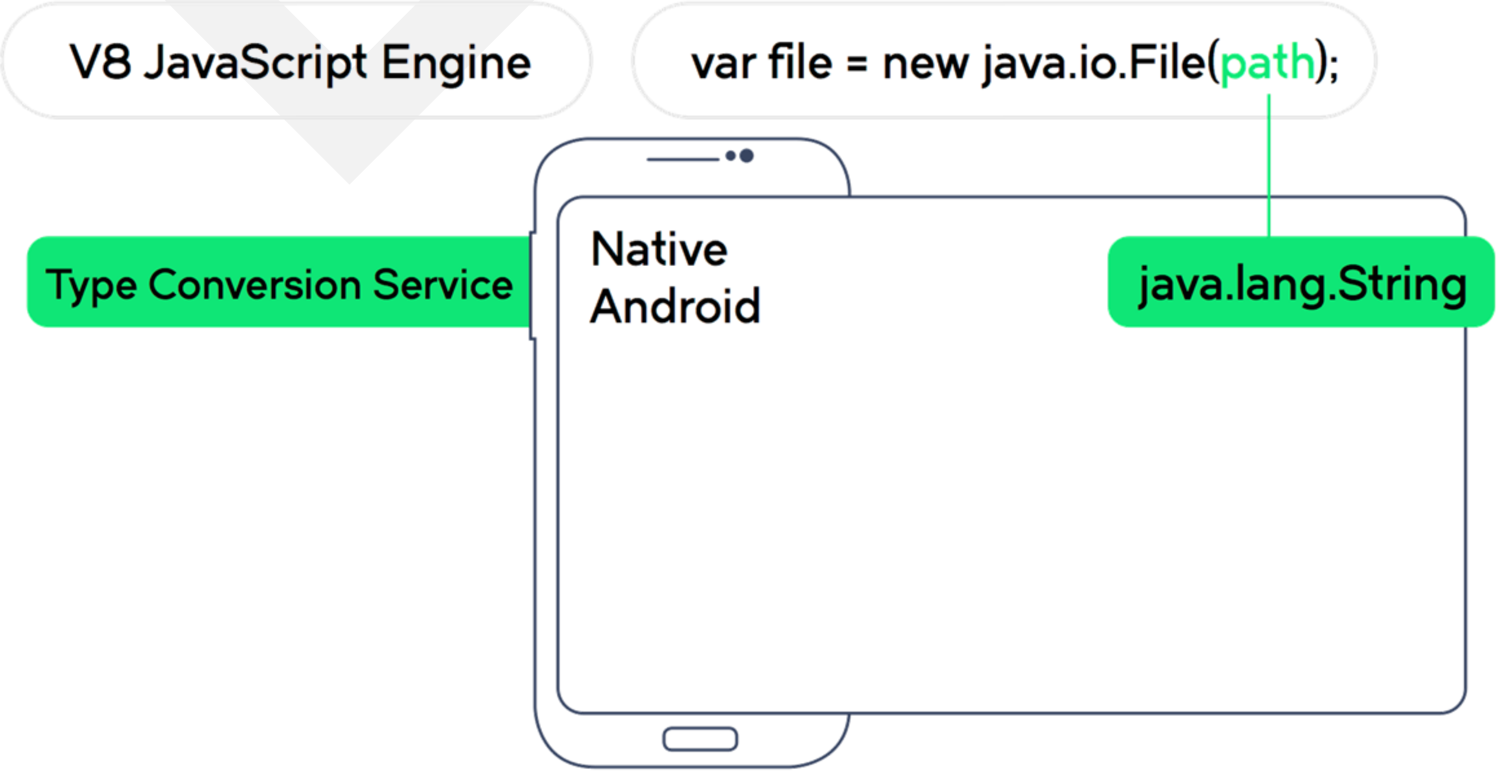

But... But... But
How?

Calling Android API

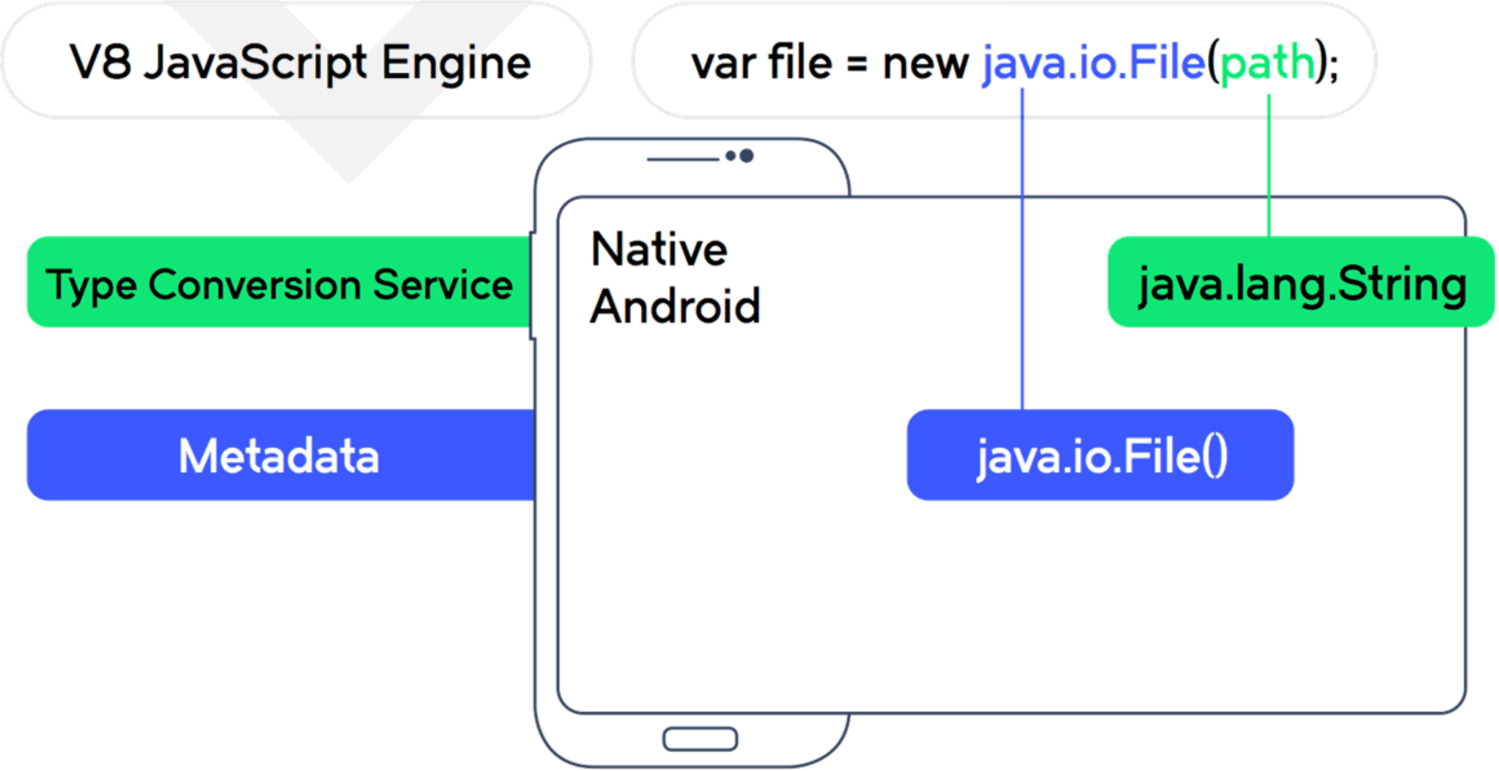
V8 JavaScript Engine

```
var file = new java.io.File(path);
```

Calling Android API



Calling Android API



V8 JavaScript Engine

```
var file = new java.io.File(path);
```

Type Conversion Service

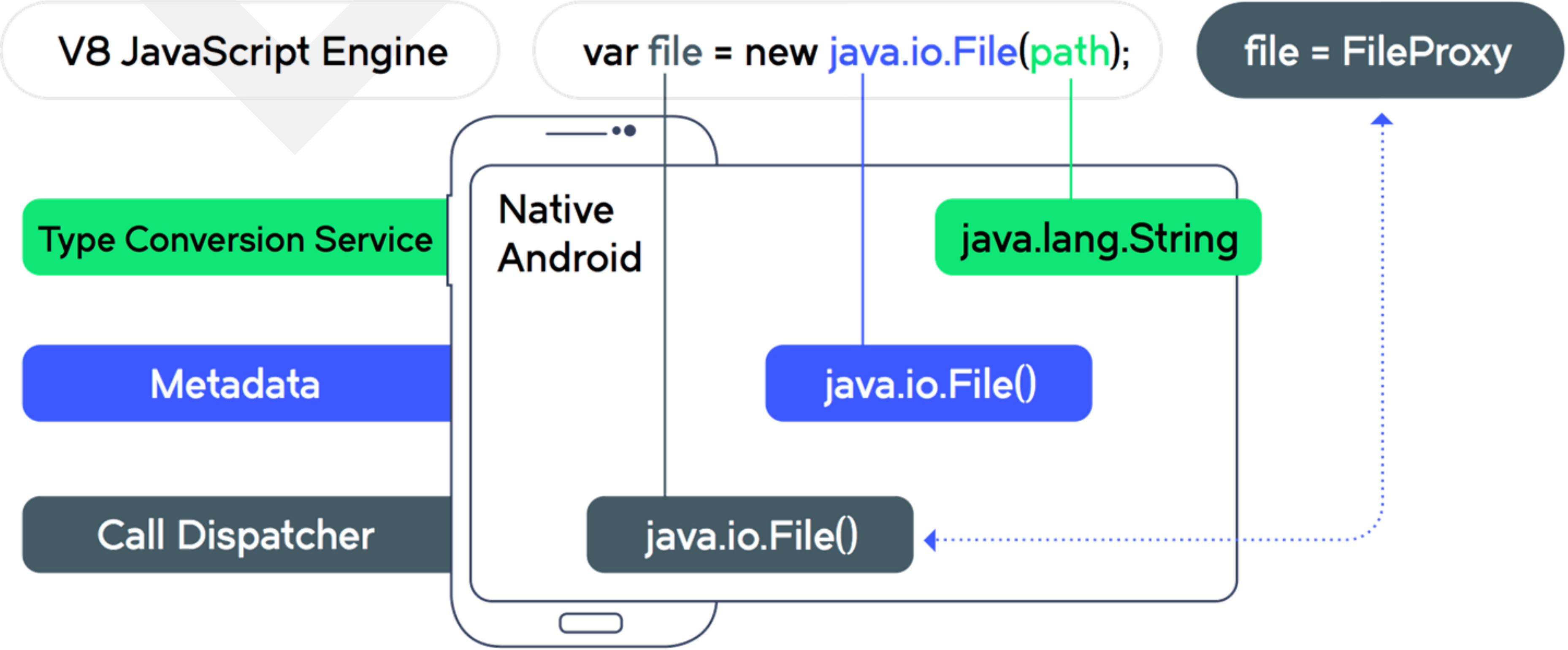
Metadata

Native Android

java.lang.String

java.io.File()

Calling Android API



V8 JavaScript Engine

var file = new java.io.File(path);

file = FileProxy

Type Conversion Service

Metadata

Call Dispatcher

Native Android

java.lang.String

java.io.File()

java.io.File()

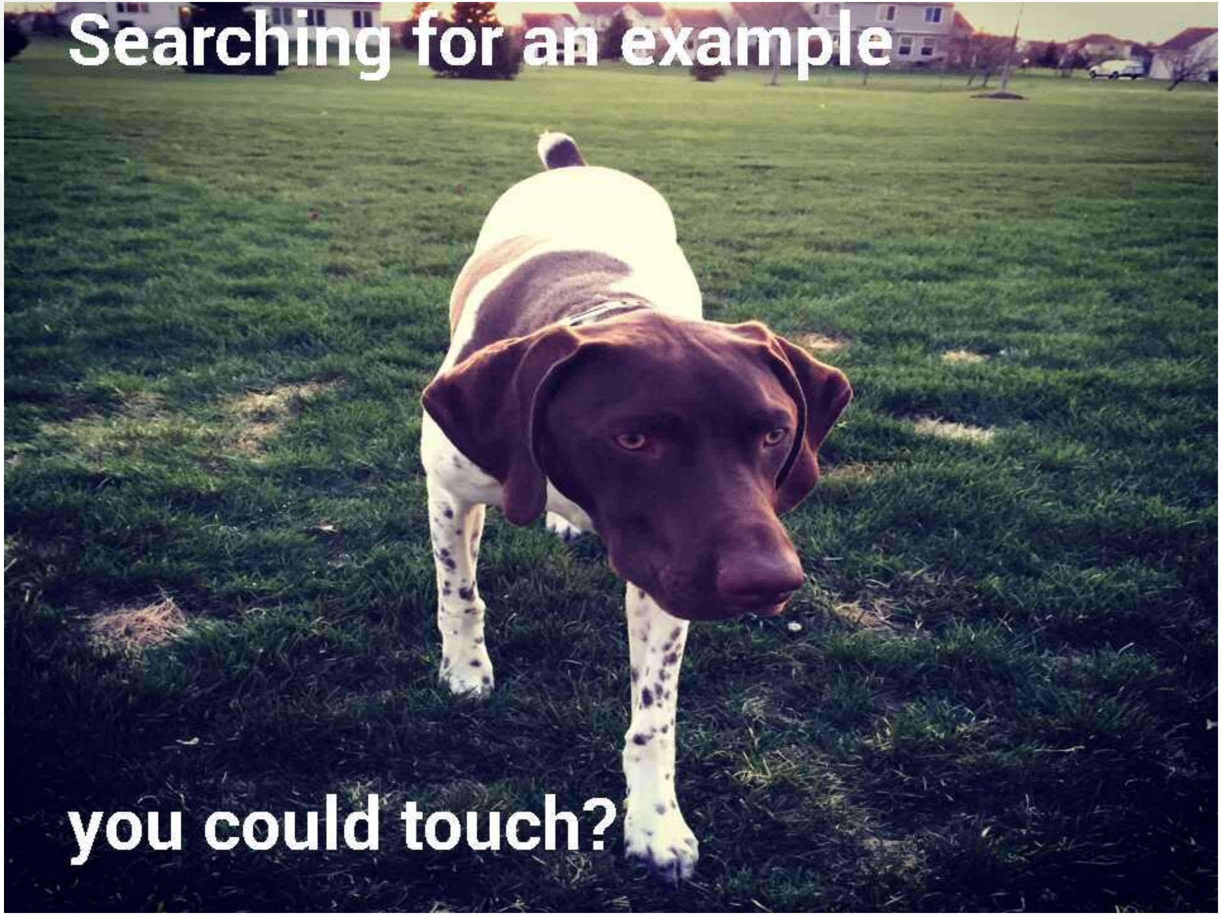

Searching for an example
you could touch?

image-manipulation module

image-manipulation.android.js

```
var paint = new android.graphics.Paint();
paint.setTypeface(type);
paint.setTextSize(fontSize);
```

image-manipulation.ios.js

```
var topRect = CGRectMake(30, 30, image.size.width, image.size.height);
var topString = NSString.alloc().initWithString(topText);
topString.drawInRectWithFont(topRect, font);
```

This my dear is

What modules are made of

Tell me about MVVM
38
or else...

Model

View

ViewModel

Model

= DATA

Model

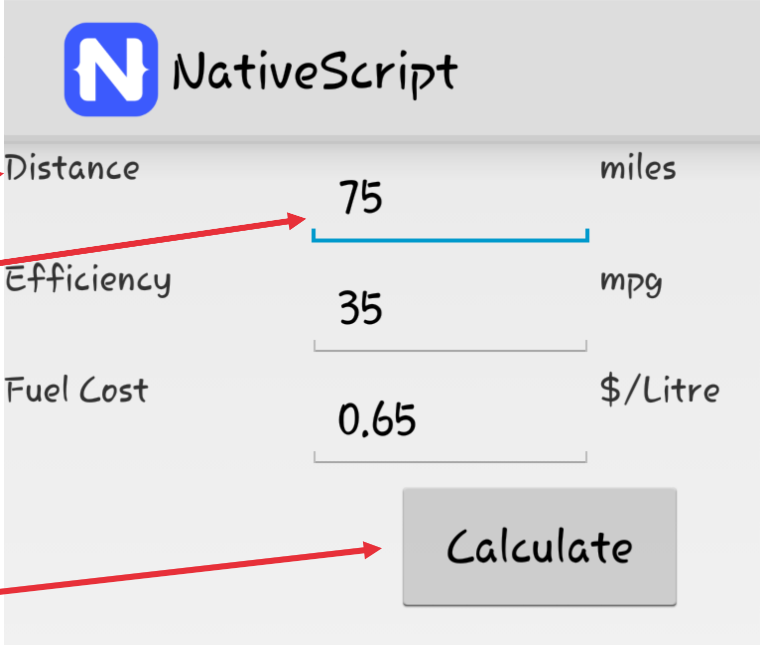
Files
Lorem ipsum dolor sit amet.
Consectetuer adipiscing elit. Cras non nunc nec
enim tristique tincidunt. Vestibulum quis tellus.
Duis nulla. Donec luctus urna. Sed tempus nibh
id massa. Vivamus placerat justo quis nibh. Ut
quis ante. Ut sollicitudin quam eu mi. Donec
molestie purus sit amet

View

= UI

View

```
<Page navigatedTo="loadCalculatorView">
    <StackLayout>
            <Label text="Distance" width="100"/>
            <TextField text="{{distance}}" width="100"/>
            <Label text="miles" />
            <Label text="Efficiency"  width="100" />
            <TextField text="{{efficiency}}" width="100"/>
            <Label text="mpg" />
             {…}
             <Button tap="calculate" text="Calculate" width="100"/>
    </StackLayout>
</Page>
```



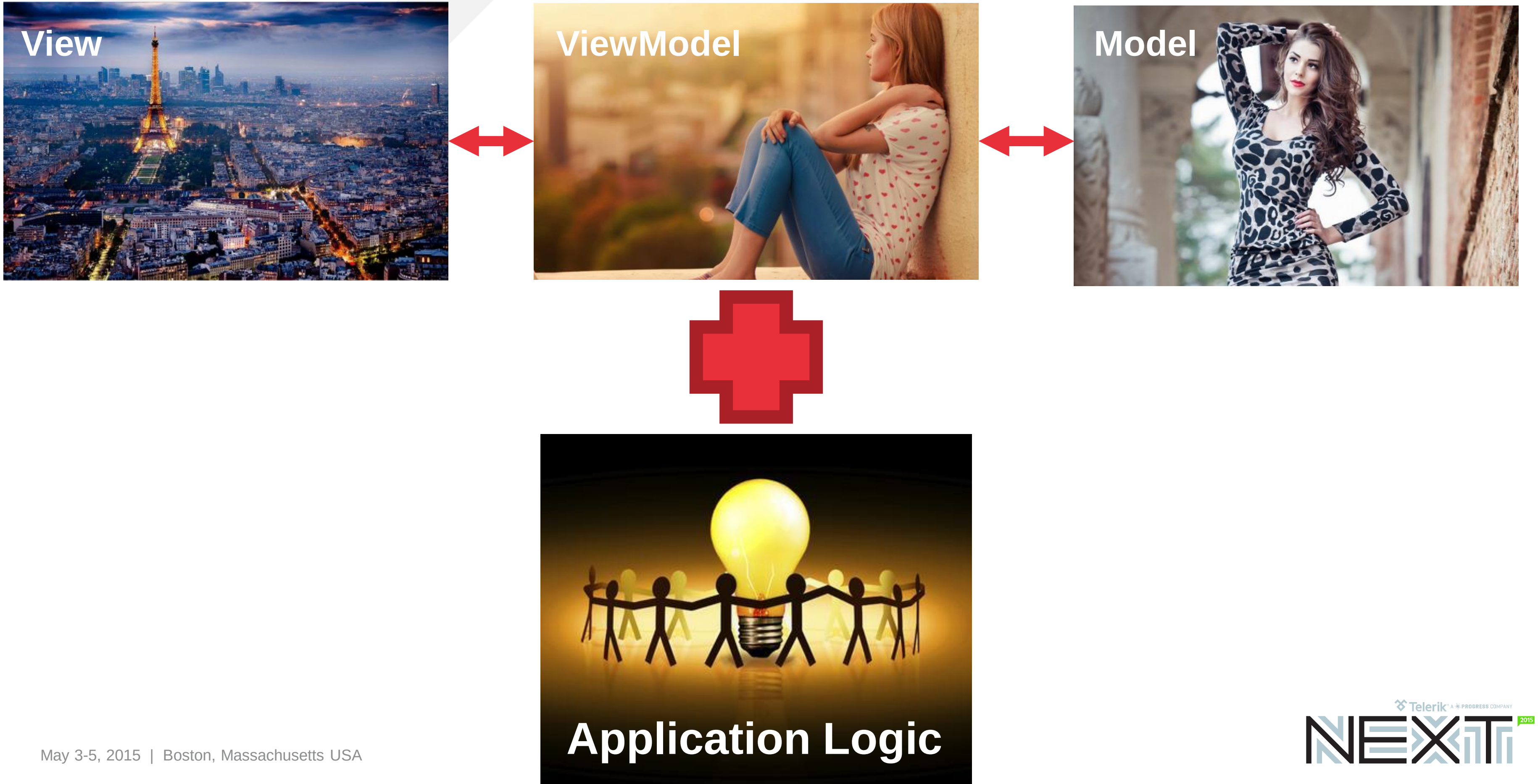
NativeScript

Distance 75 miles

Efficiency 35 mpg

Fuel Cost 0.65 $/Litre

Connects



View

ViewModel

Model

Application Logic

Bindings

View: XML

Property Bindings:

```
<Label text="{{currentCard}}" />
```

Expression Bindings

```
<Label text="{{score + ' ('+ streak +')  '}}" />
```

Action Bindins

```
<Button text="Lower" tap="{{ goLower }}"/>
```

ViewModel: JavaScript

```
var viewModel = new
observable.Observable();
```

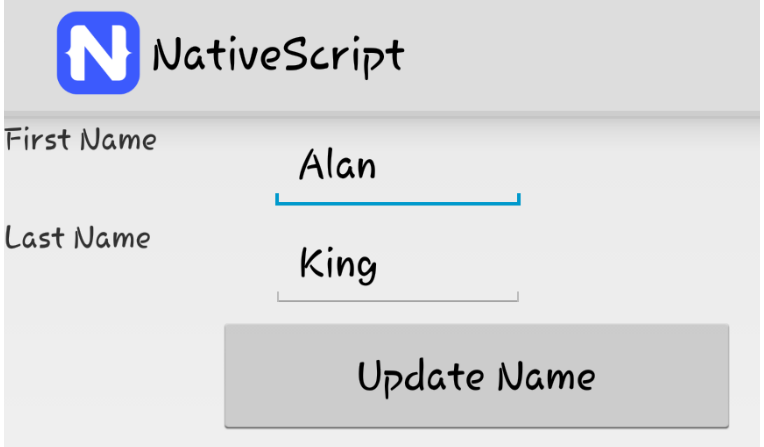
```
viewModel.set("{{currentCard}}", "5");
```

```
viewModel.set("{{streak}}", "0");
```

```
viewModel.goLower = function() {
  //Do go lower here
}
```

To set or not to set

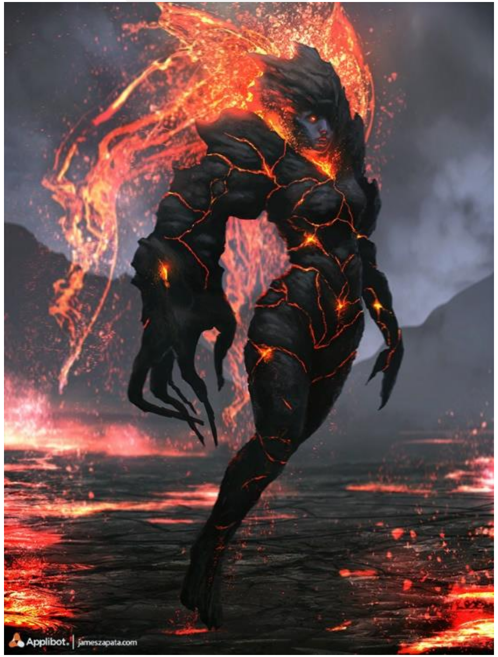
```
viewModel.updateName() {
  this.firstName = "Jack";
          //vs
  this.set("lastName", "King");
}
```



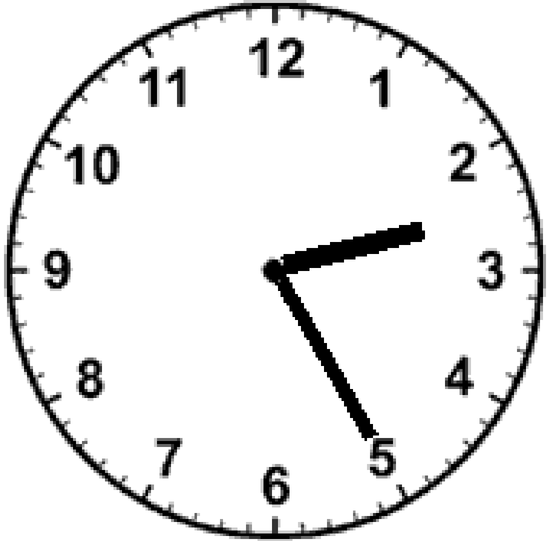
First Name: Alan

Last Name: King

Demo Time



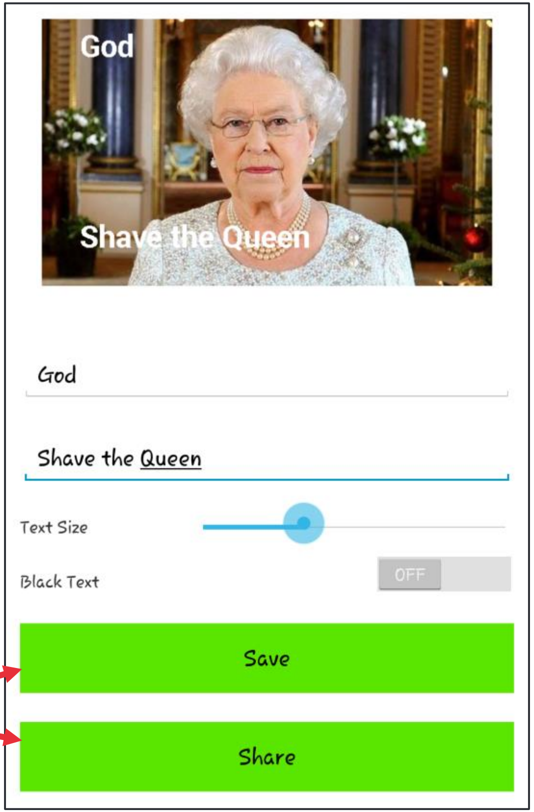
~~N~~ +



Understanding users

OR

How much would you give to know?



God

Shave the Queen

Text Size

Black Text OFF

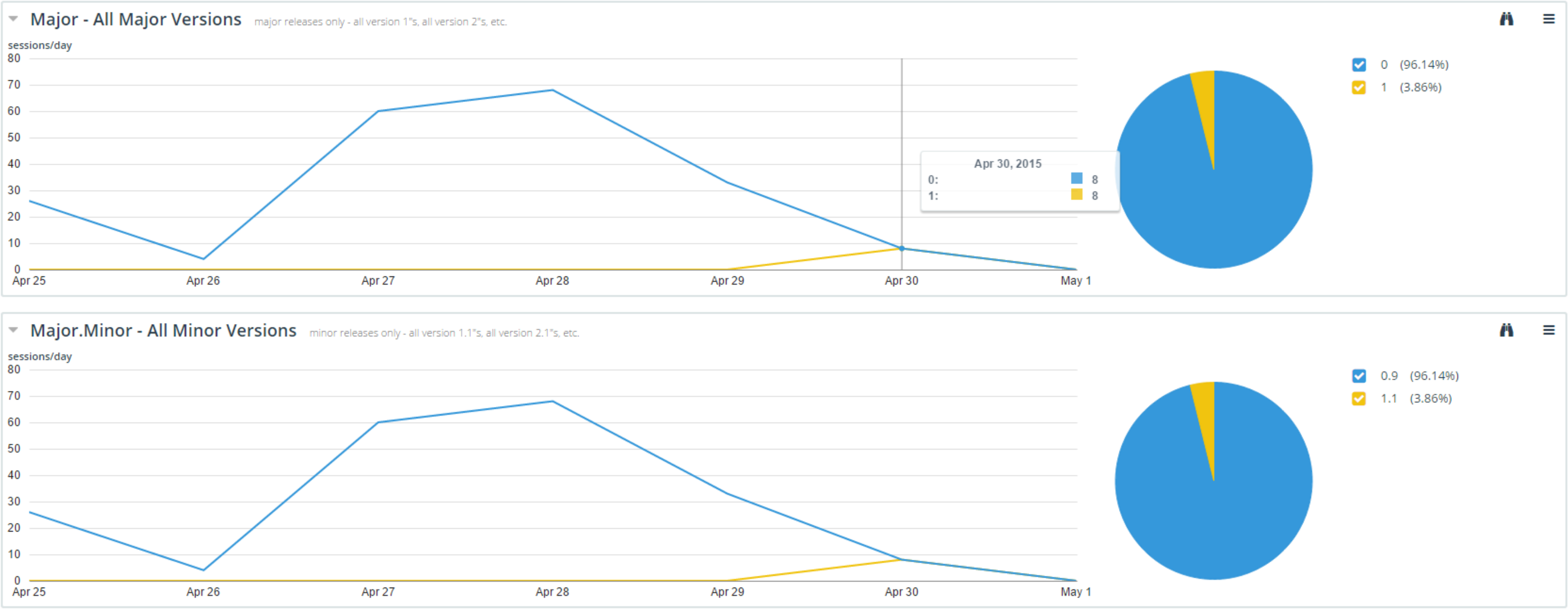
?

Setup

```
var NativeScriptMonitor =
require('./NativeScriptMonitor').Monitor;

var monitor = new NativeScriptMonitor({
    productId: ‘e4680536-g543-8gjd-bs98-0dj4dj-2hd467',
    version: '1.2.3'
});
```

Versions



Major - All Major Versions major releases only - all version 1"s, all version 2"s, etc.

Major.Minor - All Minor Versions minor releases only - all version 1.1"s, all version 2.1"s, etc.

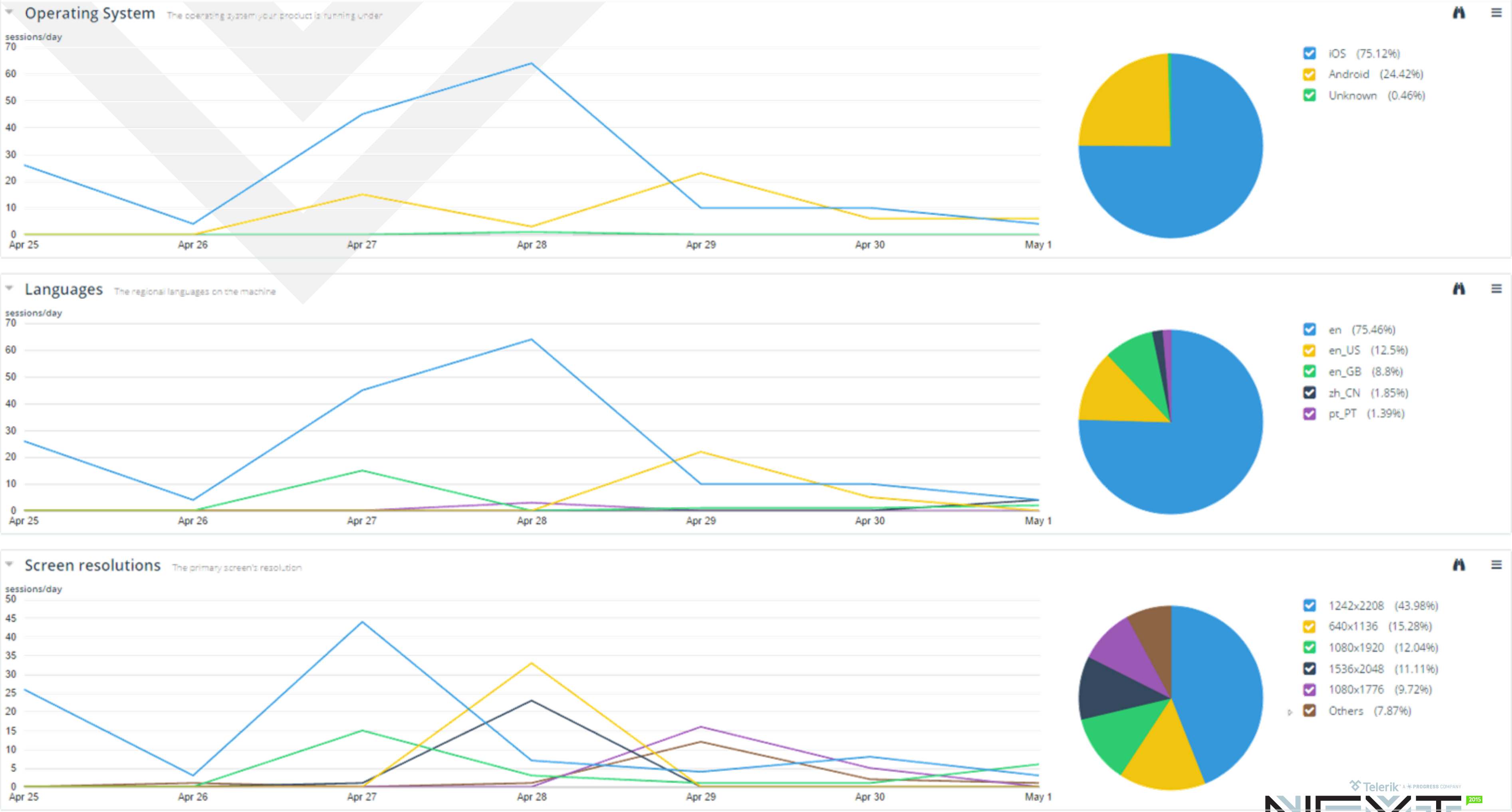
Manage Session

When Application starts

```
monitor.start();
```

Before App Closes

```
monitor.stop();
```



Operating System The operating system your product is running under

Languages The regional languages on the machine

Screen resolutions The primary screen's resolution

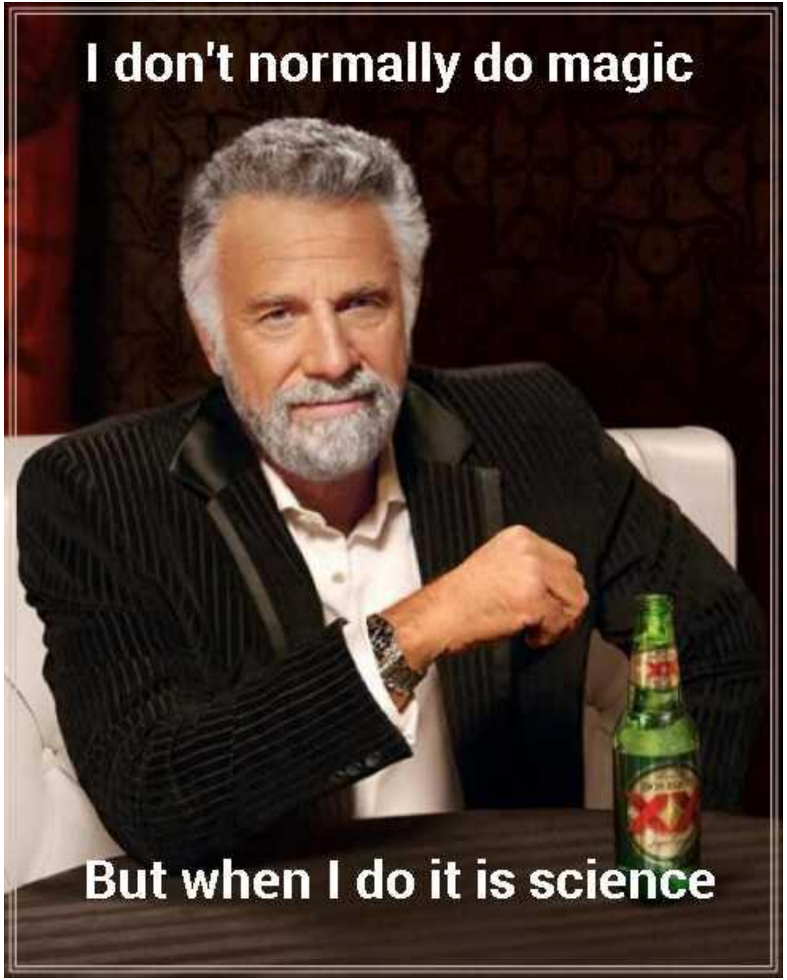
Track Feature Usage: Magic

```
function saveLocally() {
    //saveLocally code here
    monitor.trackFeature('CreateMeme.SaveLocally');
}
function share() {
    //saveLocally code here
    monitor.trackFeature('CreateMeme.Share');
}
```

Track Feature Usage: Magic

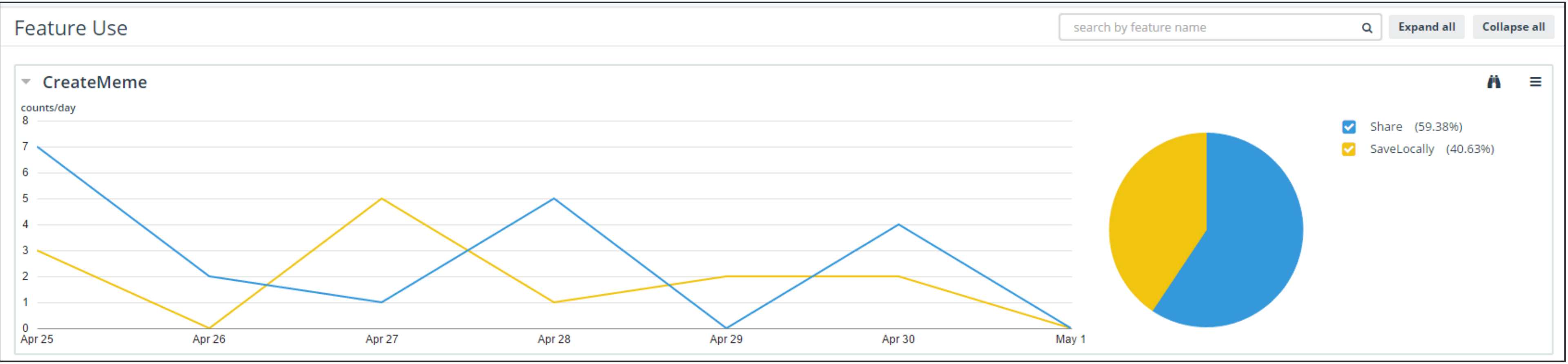
```
function saveLocally() {
    //saveLocally code here
    monitor.trackFeature('CreateMeme.SaveLocally');
}
function share() {
    //saveLocally code here
    monitor.trackFeature('CreateMeme.Share');
}
```

Your own namespace



I don't normally do magic
But when I do it is science

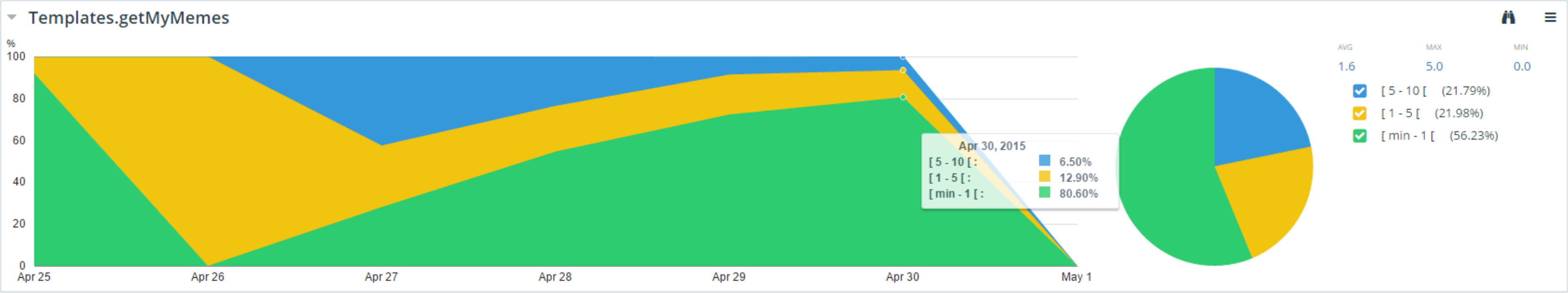
Track Feature Usage: Science



Track Values: Magic

```
function loadMemes() {
 localStorage.getMyMemes()
.then(function (entities) {
    monitor.trackFeatureValue("Templates.getMyMemes", entities.length);
    //Do the rest here
  }
}
```

Track Values: Science



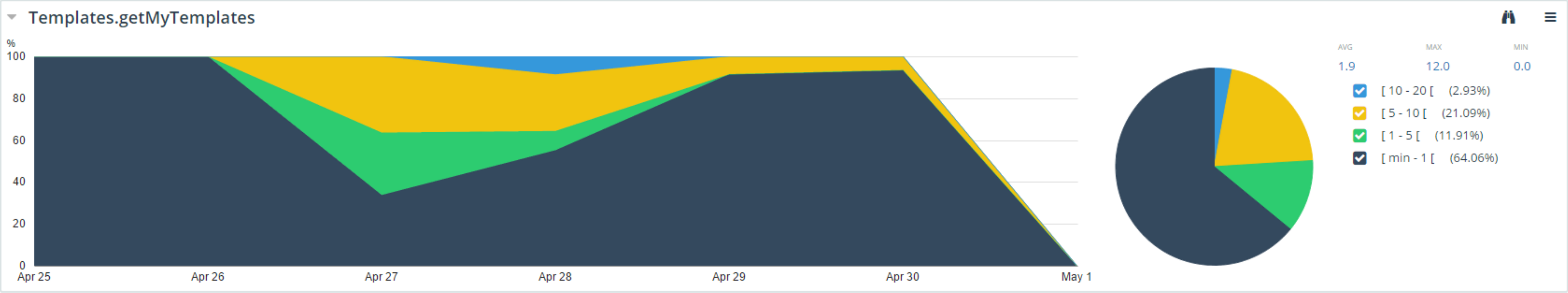
Templates.getMyMemes

AVG	MAX	MIN
1.6	5.0	0.0

- ☑ [5 - 10 [(21.79%)
- ☑ [1 - 5 [(21.98%)
- ☑ [min - 1 [(56.23%)

Apr 30, 2015

[5 - 10 [:	🟦	6.50%
[1 - 5 [:	🟨	12.90%
[min - 1 [:	🟩	80.60%



Templates.getMyTemplates

AVG	MAX	MIN
1.9	12.0	0.0

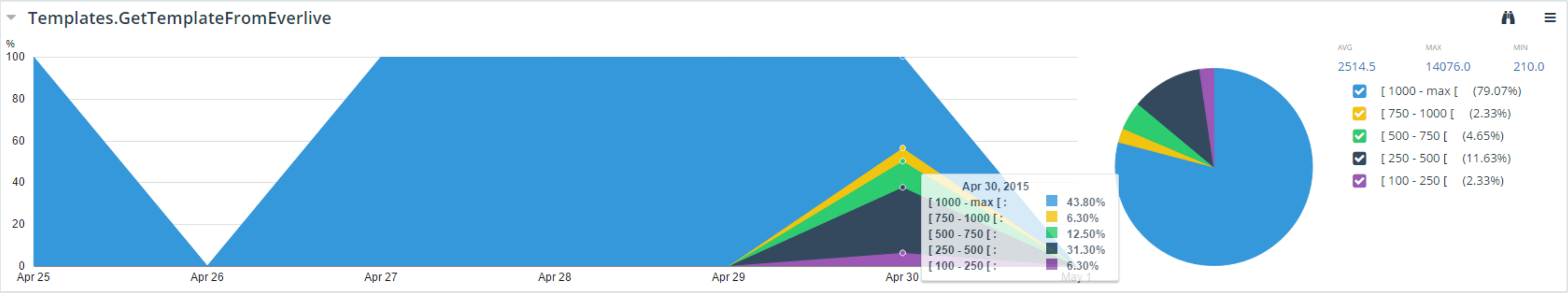
- ☑ [10 - 20 [(2.93%)
- ☑ [5 - 10 [(21.09%)
- ☑ [1 - 5 [(11.91%)
- ☑ [min - 1 [(64.06%)

Track Performance: Magic

```
function getTemplates() {
  monitor.trackFeatureStart('Templates.GetFromEverlive');

  loadTemplates()
  .then( function() {
    //When Finished
    monitor.trackFeatureStop('Templates.GetFromEverlive');
  }
}
```

Track Performance : Science



Templates.GetTemplateFromEverlive

Apr 30, 2015

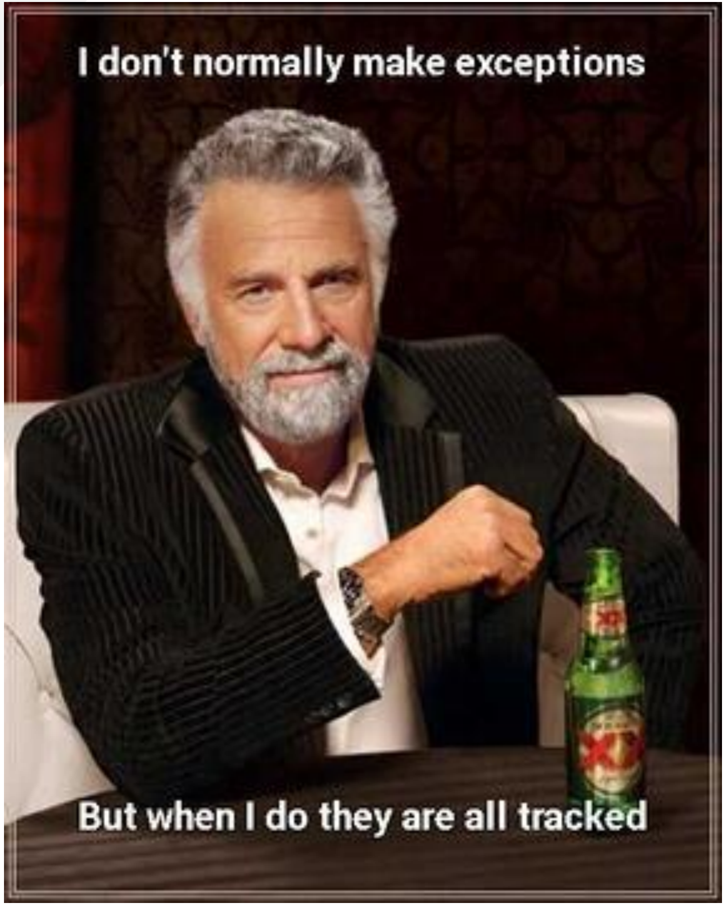
[1000 - max [:	43.80%
[750 - 1000 [:	6.30%
[500 - 750 [:	12.50%
[250 - 500 [:	31.30%
[100 - 250 [:	6.30%

AVG	MAX	MIN
2514.5	14076.0	210.0

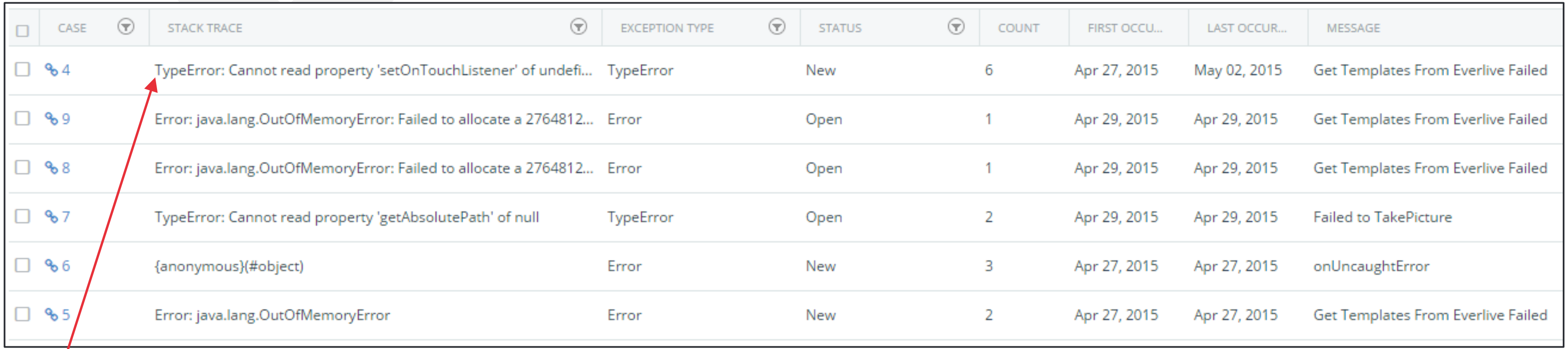
- ☑ [1000 - max [(79.07%)
- ☑ [750 - 1000 [(2.33%)
- ☑ [500 - 750 [(4.65%)
- ☑ [250 - 500 [(11.63%)
- ☑ [100 - 250 [(2.33%)

Track Exceptions: Magic

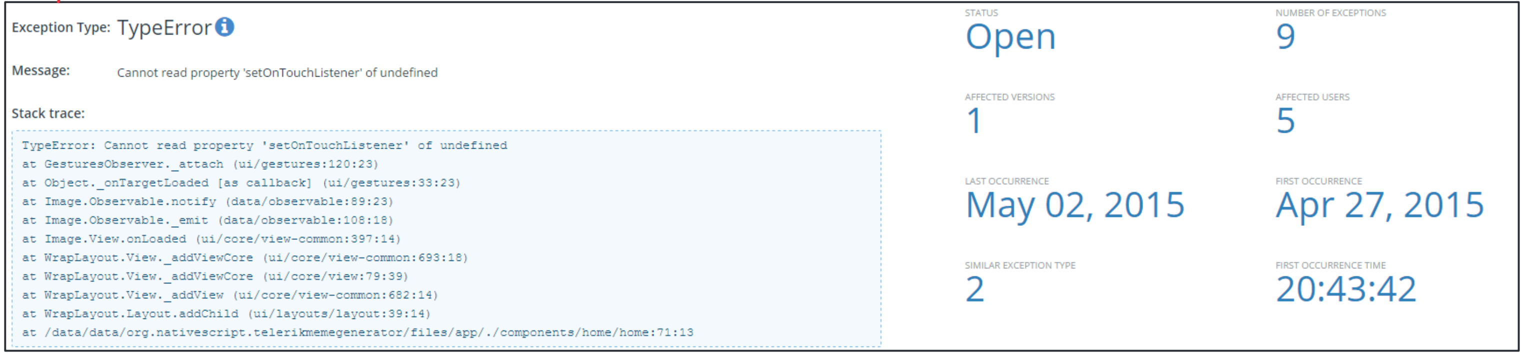
```
try {
    doSomething();
}
catch(exception) {
    monitor.trackException(exception, 'error message');
}
```


I don't normally make exceptions
But when I do they are all tracked

Track Exceptions: Science



□	CASE	STACK TRACE	EXCEPTION TYPE	STATUS	COUNT	FIRST OCCU...	LAST OCCUR...	MESSAGE
□	4	TypeError: Cannot read property 'setOnTouchListener' of undefi...	TypeError	New	6	Apr 27, 2015	May 02, 2015	Get Templates From Everlive Failed
□	9	Error: java.lang.OutOfMemoryError: Failed to allocate a 2764812...	Error	Open	1	Apr 29, 2015	Apr 29, 2015	Get Templates From Everlive Failed
□	8	Error: java.lang.OutOfMemoryError: Failed to allocate a 2764812...	Error	Open	1	Apr 29, 2015	Apr 29, 2015	Get Templates From Everlive Failed
□	7	TypeError: Cannot read property 'getAbsolutePath' of null	TypeError	Open	2	Apr 29, 2015	Apr 29, 2015	Failed to TakePicture
□	6	{anonymous}(#object)	Error	New	3	Apr 27, 2015	Apr 27, 2015	onUncaughtError
□	5	Error: java.lang.OutOfMemoryError	Error	New	2	Apr 27, 2015	Apr 27, 2015	Get Templates From Everlive Failed



Exception Type: TypeError

Message: Cannot read property 'setOnTouchListener' of undefined

Stack trace:

```
TypeError: Cannot read property 'setOnTouchListener' of undefined
at GesturesObserver._attach (ui/gestures:120:23)
at Object._onTargetLoaded [as callback] (ui/gestures:33:23)
at Image.Observable.notify (data/observable:89:23)
at Image.Observable._emit (data/observable:108:18)
at Image.View.onLoaded (ui/core/view-common:397:14)
at WrapLayout.View._addViewCore (ui/core/view-common:693:18)
at WrapLayout.View._addViewCore (ui/core/view:79:39)
at WrapLayout.View._addView (ui/core/view-common:682:14)
at WrapLayout.Layout.addChild (ui/layouts/layout:39:14)
at /data/data/org.nativescript.telerikmemegenerator/files/app/./components/home/home:71:13
```

STATUS: Open

NUMBER OF EXCEPTIONS: 9

AFFECTED VERSIONS: 1

AFFECTED USERS: 5

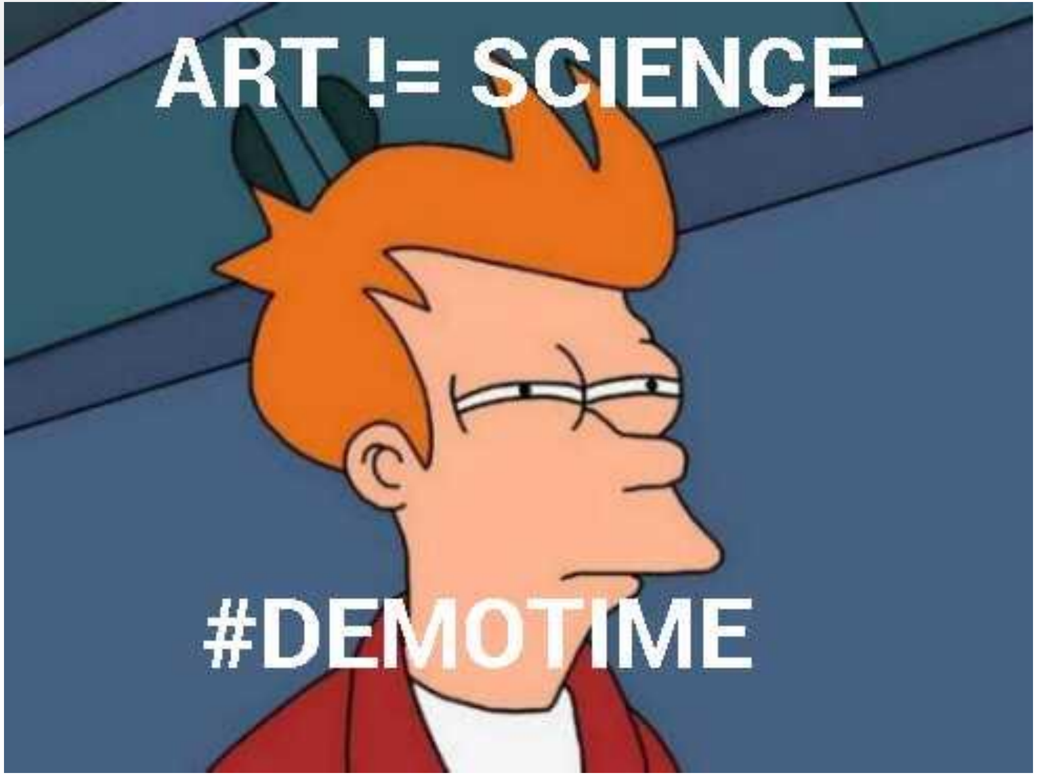
LAST OCCURRENCE: May 02, 2015

FIRST OCCURRENCE: Apr 27, 2015

SIMILAR EXCEPTION TYPE: 2

FIRST OCCURRENCE TIME: 20:43:42

The Art of Science



Questions?

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Thank you!