



Magic vs Science

Telerik Next's {N} Workshop

Sebastian Witalec

More Science Than Magic



JavaScript Virtual Machine



Google V8 JavaScript Engine



Webkit JavaScript Core

NATIVE

Native APIs



accesses native objects

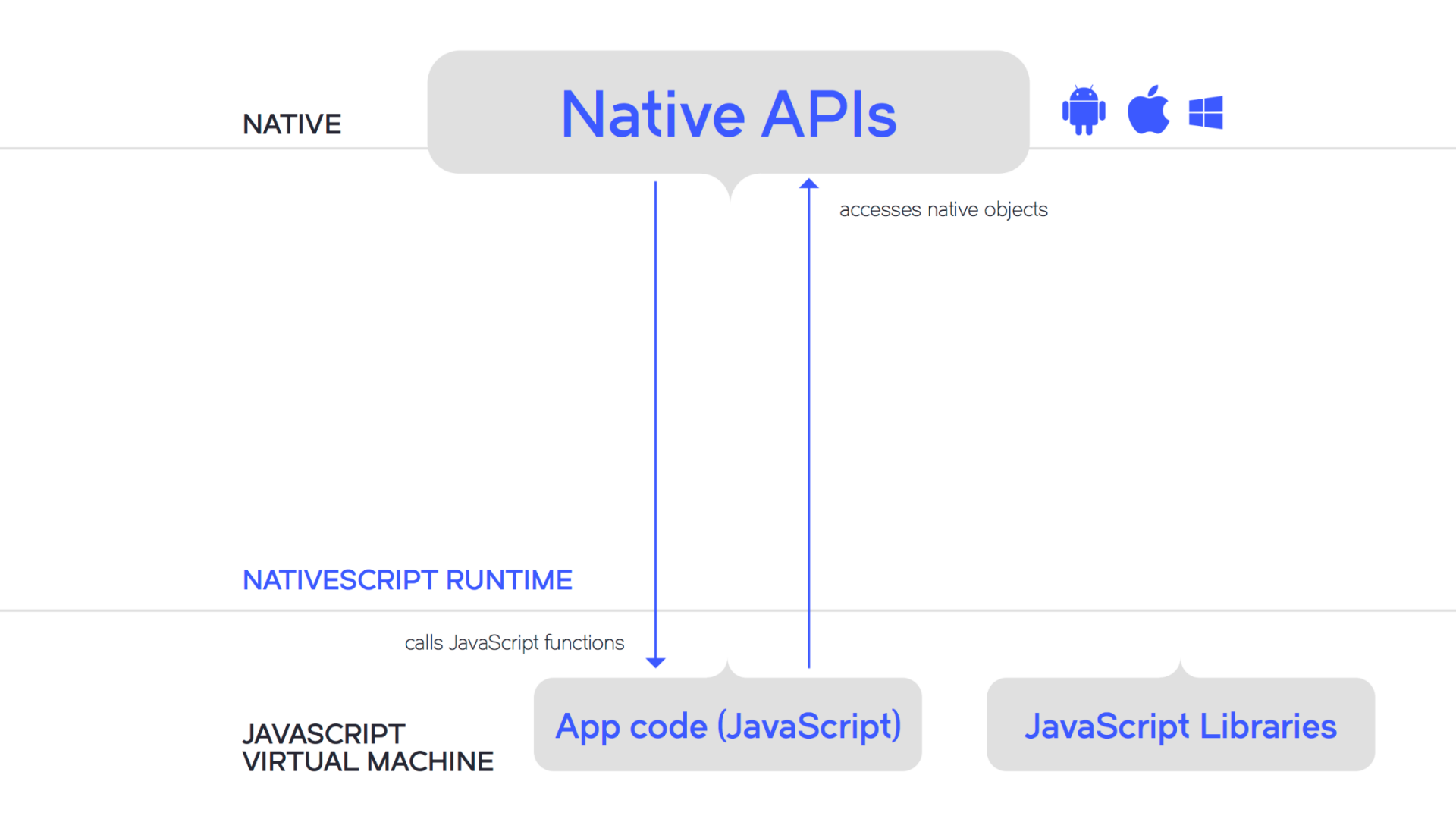
NATIVESCRIPT RUNTIME

calls JavaScript functions

JAVASCRIPT
VIRTUAL MACHINE

App code (JavaScript)

JavaScript Libraries



NATIVE

Native APIs



accesses native objects

Metadata

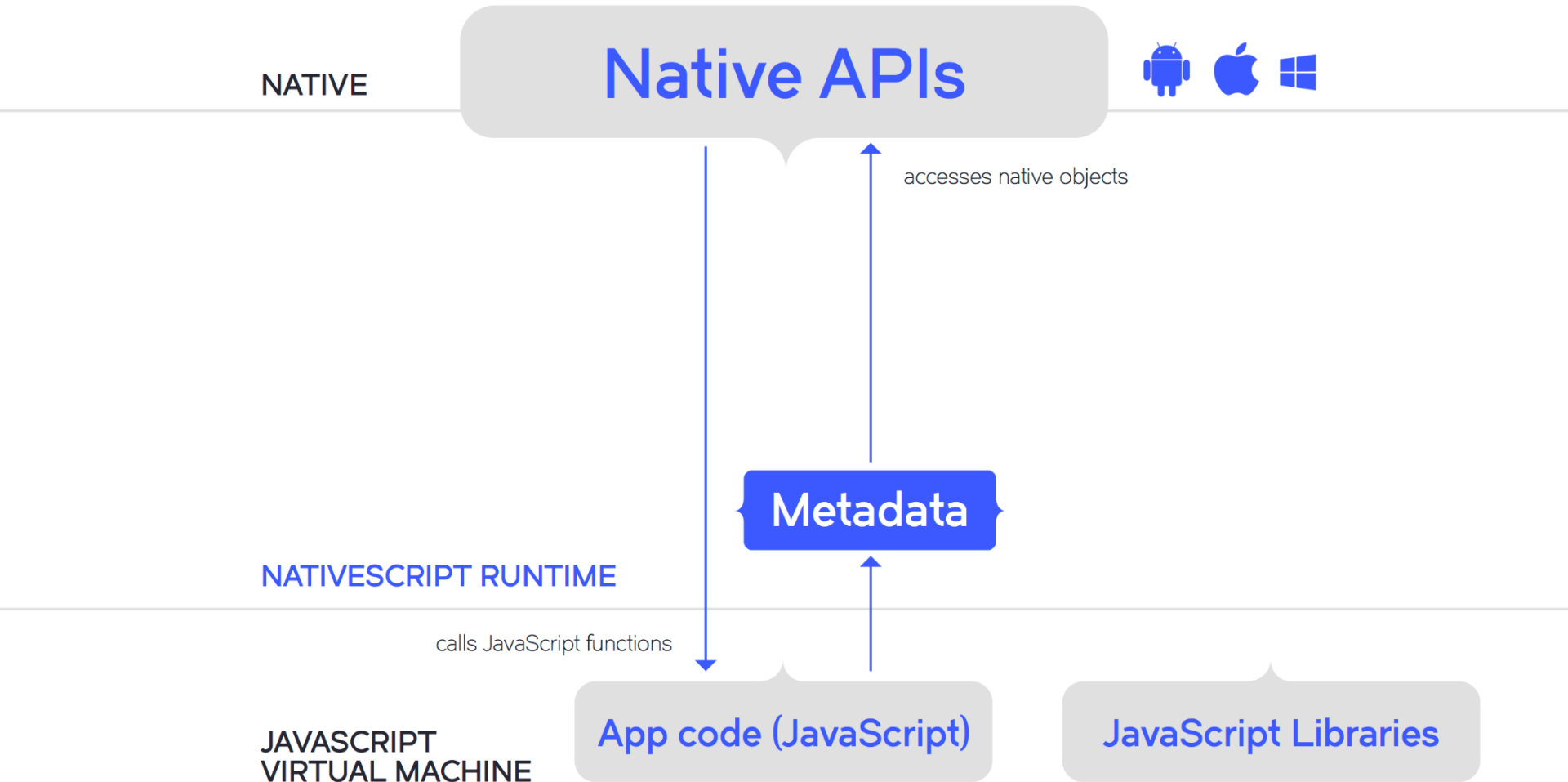
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NATIVE

Native APIs



accesses native objects

Type conversion

Metadata

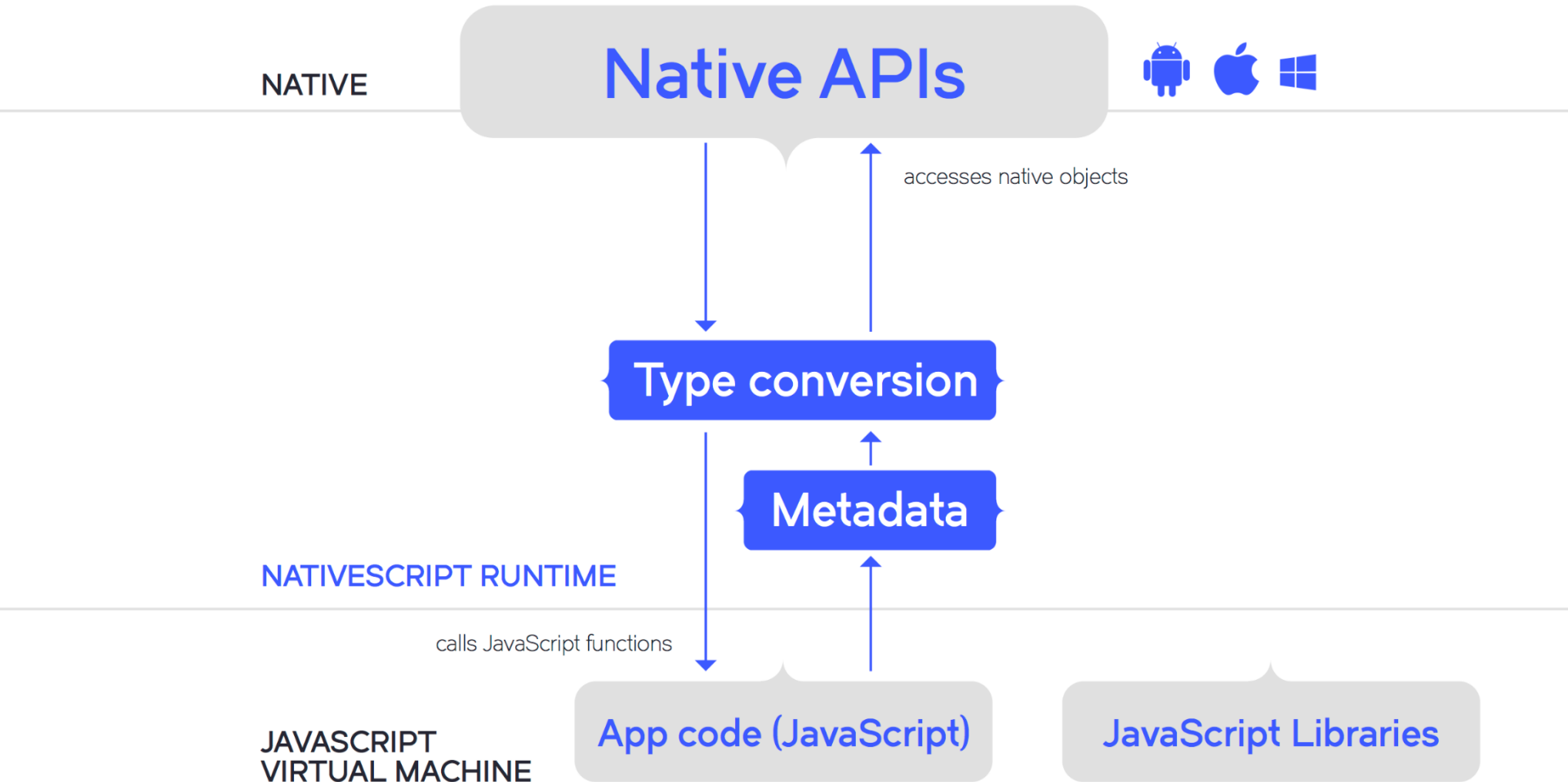
NATIVESCRIPT RUNTIME

calls JavaScript functions

JAVASCRIPT
VIRTUAL MACHINE

App code (JavaScript)

JavaScript Libraries



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

V8 JavaScript Engine

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

Type Conversion Service

Native
Android

java.lang.String

Calling Android API

V8 JavaScript Engine

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

Type Conversion Service

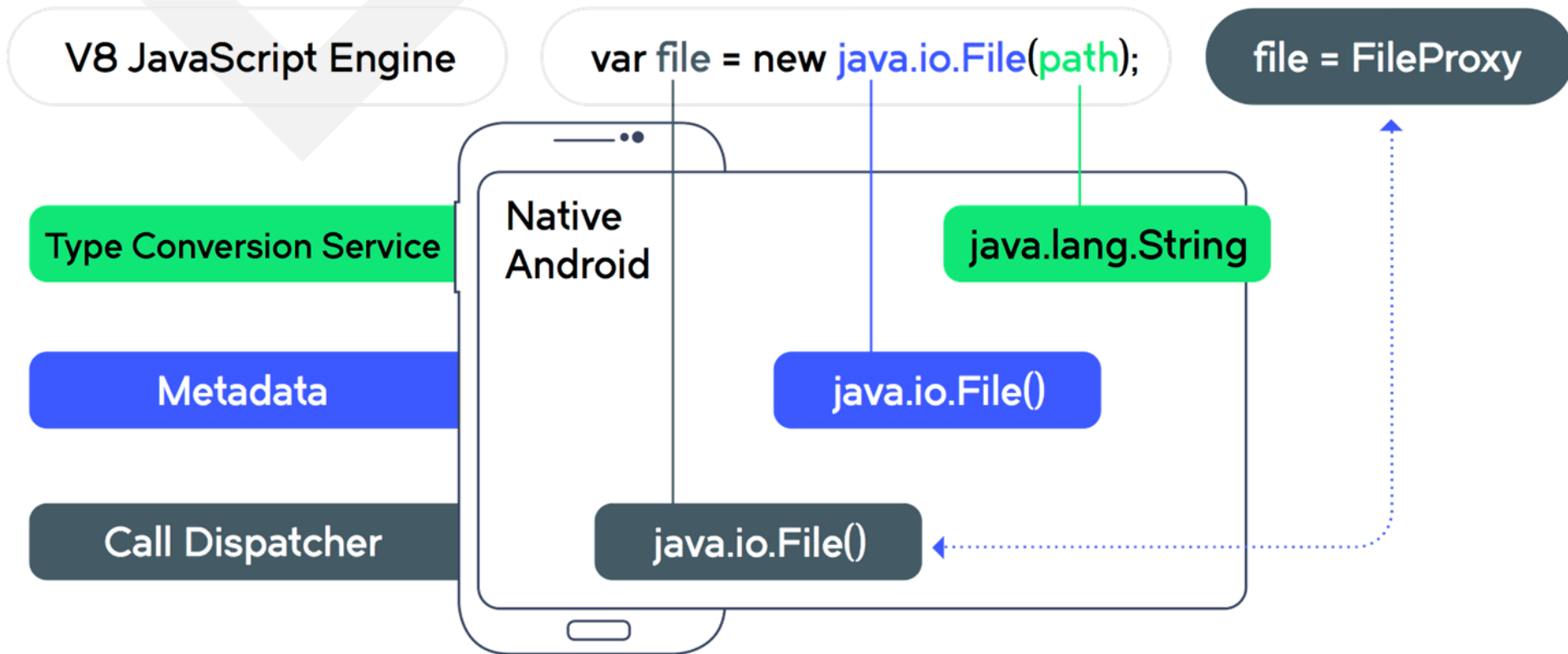
Native
Android

java.lang.String

Metadata

java.io.File()

Calling Android API



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



Model



View



ViewModel



Model



= DATA

Model



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

Calculate

Connects



Bindings

View: XML

Property Bindings:

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

Expression Bindings

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

Action Bindings

```
<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");  
}
```



NativeScript

First Name

Alan

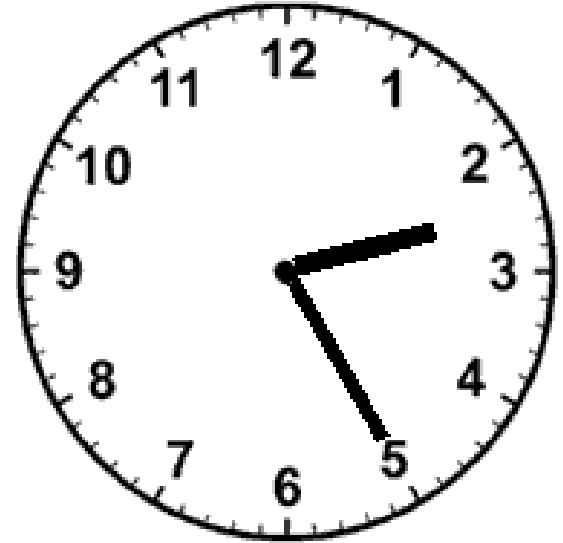
Last Name

King

Update Name

Demo

Time



Understanding users

Magic



OR

Science



How much would you give to know?

God

Shave the Queen

God

Shave the Queen

Text Size

Black Text OFF

Save

Share

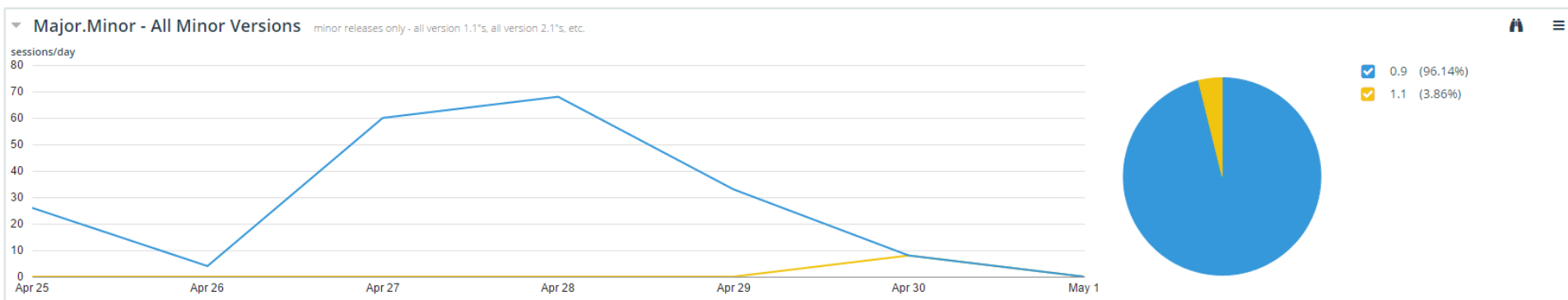
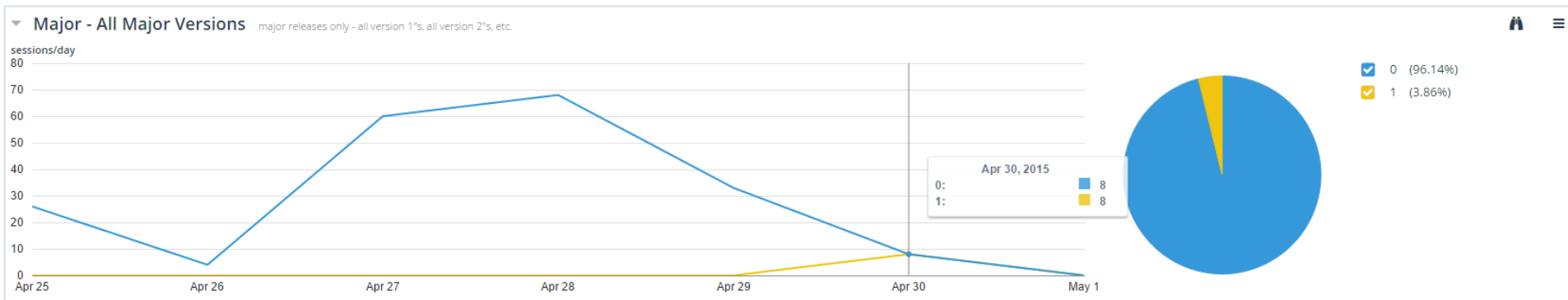
?

Setup

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

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

Versions



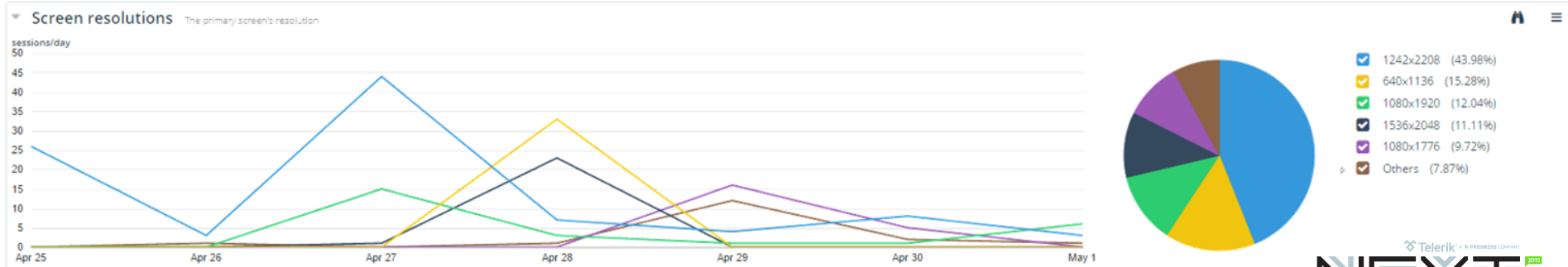
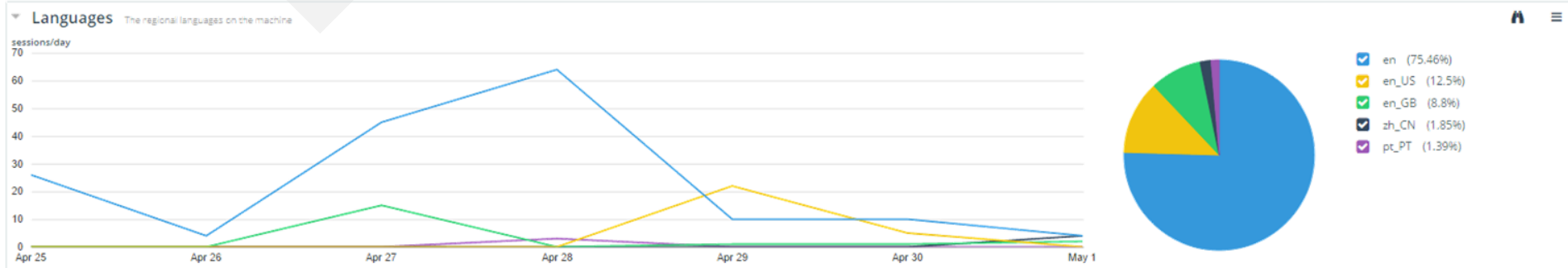
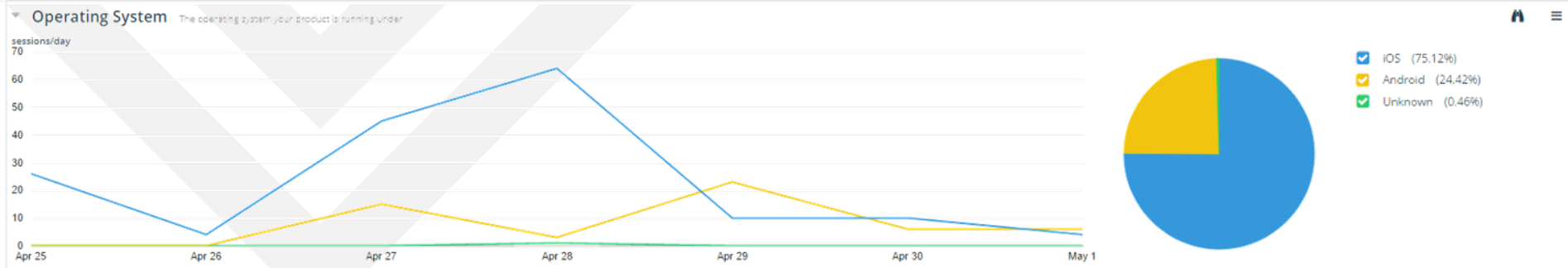
Manage Session

When Application starts

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

Before App Closes

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

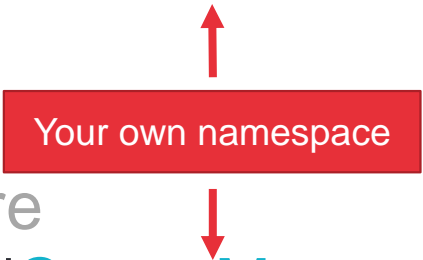



Track Feature Usage: Magic

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

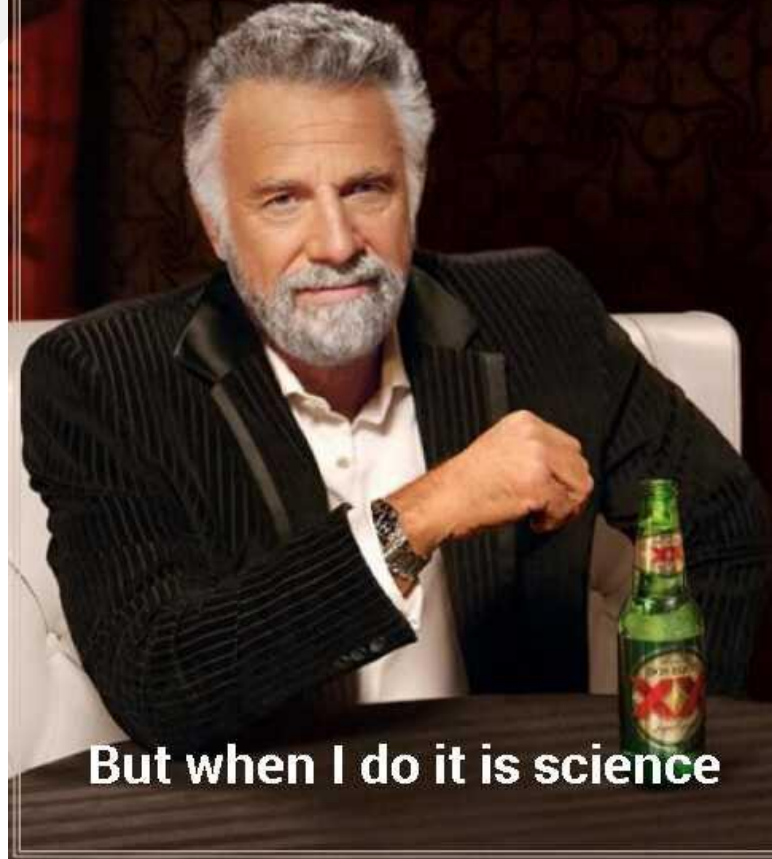
Track Feature Usage: Magic

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



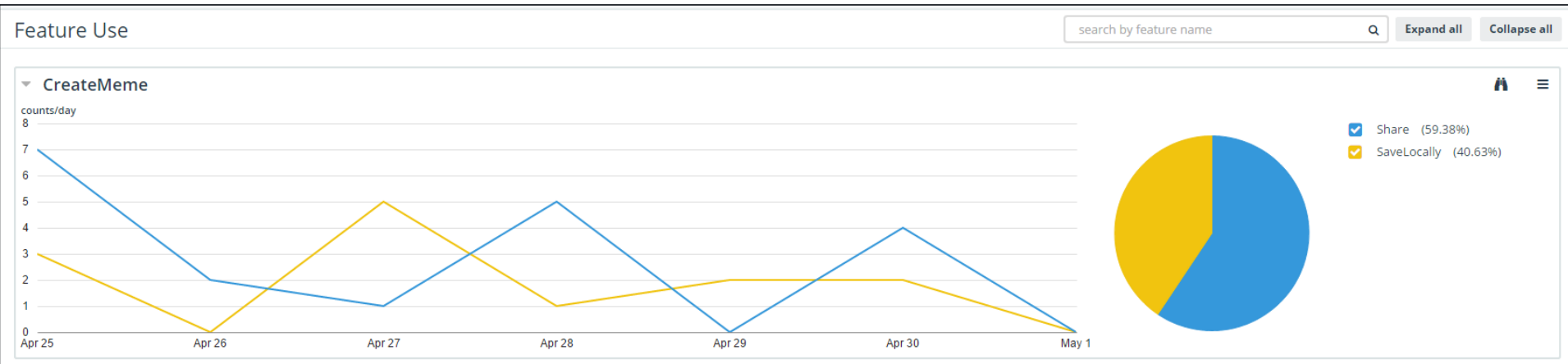
A red rectangular box labeled "Your own namespace" is positioned between the two function calls. A red arrow points upwards from the box to the "CreateMeme" part of the first function call, and another red arrow points downwards from the box to the "CreateMeme" part of the second function call.

I don't normally do magic



But when I do it is science

Track Feature Usage: Science

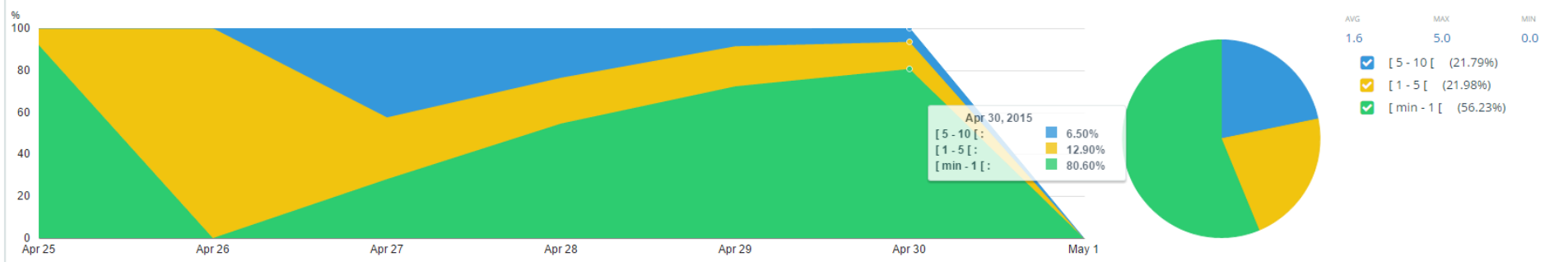


Track Values: Magic

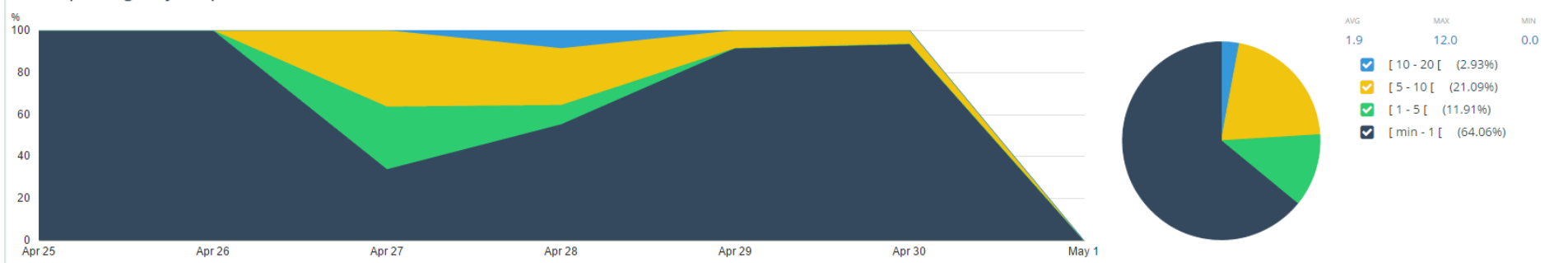
```
function loadMemes() {  
  localStorage.getMyMememes()  
  .then(function (entities) {  
    monitor.trackFeatureValue("Templates.getMyMememes", entities.length);  
    //Do the rest here  
  }  
}
```

Track Values: Science

▼ Templates.getMyMemes



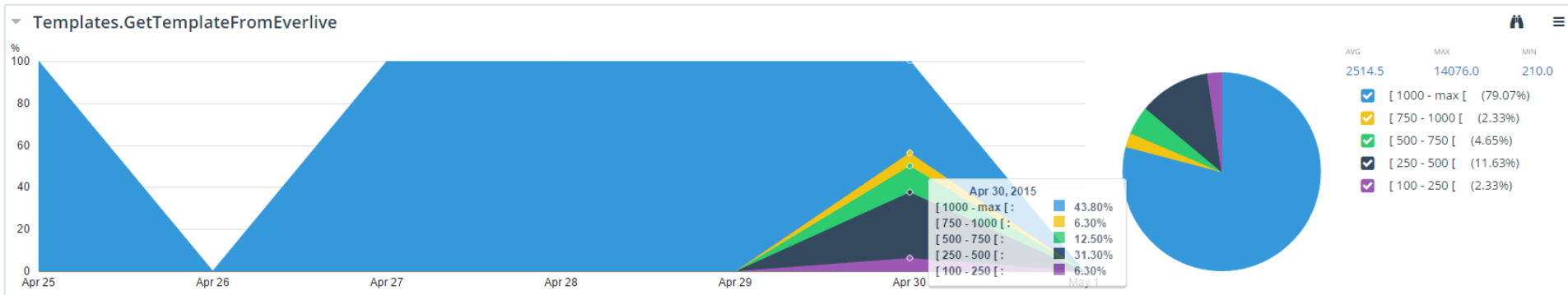
▼ Templates.getMyTemplates



Track Performance: Magic

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


Track Performance : Science



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

<input type="checkbox"/>	CASE	STACK TRACE	EXCEPTION TYPE	STATUS	COUNT	FIRST OCCU...	LAST OCCUR...	MESSAGE
<input type="checkbox"/>	4	TypeError: Cannot read property 'setOnTouchListener' of undefi...	TypeError	New	6	Apr 27, 2015	May 02, 2015	Get Templates From Everlive Failed
<input type="checkbox"/>	9	Error: java.lang.OutOfMemoryError: Failed to allocate a 2764812...	Error	Open	1	Apr 29, 2015	Apr 29, 2015	Get Templates From Everlive Failed
<input type="checkbox"/>	8	Error: java.lang.OutOfMemoryError: Failed to allocate a 2764812...	Error	Open	1	Apr 29, 2015	Apr 29, 2015	Get Templates From Everlive Failed
<input type="checkbox"/>	7	TypeError: Cannot read property 'getAbsolutePath' of null	TypeError	Open	2	Apr 29, 2015	Apr 29, 2015	Failed to TakePicture
<input type="checkbox"/>	6	{anonymous}(){#object}	Error	New	3	Apr 27, 2015	Apr 27, 2015	onUncaughtError
<input type="checkbox"/>	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.telerikxmemegenerator/files/app/.components/home/home:71:13
```

STATUS

Open

AFFECTED VERSIONS

1

LAST OCCURRENCE

May 02, 2015

SIMILAR EXCEPTION TYPE

2

NUMBER OF EXCEPTIONS

9

AFFECTED USERS

5

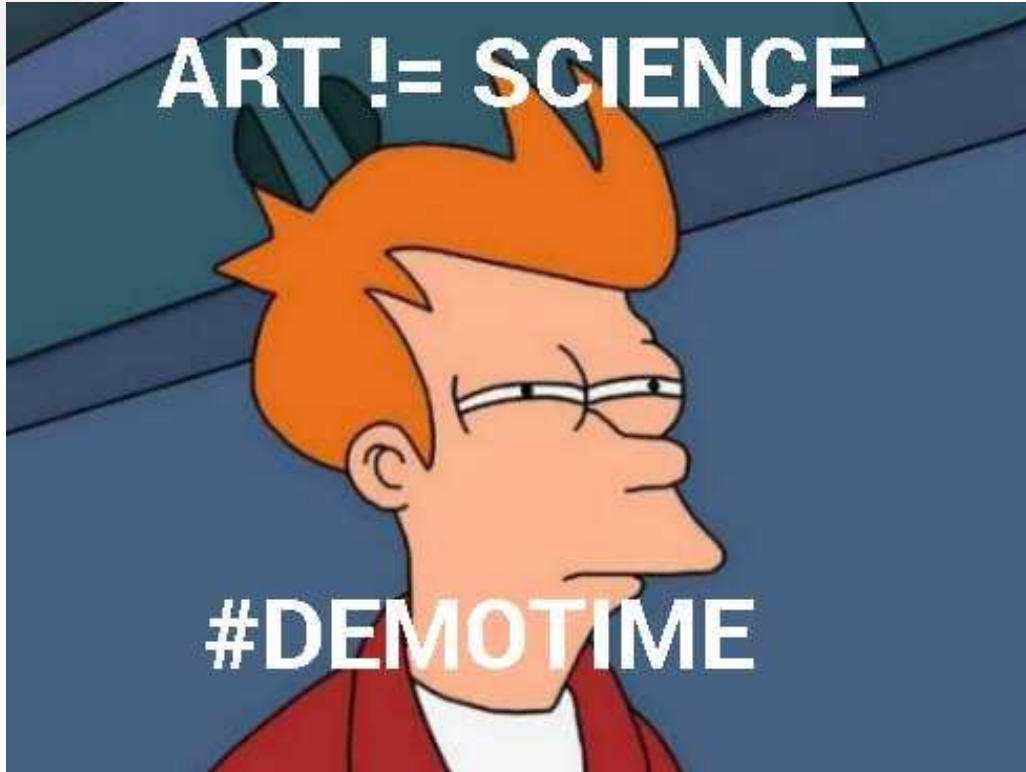
FIRST OCCURRENCE

Apr 27, 2015

FIRST OCCURRENCE TIME

20:43:42

The Art of Science



Questions?





Questions?

Thank you!