
AWESOME NATIVE APPS
WITH NATIVESCRIPT!

Rowdy Rabouw

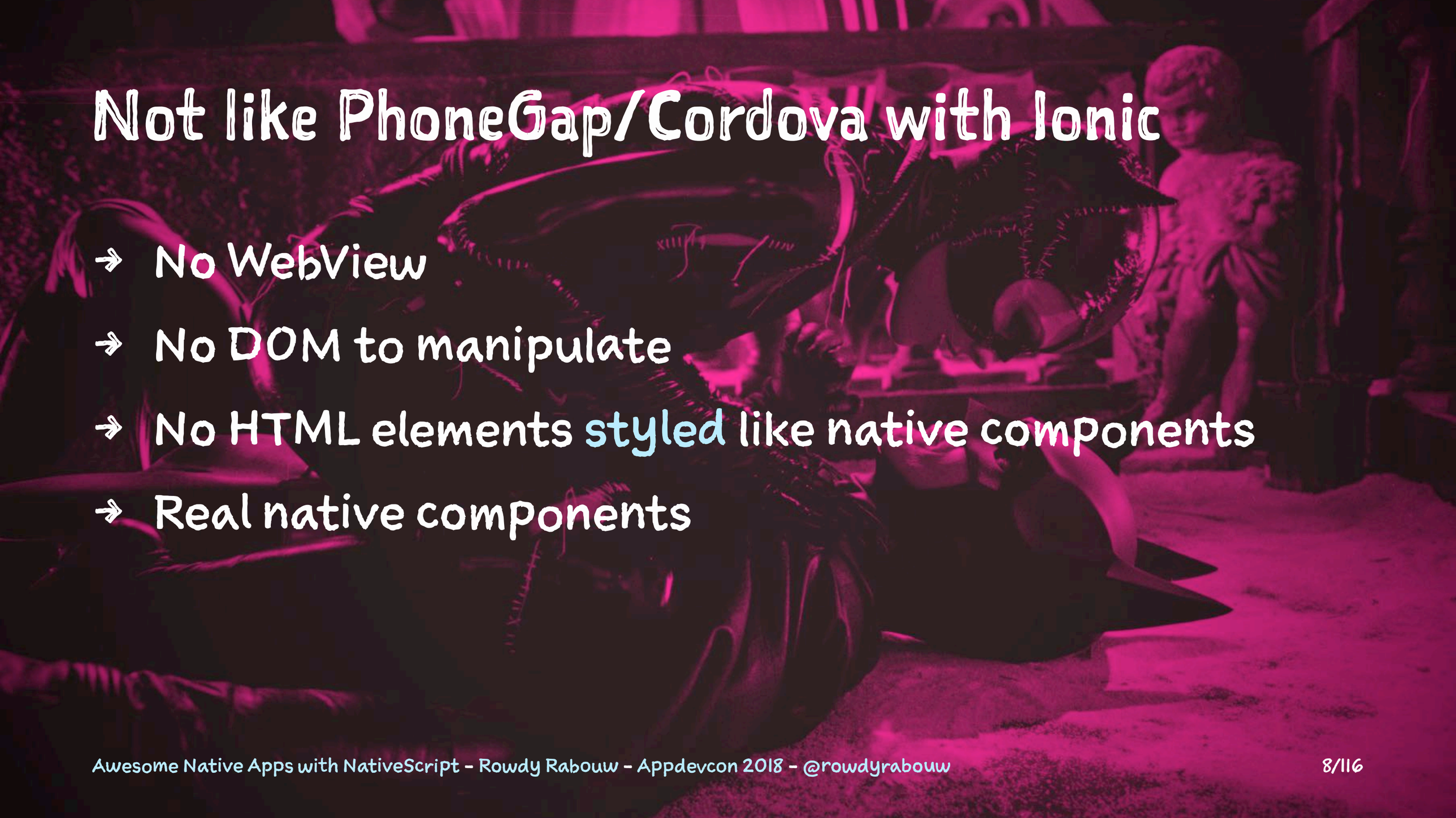
- Freelance web and app developer
- Lead developer Nationale-Nederlanden Pension App
- Progress Developer Expert for Nativescript
- Organizer NativeScript Developer Day Europe
- Curator nativescript.nl


NativeScript

NativeScript

- Open source framework for building truly native mobile apps with JavaScript
- together with markup (XML/HTML) and CSS
- and native code if you want and dare
- Cross Platform : one codebase for iOS and Android

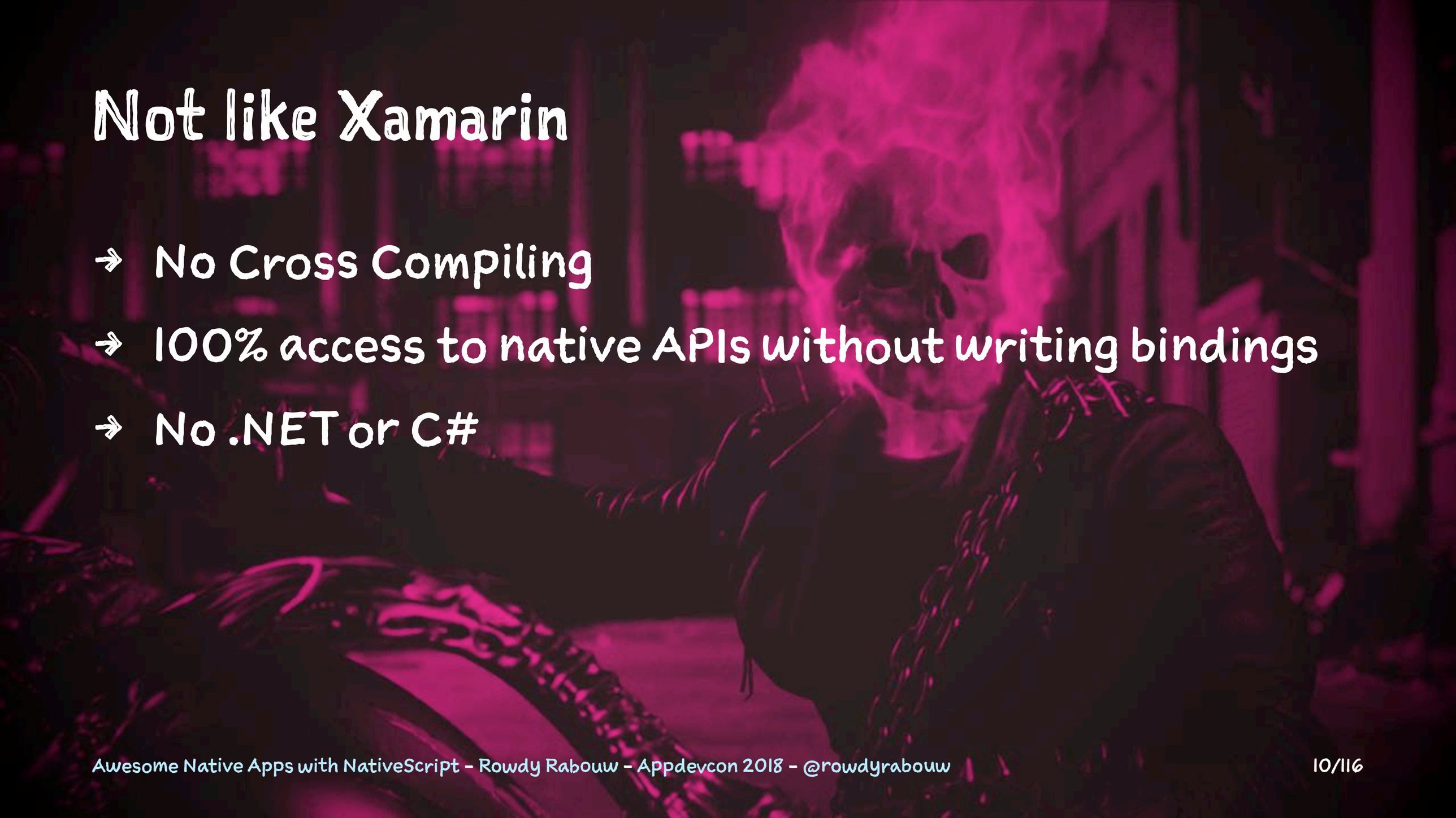

Not like
PhoneGap/Cordova
with Ionic



Not like PhoneGap/Cordova with Ionic

- No WebView
- No DOM to manipulate
- No HTML elements styled like native components
- Real native components


Not like
Xamarin



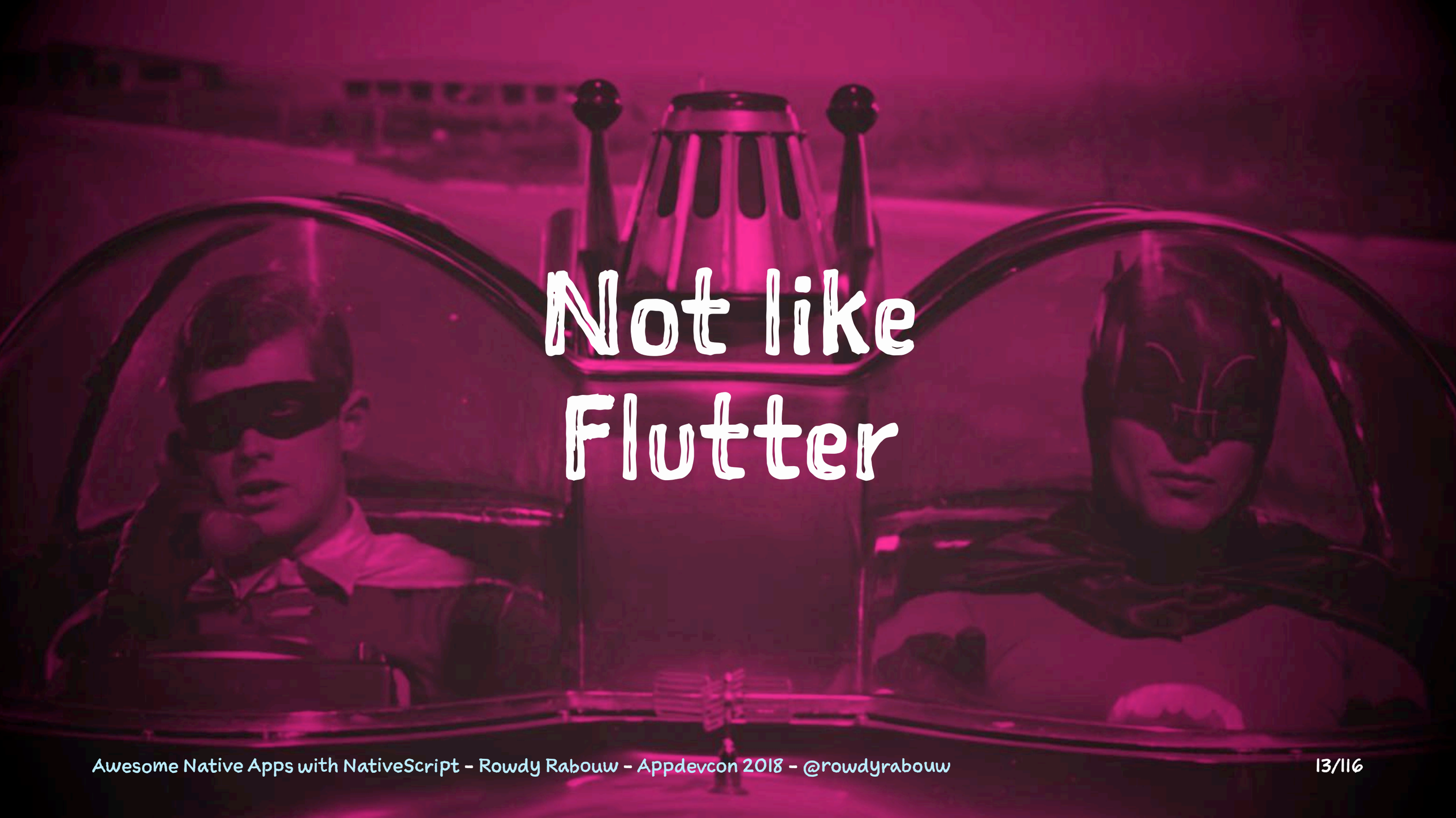
Not like Xamarin

- No Cross Compiling
- 100% access to native APIs without writing bindings
- No .NET or C#


Not like
React Native

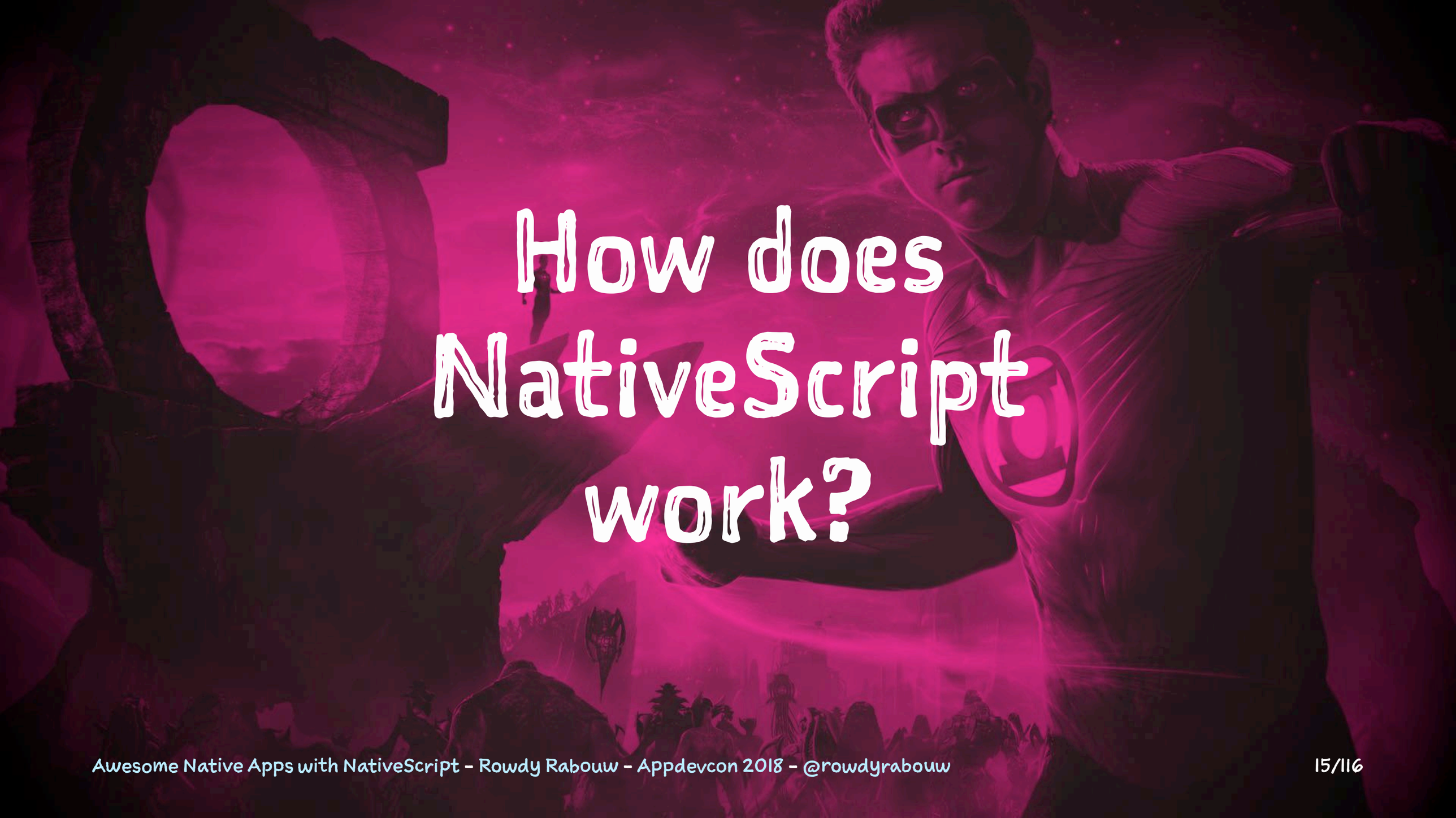
Not like React Native

- Not bound to a specific framework
- No need writing ObjectiveC, Swift or Java to access native APIs
- {N} JavaScript has 100% access to native APIs
- Maturity: 0.54 vs 3.4 (4.0 in April)
- No Hot Module Reloading yet (expected in 4.2 in July)

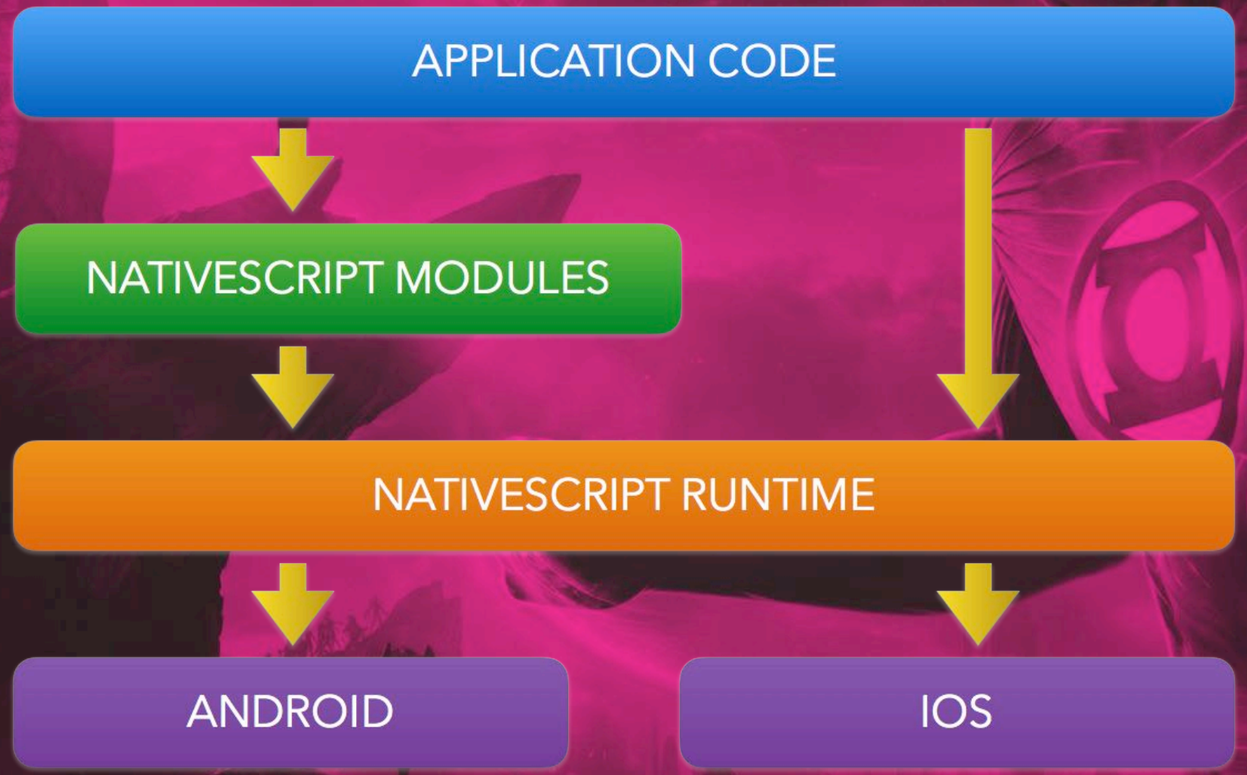

Not like
Flutter

Not like Flutter

- Not bound to a specific language (Dart)
- No Cross Compiling
- Maturity: 0.2.1 vs 3.4 (4.0 in April)
- No Hot Module Reloading yet (expected in 4.2 in July)

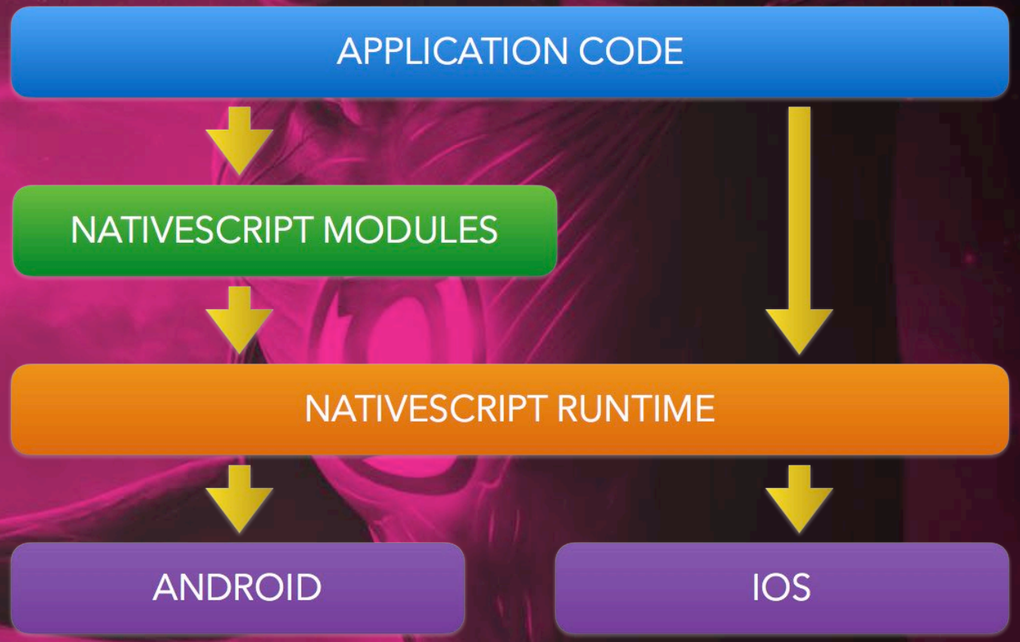

How does
NativeScript
work?

How does NativeScript work?



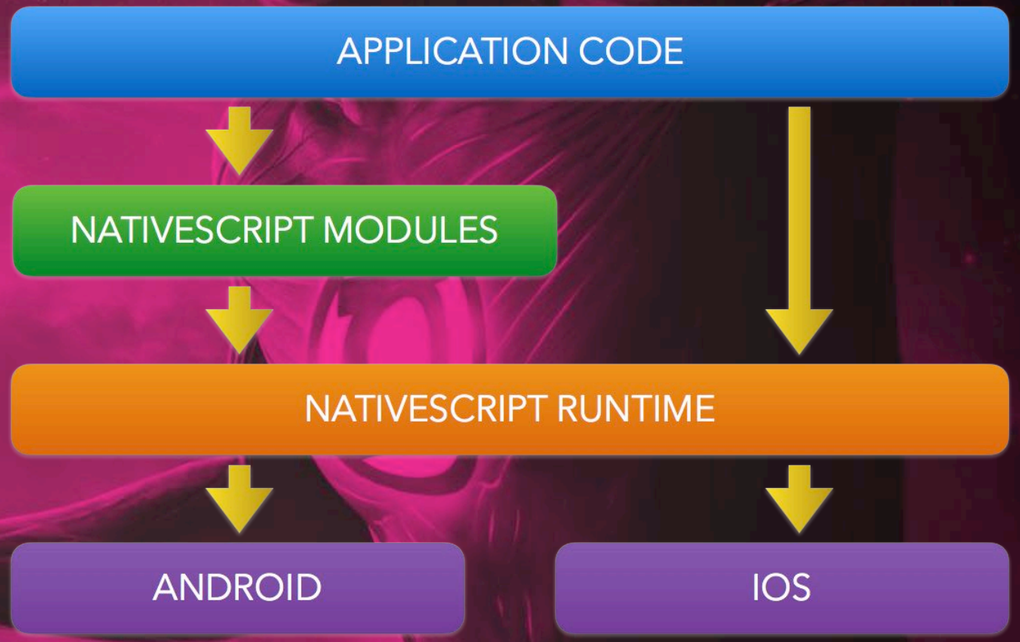
Application Code

- JavaScript code
- Page layouts in markup
- CSS for styling



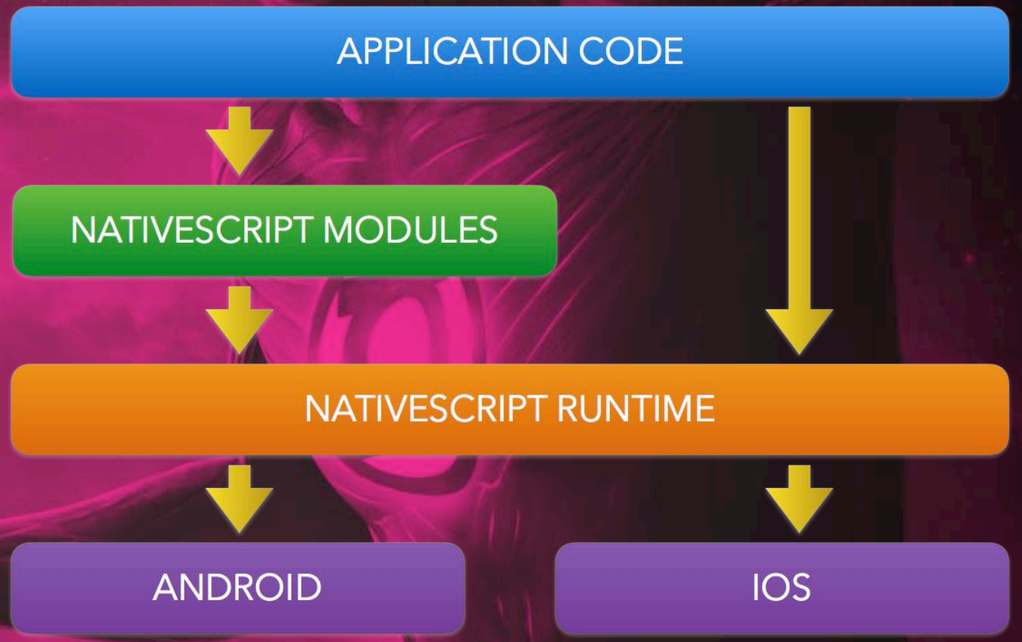
NativeScript Modules

- NativeScript Core
  - UI components
  - File system access
  - Platform information
- NativeScript Plugins
  - Camera
  - Bluetooth
  - Fingerprint Authentication



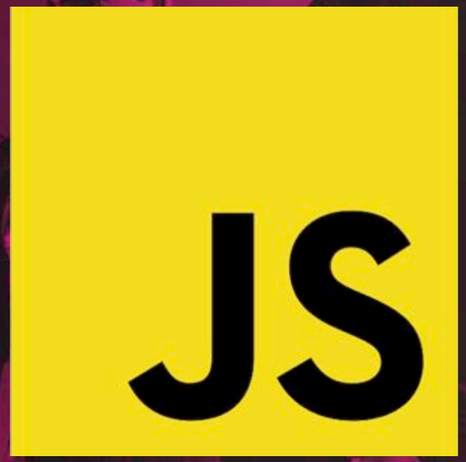
NativeScript Runtime

- Runs on JavaScript Virtual Machines
  - V8 (Android)
  - JavaScriptCore (iOS)
- Executes C++ code to invoke native code
- Uses reflection to generate metadata
  - Examines, introspects, and modifies its own structure and behavior at runtime
  - No separate binding layers between {N} and each mobile platform API
  - New features are available immediately

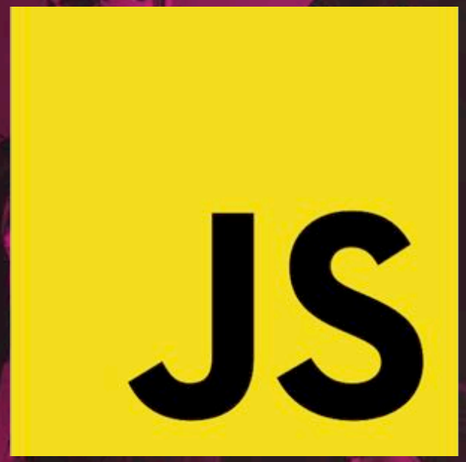


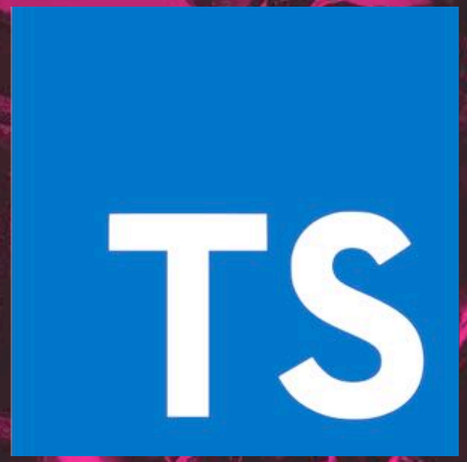

JavaScript

JavaScript

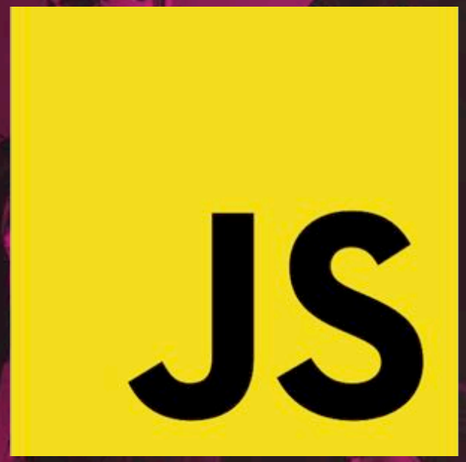


JavaScript

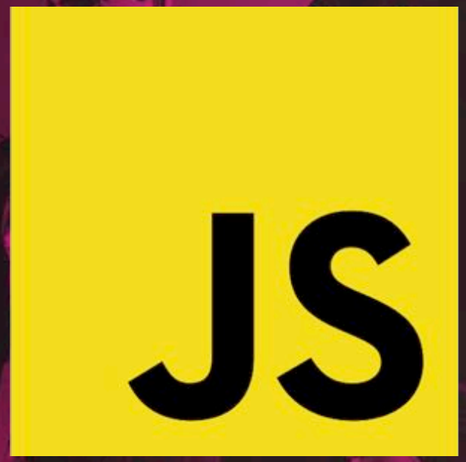




JavaScript

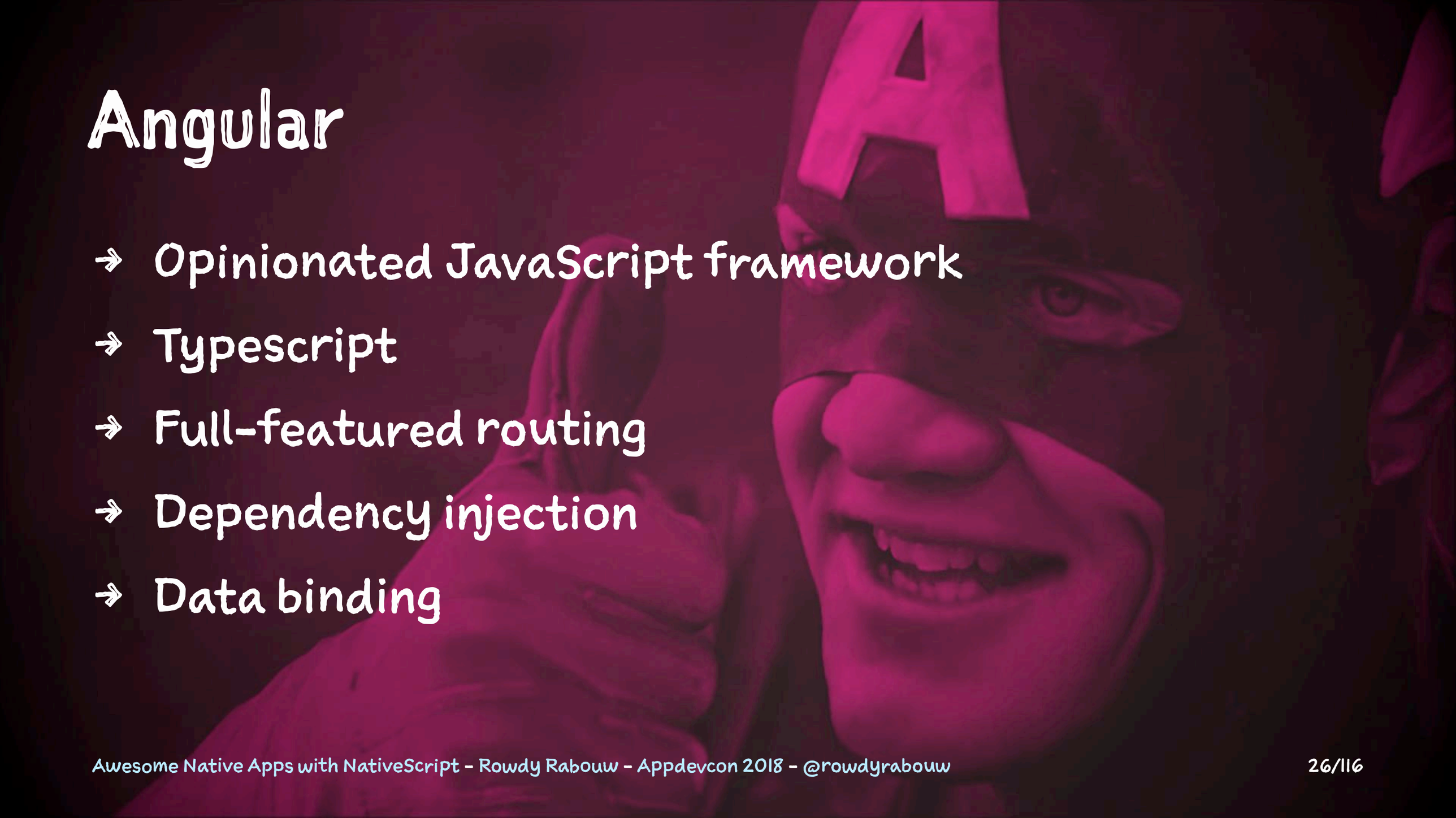


JavaScript




Angular

Angular



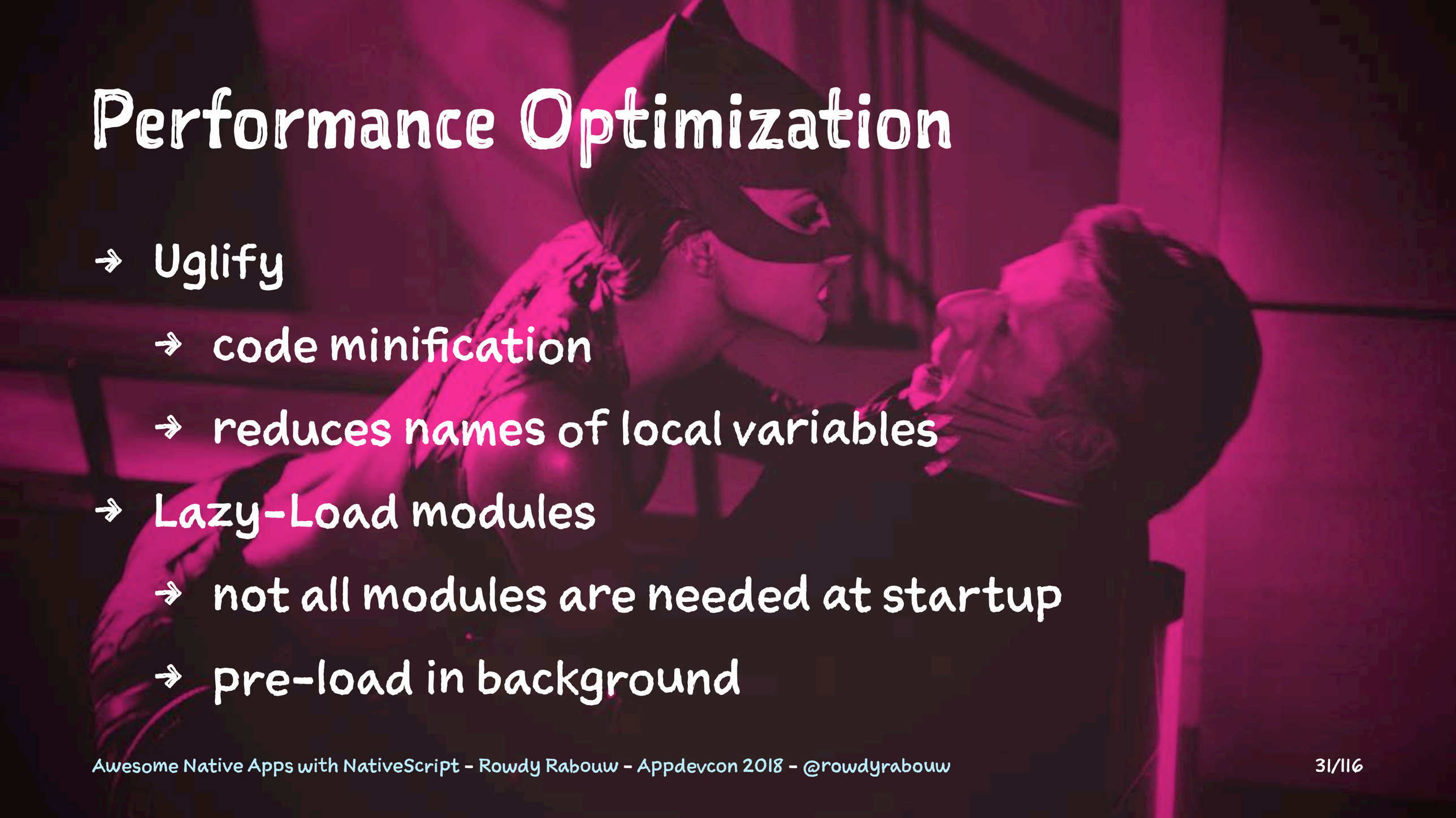
- Opinionated JavaScript framework
- Typescript
- Full-featured routing
- Dependency injection
- Data binding


AFV


Performance Optimization

Performance Optimization

- Webpack
  - traverses your source tree via module imports
  - only include modules that are used
- Ahead-of-Time compilation
  - pre-compiles application components and templates
  - Angular compiler not included in bundle



Performance Optimization

- Uglify
  - code minification
  - reduces names of local variables
- Lazy-Load modules
  - not all modules are needed at startup
  - pre-load in background


Cascading Style Sheets
(CSS)

Cascading Style Sheets (CSS)

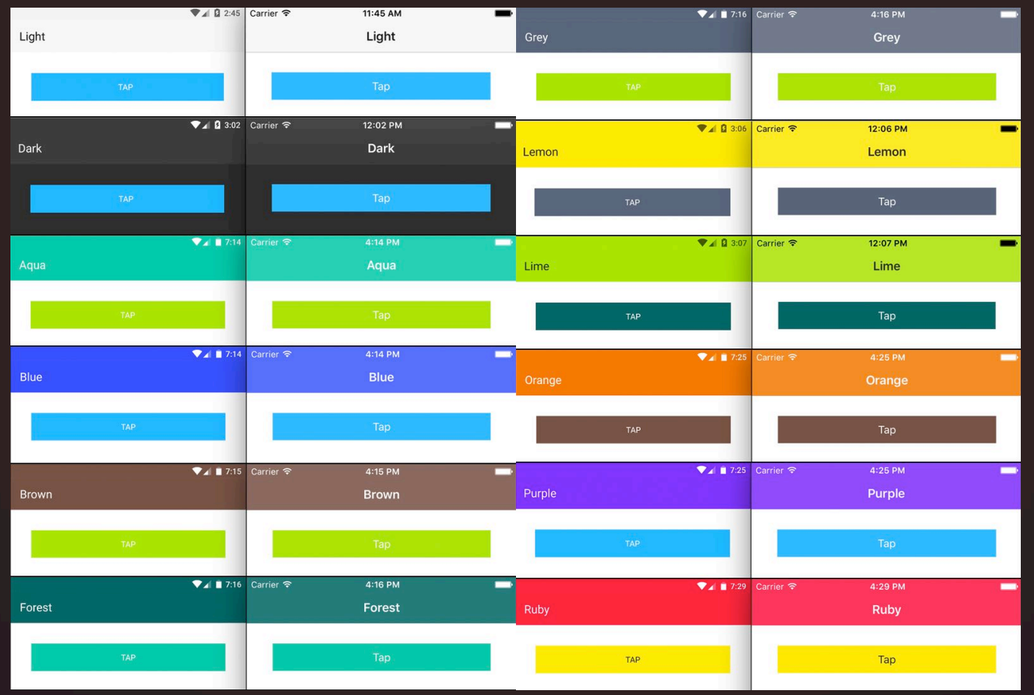
```
button,
.btn,
button[btn-type="primary"] {
  height: 40;
  font-size: 16;
  color: rgb(197, 46, 54);
  background-color: #f6c600;
  text-transform: uppercase;
  opacity: 0.5;
}
```

Cascading Style Sheets (CSS)

- subset of CSS is supported
- device-independent pixels
- https://docs.nativescript.org/ui/styling

NativeScript Theme Core

Ready to use color schemes for iOS and Android



Syntactically Awesome Style Sheets

CSS preprocessor (nested rules, functions, ...)


Native elements
with markup

Native elements with markup

```
<ActionBar title="Native elements"></ActionBar>

<StackLayout>
    <Button text="Button" (tap)="onButtonTap()"></Button>
    <Switch checked="false"></Switch>
    <SegmentedBar [items]="segmentedBarItems"></SegmentedBar>
    <Progress value="0" maxValue="100"></Progress>
    <Slider value="0" minValue="0" maxValue="100"></Slider>
    <DatePicker year="2018" month="1" day="1"
                minDate="1970-01-01" maxDate="2100-12-31"></DatePicker>
</StackLayout>
```

Native elements with markup

```
<Button text="Button" (tap)="onButtonTap()"></Button>
```

```
onButtonTap() {
    let options = {
        title: "Superheroes",
        message: "Choose your favorite",
        cancelButtonText: "Cancel",
        actions: ["Wonder Woman", "Wolverine", "Black Widow", "Superman"]
    };

    action(options).then((result) => {
        alert(result);
    });
}
```

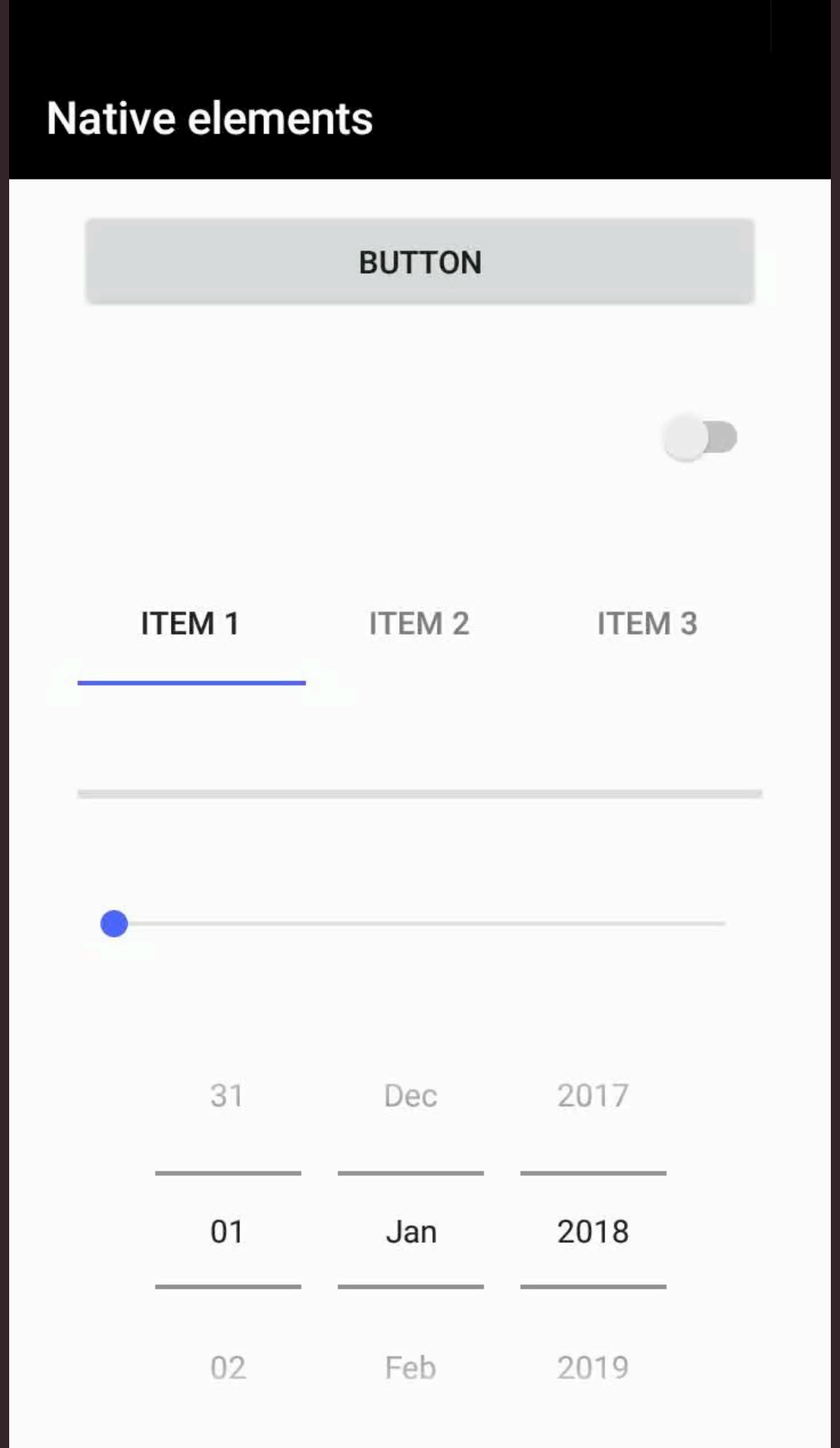
Native elements with markup

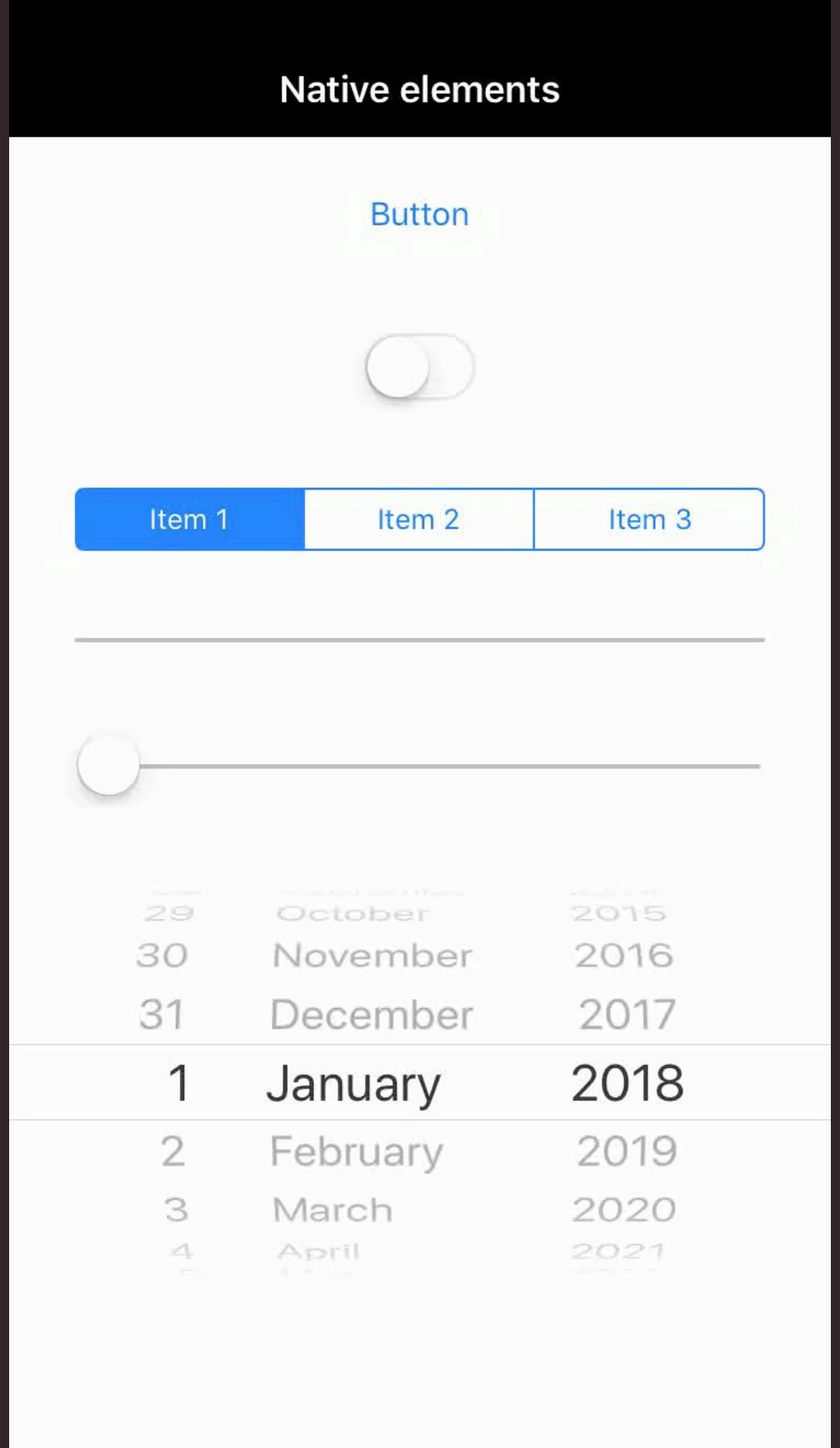
```
<SegmentedBar [items]="segmentedBarItems"></SegmentedBar>

import { SegmentedBar, SegmentedBarItem } from "ui/segmented-bar";

private getSegmentedBarItems = () => {
    let segmentedBarItem1 = new SegmentedBarItem();
    segmentedBarItem1.title = "Item 1";
    let segmentedBarItem2 = new SegmentedBarItem();
    segmentedBarItem2.title = "Item 2";
    let segmentedBarItem3 = new SegmentedBarItem();
    segmentedBarItem3.title = "Item 3";
    return [segmentedBarItem1, segmentedBarItem2, segmentedBarItem3];
}

segmentedBarItems: Array<SegmentedBarItem> = this.getSegmentedBarItems();
```


Native elements
BUTTON
ITEM 1
ITEM 2
ITEM 3
31
Dec
2017
01
Jan
2018
02
Feb
2019


Native elements
Button
Item 1
Item 2
Item 3
29
October
2015
30
November
2016
31
December
2017
1
January
2018
2
February
2019
3
March
2020
4
April
2021


Text Field

Text Field

```
<TextField></TextField>

<TextField text=""></TextField>
```

Text Field: hint

```
<TextField></TextField>

<TextField text=""></TextField>

<TextField hint="Enter your name"></TextField>
```

Text Field: autocapitalization

```
<!-- Capitalize all characters automatically -->
<TextField autocapitalizationType="allCharacters"></TextField>

<!-- Capitalize the first letter of each sentence automatically; default -->
<TextField autocapitalizationType="sentences"></TextField>

<!-- Capitalize the first letter of each word automatically -->
<TextField autocapitalizationType="words"></TextField>
```

Text Field: autocapitalization

```
<!-- Capitalize all characters automatically -->
<TextField autocapitalizationType="allCharacters"></TextField>

<!-- Capitalize the first letter of each sentence automatically; default -->
<TextField autocapitalizationType="sentences"></TextField>

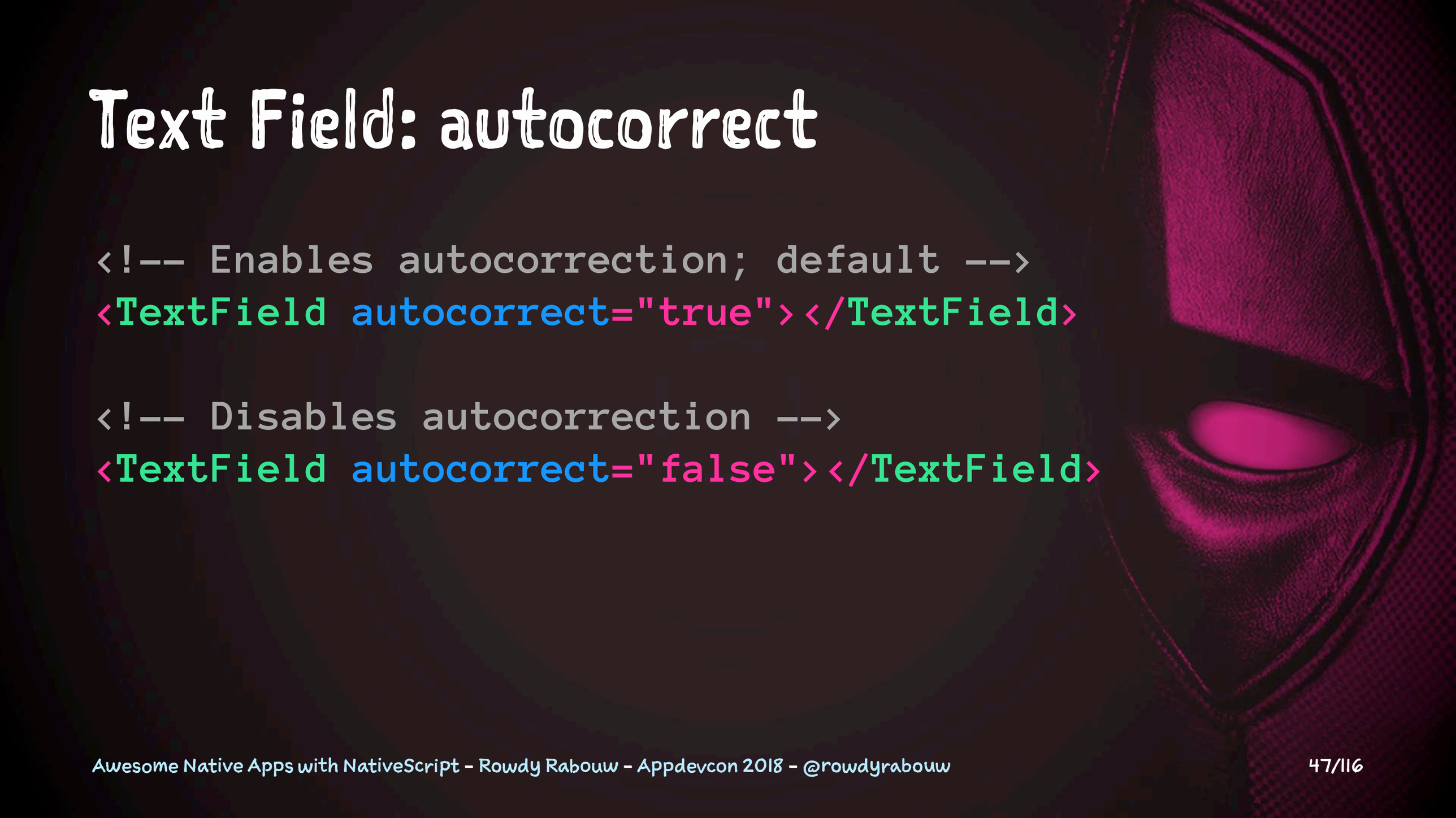
<!-- Capitalize the first letter of each word automatically -->
<TextField autocapitalizationType="words"></TextField>

<!-- Do not capitalize any text automatically -->
<TextField autocapitalizationType="none"></TextField>
```

Text Field: autocorrect

```
<!-- Enables autocorrection; default -->
<TextField autocorrect="true"></TextField>

<!-- Disables autocorrection -->
<TextField autocorrect="false"></TextField>
```



Text Field: keyboardType

```
<!-- Sets the soft keyboard type -->

<TextField keyboardType="number"></TextField>
<TextField keyboardType="datetime"></TextField>
<TextField keyboardType="phone"></TextField>

<TextField keyboardType="email"></TextField>

<TextField keyboardType="url"></TextField>
```

keyboardType

- datetime
- number
- phone
- email
- url
- default

keyboardType

- datetime
- number
- phone
- email
- url
- default

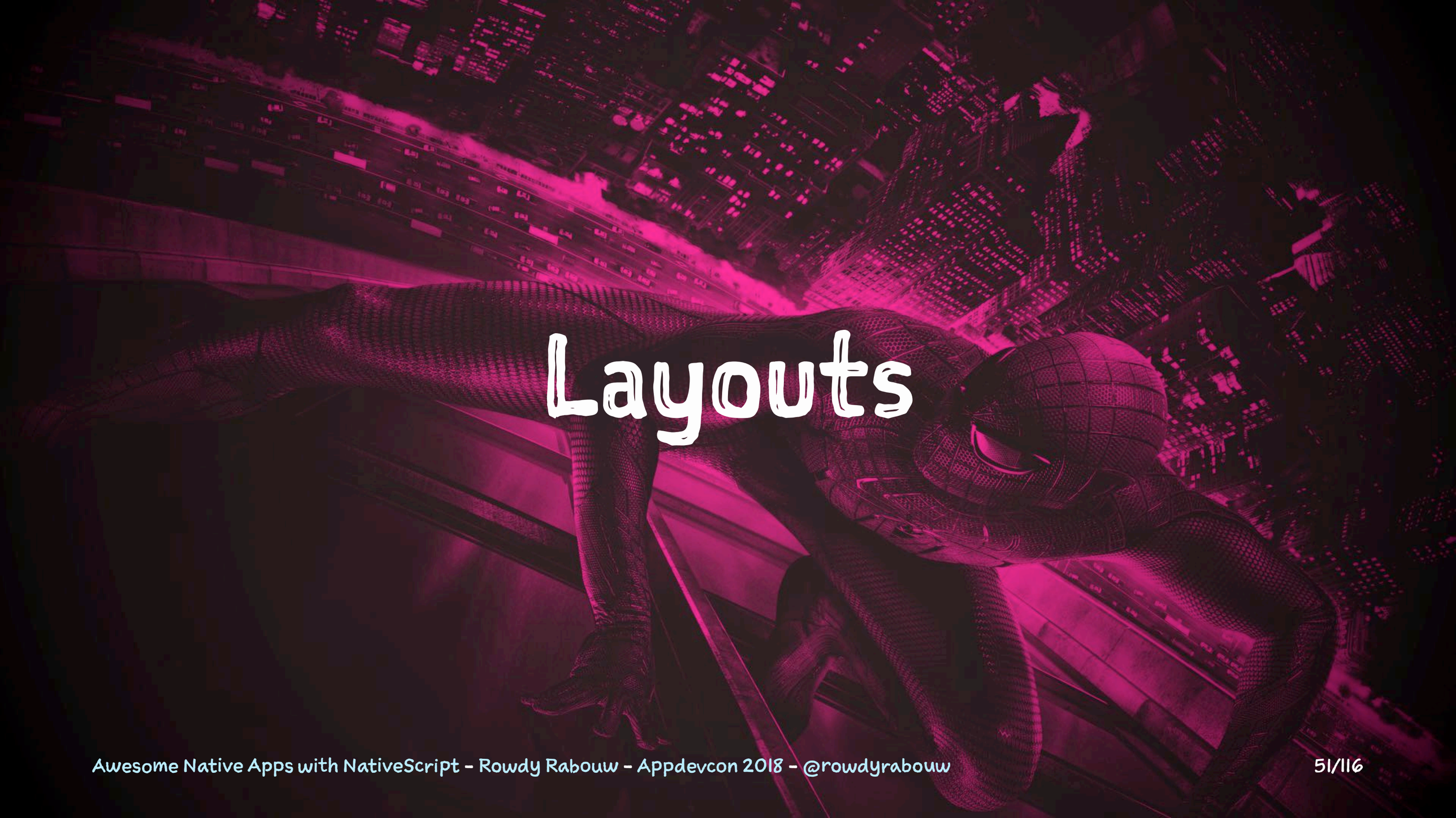
Text Field: more attributes

```
<!-- Sets text-alignment style property -->
<TextField textAlignment=""></TextField>

<!-- Sets the visibility of the view -->
<TextField visibility=""></TextField>

<!-- Sets the desired width of the view -->
<TextField width=""></TextField>

<!-- Limits input to a certain number of characters -->
<TextField maxLength=""></TextField>
```

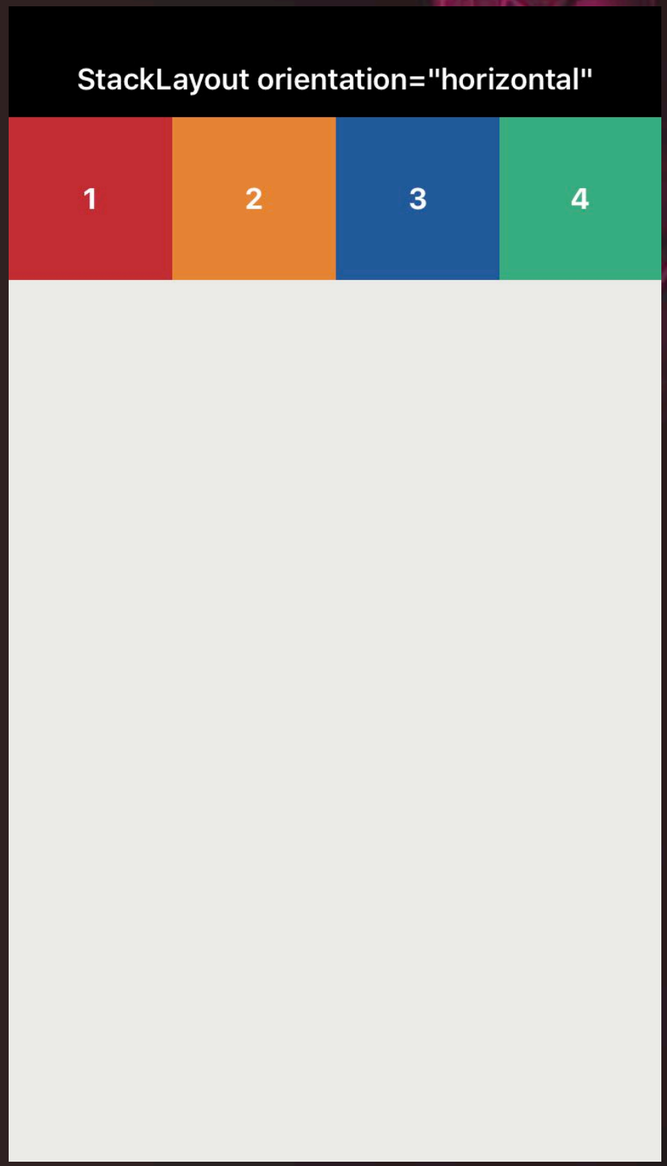

Layouts

StackLayout

```
<StackLayout orientation="horizontal">
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</StackLayout>
```

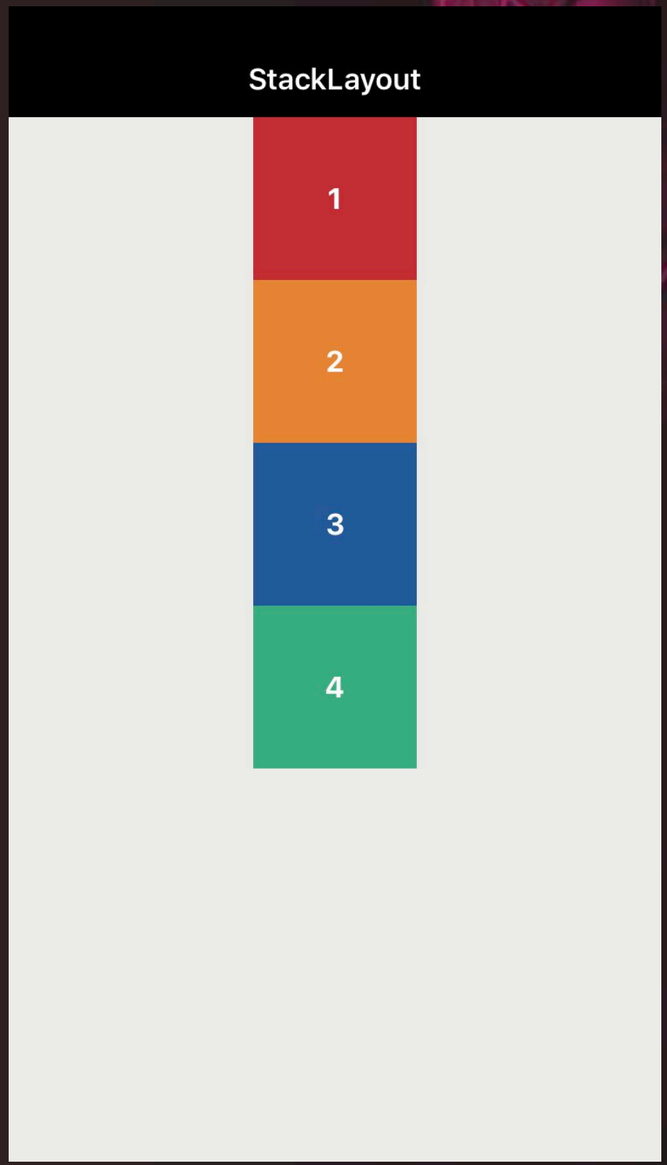
StackLayout

```
<StackLayout orientation="horizontal">
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</StackLayout>
```



StackLayout

```
<StackLayout>
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</StackLayout>
```

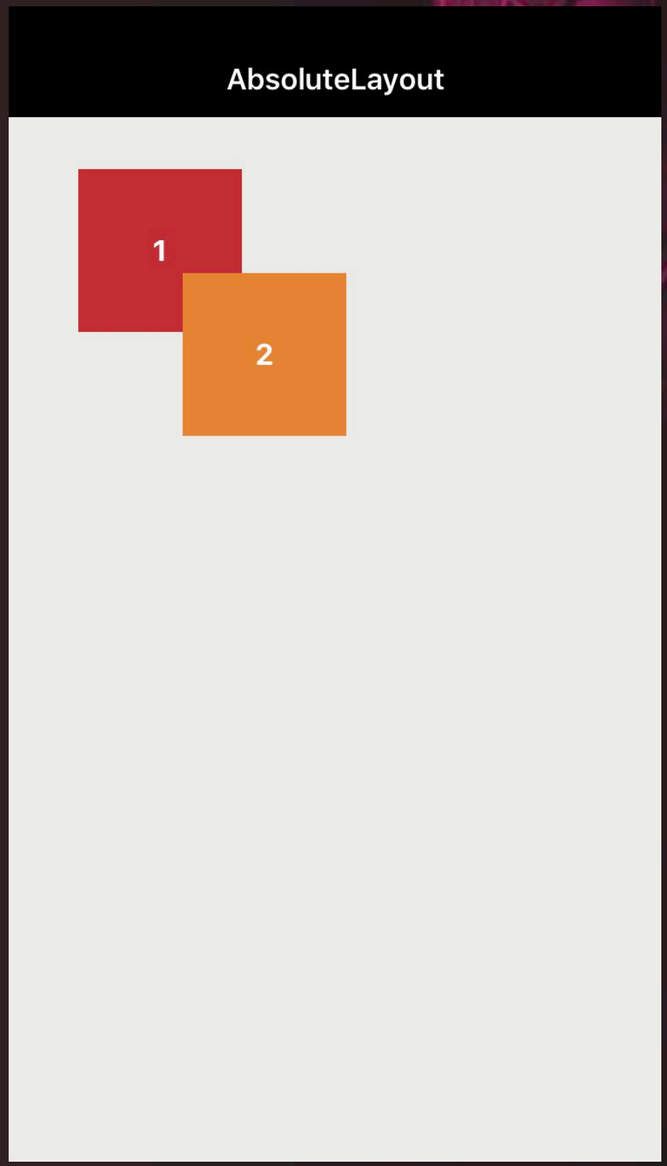


AbsoluteLayout

```
<AbsoluteLayout>
    <Label text="1" left="40" top="30"></Label>
    <Label text="2" left="100" top="90"></Label>
</AbsoluteLayout>
```

AbsoluteLayout

```
<AbsoluteLayout>
    <Label text="1" left="40" top="30"></Label>
    <Label text="2" left="100" top="90"></Label>
</AbsoluteLayout>
```

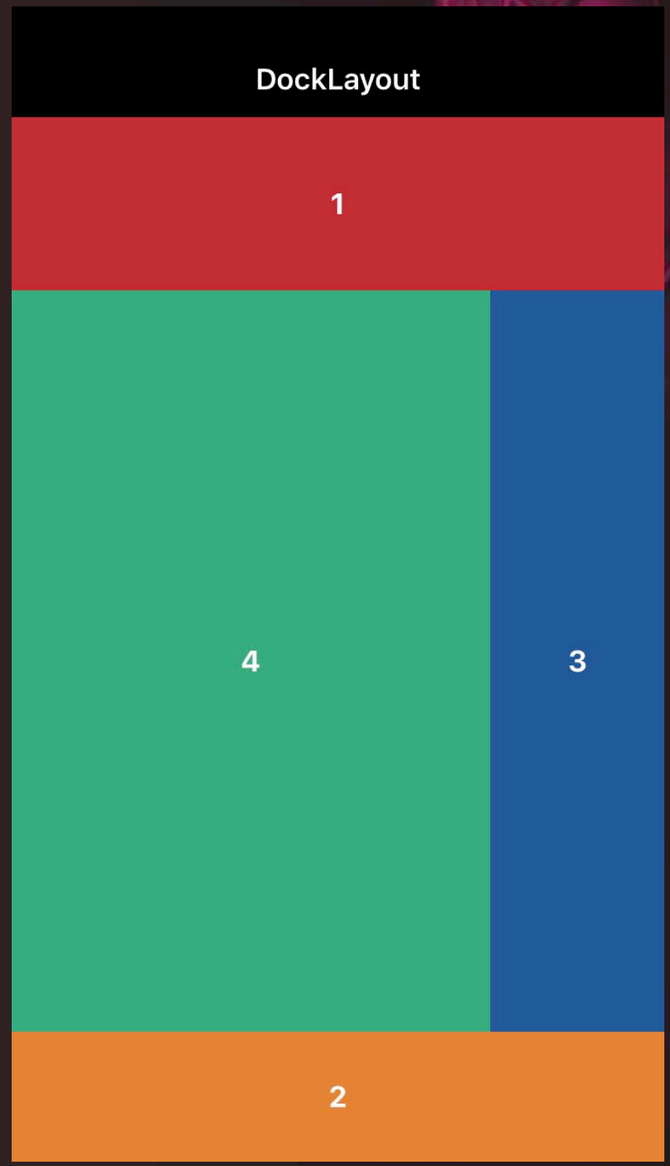


DockLayout

```
<DockLayout height="100%" stretchLastChild="true">
    <Label text="1" dock="top" height="100"></Label>
    <Label text="2" dock="bottom" height="75"></Label>
    <Label text="3" dock="right" width="100"></Label>
    <Label text="4" dock="left"></Label>
</DockLayout>
```

DockLayout

```
<DockLayout height="100%" stretchLastChild="true">
    <Label text="1" dock="top" height="100"></Label>
    <Label text="2" dock="bottom" height="75"></Label>
    <Label text="3" dock="right" width="100"></Label>
    <Label text="4" dock="left"></Label>
</DockLayout>
```

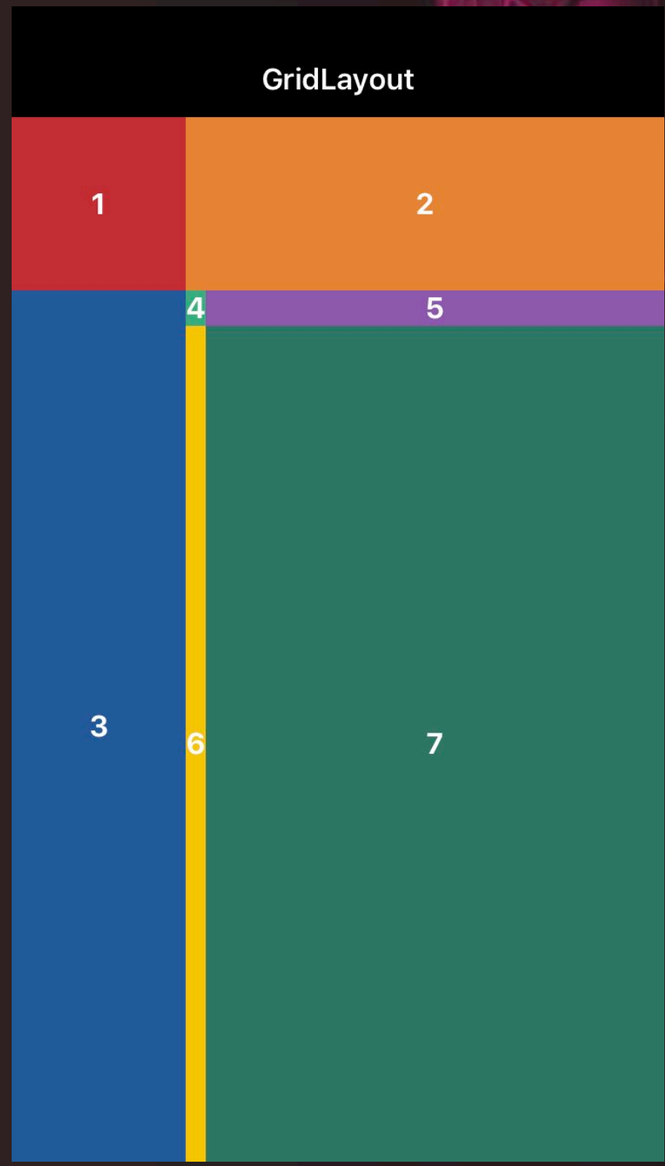


GridLayout

```
<GridLayout
    columns="100, auto, *" rows="100, auto, *">
    <Label text="1" row="0" col="0"></Label>
    <Label text="2" row="0" col="1" colSpan="2"></Label>
    <Label text="3" row="1" col="0" rowSpan="2"></Label>
    <Label text="4" row="1" col="1"></Label>
    <Label text="5" row="1" col="2"></Label>
    <Label text="6" row="2" col="1"></Label>
    <Label text="7" row="2" col="2"></Label>
</GridLayout>
```

GridLayout

```
<GridLayout
    columns="100, auto, *" rows="100, auto, *">
    <Label text="1" row="0" col="0"></Label>
    <Label text="2" row="0" col="1" colSpan="2"></Label>
    <Label text="3" row="1" col="0" rowSpan="2"></Label>
    <Label text="4" row="1" col="1"></Label>
    <Label text="5" row="1" col="2"></Label>
    <Label text="6" row="2" col="1"></Label>
    <Label text="7" row="2" col="2"></Label>
</GridLayout>
```

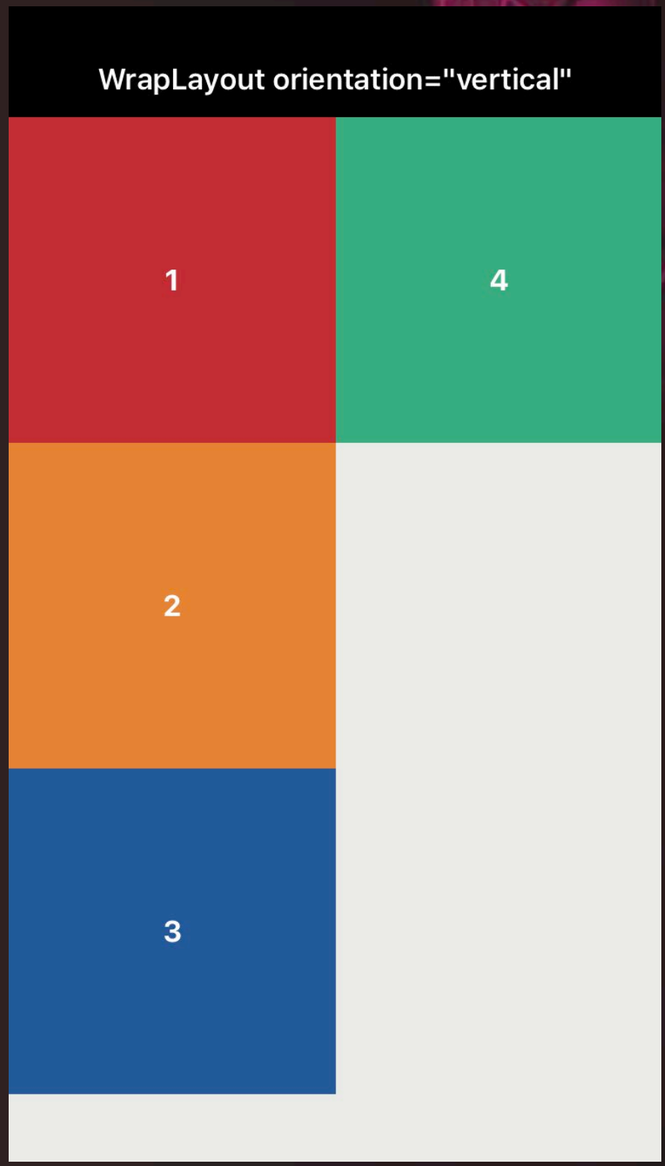


WrapLayout

```
<WrapLayout orientation="vertical">
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</WrapLayout>
```

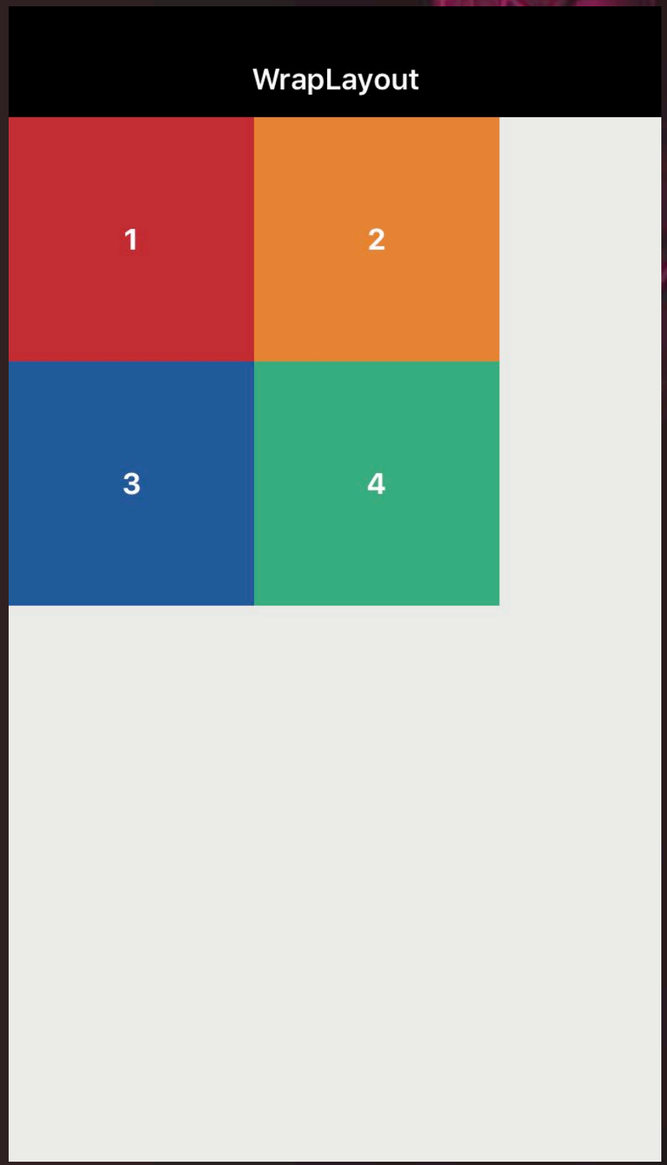
WrapLayout

```
<WrapLayout orientation="vertical">
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</WrapLayout>
```



WrapLayout

```
<WrapLayout>
    <Label text="1"></Label>
    <Label text="2"></Label>
    <Label text="3"></Label>
    <Label text="4"></Label>
</WrapLayout>
```

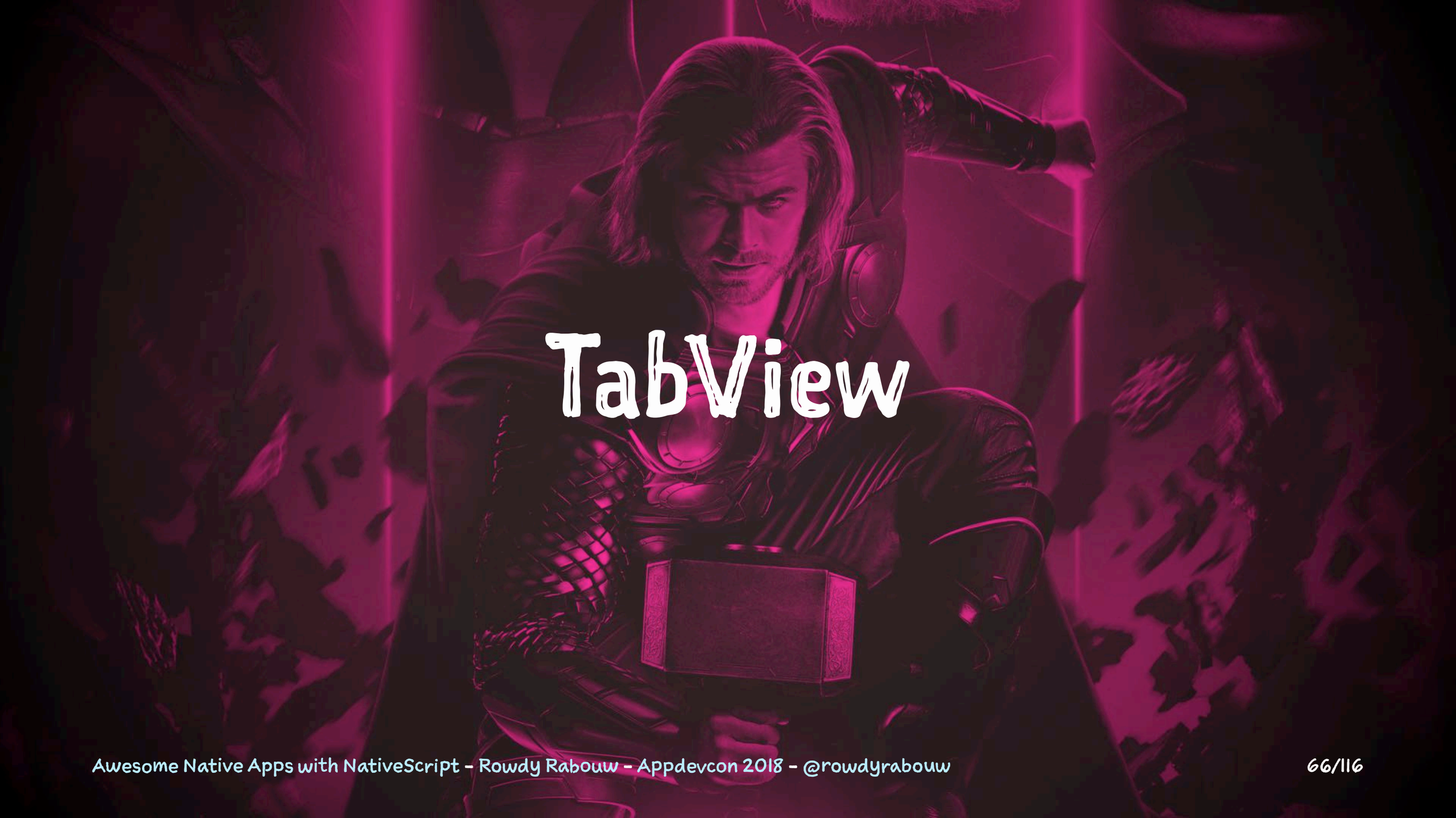


FlexboxLayout

```
<FlexboxLayout flexDirection="row-reverse">
    <Label text="1" flexGrow="1"></Label>
    <Label text="2" flexGrow="2"></Label>
    <Label text="3" flexGrow="3"></Label>
    <Label text="4" flexGrow="4"></Label>
    <Label text="5" flexGrow="5"></Label>
    <Label text="6" flexGrow="6"></Label>
</FlexboxLayout>
```

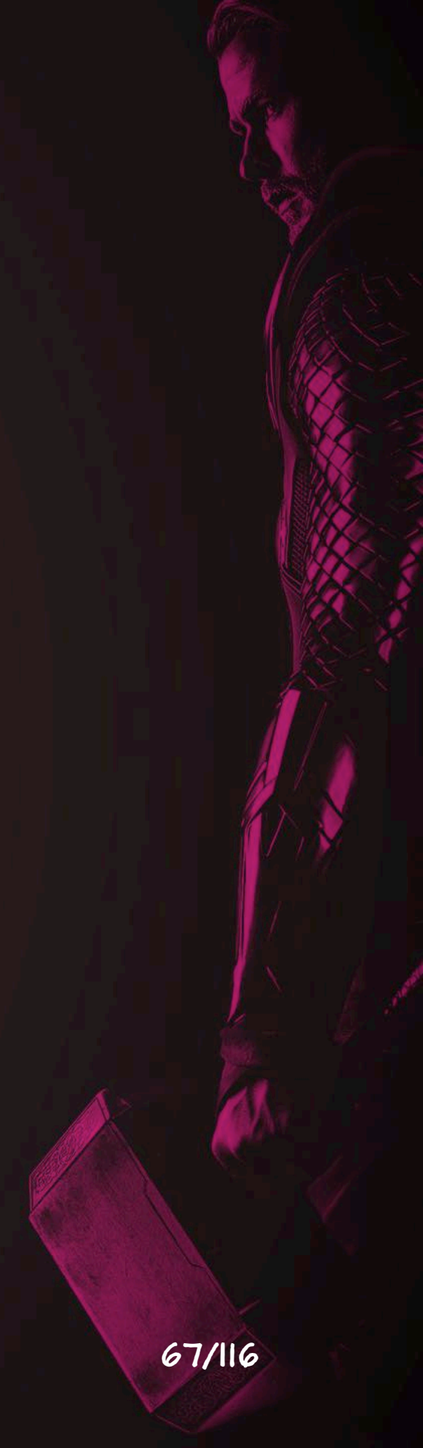
FlexboxLayout

```
<FlexboxLayout flexDirection="row-reverse">
    <Label text="1" flexGrow="1"></Label>
    <Label text="2" flexGrow="2"></Label>
    <Label text="3" flexGrow="3"></Label>
    <Label text="4" flexGrow="4"></Label>
    <Label text="5" flexGrow="5"></Label>
    <Label text="6" flexGrow="6"></Label>
</FlexboxLayout>
```


TabView

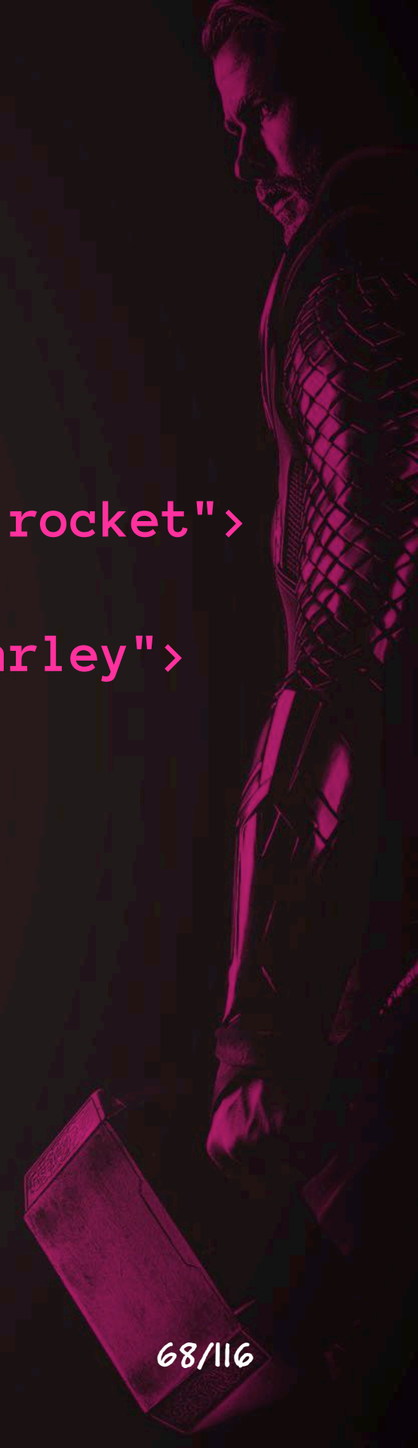
TabView

```
<TabView>
    <StackLayout *tabItem="{title: 'Tab 1'}">
        <!-- Tab 1 content -->
    </StackLayout>
    <StackLayout *tabItem="{title: 'Tab 2'}">
        <!-- Tab 2 content -->
    </StackLayout>
    <StackLayout *tabItem="{title: 'Tab 3'}">
        <!-- Tab 3 content -->
    </StackLayout>
</TabView>
```



TabView

```
<TabView height="100%">
    <StackLayout *tabItem="{title: 'Rocket Raccoon'}" class="full rocket">
    </StackLayout>
    <StackLayout *tabItem="{title: 'Harley Quinn'}" class="full harley">
    </StackLayout>
    <StackLayout *tabItem="{title: 'Hulk'}" class="full hulk">
    </StackLayout>
</TabView>
```



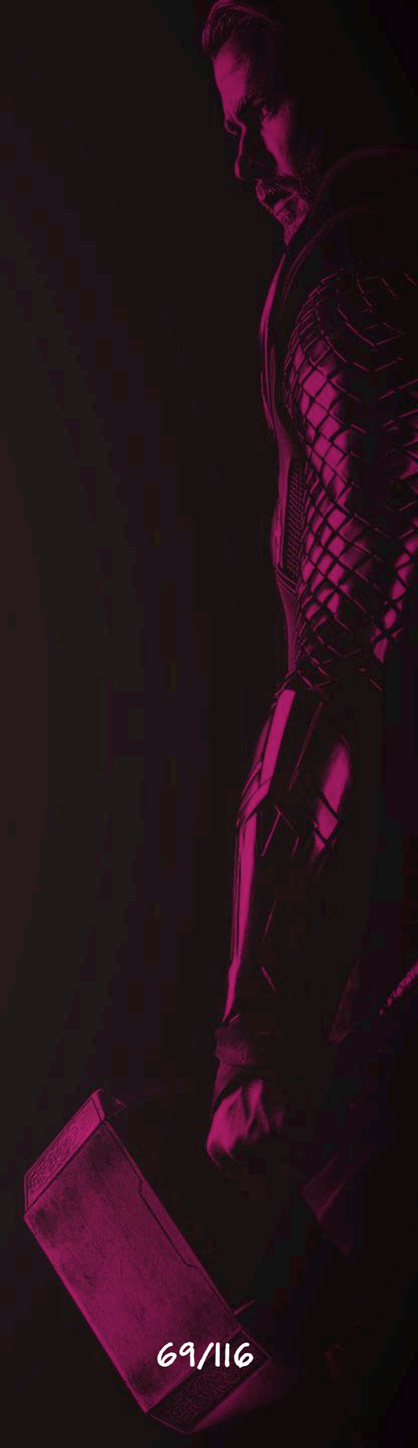
TabView

```
.full {
  background-size: cover;
  background-position: center;
  background-repeat: no-repeat;
}

.rocket {
  background-image: url("~/images/rocket-raccoon.jpg");
}

.harley {
  background-image: url("~/images/harley-quinn.jpg");
}

.hulk {
  background-image: url("~/images/hulk.jpg");
}
```



TabView

ROCKET RACCOON | HARLEY QUINN | HULK

TabView

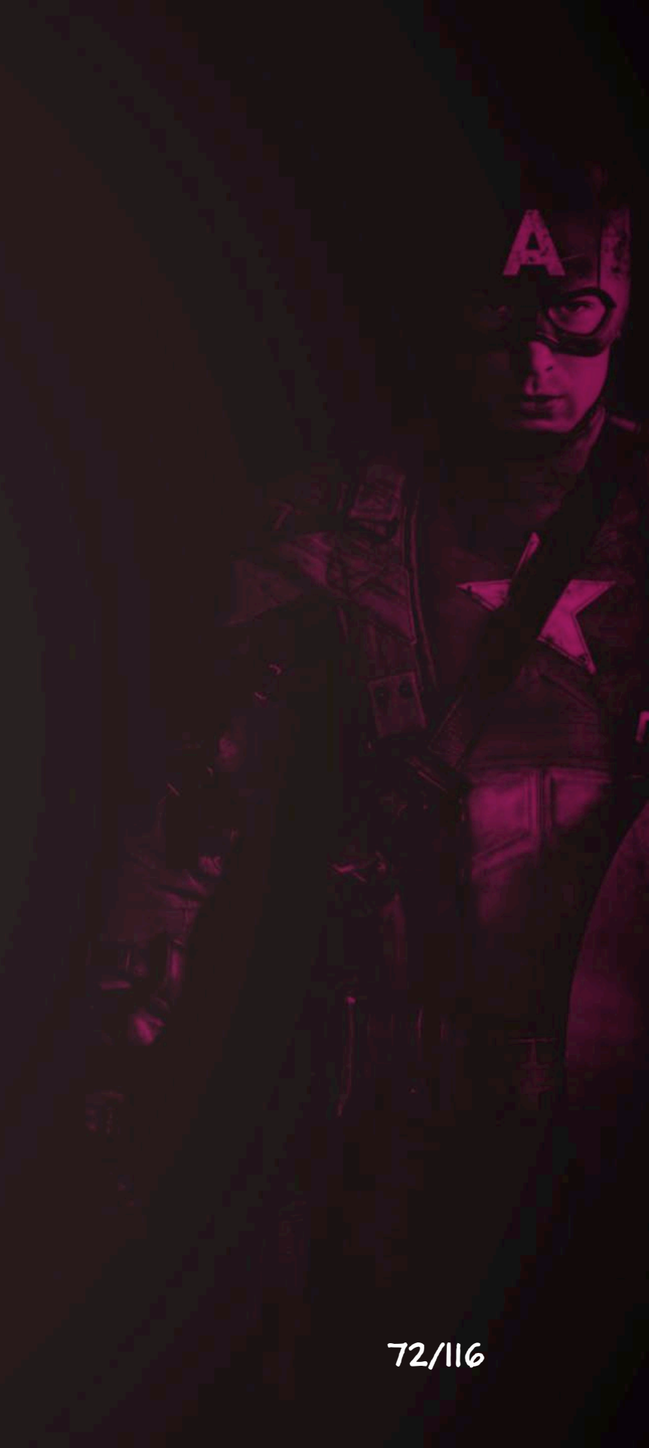
Rocket Raccoon | Harley Quinn | Hulk


Native code

slider.component.html

```
<ActionBar title="Slider"></ActionBar>

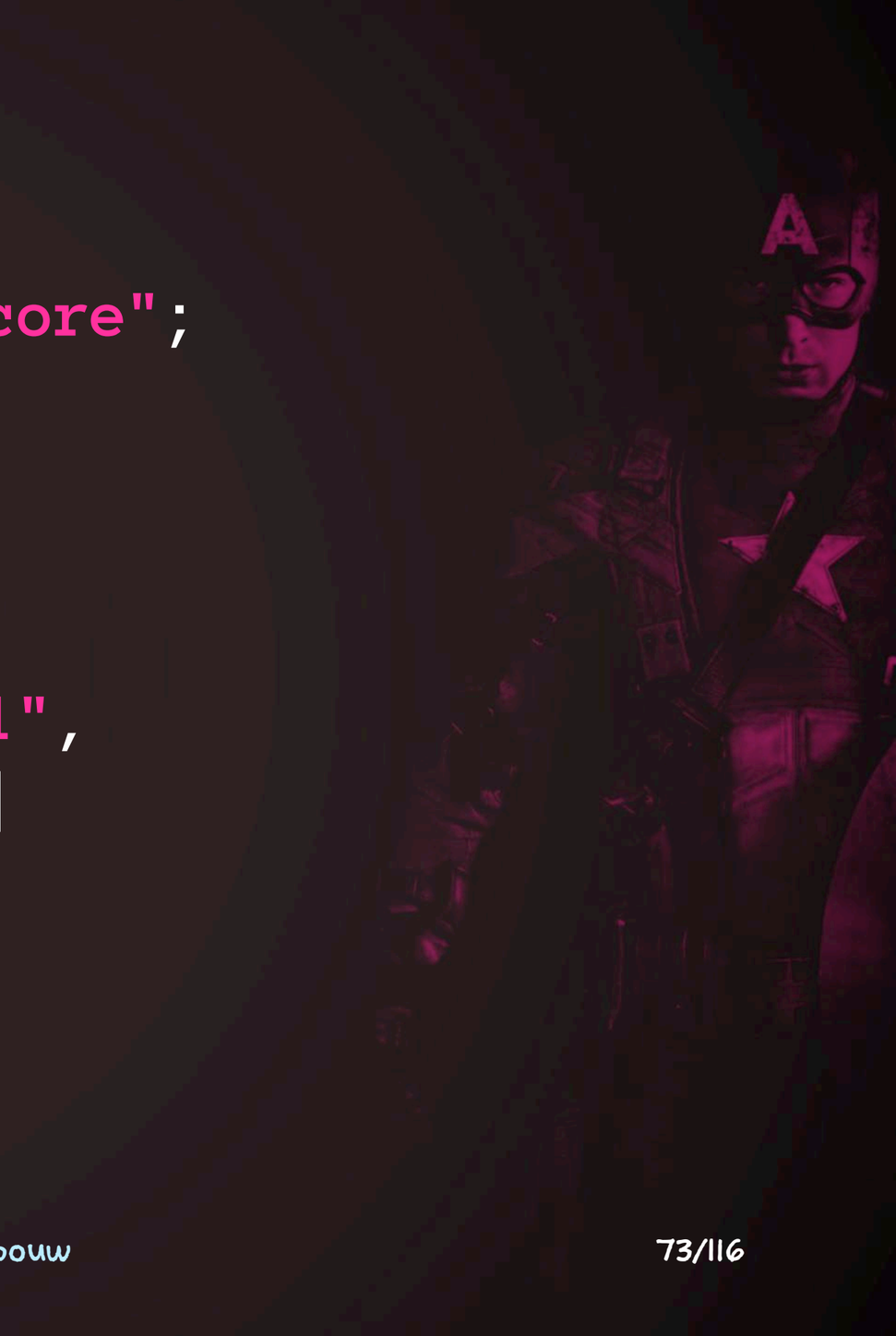
<StackLayout>
    <Slider value="70"></Slider>
</StackLayout>
```



slider.component.ts

```
import { Component } from "@angular/core";

@Component({
  selector: "app-slider",
  moduleId: module.id,
  templateUrl: "slider.component.html",
  styleUrls: ["slider.component.css"]
})
export class SliderComponent {
  constructor() {}
}
```

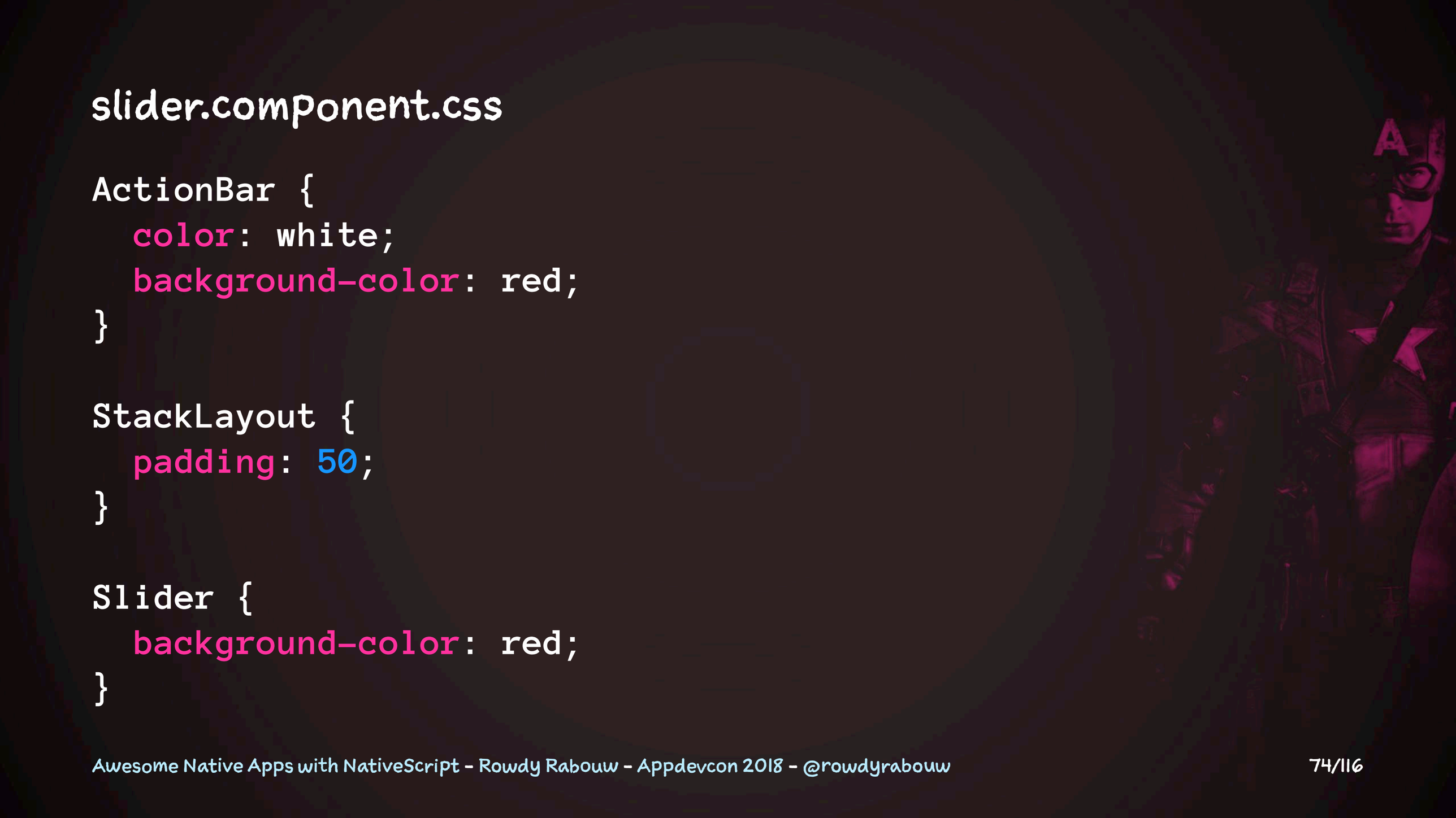


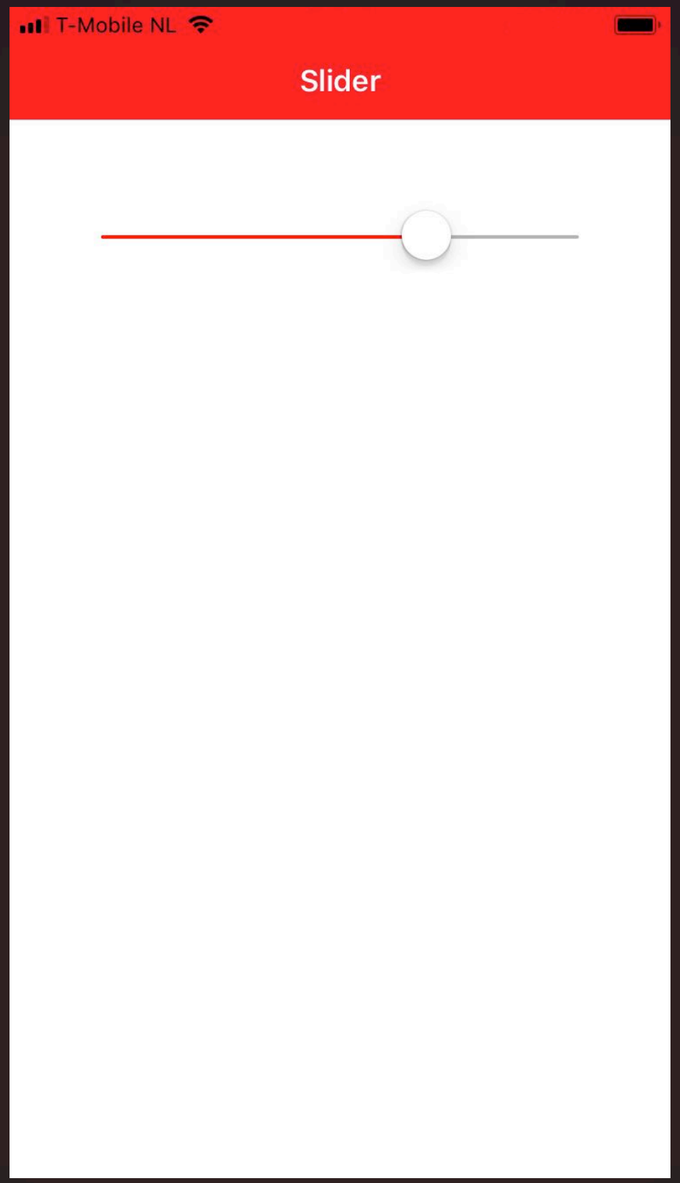
slider.component.css

```
ActionBar {
  color: white;
  background-color: red;
}

StackLayout {
  padding: 50;
}

Slider {
  background-color: red;
}
```

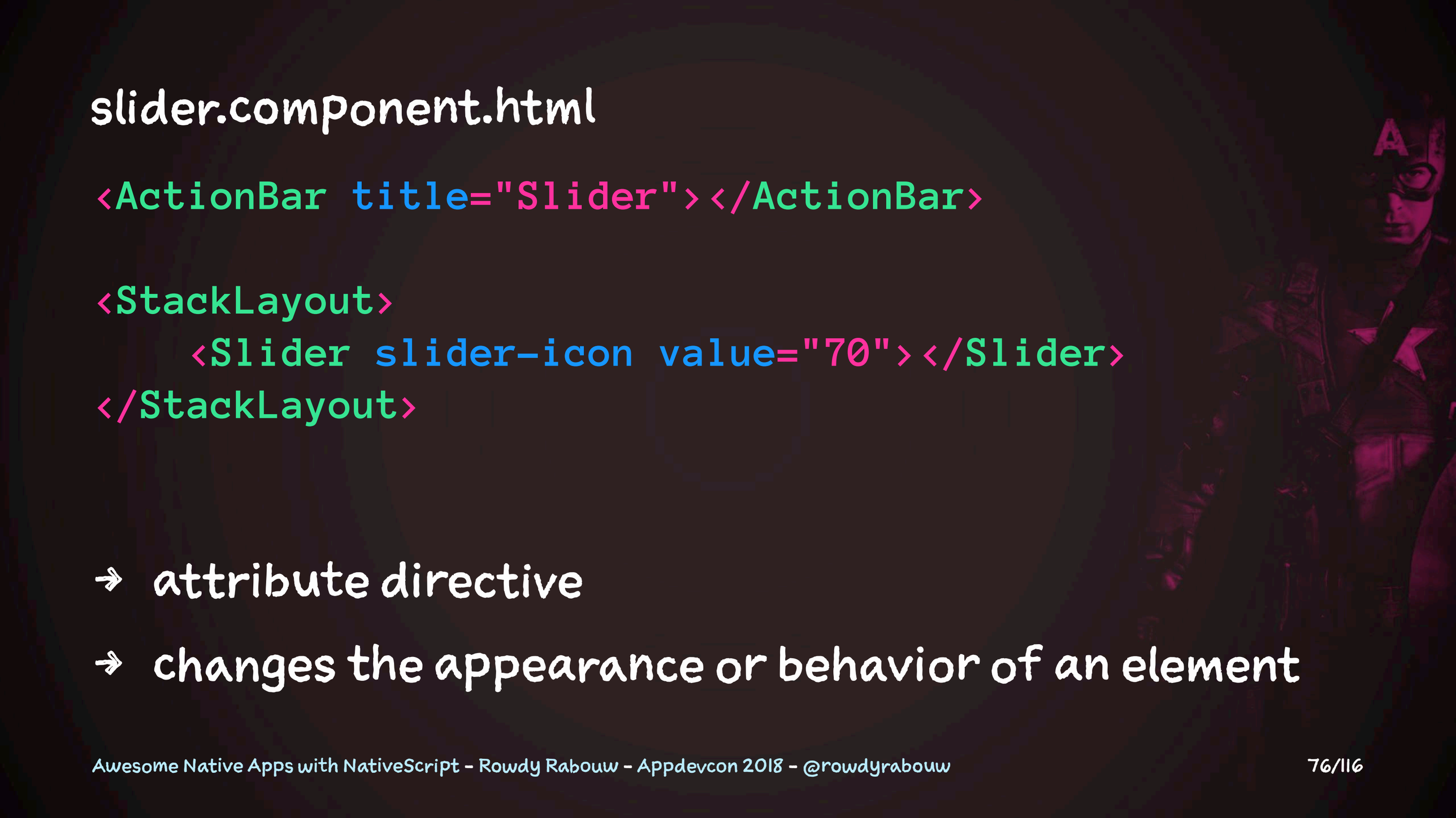



T-Mobile NL
Slider

slider.component.html

```
<ActionBar title="Slider"></ActionBar>

<StackLayout>
    <Slider slider-icon value="70"></Slider>
</StackLayout>
```



- attribute directive
- changes the appearance or behavior of an element

slider.directive.ts

```
import { Directive, ElementRef } from "@angular/core";
import { isIOS } from "platform";

@Directive({
  selector: "[slider-icon]"
})
export class SliderIconDirective {
  constructor(private el: ElementRef) {
    if (isIOS) {
      let uiSlider = this.el.nativeElement.ios;
      uiSlider.setThumbImageForState(
        UIImage.imageNamed("image.png"), UIControlState.Normal);
    }
  }
}
```

slider.directive.ts

```
import { Directive, ElementRef } from "@angular/core";
import { isIOS } from "platform";

@Directive({
  selector: "[slider-icon]"
})
export class SliderIconDirective {
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}
```

slider.directive.ts

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  constructor(private el: ElementRef) {
    if (isIOS) {
      let uiSlider = this.el.nativeElement.ios;
      uiSlider.setThumbImageForState(
        UIImage.imageNamed("image.png"), UIControlState.Normal);
    }
  }
}
```

slider.module.ts

```
import { NgModule, NO_ERRORS_SCHEMA } from "@angular/core";
import { NativeScriptModule } from "nativescript-angular/nativescript.module";

import { SliderIconDirective } from "./slider.directive";

import { SliderRoutingModule } from "./slider-routing.module";
import { SliderComponent } from "./slider.component";

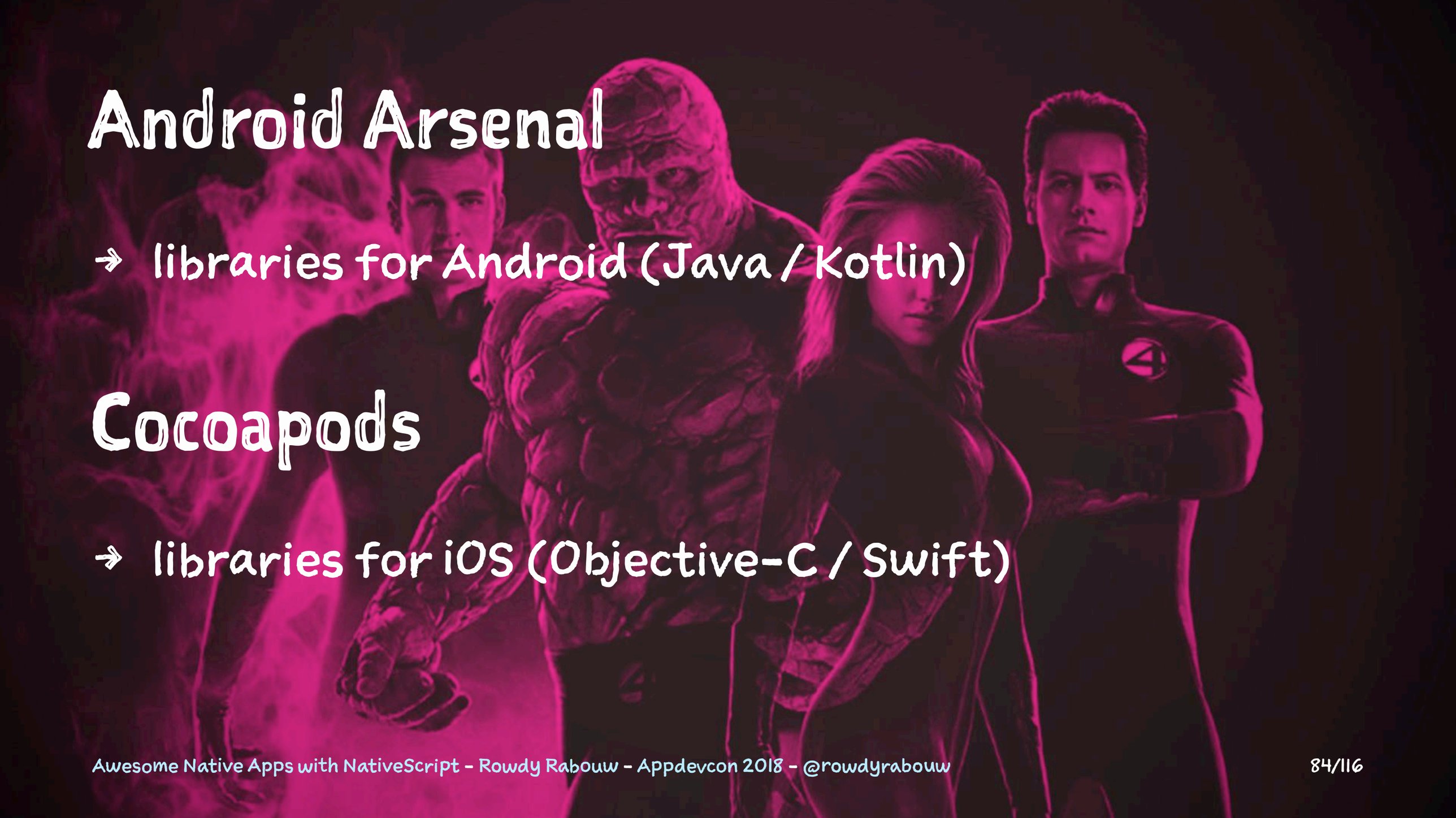
@NgModule({
  imports: [NativeScriptModule, SliderRoutingModule],
  declarations: [SliderComponent, SliderIconDirective],
  schemas: [NO_ERRORS_SCHEMA]
})
export class SliderModule {}
```


Demo


Node Package Manager

Node Package Manager

- commonly known as npm
- ready to use JavaScript modules
- almost 500.000 packages of free, reusable code



Android Arsenal

→ libraries for Android (Java / Kotlin)

Cocoapods

→ libraries for iOS (Objective-C / Swift)

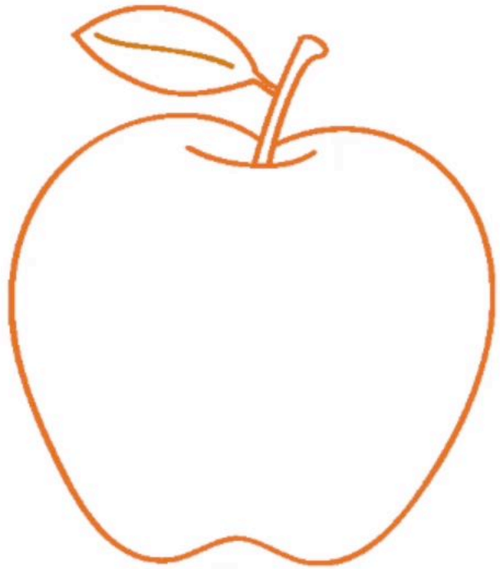

Multilingual
with ngx-translate

Multilingual with ngx-translate

- internationalization library for Angular 2+
- define translations in different languages
- switch between them easily
- no hardcoded text/labels, all in one place
- start directly, even with one language

09:41 100%

Mijn Inkomen Later

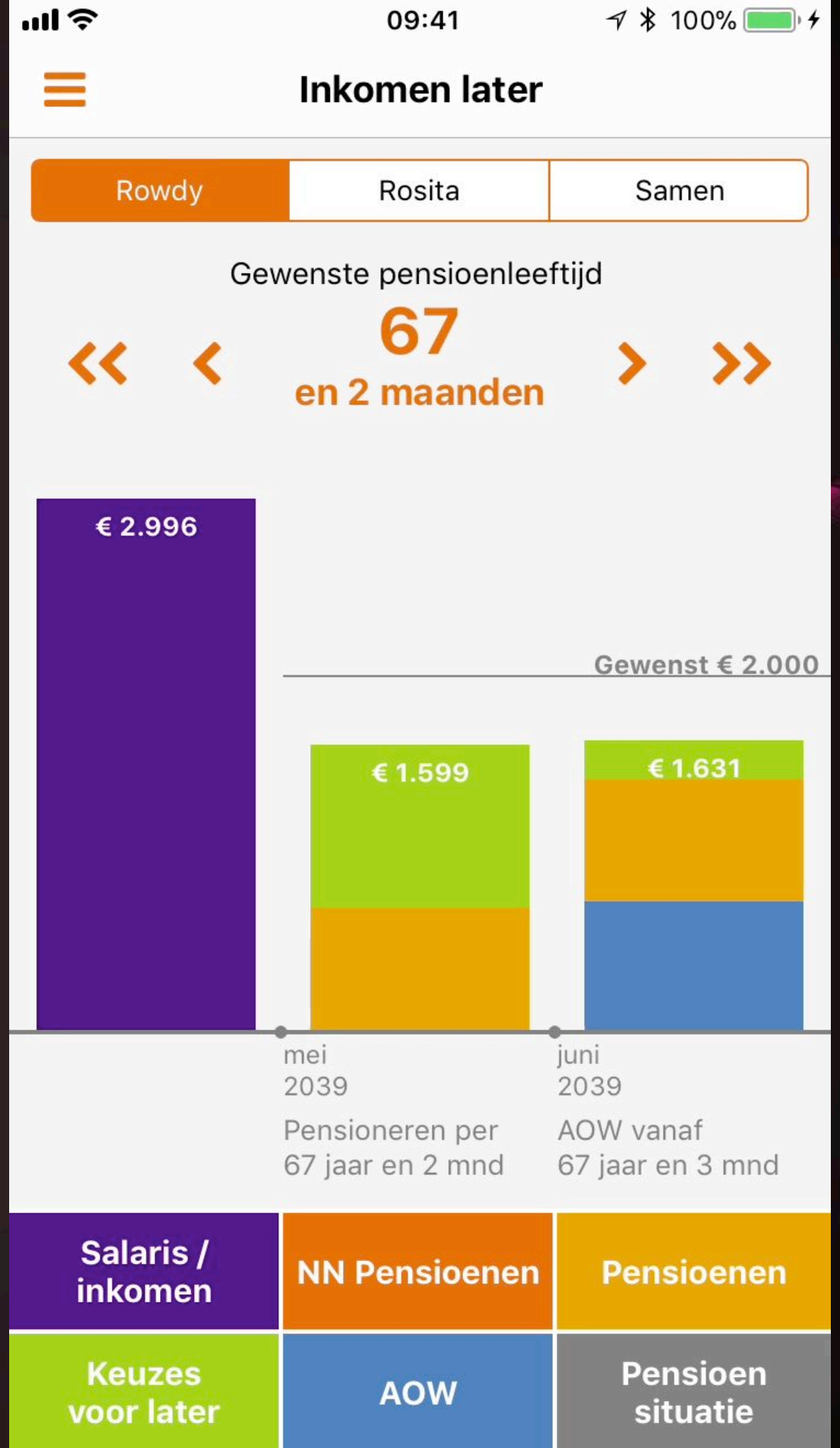


POWERED BY

nationale nederlanden

nl.json

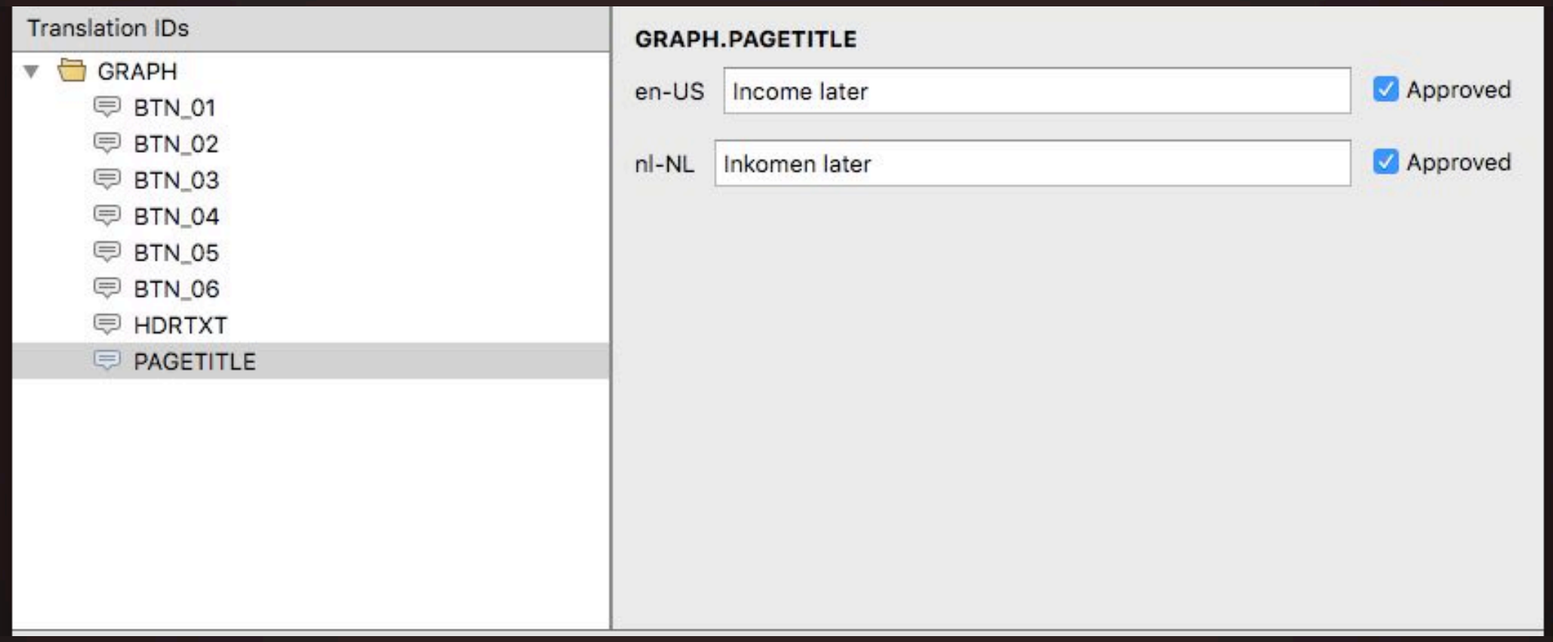
```
{
  "GRAPH": {
    "PAGETITLE": "Inkomen later",
    "HDRTXT": "Gewenste pensioenleeftijd",
    "BTN_01": "Salaris / inkomen",
    "BTN_02": "NN Pensioenen",
    "BTN_03": "Pensioenen",
    "BTN_04": "Keuzes voor later",
    "BTN_05": "AOW",
    "BTN_06": "Pensioen situatie"
  }
}
```



en.json

```
{
  "GRAPH": {
    "PAGETITLE": "Income later",
    "HDRTXT": "Desired retirement age",
    "BTN_01": "Salary / income",
    "BTN_02": "NN Pensions",
    "BTN_03": "Pensions",
    "BTN_04": "Choices for later",
    "BTN_05": "AOW",
    "BTN_06": "Pension situation"
  }
}
```

Multilingual with ngx-translate



BabelEdit by Andreas Löw - @CodeAndWeb
https://www.codeandweb.com/babeledit

Multilingual with ngx-translate

```
<Label [text]="'GRAPH.HDRTXT' | translate"></Label>
```

[] = one way data binding in Angular

| = display-value transformations

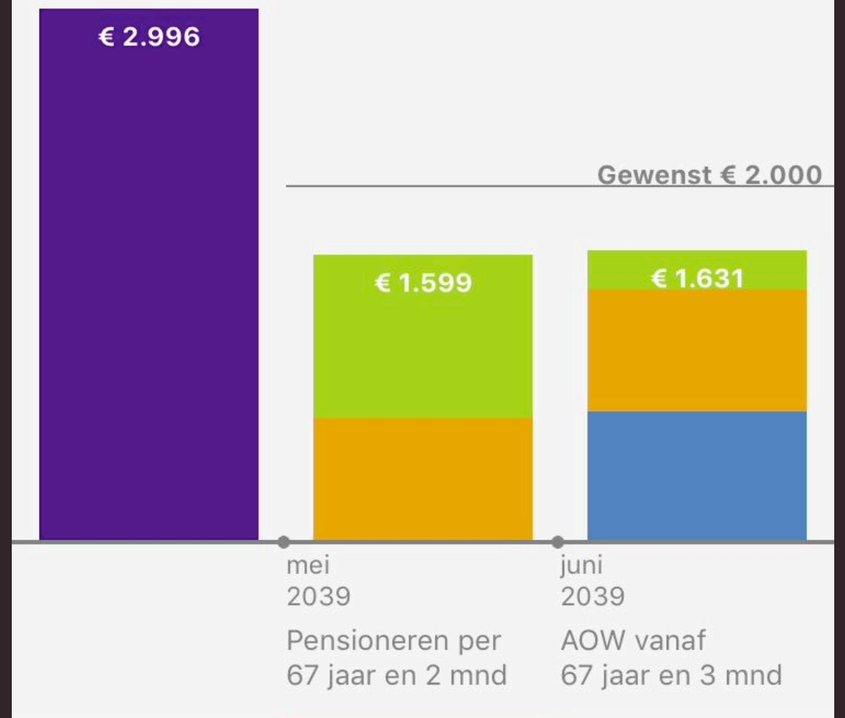
09:41 100%

Inkomen later

Rowdy | Rosita | Samen

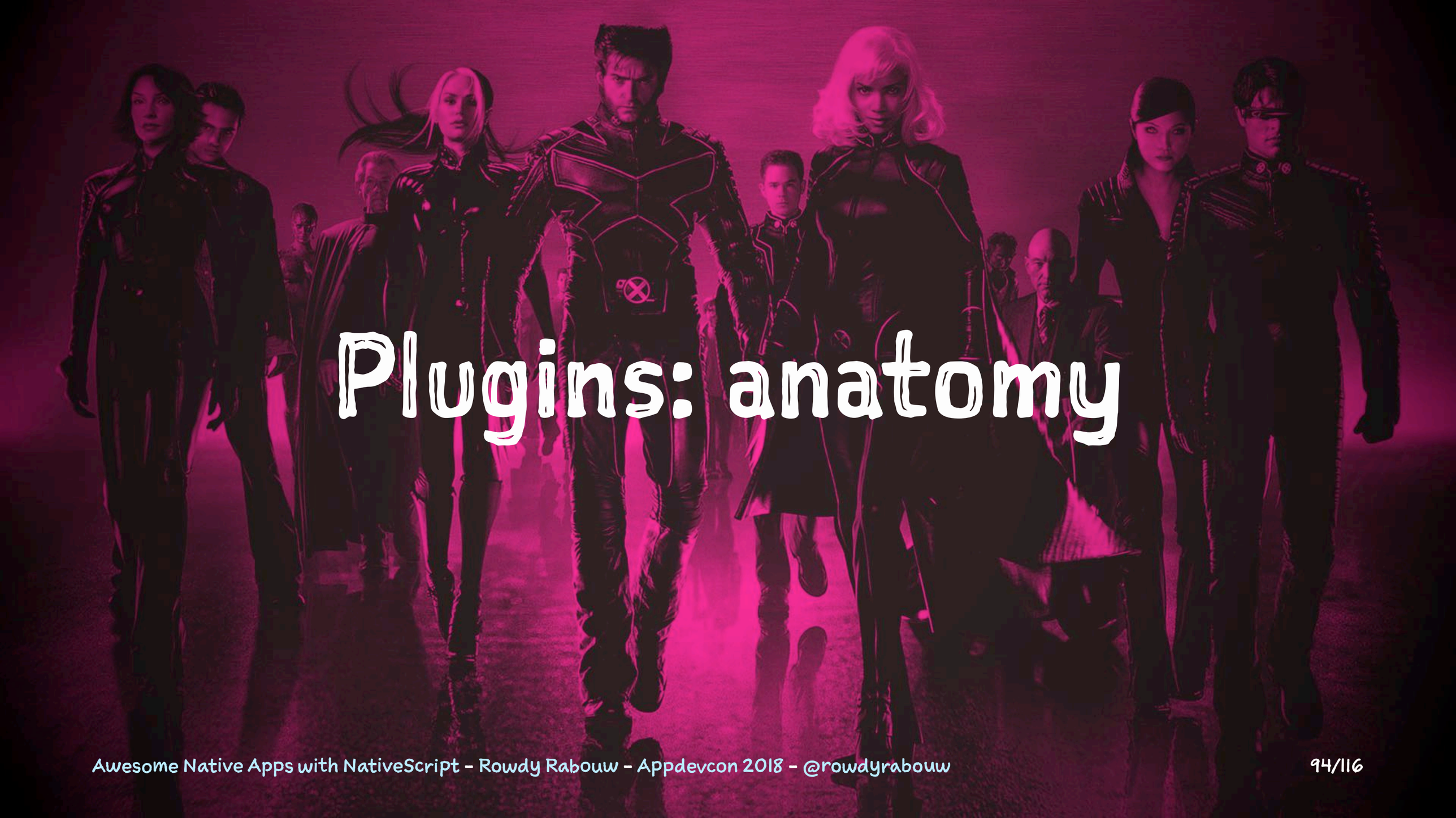
Gewenste pensioenleeftijd

67
en 2 maanden



Salaris / inkomen	NN Pensioenen	Pensioenen
Keuzes voor later	AOW	Pensioen situatie


Plugins



Plugins: anatomy

version-number.ios.ts

```
export class VersionNumber {
  get() {
    let version = NSBundle.mainBundle.objectForInfoDictionaryKey("CFBundleShortVersionString");
    return version;
  }
}
```

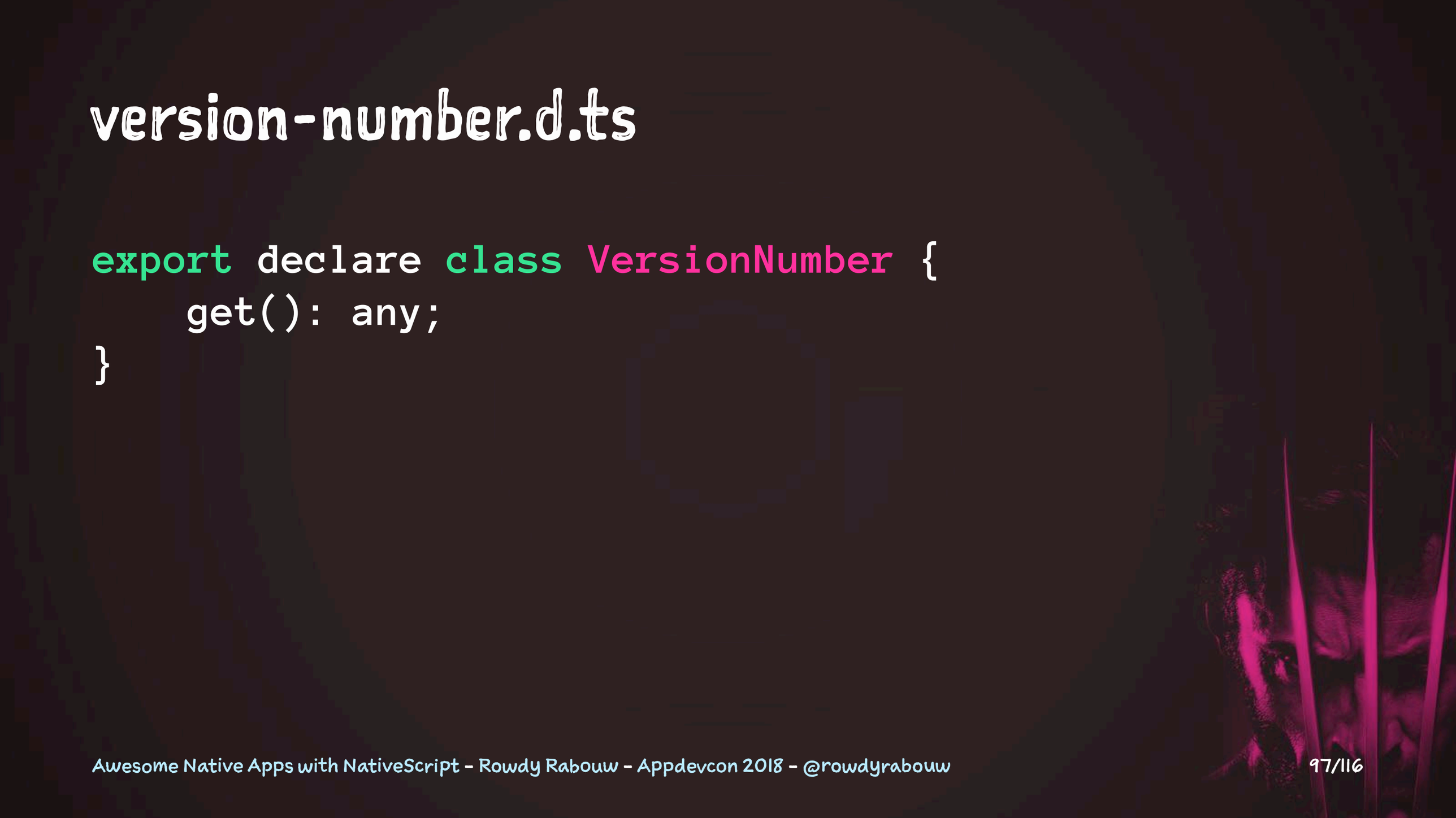
version-number.android.ts

```
import * as application from "application";

export class VersionNumber {
  get() {
    let PackageManager = android.content.pm.PackageManager;
    let pkg = application.android.context
      .getPackageManager()
      .getPackageInfo(application.android.context.getPackageName(), PackageManager.GET_META_DATA);
    return pkg.versionName;
  }
}
```

version-number.d.ts

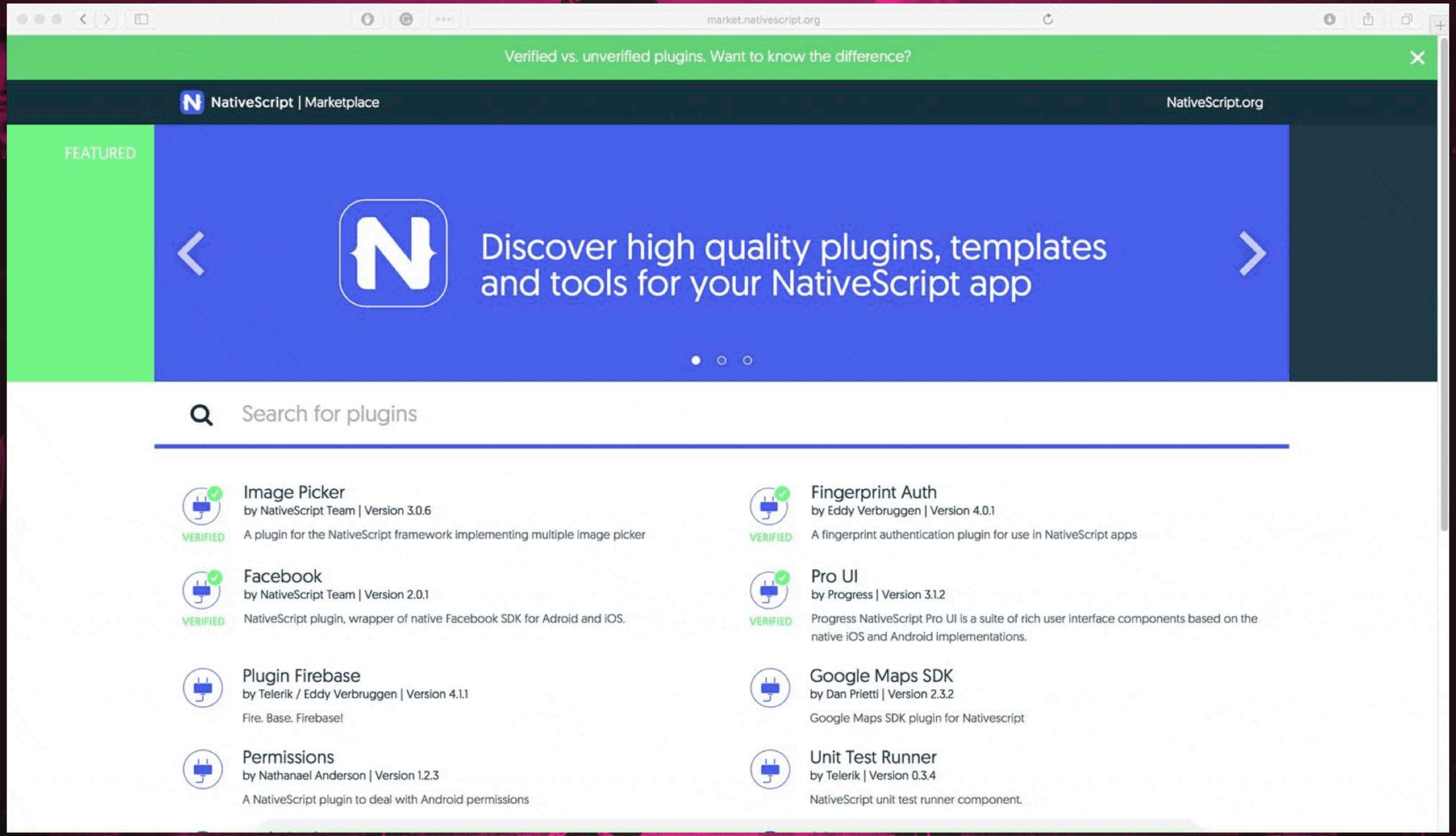
```
export declare class VersionNumber {
    get(): any;
}
```



```
tns plugin add nativescript-version-number
```

```
import { VersionNumber } from "nativescript-version-number";

let version = new VersionNumber().get();
```


market.nativescript.org
Verified vs. unverified plugins. Want to know the difference?
NativeScript | Marketplace
NativeScript.org
FEATURED
Discover high quality plugins, templates and tools for your NativeScript app
Search for plugins
Image Picker
by NativeScript Team | Version 3.0.6
VERIFIED
A plugin for the NativeScript framework implementing multiple image picker
Fingerprint Auth
by Eddy Verbruggen | Version 4.0.1
VERIFIED
A fingerprint authentication plugin for use in NativeScript apps
Facebook
by NativeScript Team | Version 2.0.1
VERIFIED
NativeScript plugin, wrapper of native Facebook SDK for Adroid and iOS.
Pro UI
by Progress | Version 3.1.2
VERIFIED
Progress NativeScript Pro UI is a suite of rich user interface components based on the native iOS and Android implementations.
Plugin Firebase
by Telerik / Eddy Verbruggen | Version 4.1.1
Fire. Base. Firebase!
Google Maps SDK
by Dan Prietti | Version 2.3.2
Google Maps SDK plugin for Nativescript
Permissions
by Nathanael Anderson | Version 1.2.3
A NativeScript plugin to deal with Android permissions
Unit Test Runner
by Telerik | Version 0.3.4
NativeScript unit test runner component.


nativescript-texttospeech
nativescript-audio

nativescript-texttospeech

```
tns plugin add nativescript-texttospeech
```

```
import { TNSTextToSpeech, SpeakOptions } from "nativescript-texttospeech";

let textToSpeech = new TNSTextToSpeech();
let speakOptions: SpeakOptions = {
  text: "Hello world!",
  locale: "en-GB"
};

textToSpeech.speak(speakOptions);
```

nativescript-audio

```
tns plugin add nativescript-audio
```

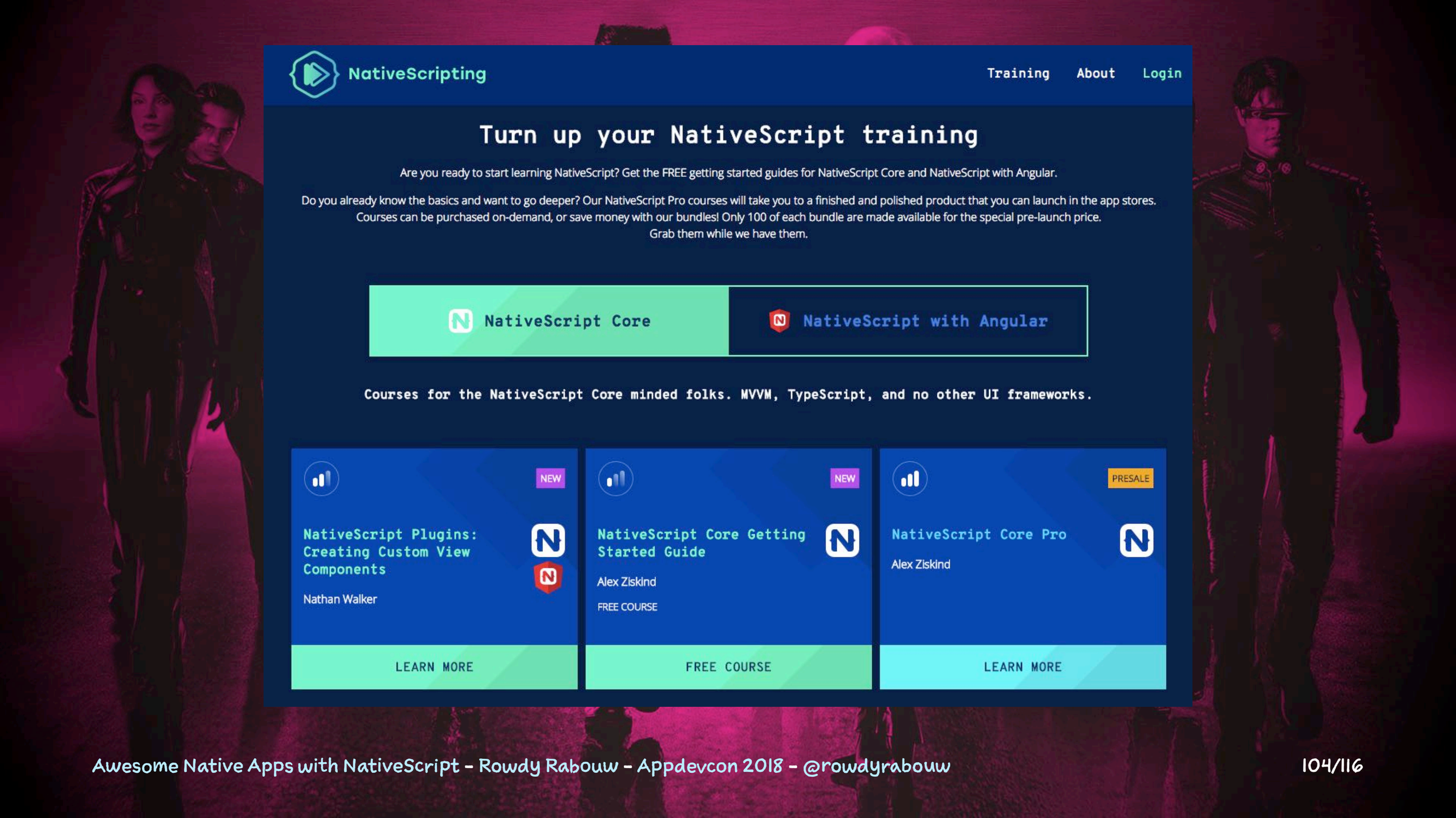
```
import { TNSPlayer } from "nativescript-audio";

let player = new TNSPlayer();

player.initFromFile({
  audioFile: "~/audio/song.mp3"
});

player.play();
```


Win a T-shirt!


NativeScripting
Training
About
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Are you ready to start learning NativeScript? Get the FREE getting started guides for NativeScript Core and NativeScript with Angular.
Do you already know the basics and want to go deeper? Our NativeScript Pro courses will take you to a finished and polished product that you can launch in the app stores.
Courses can be purchased on-demand, or save money with our bundles! Only 100 of each bundle are made available for the special pre-launch price.
Grab them while we have them.
NativeScript Core
NativeScript with Angular
Courses for the NativeScript Core minded folks. MVVM, TypeScript, and no other UI frameworks.
NEW
NativeScript Plugins: Creating Custom View Components
Nathan Walker
LEARN MORE
NEW
NativeScript Core Getting Started Guide
Alex Ziskind
FREE COURSE
FREE COURSE
PRESALE
NativeScript Core Pro
Alex Ziskind
LEARN MORE


nativescript-speech-recognition
nativescript-videoplayer
nativescript-texttospeech

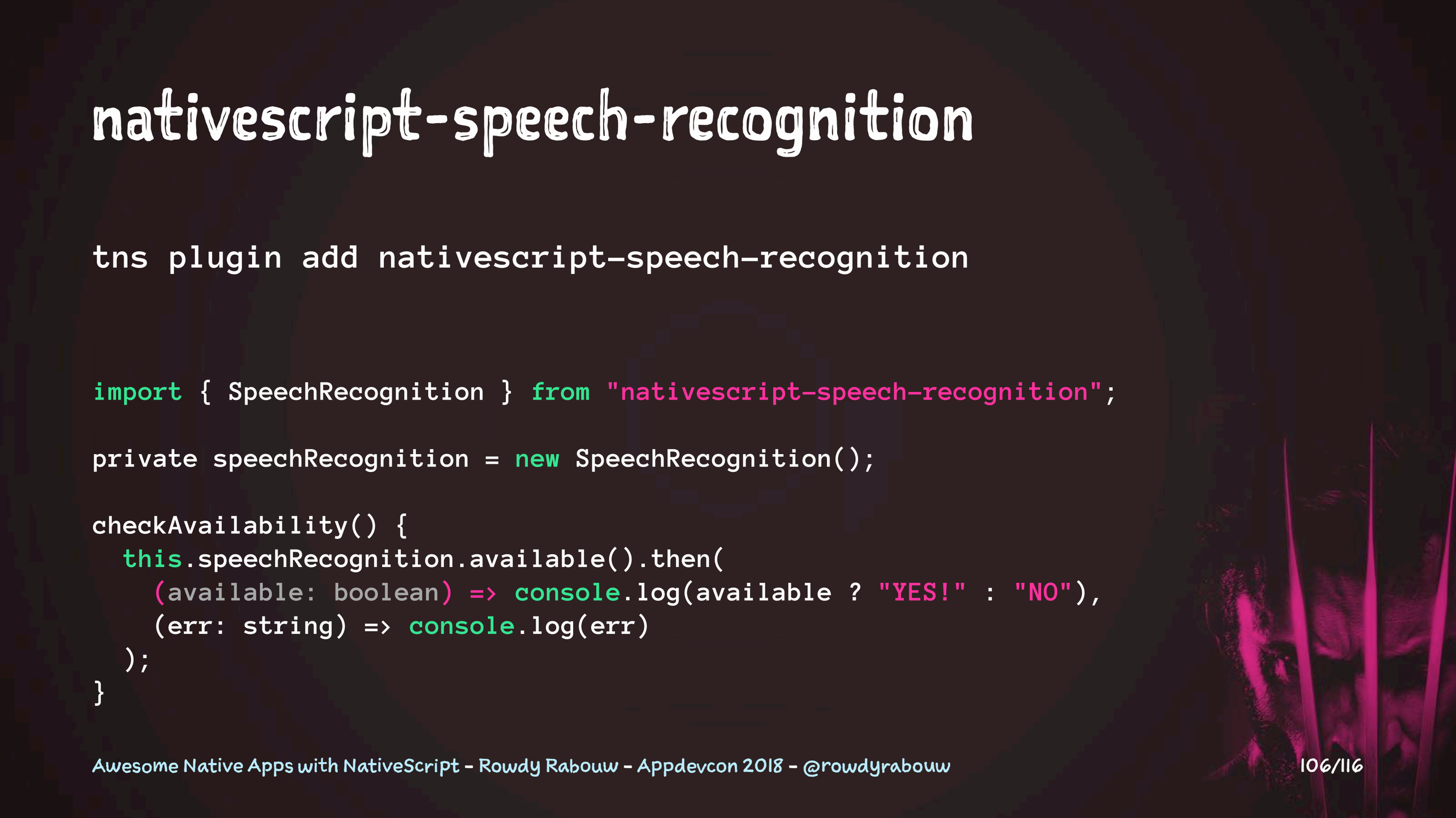
nativescript-speech-recognition

```
tns plugin add nativescript-speech-recognition
```

```
import { SpeechRecognition } from "nativescript-speech-recognition";

private speechRecognition = new SpeechRecognition();

checkAvailability() {
  this.speechRecognition.available().then(
    (available: boolean) => console.log(available ? "YES!" : "NO"),
    (err: string) => console.log(err)
  );
}
```

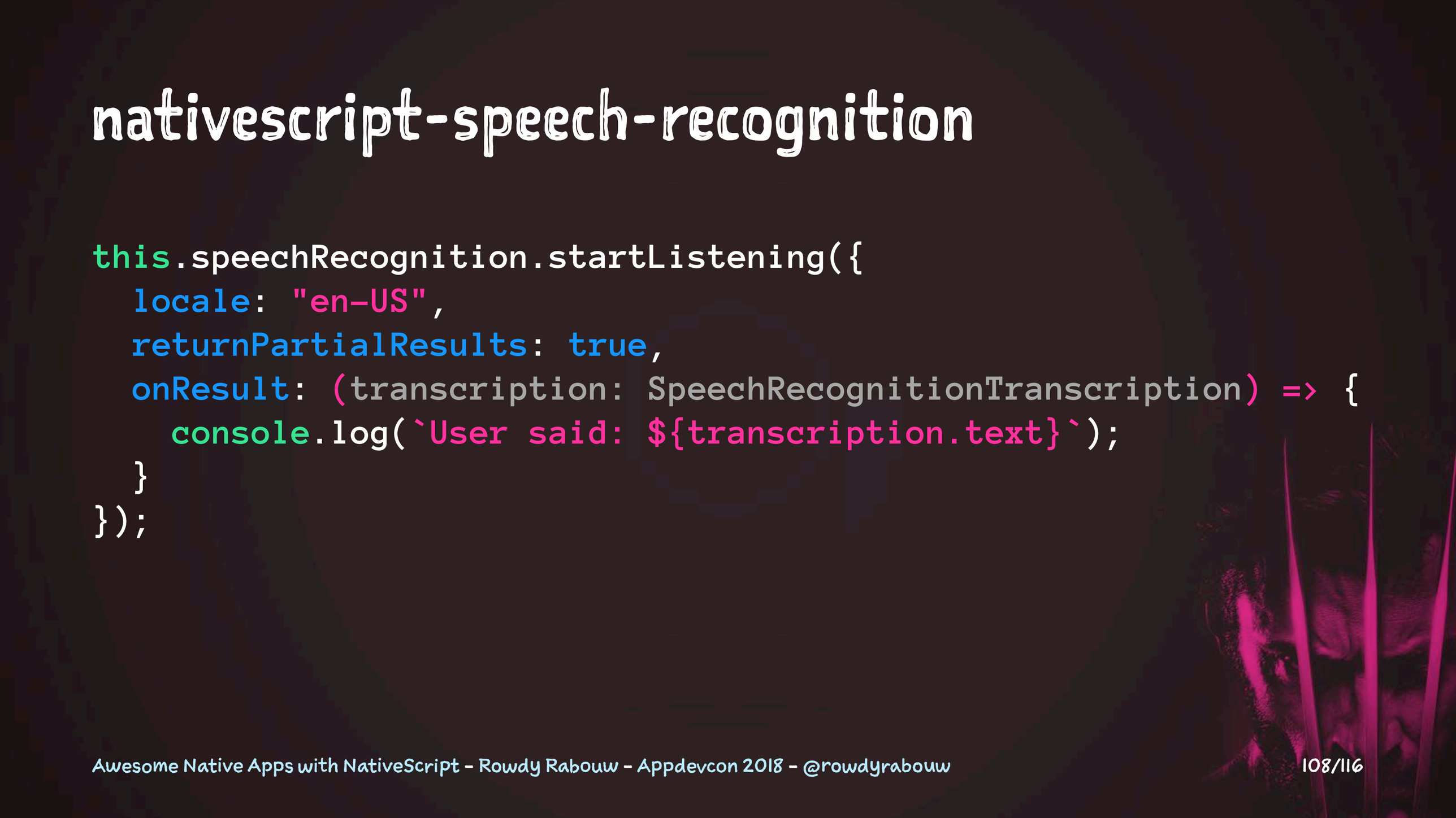


nativescript-speech-recognition

```
this.speechRecognition.requestPermission().then((granted: boolean) => {
  console.log("Granted? " + granted);
});
```

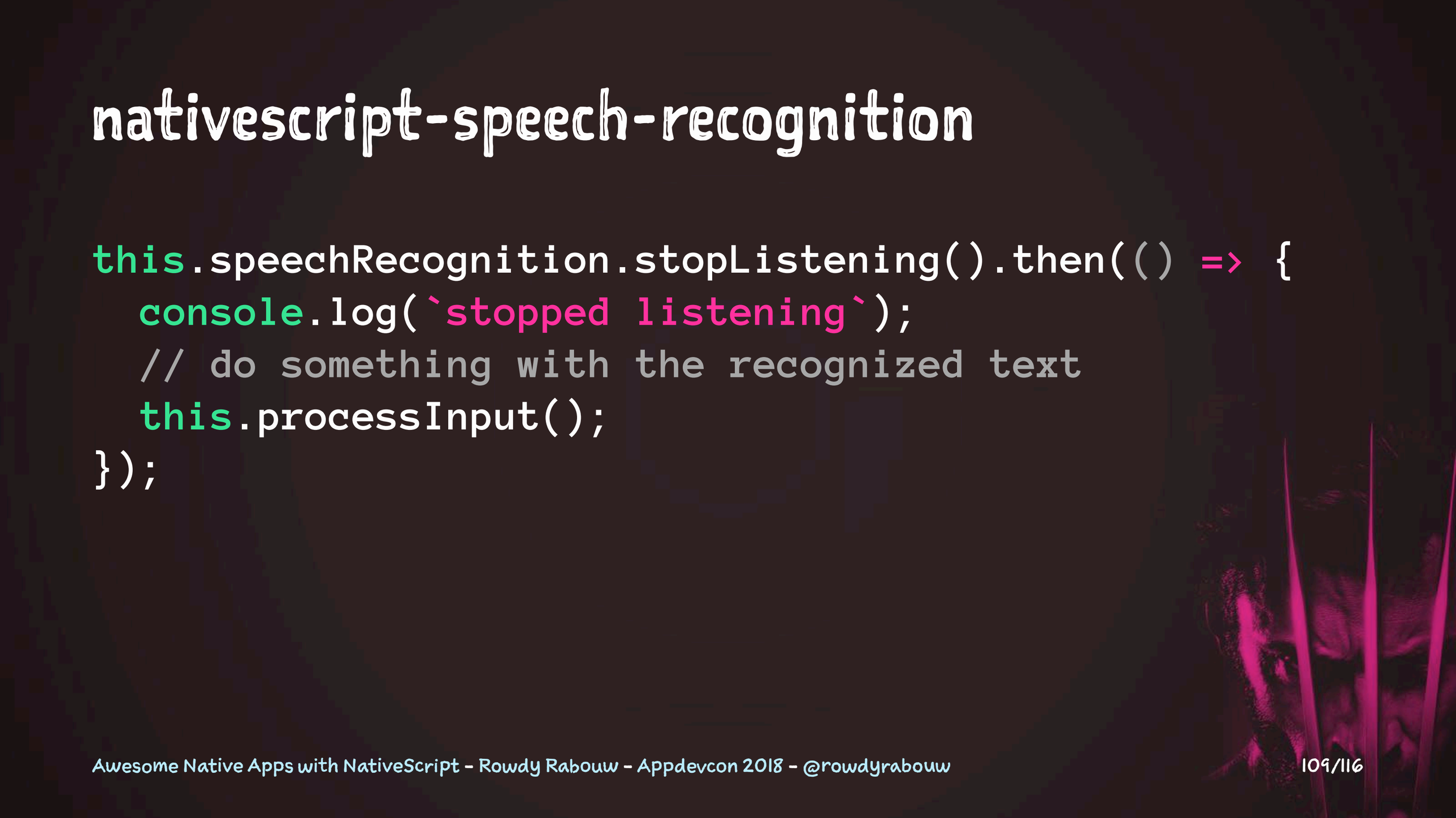
nativescript-speech-recognition

```
this.speechRecognition.startListening({
  locale: "en-US",
  returnPartialResults: true,
  onResult: (transcription: SpeechRecognitionTranscription) => {
    console.log(`User said: ${transcription.text}`);
  }
});
```



nativescript-speech-recognition

```
this.speechRecognition.stopListening().then(() => {
  console.log(`stopped listening`);
  // do something with the recognized text
  this.processInput();
});
```



nativescript-videoplayer

```
tns plugin add nativescript-videoplayer
```

```
<VideoPlayer src="video.mp4"></VideoPlayer>
```


Demo


2xr.nl/AppDevCon2018


Thank you! 👋

Links and Resources

Links

NativeScript styling: http://2xr.nl/css

Native elements playground: http://2xr.nl/Native

keyboardType playground: http://2xr.nl/keyboardType

TabView playground: http://2xr.nl/TabView

Plugin demo app: http://2xr.nl/AppDevCon2018code

Resources

NativeScript.nl - https://nativescript.nl

NativeScript Book - https://nativescript.org/get-the-nativescript-book

NativeScript Documentation - https://docs.nativescript.org

NativeScript Marketplace - https://market.nativescript.org

NativeScript Playground - https://play.nativescript.org

NativeScript Sidekick - https://www.nativescript.org/nativescript-sidekick