

U+_-

LECTURE 1

MULTIPLATFORM MOBILE APPS

DANIEL RYS
JAN VÁCLAVÍK

OVERVIEW

- About us + you
- Course structure
- Native vs. hybrid apps
- Compare technologies
- Intro to Ionic

ABOUT US

ABOUT DAN

- Mobile/front-end dev at **USERTECH**
- Studied CTU FEE in Prague
- Photography enthusiast



@danielrys



[linkedin.com/in/rysdaniel](https://www.linkedin.com/in/rysdaniel)

ABOUT JAN

- Hybrid developer at **USERTECH**
- Studied CTU FIT in Prague
- Loves web technologies everywhere
- Traveller



@janvaclavik



[linkedin.com/in/janvaclavik](https://www.linkedin.com/in/janvaclavik)



www.janvaclavik.cz



USERTECH

- We focus on **UX, web & mobile apps**
- Offices in **Prague, Shenzhen, New York**
- Technologies:
 - **Javascript** (Ionic, Angular, React, ClojureScript)
 - **Python** (Django)
 - **PHP** (Symfony)
- Our clients: **Škoda, Home Credit, E-ON**
- Our start-ups: **E-hotel, Zonky, SingleCase, Lens ID, Traffika**

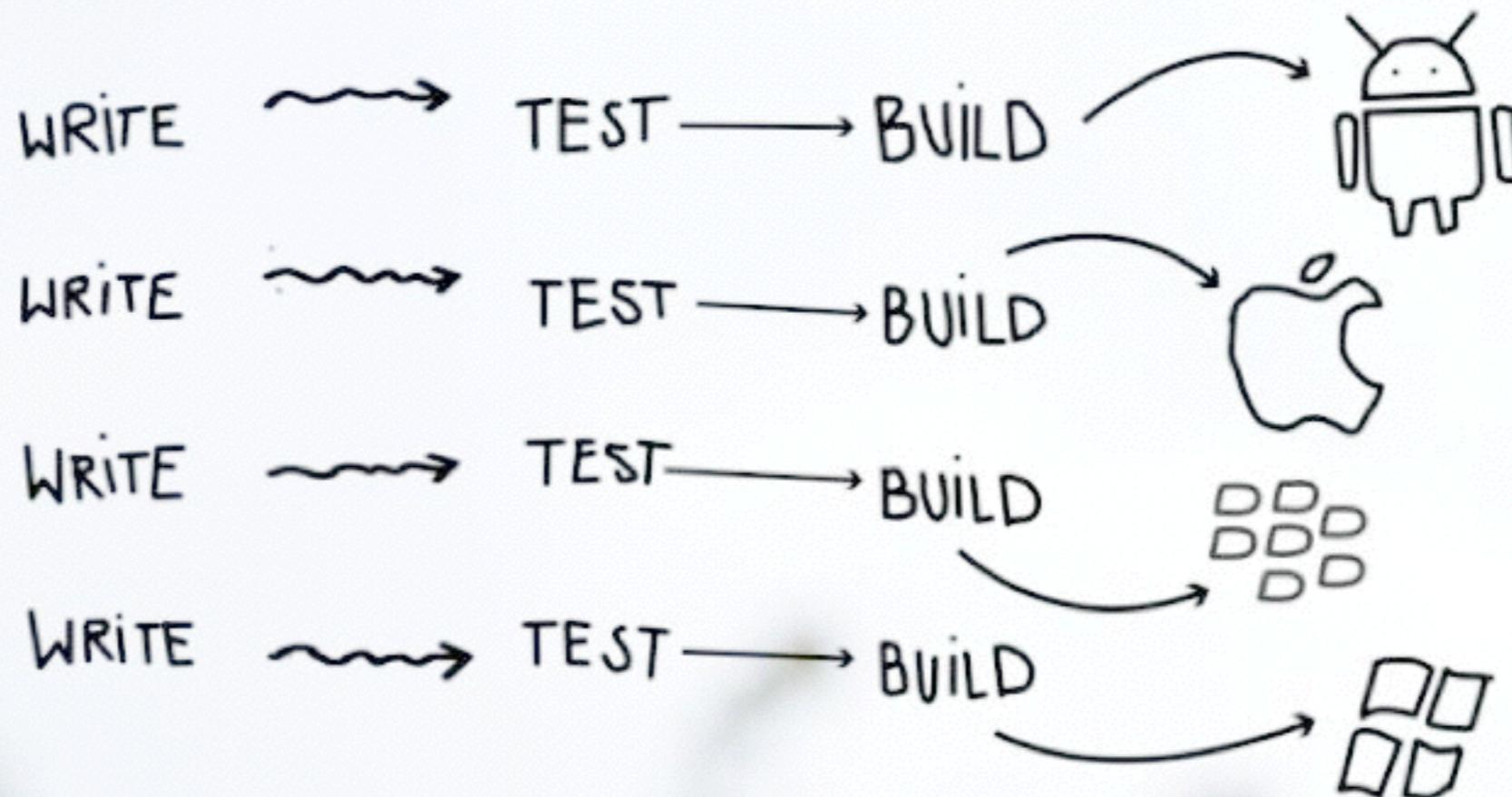
ABOUT YOU

COURSE STRUCTURE

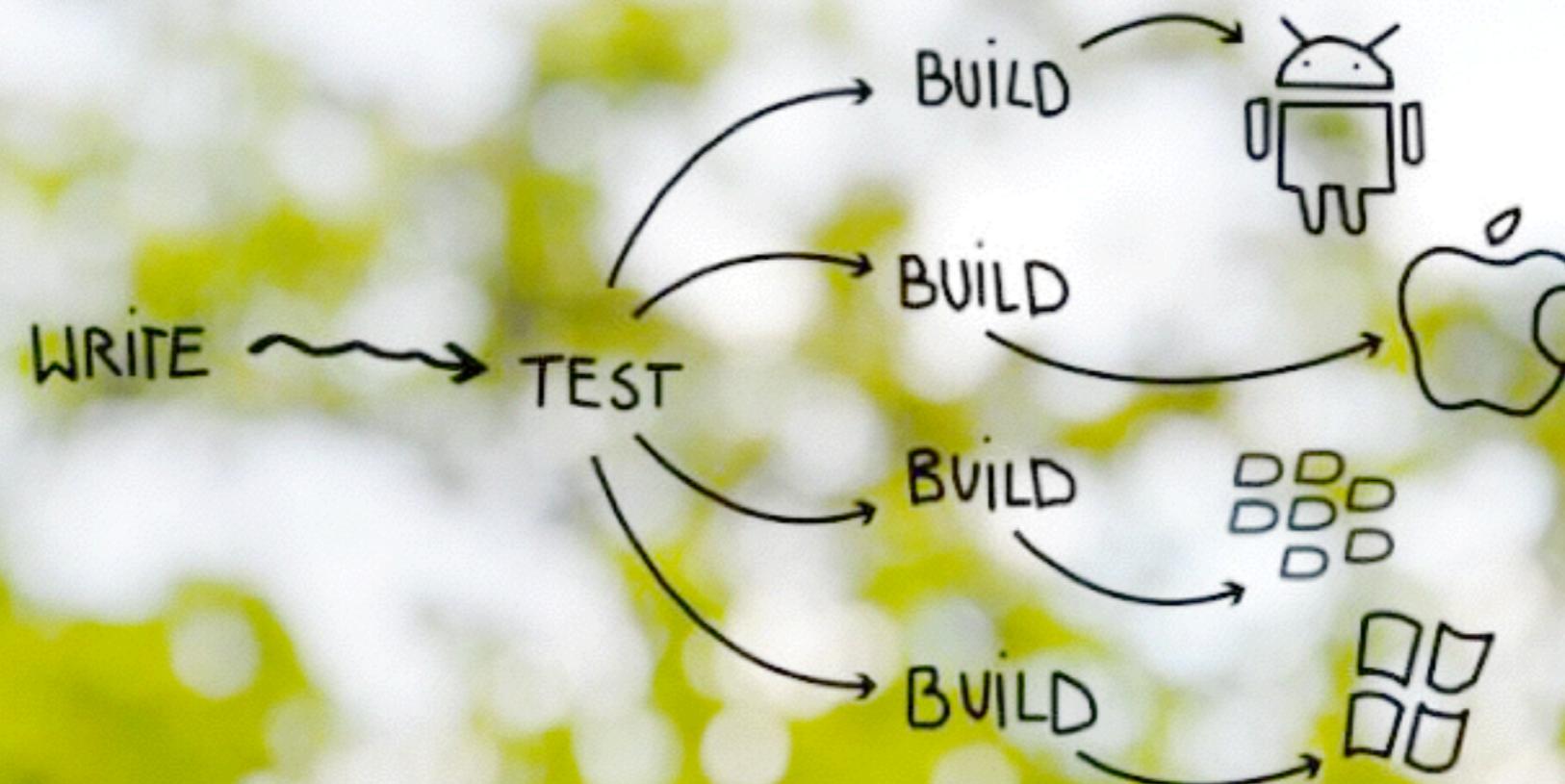
- **12 lectures** (every Tuesday till 24.5.)
 - Intro to multi-platform apps
 - Ionic
 - Ionic + Electron
 - Ionic version 2
 - React Native
- **6 homeworks** (till 16.4.)
- **Team projects**
 - 16.4. – Assignment
 - 28.5. – Presentation
- **Final test** (28.5.)

NATIVE VS. HYBRID APPS

NATIVE



HYBRID



NATIVE

- + Good for complex effects
- + Native UI support
- + Better for old devices

HYBRID

- + Multiplatform development
- + Mobile, desktop app, web
- + Easy to debug
- + Web technologies

-
- Expensive
 - Multiple codebases, languages
 - Complicated updates

- Needs better HW
- No native UI support

MORE PLATFORMS, MORE PROBLEMS, MORE LANGUAGES

- **Android** – Java
- **iOS** – Objective-C / Swift
- **Windows (+mobile)** – C#
- **BlackBerry** – Qt / C++, Javascript...
- **Linux** – Qt / C++,...
- **Mac OS X** – Objective-C / Swift
- **Mobile web** – Javascript
- **Arduino** – Wiring, C++

IN PERFECT WORLD

- **Android** – Javascript
- **iOS** – Javascript
- **Windows (+mobile)** – Javascript
- **BlackBerry** – Javascript
- **Linux** – Javascript
- **Mac OS X** – Javascript
- **Mobile web** – Javascript
- **Arduino** – Javascript

IN PERFECT WORLD

- **Android** – Javascript
- **iOS** – Javascript
- **Windows (+mobile)** – Javascript
- **BlackBerry** – Javascript
- **Linux** – Javascript
- **Mac OS X** – Javascript
- **Mobile web** – Javascript
- **Arduino** – Javascript

Possible
right now!

WAYS OF MOBILE DEVELOPMENT

Native apps

Java, Swift, C#, ...

Compilers

to native code



React Native



Xamarin

Hybrid app

Native app + WebView



APACHE
CORDOVA™

Mobile web

Progressive
mobile apps,...

WAYS OF MOBILE DEVELOPMENT

Native apps

Java, Swift, C#, ...

Compilers

to native code



React Native



Xamarin

Hybrid app

Native app + WebView



APACHE
CORDOVA™

Mobile web

Progressive
mobile apps,...

Our main focus



CASE STUDY

Create Android, iOS, WP apps for showing weather data from API *

Type	Technologies	Team Size	MD	Price
NATIVE APP	JAVA, SWIFT, C#	3	12	24 000 CZK
COMPILED APP	C#	1	8	16 000 CZK
HYBRID APP	WEB TECH	1	5	10 000 CZK
MOBILE WEB	WEB TECH	1	3	6 000 CZK

COMPILERS TO NATIVE CODE

- Using easier languages than Objective-C/Swift or Java
- Compiling to native code afterwards
- Has advantages from both (native app, easier to make)

HYBRID APPS

- HTML5 app acting like native
- Web **wrapped in native layer**
- Develop a **single code base** (web platform)
- Direct **access to native APIs**
- Familiar web dev environment



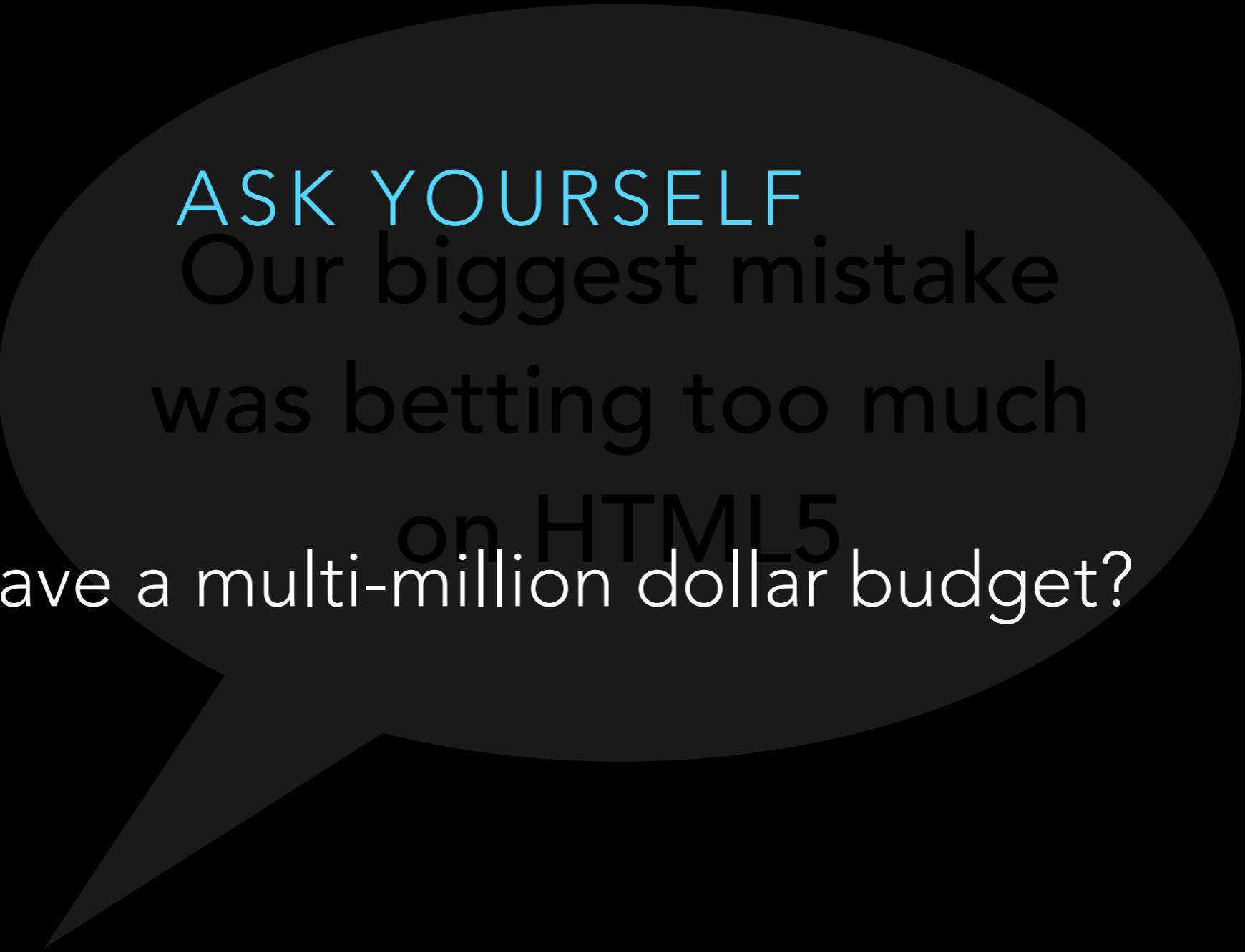
Our biggest mistake
was betting too much
on HTML5



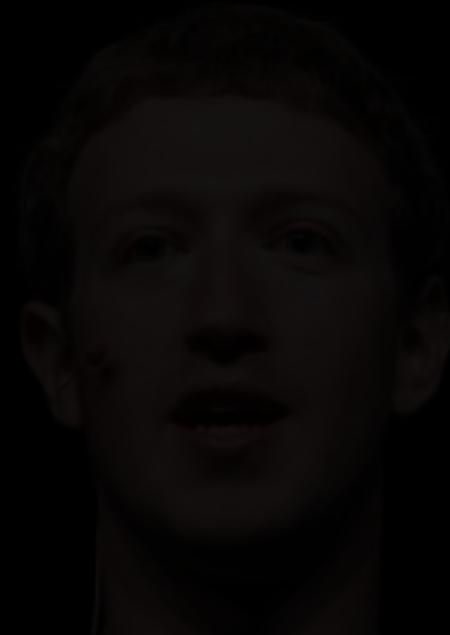
Mark Zuckerberg
Founder of Facebook

ASK YOURSELF
Our biggest mistake
was betting too much

1. Have a multi-million dollar budget?



Mark Zuckerberg
Founder of Facebook



ASK YOURSELF
Our biggest mistake
was betting too much

on HTML5

1. Have a multi-million dollar budget?
2. Have a large team of experienced native developers?



Mark Zuckerberg
Founder of Facebook

ASK YOURSELF
Our biggest mistake
was betting too much

on HTML5

1. Have a multi-million dollar budget?
2. Have a large team of experienced native developers?
3. Does your billion-dollar revenue depend on this app?

Mark Zuckerberg

Founder of Facebook



ASK YOURSELF
Our biggest mistake
was betting too much

on HTML5

1. Have a multi-million dollar budget?
2. Have a large team of experienced native developers?
3. Does your billion-dollar revenue depend on this app?

Mark Zuckerberg

Founder of Facebook

If so... Do native

OTHERWISE GO HYBRID



Hybrid apps
are slow!

A photograph of a man with glasses and a beard, wearing a green polo shirt, shouting or speaking intensely. He is positioned in front of a computer monitor displaying a grid of small windows or icons. A white speech bubble originates from his mouth.

Hybrid apps
are slow!

YOU ARE SLOW!



A photograph of a man with glasses and a brown shirt, looking upwards and slightly to his right with an open mouth as if speaking. He is positioned in front of a computer monitor displaying a colorful grid of icons.

Hybrid apps
are slow!

PEOPLE HAVE BEEN SAYING THAT
SINCE 2010

MOBILE DEVICES HAVE RAPIDLY IMPROVED

YEAR	DEVICE	PROCESSOR	RAM
2007	IPHONE	620 MHz	128 MB
2010	IPHONE 4	1 GHz	512 MB
2015	IPHONE 6	1.4 GHz DUAL-CORE	1 GB

WEB-BROWSERS HAVE RAPIDLY IMPROVED

- Android is now **Chromium-based**
- **Better performance**, faster rendering on Android / iOS
- New features: Gestures, transitions, transforms, scrolling, SVG, CSS 3, input types, File API, Web sockets API, Beacon API, Vibrations API, audio / video formats, Web Audio API, Form validation, Security, etc.

PLUGINS

3D touch, SMS, Geolocation, SQLite Storage, Device Motion, Action Sheet, Audio, Video, Contacts, Whitelist, Ionic Keyboard, File Transfer, File API, Clipboard, Camera, Barcode scanner, InApp Browser, Splash Screen, Touch ID, In-App purchases, iBeacon, Calendar, Network information, Screen orientation, AdMob, Native page transitions, Image picker, Local notifications, File opener, Modal, Dialog, Confirm, Alert, Date picker, Status bar, Video thumbnail, Push notifications, Background service, Social sharing, Vibration, Fullscreen, Crop, Console, Battery status, Live reload, Google Analytics, Crosswalk, Mobile accessibility, Media playback, Toast messaging, Google maps, Hockey app, Panorama viewer, Bluetooth, Carnival, NFC, Brightness, OAuth, Music, Apple Watch

MANY

CORDOVA PLUGINS

3D touch, SMS, Geolocation, SQLite Storage, Device Motion, Action Sheet, Audio, Video, Contacts, Whitelist, Ionic Keyboard, File Transfer, File API, Clipboard, Camera, Barcode scanner, InApp Browser, Splash Screen, Touch ID, In-App purchases, iBeacon, Calendar, Network information, Screen orientation, Address, Native page transitions, Image picker, Local notifications, File open, Modal, Dialog, Confirm, Alert, Date picker, Status bar, Video thumbnail, Push notifications, Background service, Social sharing, Vibration, Fullscreen, Crop, Console, Battery status, Live reload, Google Analytics, Crosswalk, Mobile accessibility, Media playback, Toast messaging, Google maps, Hockey app, Panorama viewer, Bluetooth, Carnival, NFC, Brightness, OAuth, Music, Apple Watch

FEW QUESTIONS FOR YOU

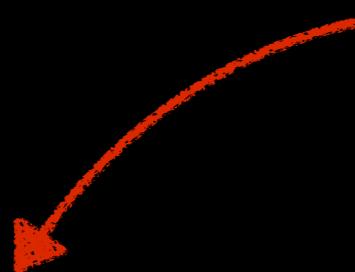
COMPARE TECHNOLOGIES

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, Ionic

WHAT TO USE?

- + React-based
- No Android UI elements
- Small community



Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, Ionic

WHAT TO USE?

- + Native app
- ± Android like layouts
- Needs lot of CSS customization



Reapp, **Native Script**, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, Ionic

WHAT TO USE?

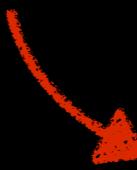
- + Native app
- C# and needs OS Windows
- \$999 / organization / year



Reapp, Native Script, **Xamarin**, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, Ionic

WHAT TO USE?

- + Native apps
- \$5000 / 5 developers / year



Reapp, Native Script, Xamarin, **Tabris.js**,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, Ionic

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,

React Native, Ionic



- + Native app
- \$259 / developer / month

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, **AppGyver**, Sencha, framework 7,

React Native, Ionic



- ± Native + hybrid combo
- Very slow
- \$9 / developer / month

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, **Sencha**, framework 7,
React Native, Ionic

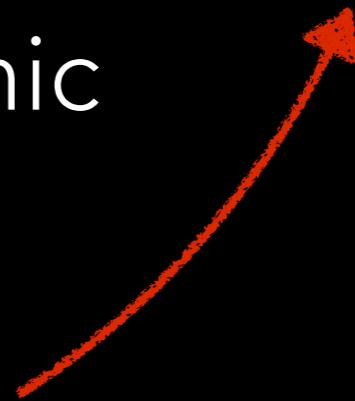
± Hybrid
- \$4340 or more?

WTF?

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, **framework 7**,
React Native, Ionic

- ± Hybrid
- + Both Android, iOS UI's
- Small community



WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,

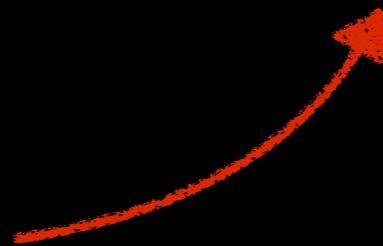
React Native, Ionic



- + Native apps
- + Based on React
- + Developed by Facebook
- Early to use in production

WHAT TO USE?

Reapp, Native Script, Xamarin, Tabris.js,
Appcelerator, AppGyver, Sencha, framework 7,
React Native, **Ionic**

- ± Hybrid apps
 - + Huge community
 - + Supports Android, iOS, Windows 10, mobile web
 - + Free and Open-source
- 

WINNERS

Ionic

React Native



ionic

IONIC

- **Javascript based** framework for multi-platform apps
- Based on **MVC** (Model-View-Controller) **pattern**
- **Open Source** framework (MIT license)
- Huge service eco-system (you will see later)

SUPPORTED PLATFORMS

- Android
- iOS
- Windows 10 Mobile (Windows 10)
- Mobile web

SUPPORTED PLATFORMS

- Android
 - iOS
 - Windows 10 Mobile (Windows 10)
 - Mobile web
-
- Mac OS X
 - Linux
 - Windows

SUPPORTED PLATFORMS

- Android
- iOS
- Windows 10 Mobile (Windows 10)
- Mobile web
- Mac OS X
- Linux
- Windows



WITH
ELECTRON

IONIC ACHIEVEMENTS

- 21,000+ Github Stars
- Top 40 most starred Github repos
- Consistently Top 10 trending JS Github repos
- 11,000+ Stack Overflow topics
- 1,300,000+ Ionic apps have been started from CLI
(Command-line interface)

WEB DEVS WILL FEEL RIGHT AT HOME

HTML



JS



CSS

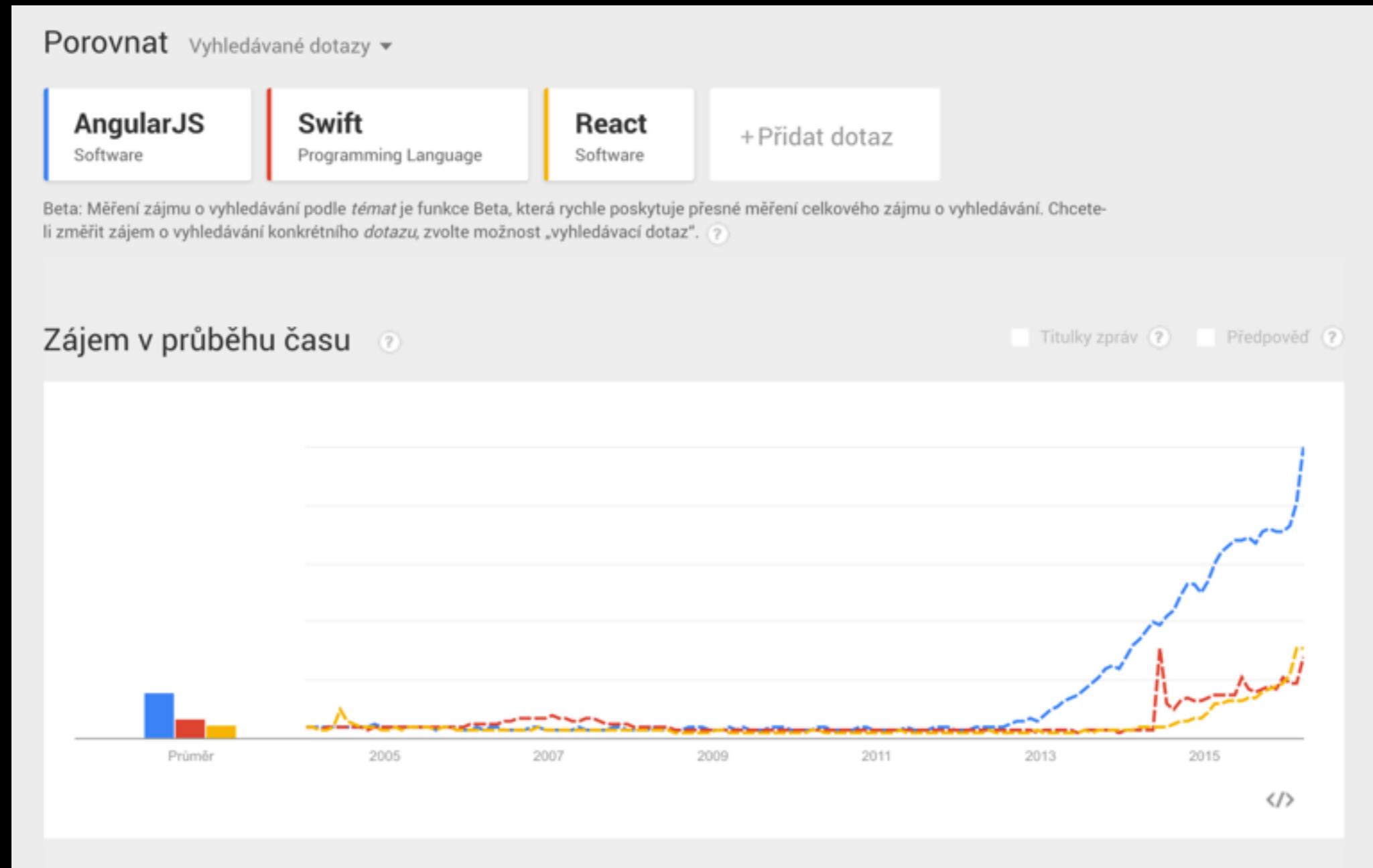


ANGULAR.JS

Hated by many, but still the most suitable



IS ANGULAR DEAD?



Source: <http://google.cz/trends/explore>

ANGULAR 2

In BETA!



IONIC 2

For Angular 2 in beta version



KILLER FEATURES

- Automatic platform customizations
- Pre-defined UI components from Android, iOS
- Ionic CLI and services (Deploy, View, Push, Creator,...)

PERFORMANCE ORIENTED

- Native scroll
- Hardware accelerated CSS animations
- Easy to integrate **Crosswalk** for old Androids

SYNTACTICALLY AWESOME CSS

SASS/SCSS

- Easily to customize/override
- Stand-alone SCSS





700+ ICONS INCLUDED

ION|CONS

<http://ionicons.com>

DEMO

FOLLOW CZECH IONIC COMMUNITY
ON TWITTER



@ionicCzech

HOMEWORK

Install Android SDK and NodeJS

<http://bit.ly/1W38RfK>

<http://zdrojak.cz/clanky/vyvijime-hybridni-aplikace-v-ionicu>

<http://bit.ly/1Tt3tDF>

QUESTIONS?

U+_-

JAN VÁCLAVÍK

@janvaclavik

DANIEL RYS

@danielrys

WWW.USERTECHNOLOGIES.COM