

Mobile Application Development

Produced
by

David Drohan (ddrohan@wit.ie)

Department of Computing & Mathematics
Waterford Institute of Technology

<http://www.wit.ie>



Waterford Institute of Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE





Android & Firebase

Part 4

Firebase Integration





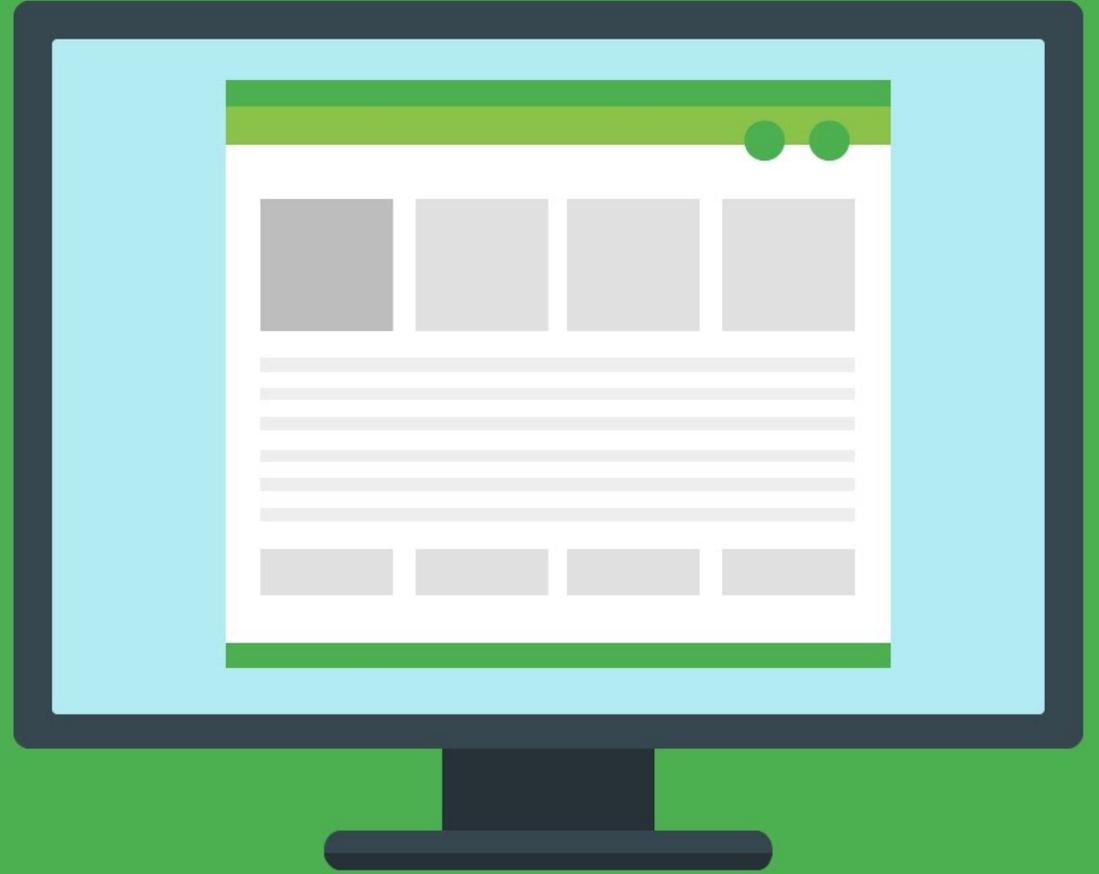
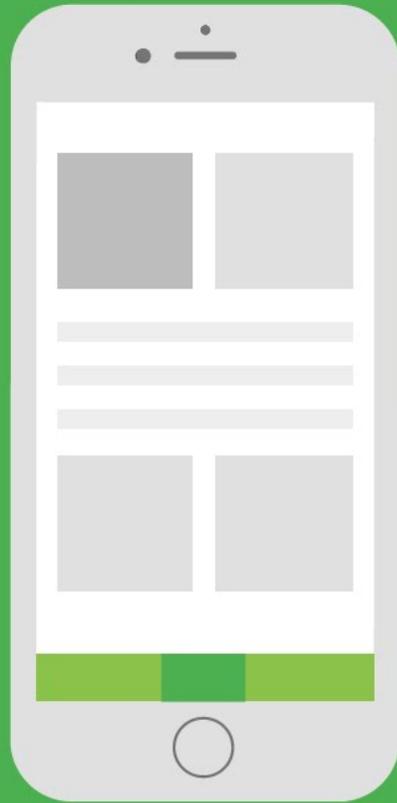
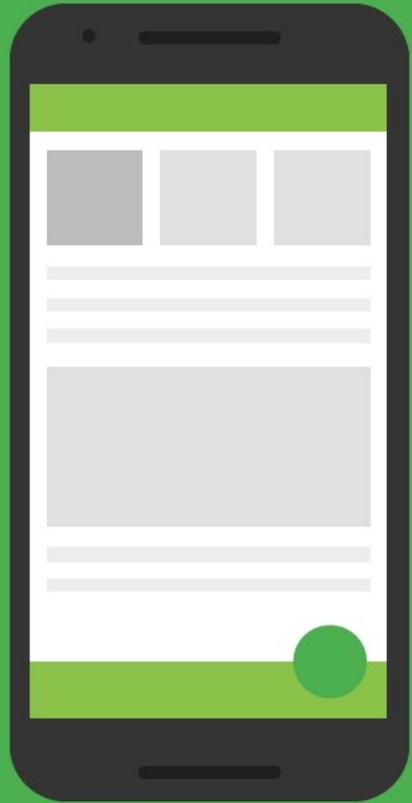
Agenda

- ❑ Firebase history
- ❑ The all new Firebase
- ❑ Real-time database
- ❑ Authentication
- ❑ Storage
- ❑ Remote config
- ❑ Hosting
- ❑ Crash reporting
- ❑ Test lab
- ❑ Firebase cloud messaging
- ❑ Dynamic links
- ❑ App indexing
- ❑ Analytics
- ❑ CoffeeMate Highlights & Demos along the way...



Agenda

- Firebase history
- The all new Firebase
- Real-time database
- Authentication
- Storage
- Remote config
- Hosting
- Crash reporting
- Test lab
- Firebase cloud messaging
- Dynamic links**
- App indexing**
- Analytics**
- CoffeeMate Highlights & Demos along the way...



Dynamic Links

Works the way they're supposed to



Firebase Dynamic Links

- ❑ When users open a Dynamic Link into an app that is not installed, the app's Play Store page opens, where users can install the app. After users install and open the app, the app displays the deep-linked content.
- ❑ Dynamic Links work seamlessly across iOS, Android, and web apps.
- ❑ if your app needs to be upgraded to open a link, your app automatically opens the link (with appropriate content) after upgrading.
- ❑ Create short links using the Firebase console.
- ❑ Free, unlimited use.



console.firebase.google.com/project/coffeematefbi/durablelinks

kollect.ie WTC – ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI – Dynamic Links – Firebase console https://www.jumpyjosh.com

Firestore CoffeeMateFBI Go to docs

Overview Dynamic Links

Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**



Send users to the right place in your app, whether or not it is already installed

Dynamic Links are URLs that reduce friction and get users to the relevant screens of your app.

[Learn more](#) [View the docs](#)

By clicking on the button below, you understand that your Android/iOS app info (e.g. package name, bundle ID and App ID Prefix) will be added to publicly available asset/association files.

GET STARTED



console.firebase.google.com/project/coffeematefbi/durablelinks/creation

kollect.ie WTC - ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI - Dynamic Links - Firebase console https://www.jumpyjosh.com

Firestore CoffeeMateFBI Go to docs

Overview Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**

Dynamic Links

Create Dynamic Link

- 1 Set up your Dynamic Link**

A Dynamic Link is a deep link into your app that works whether or not your app is installed. On desktop it will go to the deep link URL. [Learn More](#)

Deep link URL

Dynamic Link name

NEXT
- 2 Define link behaviour for iOS
- 3 Define link behaviour for Android
- 4 Campaign tracking, social tags and advanced options (optional)

You can also create Dynamic Links from your app programmatically. [Learn more](#)

CANCEL **CREATE DYNAMIC LINK**



console.firebase.google.com/project/coffeematefbi/durablelinks/creatio

kollect.ie WTC – ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI – Dynamic Links – Firebase console https://www.jumpyjosh.com

Firestore

Analytics

Database

Storage

Hosting

Functions

Test Lab

Crash Reporting

Performance

Notifications

Remote Config

Dynamic Links

AdMob

Spark
Free \$0/month [UPGRADE](#)

Dynamic Links

← Create Dynamic Link ?

1 ✓ Set up your Dynamic Link
JumpyJosh Home Page, Deep link URL: http://www.jumpyjosh.com

2 Define link behaviour for iOS

Open the deep link URL in a browser

Open the deep link in your iOS App

PREVIOUS [NEXT](#)

3 Define link behaviour for Android

4 Campaign tracking, social tags and advanced options (optional)

You can also create Dynamic Links from your app programmatically. [Learn more](#)

CANCEL [CREATE DYNAMIC LINK](#)



console.firebase.google.com/project/coffeematefbi/durablelinks/creation

kollect.ie WTC – ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI – Dynamic Links – Firebase console https://www.jumpyjosh.com

Firebase CoffeeMateFBI Go to docs

Overview Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**

Dynamic Links

Create Dynamic Link

- ✓ Set up your Dynamic Link
JumpyJosh Home Page, Deep link URL: http://www.jumpyjosh.com
- ✓ Define link behaviour for iOS
Open the deep link URL in a browser
- 3 Define link behaviour for Android
 - Open the deep link URL in a browser
 - Open the deep link in your Android App
 - ie.cmfbf
 - ie.wit.firebaseioex
 - ADD ANDROID APP
- 4 Campaign tracking, social tags and advanced options (optional)

You can also create Dynamic Links from your app programmatically. [Learn more](#)

CANCEL CREATE DYNAMIC LINK



console.firebase.google.com/project/coffeematefbi/durablelinks/creation

kollect.ie WTC - ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI - Dynamic Links - Firebase console https://www.jumpyjosh.com

Firestore CoffeeMateFBI Dynamic Links > Create Dynamic Link Go to docs

Overview Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**

1 Set up your Dynamic Link
JumpyJosh Home Page, Deep link URL: http://www.jumpyjosh.com

2 Define link behaviour for iOS
Open the deep link URL in a browser

3 Define link behaviour for Android

- Open the deep link URL in a browser
- Open the deep link in your Android App

ie.cmfbf

If your app is not installed, send the user to

- Google Play page for your app
- Custom URL or Instant App

Advanced Settings (optional)

- Open Google Play for versions lower than

PREVIOUS **NEXT**

4 Campaign tracking, social tags and advanced options (optional)

You can also create Dynamic Links from your app programmatically. [Learn more](#)

CANCEL **CREATE DYNAMIC LINK**



console.firebase.google.com/project/coffeematefbi/durablelinks/creatio

kollect.ie WTC - ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI - Dynamic Links - Firebase console https://www.jumpyjosh.com

Firestore Analytics Overview **Dynamic Links** Go to docs

Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**

Create Dynamic Link

- ✓ **Set up your Dynamic Link**
JumpyJosh Home Page, Deep link URL: http://www.jumpyjosh.com
- ✓ **Define link behaviour for iOS**
Open the deep link URL in a browser
- ✓ **Define link behaviour for Android**
Link directly in ie.cmfbf
- 4 Campaign tracking, social tags and advanced options (optional)**
 - Add social meta tags for better sharing
 - Track a campaign with UTM parameters
 - Skip the app preview page (not recommended)

You can also create Dynamic Links from your app programmatically. [Learn more](#)

CANCEL **CREATE DYNAMIC LINK**



console.firebase.google.com/project/coffeematefbi/durablelinks/links/

kollect.ie WTC - ROCA Sports The Pirate Bay Bofl 365 Online Android Development Electronic Marksheets lynda.com solution.md Triathlon Ireland Apple Developer TeamViewer

CoffeeMateFBI - Dynamic Links - Firebase console https://www.jumpyjosh.com

Firestore Analytics Overview **Dynamic Links** Go to docs

Analytics

DEVELOP

- Authentication
- Database
- Storage
- Hosting
- Functions
- Test Lab
- Crash Reporting
- Performance

GROW

- Notifications
- Remote Config
- Dynamic Links**

EARN

- AdMob

Spark Free \$0/month **UPGRADE**

Last 7 days Sep 20 - 26 Sep 2017

https://vv7wz.app.goo.gl/ **NEW DYNAMIC LINK**

Link Name	URL	Created ↑	Clicks ↓	First-opens ↓	Re-opens ↓
i Statistics might not include events that have been logged within the last 36 hours ?					
JumpyJosh Home Page	https://vv7wz.app.goo.gl/eNh4	28 Sep 2017		You'll see your first data within 36 ho...	



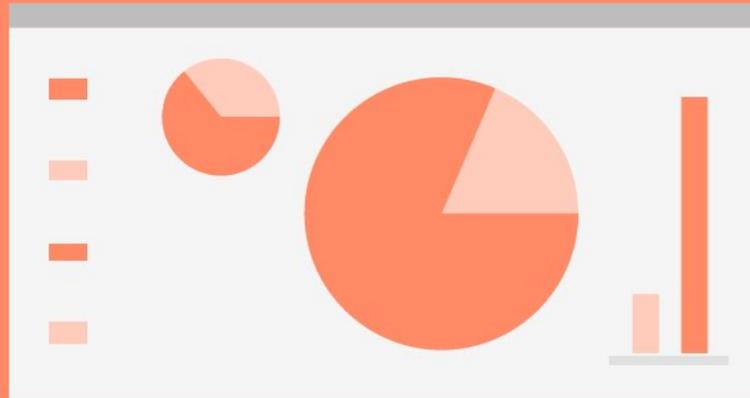
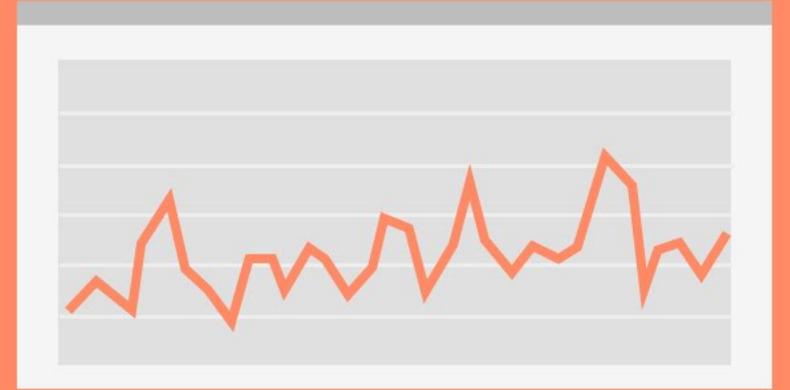
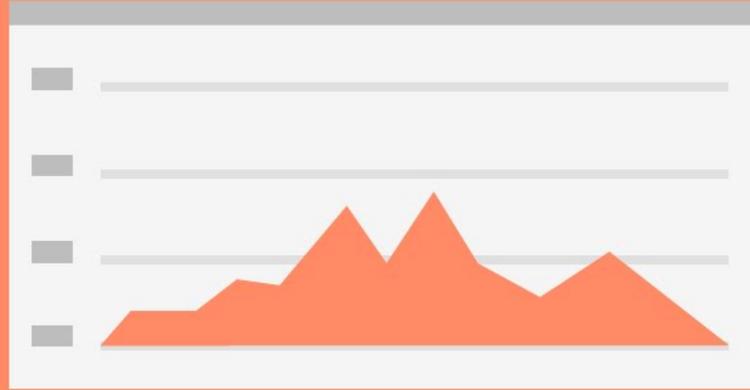
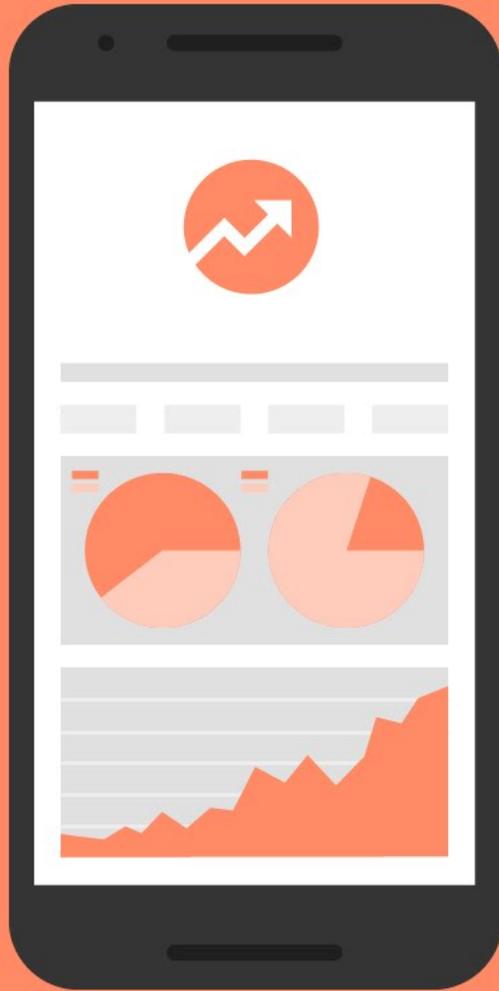
App Indexing

Get into Google Search



App Indexing

- ❑ Firebase App Indexing gets your app into Google Search.
- ❑ If users have your app installed, they can launch your app and go directly to the content they searched for.
- ❑ App Indexing re-engages your app users by helping them find both public and personal content right on their device, even offering query **auto completions** to help them more quickly find what they need.
- ❑ If users don't yet have your app, relevant queries trigger an install card for your app in Search results.



Analytics

Measure your Success



Analytics

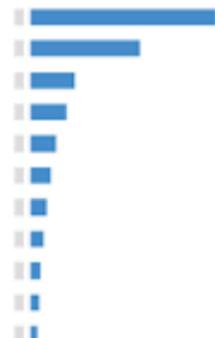
- ❑ Google Analytics for Firebase provides free, unlimited reporting on up to 500 distinct events.
- ❑ The SDK automatically captures certain key events and user properties, and you can define your own custom events to measure the things that uniquely matter to your business.
- ❑ Analytics surfaces data about user behavior in your Android and iOS apps, enabling you to make better decisions about your product and marketing optimization.
- ❑ View crash data, notification effectiveness, deep link performance, in-app purchase data, and more.



Demographics



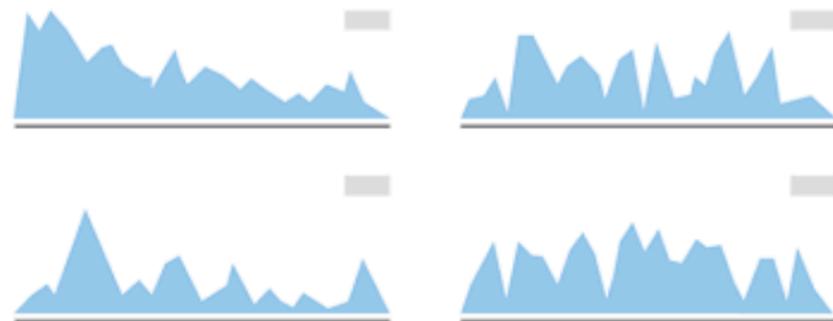
Android - iOS



Retention

	Week 0	Week 1	Week 2	Week 3	Week 4
Category 1	100%	17%	11%	9%	5%
Category 2	100%	19%	10%	7%	
Category 3	100%	20%	14%		
Category 4	100%	22%			
Category 5	100%				

Engagement



Average revenue

	Monthly	Weekly	Daily
Category 1	\$0.46	\$0.31	\$0.11
Category 2	-10.2%	+34.5%	-50.5%



Thanks!

A simple line drawing of a smiling person with their arms raised in a gesture of thanks. The person has a round face with a wide smile, two dots for eyes, and a few lines for hair. Their arms are raised, with hands open. A small '©' symbol is visible at the bottom right of the drawing.



Some important points though....

- ❑ Do not think RDBMS, think JSON. How data should be structured is very important.
- ❑ Firebase has a recycler view, that integrates with real time database smoothly without any listeners.
- ❑ Test lab which is available in paid plan (Blaze), is an amazing feature for testing your app on different real and virtual devices.
- ❑ Set developer mode to true when testing remote config.



References & Links

- ❑ [Presentation by Kaushal Dhruw & Shakti Moyal 2016](#)
- ❑ <https://firebase.google.com>
- ❑ Demo app available at <https://goo.gl/WBP5fR>



Questions?