

Set Course for Notifications... Engage!

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Engage



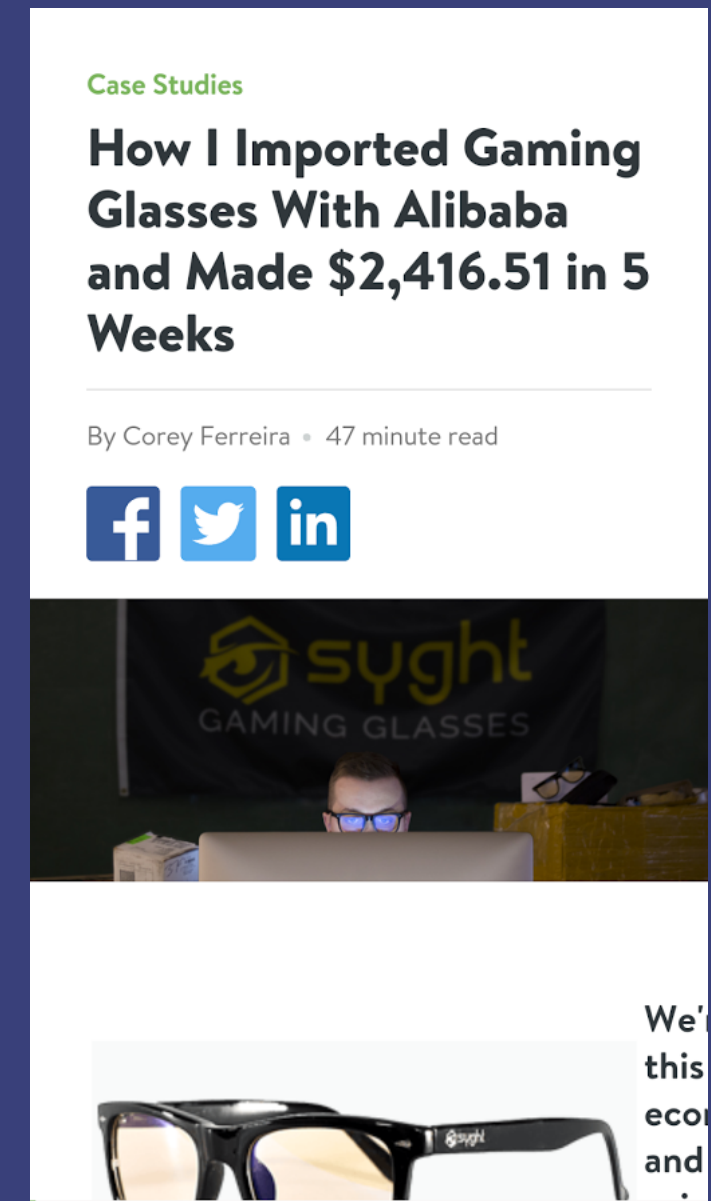
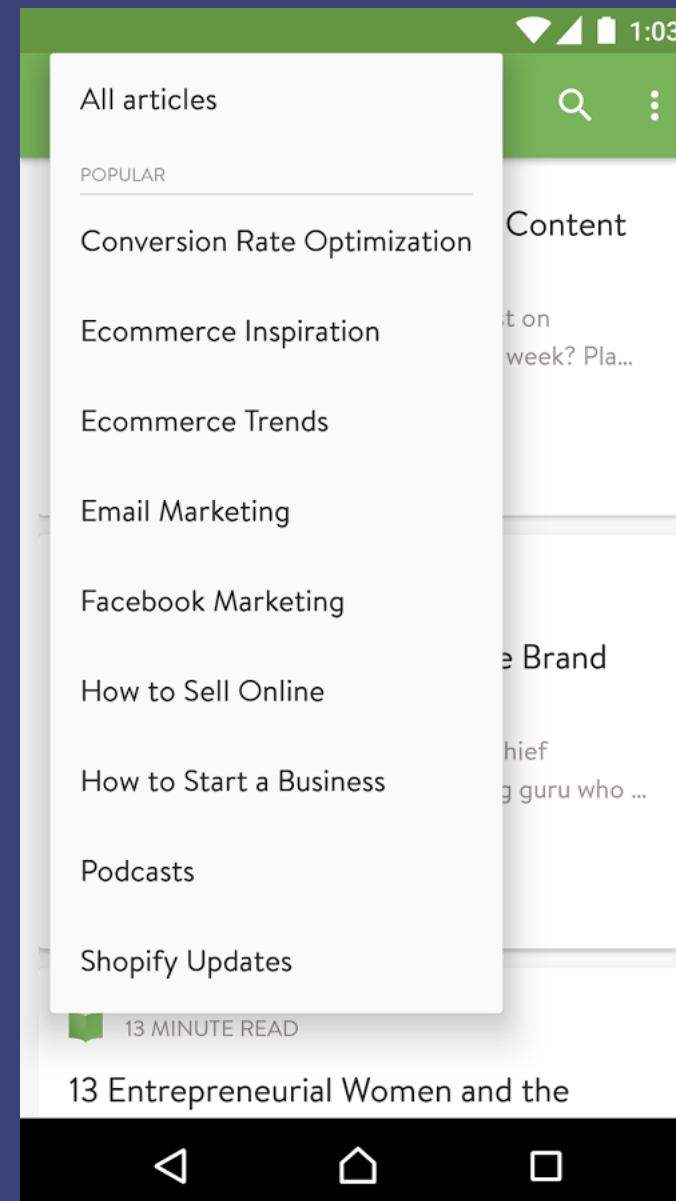
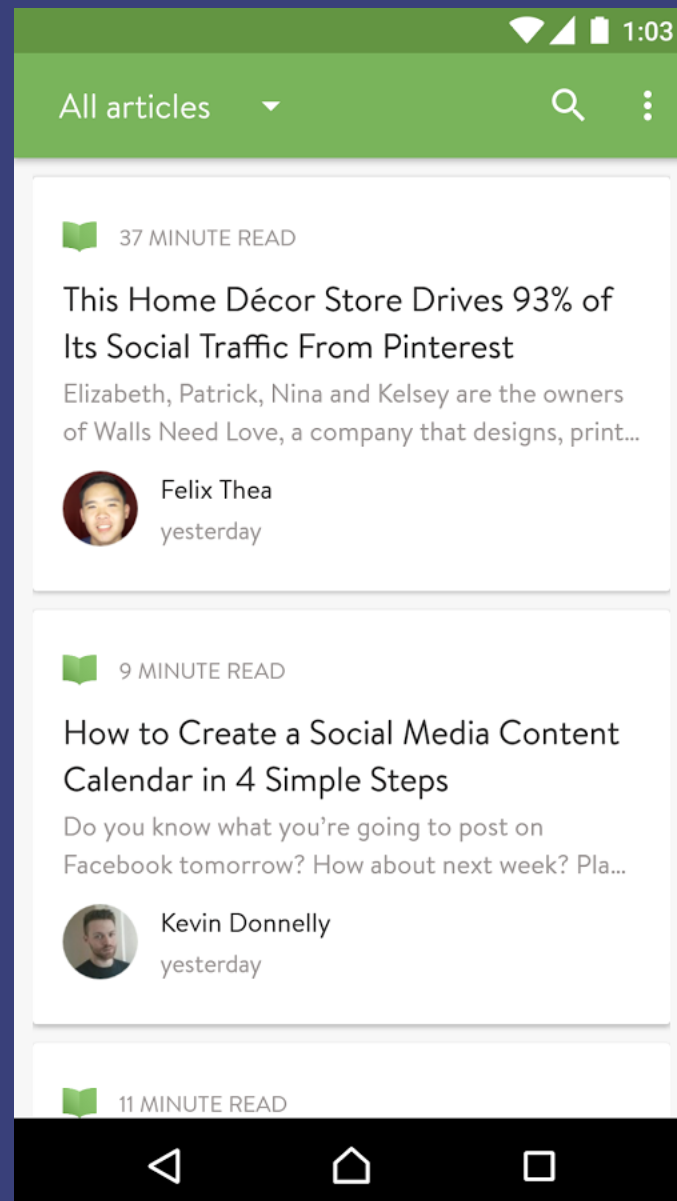
ENTREPRENEUR'S DIGEST

POWERED BY



shopify

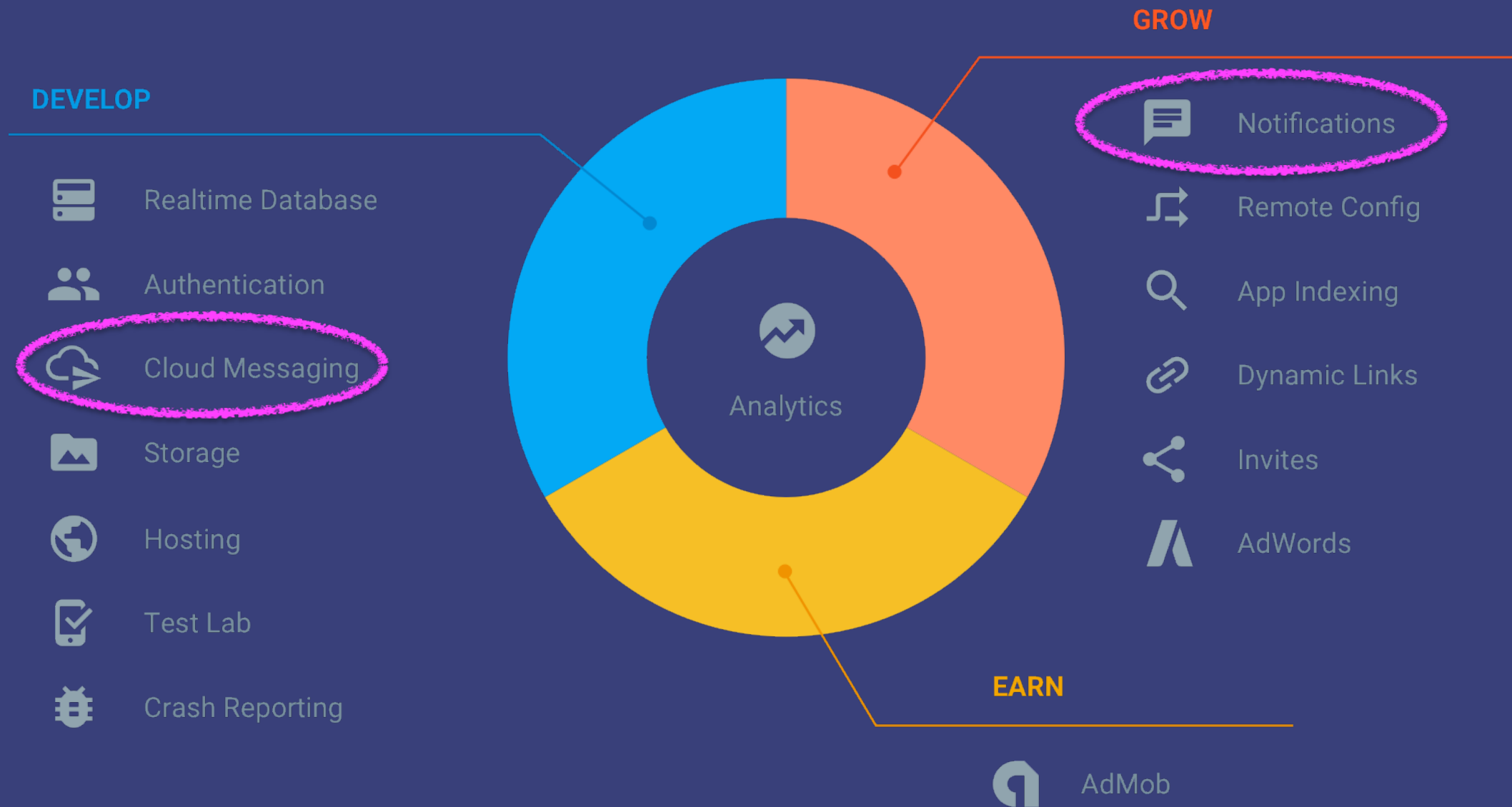
Entrepreneur's Digest

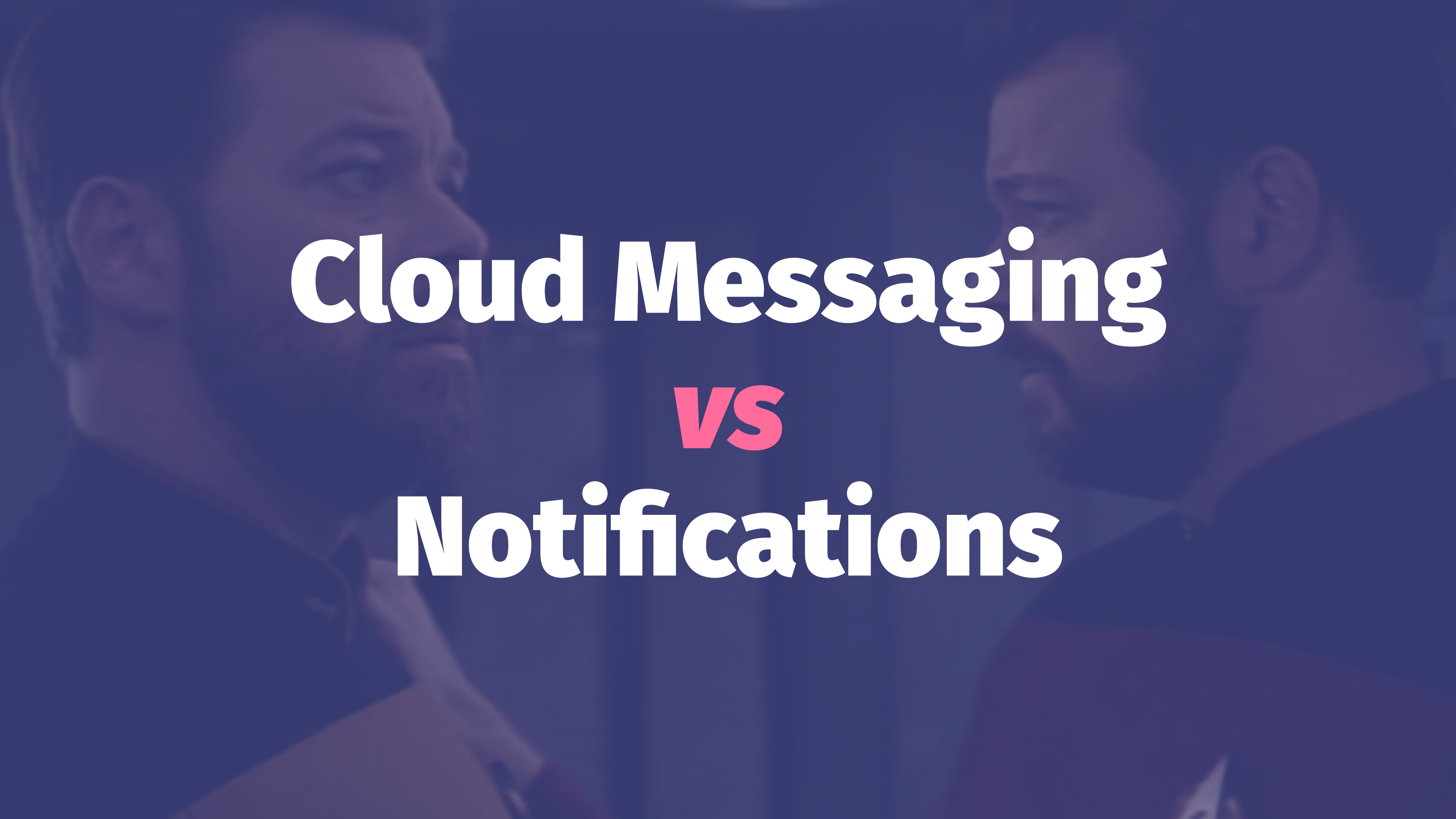


Let's Try Firebase!



Let's Try Firebase!



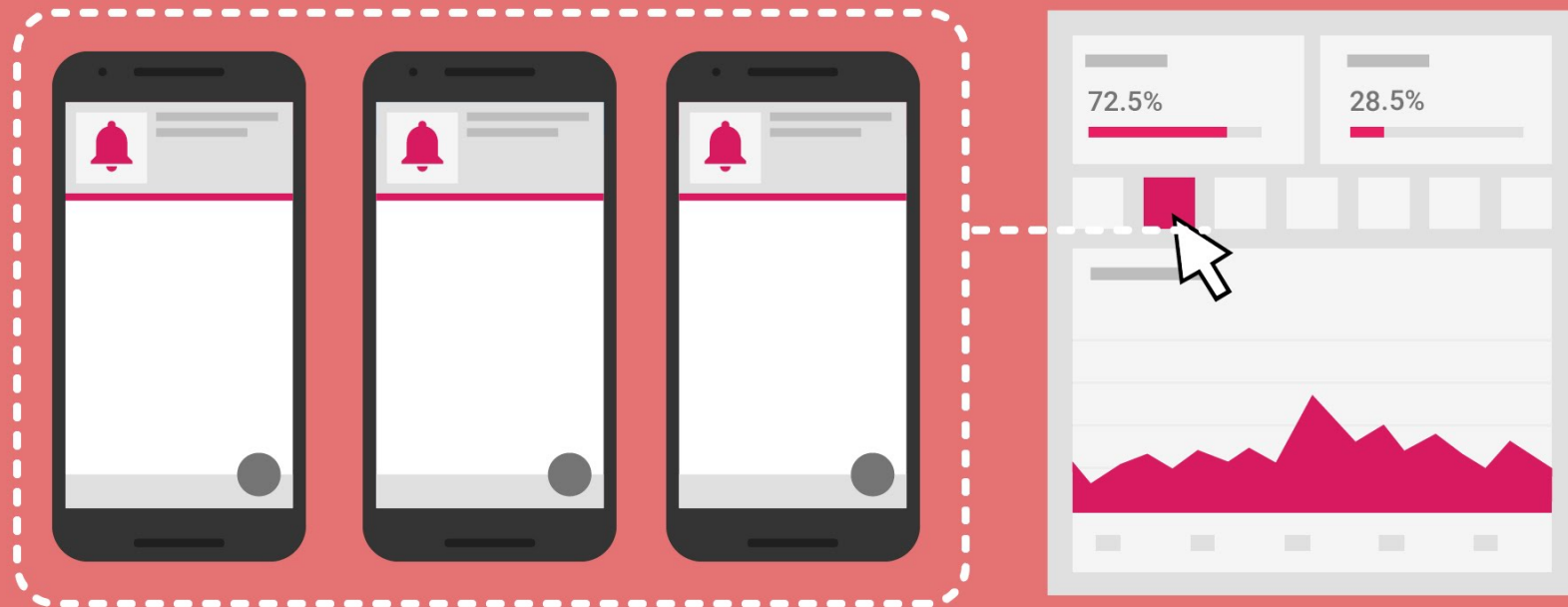


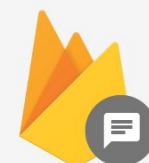
Cloud Messaging *VS* Notifications

Cloud Messaging

- Reliably delivers messages
- Optional application server
- Multiplatform client SDKs





 Notifications

Notifications

- Graphical console for re-engagement
- No coding required
- Built-in analytics

Android Integration

```
compile "com.google.firebase:firebase-messaging:${FB_VERSION}"
```

What You Get

- Manifest permissions
 - Registration token
 - Broadcast receiver
- Display in notification area
 - Topic subscription
 - Analytics

Notifications Console

Message text

\$5 promo

Message label (optional) ?

Enter message nickname

Delivery date ?

Time

Time zone ?

Send Later ▾

5/30/16 ▾

12:00 PM

Recipient time zone ▾

☒ Recipient time zone

Target

☒ User segment ☐ Topic ☐ Single device

Target user if...

App

iOS com.redhotlabs.bingo ▾

Audience ▾

 Australian Purchasers ▾

AND

ADD TARGET

 Conversion events ?

^

All fields optional

Funnel Analysis

Hello world

✓ Completed

Jun 3, 2016
2:56 PM



<1000

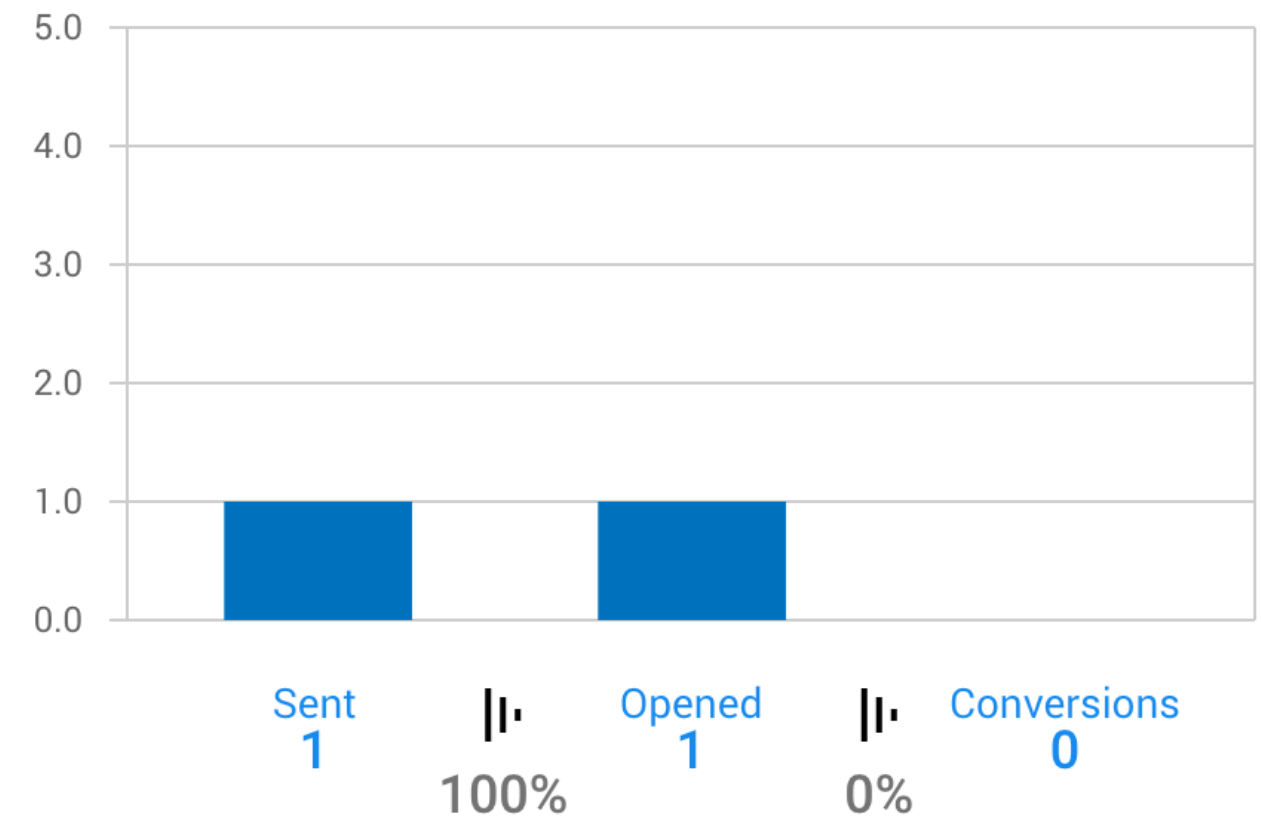
100%

Notifications funnel

Apps



com.shopify.blog



A man with grey hair, wearing a red long-sleeved shirt, is shown from the chest up. He has his eyes closed and a wide smile, with his arms raised in a celebratory gesture. The background is slightly blurred, showing what appears to be an indoor setting with some structural elements. The entire image is overlaid with a semi-transparent dark blue filter.

Wow, amazing!

A blue-tinted image of a Star Trek character, likely a Klingon, with their hands clasped in front of them. The word "But..." is overlaid in a bold, pink, italicized font. The background is a solid blue color.

But...

What About...

- Different notification **style**?
- **Grouping** and **summary**?
- Not showing until **background sync** happens?
- **Analytics** and reporting?

**Let's
Dig
Deeper**

Notification Messages

```
{  
  "to" : "/topics/email_marketing",  
  "notification" : {  
    "body" : "How to Grow a Business with Email Marketing",  
    "title" : "New article available",  
  }  
}
```

- Predefined keys
- Shown automatically if app backgrounded
 - Console only sends this type

Data Messages

```
{  
  "to" : "/topics/email_marketing",  
  "data" : {  
    "item_id" : 14142135,  
    "article_title" : "How to Grow a Business with Email Marketing"  
  }  
}
```

- Freeform keys and values
- App decides what to do on receive
- Console cannot send this kind

Notification *vs* Data Messages

App state	Notification	Data	Both
Foreground	<code>onMessageReceived</code>	<code>onMessageReceived</code>	<code>onMessageReceived</code>
Background	System tray	<code>onMessageReceived</code>	Notification: system tray Data: in extras of the intent.

Sending Data Messages

- Must use FCM
- Handle everything in `onMessageReceived`
 - No more analytics 🐱💧
 - Or funnel analysis 🐱💧 🐱💧

The Best of Both Worlds?

- Custom Notifications
- Analytics + Reporting

Styling & Grouping Notifications

Styling & Grouping Notifications



2 new articles

14:26

7 Ways Kit Can Help You Make Your First...

Why the Creator of Qwerky Writer Says Yo...

Grouping Notifications

```
private static final String GROUP_NEW_ARTICLE = "new_article";
```

```
new NotificationCompat.Builder(context)  
    .setContentTitle(title[0])  
    .setGroup(GROUP_NEW_ARTICLE) // ◀◀◀◀◀
```

...

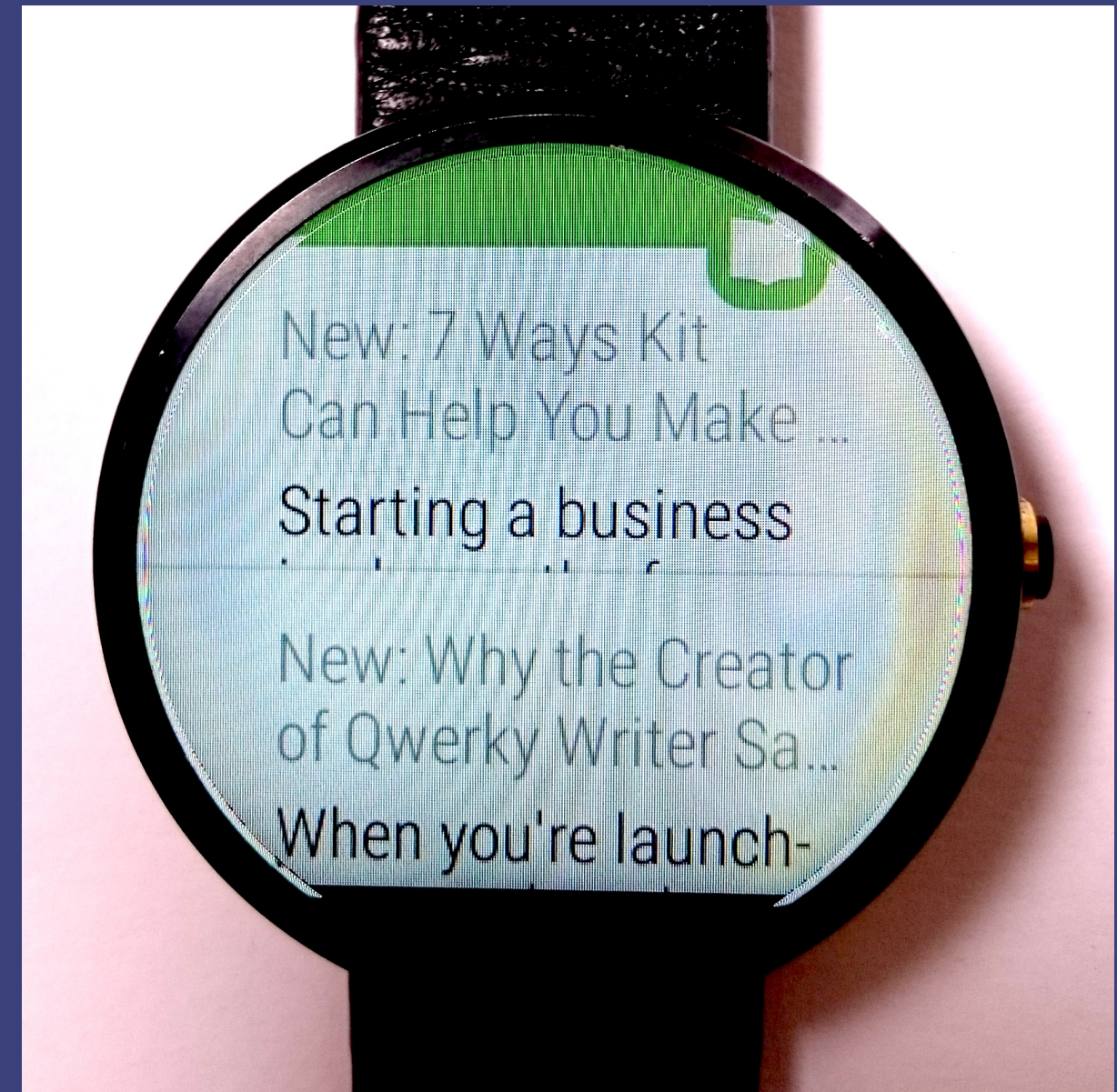
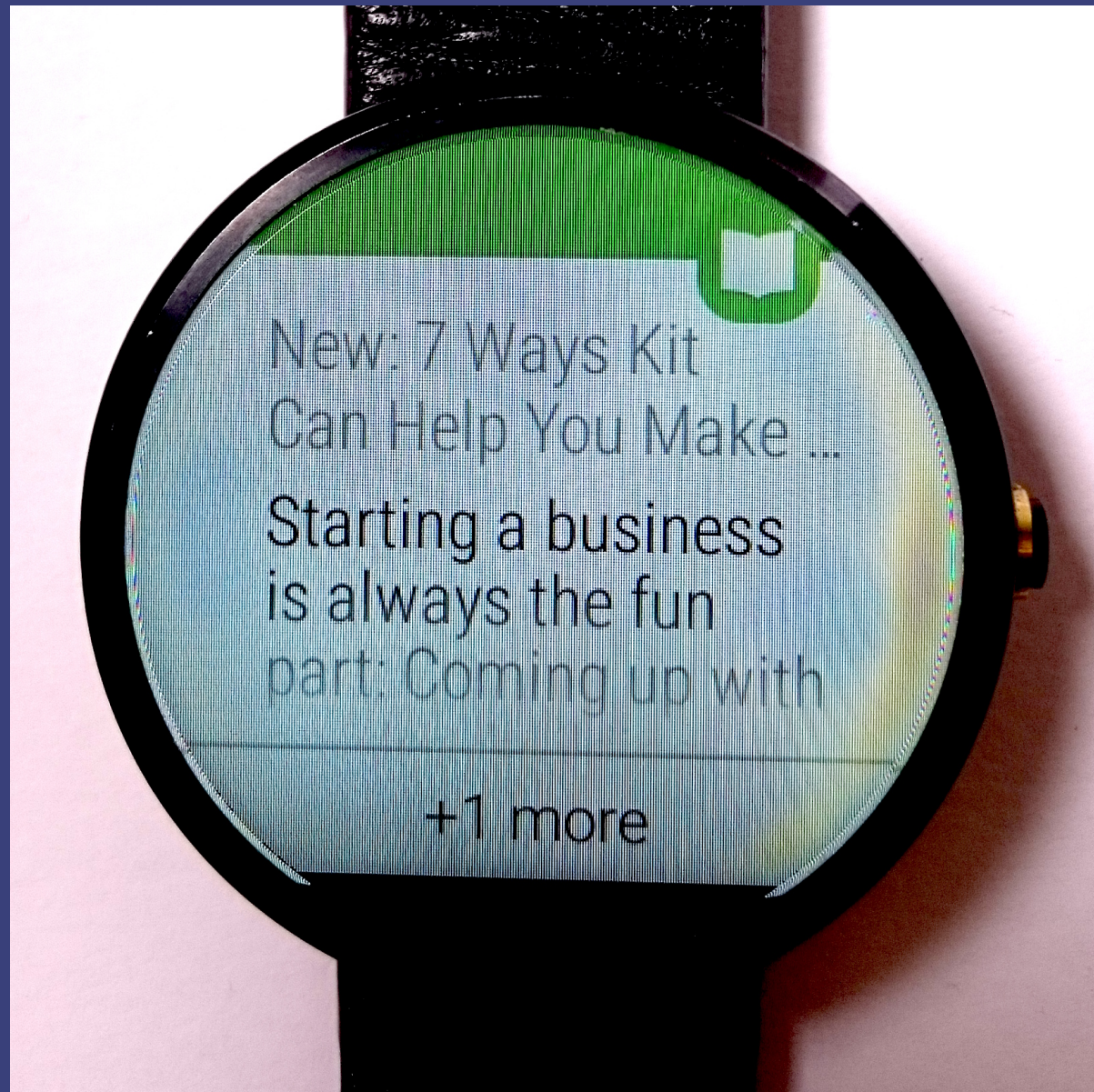
```
new NotificationCompat.Builder(context)  
    .setContentTitle(title[1])  
    .setGroup(GROUP_NEW_ARTICLE) // ◀◀◀◀◀
```

...

Summary Notification

```
new NotificationCompat.Builder(context)
    .setContentTitle(n + " new articles")
    .setStyle(inboxStyle)
    .setGroup(GROUP_NEW_ARTICLE) // ◀◀◀◀◀
    .setGroupSummary(true)       // ◀◀◀◀◀
    ...
```


Stacked Notifications in Wear



Bundled Notifications in Nougat

 Entrepreneur's Digest • 1m 

New: Why the Creator of Qwerky Writer Says You Sh...

New: 7 Ways Kit Can Help You Make Your First Sale

 Entrepreneur's Digest • 1m 

1m 

New: Why the Creator of Qwerky Writer Says You Sh..
When you're launching a product that your market is..

4m 

New: 7 Ways Kit Can Help You Make Your First Sale
Starting a business is always the fun part: Coming u..

Notifications As Pings

When Not To Show

- During "Do Not Disturb" time
- Push data needs further processing
 - Send-to-sync messages

Being a Good App Citizen

- Push messages are delivered ***very quickly***
 - Consider server when client syncs
 - Stagger start time of sync
 - Minimize power usage

Scheduling Background Sync

<https://developer.android.com/topic/performance/scheduling.html>

- JobScheduler (API 21)
- Firebase JobDispatcher?
- **GCMNetworkManager**

Jobs in GCMNetworkManager

- Specify network and scheduling requirements
- Scheduler tries to batch and defer as long as possible

build.gradle

```
compile "com.google.android.gms:play-services-gcm:${PLAY_VERSION}"
```

AndroidManifest.xml

```
<service
    android:name=".notifications.MyFirebaseMessagingService"
    android:exported="false">
    <intent-filter>
        <action android:name="com.google.firebase.MESSAGING_EVENT" />
    </intent-filter>
</service>
```

→ onMessageReceived is called in this service

MyFirebaseMessagingService.java

```
@Override
public void onMessageReceived(RemoteMessage remoteMessage) {
    Map<String, String> data = remoteMessage.getData();
    long articleId = parseIdFromData(data);

    // TBD: Remember we have a pending notification

    scheduleArticleFetch(rng.nextInt(SYNC_MIN) + 1, SYNC_MAX);
}
```

scheduleArticleFetch(min, max)

```
OneoffTask task = new OneoffTask.Builder()  
    .setService(MyGcmTaskService.class)  
    .setRequiredNetwork(Task.NETWORK_STATE_CONNECTED)  
    .setExecutionWindow(min, max)  
    .build();  
gcmNetworkManager.schedule(task);
```

AndroidManifest.xml

```
<service
  android:name=".service.MyGcmTaskService"
  android:exported="true"
  android:permission="com.google.android.gms.permission.BIND_NETWORK_TASK_SERVICE">
  <intent-filter>
    <action android:name="com.google.android.gms.gcm.ACTION_TASK_READY" />
  </intent-filter>
</service>
```

→ Background job will run in this service

MyGcmTaskService.java

```
@Override
public int onRunTask(TaskParams taskParams) {
    Bundle extras = taskParams.getExtras();

    apiService.fetchLatest(...);

    // TBD: Alert observers that sync has completed,
    // then showing any notifications that were pending
}
```


Analytics



Events

notification_foreground	when a notification sent by Firebase Notifications is received while the app is in the foreground.
notification_receive	when a notification sent by Firebase Notifications is received by a device when the app is in the background. Android apps only.
notification_open	when a user opens a notification sent by Firebase Notifications.
notification_dismiss	when a user dismisses a notification sent by Firebase Notifications. Android apps only.

- Automatically collected events are reserved
- Need to define your own names

Detect Foreground or Background Ordered Broadcast

<https://commonsware.com/blog/2010/08/11/activity-notification-ordered-broadcast.html>

Application and ActivityLifecycleCallbacks

<http://www.developerphil.com/no-you-can-not-override-the-home-button-but-you-dont-have-to/>

notif_receive, notif_foreground

```
@Override
public void onMessageReceived(RemoteMessage remoteMessage) {
    boolean isBackground =
        ((MyApp)application()).isBackground();
    firebaseAnalytics.logEvent(isBackground
        ? "notif_receive"
        : "notif_foreground",
        params);
    ...
}
```

notif_receive, notif_foreground

```
@Override
public void onMessageReceived(RemoteMessage remoteMessage) {

    // TBD: Extract any extra data and record in event, e.g. item ID

    boolean isBackground =
        ((MyApp)application()).isBackground();
    firebaseAnalytics.logEvent(isBackground
        ? "notif_receive"
        : "notif_foreground",
        params);
    ...
}
```

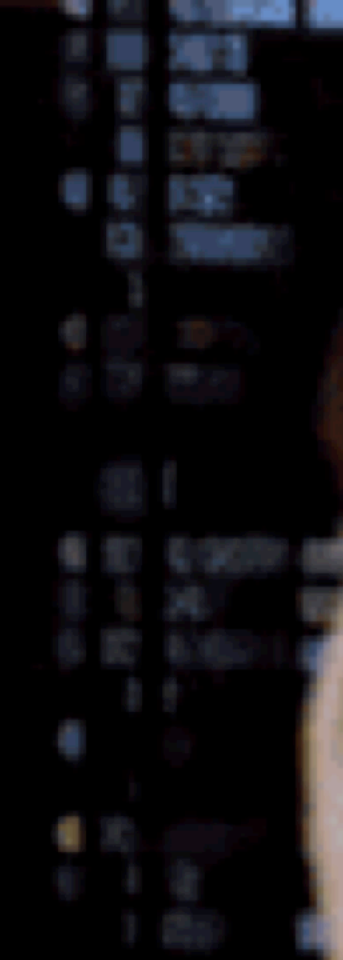
Opening Notification

```
Intent serviceIntent = new Intent(NotificationActionService.ACTION_TAPPED,  
    null, context, NotificationActionService.class);  
  
...  
Intent intent = PendingIntent.getService(context.getApplicationContext(),  
    REQUEST_CODE_TAPPED,  
    serviceIntent,  
    PendingIntent.FLAG_UPDATE_CURRENT);  
  
NotificationCompat.Builder builder = new NotificationCompat.Builder(context)  
    .setContentIntent(intent)  
    ...
```

NotificationActionService.java

```
public class NotificationActionService extends IntentService {
    @Override
    protected void onHandleIntent(Intent intent) {
        switch (intent.getAction()) {
            case ACTION_TAPPED:
                firebaseAnalytics.logEvent("notif_open", params);

            case ACTION_DISMISSED:
                firebaseAnalytics.logEvent("notif_dismiss", params);
        }
    }
}
```

29	5	EXTRA-25-20000
30	6	EXTRA-25-20000
31	8	EXTRA-25-20000

Code Snippets

<https://goo.gl/50tRcm>

Analytics Limitations

- **Can't** filter analytics by event parameters *
- Need parameters for per-notification funnel analysis
- Parameters **can** be specified in Audiences

Audiences

Audience name

Notifications Disabled

22/80

Audience description

Users with push notifications disabled

38/100

Include users that met the following conditions at least once

system_notif_on

... exactly matches false

OR

app_article_notif_on

... exactly matches false

CANCEL

SAVE

→ Segment user base by combining events, parameters and properties



Segment by Item ID

Audience name	Audience description
Notif Recipients 199447433: "7 Way 74/80	Users who received notification for article 199447433 and either opened or dismissed i 87/100
Include users that met the following conditions at least once	
x_notification_receive	Count > 0 item_id = 199447433
AND	
x_notification_open	Count > 0 item_id = 199447433
OR	
x_notification_dismiss	Count > 0 item_id = 199447433

- Users who received a notification **AND**,
- Opened the notification, **OR**, dismissed it

Define Funnel

Funnel name

Open notification

17/80

Description

User taps on push notification

30/150

Select a minimum of two events that you'd like to track in this funnel.

x_notification_receive ▼

||

x_notification_open ▼

||

ADD ANOTHER EVENT +

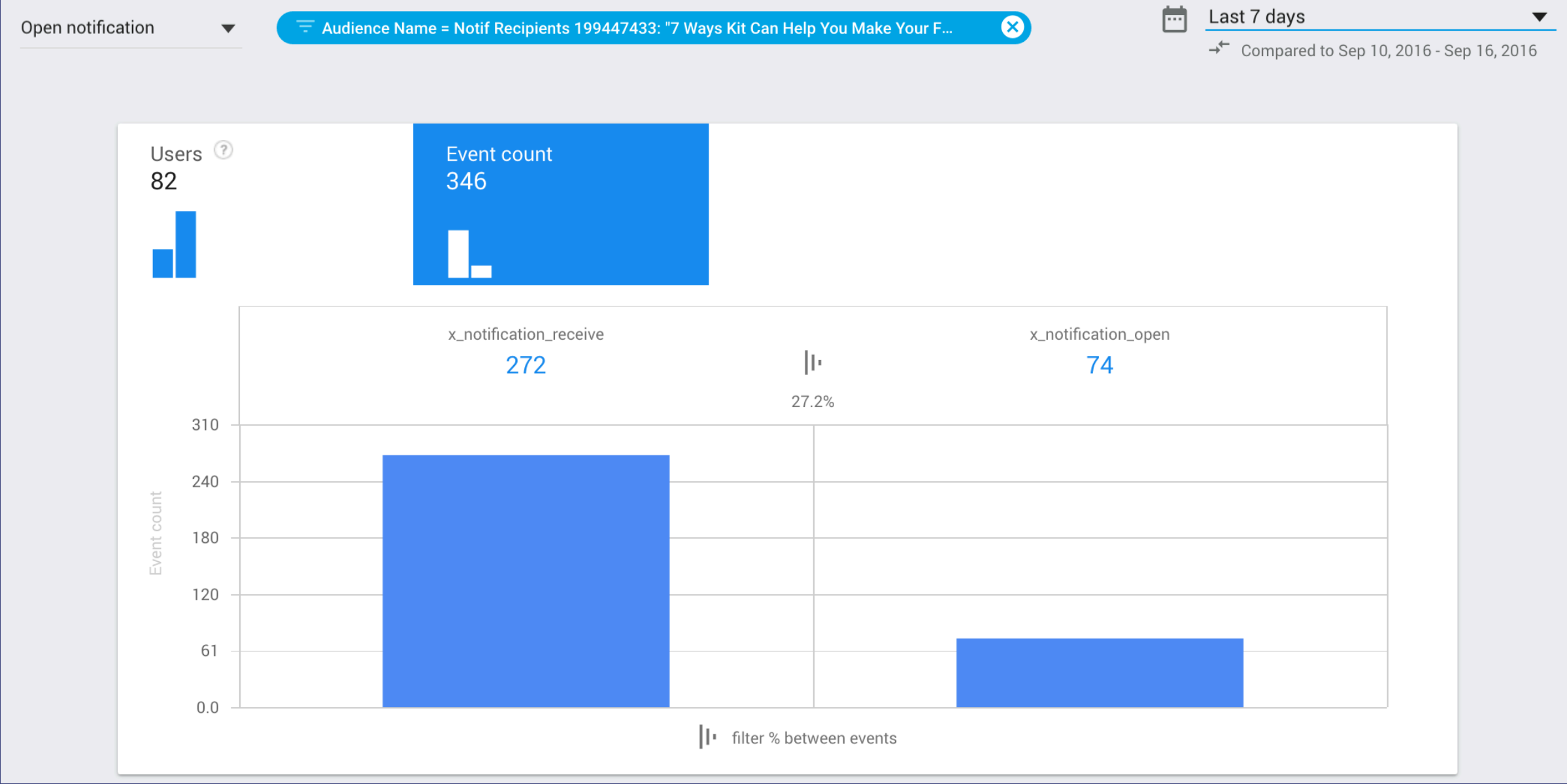
CANCEL

UPDATE

UPDATE & VIEW

→ Then, view funnel with audience filter

Funnel Analysis





Beyond Analytics

- Filtering on event parameters is a popular feature request
- Can stream raw events + parameters into BigQuery

Application Server

Topic Messaging

- Useful if you don't need to address individually
 - Topics don't have to be pre-defined
- For simple messaging, subscribe all clients to one topic

```
firebase.subscribeToTopic("all_new_articles");
```

Sending Notifications to FCM

- Don't need to integrate into your backend
- Anything that can send an HTTP request
 - Example using cURL in the Gist
 - Shell script useful for debugging

Resources

Learning

<https://github.com/firebase/quickstart-android>

<https://github.com/googlesamples/android-ActiveNotifications>

[Firebase YouTube channel](#)

[Firebase Blog](#)

Support

Stack Overflow, Google Group, Report Bug/Feature Request

<https://firebase.google.com/support/>

Status Page

<https://status.firebase.google.com/>

Firebase Slack

<https://firebase-community.appspot.com/>

Takeaway

- Firebase Notifications gives you a basic implementation
- For more complex needs, get to know FCM
 - For me, no reduction in lines of code
- Lot of manual work to produce analytics

Let's have some questions!

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